Minnesota e-Health Initiative

Report to the Minnesota Legislature
August 2018

DEPARTMENT OF HEALTH

Protecting, Maintaining and Improving the Health of All Minnesotans

August 21, 2018

The Honorable Michelle Benson
Chair, Health and Human Services Finance
and Policy Committee
Minnesota Senate
3109 Minnesota Senate Building
95 University Ave. W.
Saint Paul, MN 55155-1606

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

The Honorable Jim Abeler
Chair, Health, Human Services Reform Finance and
Policy Committee
Minnesota Senate
3215 Minnesota Senate Building
95 University Ave. W.
Saint Paul, MN 55155-1206

The Honorable Joe Schomacker
Chair, Health and Human Services Reform
Committee
Minnesota House of Representatives
509 State Office Building
100 Rev. Dr. Martin Luther King Jr. Blvd.
Saint Paul, MN 55155

Senator Tony Lourey, DFL Lead
Health and Human Services Finance and Policy
2211 Minnesota Senate Building
95 University Avenue W.
St. Paul, MN 55155

Representative Erin Murphy, DFL Lead
Health and Human Services Finance
331 State Office Building
100 Rev. Dr. Martin Luther King Jr. Blvd.
St. Paul, MN 55155

Senator Jeff Hayden, DFL Lead
Human Services Reform Finance and Policy
2209 Minnesota Senate Building
95 University Avenue W.
St. Paul, MN 55155

Representative Tina Liebling, DFL Lead
Health and Human Service Reform
237 State Office Building
100 Rev. Dr. Martin Luther King Jr, Blvd.
St. Paul, MN 55155

To the Honorable Chairs and Ranking Members:

As required by Minnesota Statutes, sections 62J.495 and 62J.498-4982, this Minnesota e-Health Initiative report outlines progress toward Minnesota's vision of an inclusive, sustainable, statewide system for health information exchange to support care coordination for complex patients, advance health equity, and support successful participation in value-based care models. It also discusses the challenges that we need to address in order to achieve this goal, and recommendations for overcoming them.

Minnesota has long been a leader in e-health. Through a combination of statewide collaboration, a strong policy framework, and significant state and federal funding, all hospitals and nearly all clinics in the state are now using electronic health records (EHRs). But providers in behavioral health, long-term

and post-acute care, dentistry, state and local public health, and social services have largely been left out of federal meaningful use programs and incentives, and still lag in EHR adoption.

Minnesota providers also struggle to effectively exchange information, particularly across EHR systems and care networks. Legal, financial, and regulatory barriers prevent many providers from effectively exchanging data about shared patients, resulting in fragmented care and a lack of consistent patient and provider access to critical information.

E-health tools offer great promise for preventing and responding to Minnesota's opioid epidemic, lowering costs related to duplicative or unnecessary care, and giving patients access to their own health information in order to help guide their care. But achieving these goals will require Minnesota stakeholders across the health care system to come together to develop and implement solutions that work for everyone.

The Minnesota e-Health Initiative is ensuring that these and many other activities are occurring in a coordinated and focused way.

Sincerely,

Jan K. Malcolm
Commissioner
P.O. Box 64975
St. Paul, MN 55164-0975
www.health.state.mn.us

TABLE OF CONTENTS

Executive Summary 6

Key activities and accomplishments 6

Introduction 8

Minnesota's e-health accomplishments and continued efforts 9

Health information exchange to support better health 9

E-health tackles the opioid epidemic 14

Minnesota Accountable Health Model is moving ahead 18

Privacy, security and consent management for health information exchange 20

Public Health Prevention and Response through MDH Information System Modernization and Interoperability 21

Health Care Administrative Simplification 22

2017 annual e-Health Summit: Connectivity. Equity. Health 23

Fast forward to the future: 2030 planning project 24

Working together on assessments for healthy communities 26

Looking Ahead: Next Steps 28

Appendices 29

Appendix A: Minnesota e-Health Advisory Committee 29

Appendix B: e-Health Profile of EHR Adoption, Use and Health Information Exchange 35

Appendix C: Health Care Administrative Simplification as Part of e-Health Planning and Oversight 43

Appendix D: Health Information Exchange Oversight 45

Appendix E: E-health Standards for Interoperability 48

Glossary of Selected Terms 50

As requested by Minnesota Statute 3.197: This report cost approximately $5,000 to prepare, including staff time, printing and mailing expenses.

Upon request, this material will be made available in an alternative format such as large print, Braille or audio recording. Printed on recycled paper.

Executive Summary

Over the last decade, Minnesota – and the U.S. – has made dramatic progress towards achieving a broad vision in which an individual's health information can be securely shared electronically to improve patient care. But how health care is delivered and paid for, and the ways in which individuals use technology in all aspects of their lives, continues to change at a rapid pace, and in the upcoming years, Minnesota's health and health care systems will face tremendous opportunities and challenges.

These challenges include an aging and diversifying population with complex health and social needs, rapid technological changes and the emergence of mobile applications for sharing and accessing health information, cultural shifts related to use and sharing of information by individuals and organizations, and an ever more urgent need to reign in health care costs. Increasingly, we also recognize the need for a system that is nimble enough to respond to potential natural and other disasters such as 2017's hurricanes and the devastating epidemic of opioid misuse and overdose. E-health is central to addressing all of these challenges, and is a critical tool to improve health care quality, keep patients safe from harm, reduce health care costs, and enable individuals and communities to take an active role in directing their care and making the best possible health decisions.

The Minnesota e-Health Initiative is widely recognized as a model of effective public-private collaboration. Guided by a 25-member e-Health Advisory Committee, the e-Health Initiative has provided guidance to the community and legislative policy recommendations to the Commissioner of Health for well over a decade. As a result, Minnesota is consistently a leader in the adoption and use of e-health to improve the health of individuals and communities, and well-poised to tackle the individual and community needs of a rapidly changing health and health care, technology, and information environment.

Key activities and accomplishments

The Minnesota Department of Health (MDH) and the e-Health Advisory Committee (Advisory Committee) led a wide range of activities in 2017. This includes the following:

- Completed an in-depth study on strategies for improving Health Information Exchange (HIE) in Minnesota. The legislatively mandated study examined Minnesota's legal, financial, and regulatory framework for HIE, including the requirements of the Minnesota Health Records Act. The study recommended a new model for connecting providers and communities to improve individual and community health, along with legislative changes to support more efficient data exchange in compliance with patient preferences.
- At the request of Governor Dayton, the e-Health Advisory Committee developed recommendations for e-health strategies to help address the opioid crisis.

- MDH provided grants to community collaboratives for implementation of secure exchange and analysis of health-related information in an effort to improve overall health outcomes while lowering costs.
- As part of the state innovation model (SIM) program, MDH created a toolkit that provides training and resource materials to address common privacy issues faced by providers exchanging health information.
- Merged the successful, 12 year-old Minnesota Health Care Administrative Simplification program with the Office of Health Information Technology (OHIT). This created a single, broader policy and implementation program building on the experience and knowledge of each of the previous units to accomplish more together than was possible separately.
- MDH and its partners held a successful annual statewide e-health Summit attended by nearly 300 people. The event highlighted topics on e-health with practical information, insights, tools and resources to connect communities and transform health care.
- In partnership with the Advisory Committee, worked to identify improvements in the e-health initiative that will help assure it be more agile and will be in a better position to lead, influence, anticipate and respond to future challenges, opportunities and uncertainties that are significant to e-health.

This annual report describes these recent accomplishments in more detail and identifies e-health and health information exchange actions that are critical to improving the health of individuals and communities in Minnesota. MDH and the Advisory Committee recognize the need to build on past successes in order to meet the challenges in this dynamic and complex environment, and to take meaningful steps in 2019 towards building a sustainable health information exchange infrastructure that supports secure exchange of information across settings and communities. Strong leadership from both the public and private sectors will be critical to the success of these efforts.

Introduction

An effective transportation system enables the flow of goods and services, knits communities together, and contributes to individual well-being. When it works well, such a system offers seamless support to those who are using it – they rarely if ever have to think about it. The same is usually true of our systems for communicating with friends and family; we can pick up our phone and have confidence that we can connect to anyone we need to reach. But when it comes to health care, some of those assumptions fail to hold true; the right information may not flow to the right person or place, for the right reason, at the right time to protect and enhance the health of individuals and communities.

Just as those using the transportation system may be unaware of the extensive engineering and planning needed to move goods from point A to point B, those using an e-health system may be unaware of the data on-ramps and electronic connections needed to ensure that patients receive the best care and that public health is protected. In Minnesota, helping to guide that work is the job of the Minnesota e-Health Initiative, a long-standing public-private collaborative established in state law that works together to ensure that our health information system works for everyone.

This report summarizes the recent progress, accomplishments, recommendations and continuing efforts of Minnesota's e-Health Initiative to develop, maintain, and enhance the state's e-Health system. It describes not only the ongoing work on the system's "below-the-surface" components, but it also provides a larger, birds-eye view of what the unfolding system looks like and where it might take us both now and in the future. This year's accomplisments are mostly due to investments by the state and federal resources. Much of the federal funding ended at the end of 2017 with the end of the Minnesota's State Innovation Model (SIM) grant. To continue the moving forward, there is a need for continued state and federal investments.

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*

Minnesota's e-health accomplishments and continued efforts

The Minnesota e-Health Initiative (e-Health Initiative) is a public-private collaborative whose vision is to accelerate the adoption and use of health information technology (e-health) in order to improve health care quality, increase patient safety, reduce health care costs, and improve public health. The e-Health Initiative is guided by a legislatively mandated 25-member advisory committee that has broad representation and support from health care providers, payers, and professional associations (Appendix A).

Minnesota's health care providers have had a tremendous uptake in adoption of technology, with all hospitals and most clinics and nursing homes using electronic health record (EHR) systems (Appendix B). Despite these successes, much work remains to optimize the use of these systems - and the data stored within them - to improve patient care and support community health. In 2017, the e-Health Initiative focused much attention toward promoting health information exchange, identifying strategies for using e-health to address the opioid misuse and abuse epidemic, wrapping up the Minnesota State Innovation Model (SIM) activities, and planning toward the future. These and other activities and accomplishments are described in more detail in the following sections of this report.

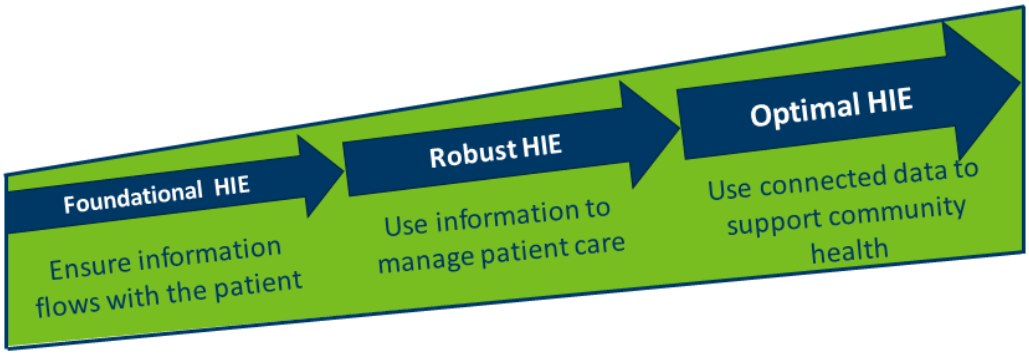
Health information exchange to support better health

Health Information Exchange (HIE) is the electronic flow of health information between a patient's health care providers. Minnesota has made progress on HIE, but it is not yet occurring equitably nor robustly across the state, meaning that access to health care information for many Minnesotans continues to be inefficient and fragmented when they visit multiple providers or health systems. To have effective HIE, we need every health organization to participate, with each person's information more easily available when and where it is needed to better serve them.

To help address this need, the 2016 Minnesota Legislature directed MDH to assess Minnesota's legal, financial, and regulatory framework for HIE, including the requirements in Minnesota Statutes, sections 144.291 to 144.298 (the Minnesota Health Records Act), and to recommend modifications that would strengthen the ability of Minnesota health care providers to securely exchange data in compliance with patient preferences and in a way that is efficient and financially sustainable.

About Health Information Exchange

This study identified three important uses for HIE that greatly and favorable impact individual and community health. First is "foundational" HIE, meaning that information flows with the patient to any provider they see. Building upon the foundation, we refer to "robust" HIE as using information to manage patient care, so that providers across the care continuum can communicate, consolidate patient information, and use analytics to support health outcomes. A third "optimal" HIE use allows communities to understand the health status of their population, better handle disease outbreaks, and manage emergency response.

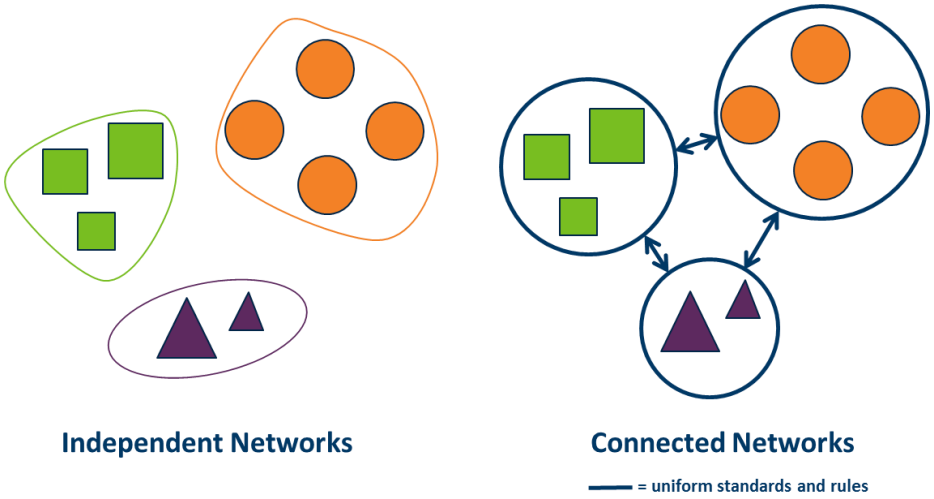


In Minnesota, quite a lot of HIE is happening securely with appropriate authorization within many health information networks; however, many of the networks are not efficiently connected together. In order to achieve foundational HIE these networks need to be connected. This concept of "connected HIE networks" means that each of these networks has a connection to each other network and all can exchange clinical information with each other using uniform standards and rules. Any organization that participates with any of those networks is then connected to all of the organizations participating in any of the networks.

Exhibit 1 presents a simplified visual to show how this concept applies. In this example:

- Independent networks may have their own standards and rules, and therefore may not be compatible to exchange information with other networks.
- Connected HIE networks have a governance process to define rules and establish uniformity so that providers in any network can communicate with providers in any other network. The rules and uniformity are portrayed as common shapes (circles), and connections (lines and arrows).

Exhibit 1: Depiction of Independent and Connected HIE Networks



Types of HIE models

There are a few basic models for HIE in the United States. For the most part, HIE organizations are established at the state or regional level. Typically, the basic conceptual frameworks for these models are government-led, a public utility model, private sector led, or a hybrid of these. Minnesota's approach to HIE has been a hybrid between the public utility and private sector models, intended to support a market-based strategy that relies on communities and the private sector to develop innovative solutions that meet the needs of Minnesotans and our health care market. This approach includes limited government oversight to ensure fair practices, availability of HIE options, and compliance with state and federal requirements, including privacy, security and consent protections.

The Minnesota HIE model has not evolved as designed, effectively leaving a variety of disconnected HIE networks serving patients in the state. There is a tremendous amount of HIE happening, but it is not happening equitably across the state nor across the care continuum. As a result, Minnesota's health organizations need to manage multiple connections and rely on manual workarounds, diverting time and resources away from patient care and adding costs to the health care system.

Study Findings

This study revealed a number of barriers and gaps that are inhibiting effective HIE in Minnesota:

- Minnesota needs to establish foundational HIE across all providers in the state to ensure that a person's entire care team is connected for transitions of care, referrals and ongoing coordination with a person's care team.
- Minnesota faces several significant barriers to establishing foundational HIE, with few organizations connected to networks, and many networks not connected to each other. Stakeholders do not expect the market to resolve the lack of connectivity without an entity establishing "rules of the road."
- Many providers face barriers to HIE because of the Minnesota Health Records Act (MHRA), which governs how health information can be used and shared in Minnesota. It includes some provisions with unintended consequences that inhibit HIE, including misalignment with the Federal Health Insurance Portability and Accountability Act of 1996 (HIPAA). This creates technical and workflow challenges because standards for EHR systems are designed to manage consent as required by HIPAA. There are also varied interpretations of MHRA that lead to an unwillingness to share information, delays in care, duplication of services, and patient frustration at the need to continually sign for consent.
- HIE requires up-front investments and ongoing funding for HIE infrastructure, onboarding providers, workforce training, and management of ongoing HIE transactions and workflows.
- Minnesota's current HIE environment does not support a wellness-based approach that enables unhealthy people to get healthy, and healthy people to stay healthy. Health providers need an infrastructure that supports robust HIE, allowing them to use information to understand treatment outcomes and coordinate ongoing care, as well as to support accountable health.
- HIE will enhance administrative efficiencies and cost containment. A coordinated HIE infrastructure, with efficient ways to manage administrative data transactions, can significantly contain costs for stakeholders and health care consumers.
- Creating and connecting networks will accelerate foundational HIE. Minnesota needs to build upon the significant investments made by health organizations in the state and align with national efforts to connect providers across state lines. By supporting continued development of existing networks and establishing "rules of the road" for these networks to connect, Minnesota can achieve broad foundational HIE.

Study Recommendations

The primary recommendation, based on the study's findings, is to move Minnesota in the direction of a connected networks model that is consistent with national initiatives and will ensure that essential HIE services are accessible to all stakeholders statewide. To achieve this, the Minnesota Department of Health (MDH), with endorsement from the Minnesota e-Health Advisory Committee, recommends:

1. The Minnesota Legislature should modify the Minnesota Health Records Act to align with HIPAA for disclosure purposes only and to support HIE while maintaining key provisions to ensure patient control of information.
2. MDH should establish a task force, reporting to the e-Health Advisory Committee, to develop strategic and implementation plans for the connected networks model by focusing on:
    a. Expanding exchange of clinical information to support care transitions between organizations that use Epic and those that do not.
    b. Expanding event alerting (for admission, discharge, and transfer) to support effective care coordination.
    c. Identifying, prioritizing and scoping needs for ongoing connected networks and HIE services with the goal of optimal HIE.
3. The MN Legislature should act on the recommendations of the e-Health Initiative's HIE task force to:
    a. Update Minnesota's Health Information Exchange Oversight law to support the coordinated networks concept. See Appendix D for current status and background.
    b. Appropriate funds to help providers connect to HIE services and develop ongoing coordinated HIE services.

Next steps

Minnesota has experienced many of the same struggles as other states, along with some unique challenges associated with the health care market. Minnesota is also unique in looking beyond foundational HIE needs and developing a strong, forward-thinking, collaborative vision to connect providers across the care continuum and use information to support both individual and community health.

To achieve this worthy goal, we must first advance foundational HIE that flows with the patient to the provider by addressing barriers and building upon assets already in place. These assets include significant e-health investments, lessons learned from previous efforts to establish and connect HIE networks, and the HIE options and networks emerging here in the state and nationally.

If Minnesota can achieve this vision, we can provide value to providers, patients, health plans/payers, communities, policymakers, and other key stakeholders. Much work needs to be done to achieve the initial goal of foundational HIE across the spectrum of care providers and to tackle the work of the task force. MDH will be working closely with the Advisory Committee along with the HIE Taskforce to work towards achieving these goals.

E-health tackles the opioid epidemic

In October of 2017, former Minnesota Health Commissioner Dr. Edward Ehlinger issued the following statement regarding the nation's opioid crisis.

> *"Opioid addiction is a serious public health problem with tragic consequences in Minnesota and around the country. Many steps have been taken to address this problem in our state, and more resources and actions are needed to reinforce and expand on those efforts. …*
>
> *It is important to understand that the crisis of opioid addiction does not occur in a vacuum. At the same time we are seeing an increase in opioid addictions and deaths, we are also seeing significant increases in alcohol and other substance abuse, mental health crises, suicides and other violent deaths. These are all diseases of disconnection and despair arising from the same set of community conditions – lack of connection, belonging, and hope.*
>
> *While we must directly address the issue of opioids, we also must address these underlying conditions through broader public health and community-building efforts. That includes working for stronger schools, safer neighborhoods, better access to transportation, and a sustainable income for all Minnesotans. By taking this broader, more complete view of public health we can more effectively treat those impacted today and prevent more problems in the future."*

In response to the opioid epidemic, Governor Dayton asked the Minnesota e-Health Advisory Committee to provide a set of recommendations for using e-health to prevent and respond to opioid misuse and overdose. The Advisory Committee, with input from an Opioids and e-Health Steering Team and OHIT, developed seven recommendations. The Advisory Committee believes implementation of the following recommendations can have a significant impact on mitigating the opioid epidemic.

The Advisory Committee recommended that:

1. By July 2018, the Minnesota Legislature should provide resources to fully implement and ensure compliance with Minnesota Statutes Section 62J.497 including a focus on

increasing the rate of e-prescribing of controlled substances from approximately 20 percent (Surescripts 2016 National Progress Report) to over 80 percent by 2020. Implementation of this recommendation should occur with input from the Minnesota e-Health Advisory Committee to:

a. Provide or ensure statewide education and technical assistance on electronic prescribing (e-prescribing) of controlled substances.
b. Support full-implementation of all e-prescribing related transactions in the nationally recognized National Council for Prescription Drug Programs Standards (NCPDP), including electronic prior authorization and Formulary and Benefits.
c. Provide grants to increase the rate of e-prescribing of controlled substances. Grantees include, but are not limited to, prescribers that serve rural or underserved populations; prescribers that have small, independent practices; and other providers needing support such as dentists.
d. Support the use of evidence-based clinical guidelines and clinical decision support.
e. Monitor the status of e-prescribing, specifically for controlled substances, and assess the barriers to e-prescribing of controlled substances.
f. Develop and implement policy options including rulemaking and enforcement for non-compliance of e-prescribing as needed, if goals are not met.

2. By January 2019, the Minnesota Board of Pharmacy, with input from the Minnesota e-Health Advisory Committee, health and health care provider associations, and other stakeholders, should develop requirements and an implementation plan to improve the Prescription Monitoring Program (PMP). The requirements and implementation plan should include use cases and policies for the required use of the PMP. The implementation plan should:
    a. Address affordable, effective and seamless use of the PMP by prescribers and dispensers through the EHR, other HIT, and integration into Minnesota's HIE and include full implementation of clinical guidelines and clinical decision support and access to other states' PMP information.
    b. Improve stakeholder input and oversight, representative governance, regulatory authority, and funding of the PMP to support alignment with state and federal requirements and standards, improve data quality and usability, support patient consent and privacy, and meet workforce-training needs.

    The Governor and Legislature should provide resources for the development and implementation of the requirements and implementation plan to improve the PMP.

3. By July 2018, the Minnesota Legislature should amend Minnesota Statutes, Section 152.126 to expand the permitted uses of Prescription Monitoring Program data. The

updated language should ensure that state and federal agencies, tribal governments, academia, local public health, payers, and other partners are able to appropriately access and analyze information for improved prevention, response, and care while safeguarding patient privacy in accordance with state and federal law. Transparent processes and principles developed by the Board of Pharmacy with input from the Minnesota e-Health Advisory Committee and other stakeholders should guide access to the Prescription Monitoring Program data. Potential data uses should include, but are not limited to:

a. Identify geographic areas and populations showing indicators of misuse and abuse to better target resources for prevention, response, and coordinated care, treatment, and services.
b. Ensure more timely and accurate responses to misuse and overdoses by leveraging other data sources such as overdose, toxicology, and drug seizure reports; medical examiner/coroner data; payer claims; poison control reports; and birth and death records.
c. Support the development and use of advanced clinical decision support and clinical guidelines to flag suspicious behavior and/or patterns and identify individuals at risk for opioid misuse at the point of care and beyond.
d. Identify critical needs for training and best practices for prescribers, dispensers and other providers such as emergency medical services and local public health.

The Governor and Legislature should provide resources to support the expanded uses of the Prescription Monitoring Programs data, and develop and implement the transparent processes and principles to guide access to data.

4. State agencies and associations should, by September 2018, review, update, and provide education on e-health and opioids policies and guidelines to ensure dispensers, prescribers, payers, and other providers, including the care team, have appropriate and timely access to health information, can subsequently share information, and understand their scope of action related to the information. Use cases should include, but are not limited to, instances when prescribing and dispensing practices are outside nationally recognized clinical guidelines, such as those published by the Centers for Disease Control and Prevention and the U.S. Food and Drug Administration, and individuals are at-risk for misuse and abuse.

5. The Governor, by July 2018, should ensure access and coverage for all Minnesotans and providers, and provide resources for grants and technical assistance, to expand access to services and care enabled by telehealth, telemedicine and other forms of virtual technology to fill access gaps in opioid tapering and withdrawal, chemical dependency, mental health, and alternative pain treatment and services.

6. The Governor should support state agencies and stakeholders in participating in statewide coordinated HIE services. The support should be consistent with the findings of Minnesota Health Information Exchange Study, which will be submitted to the Legislature in February of 2018, align with input from the Minnesota e-Health Advisory Committee, ensure providers and public health have access to information to support individual and community health services, and support:
    a. Alerts for emergency services, urgent care, and other medical visits relating to substance misuse and overdose.
    b. Referrals to substance abuse treatment and community services.
    c. Access to patient health history including medication lists.

7. The Minnesota Department of Health, by December 2018, should submit to the Governor and the Legislature an update to their informatics profile that assesses the gaps in current information and information systems used to prevent and respond to substance misuse and overdose and identify resources needed to fill those gaps. The Governor and Legislature should provide resources to ensure those needs are met.

The advisory committee also recognized that mitigating the opioid epidemic goes beyond e-health. There is a need for better access to and coverage for health services, specifically opioid tapering and withdrawal, chemical dependency, mental health and alternative pain treatment and services. Therefore, they also recommended that the Governor work to ensure all Minnesotans have access to the treatment and services needed to achieve health and wellbeing.

Next Steps

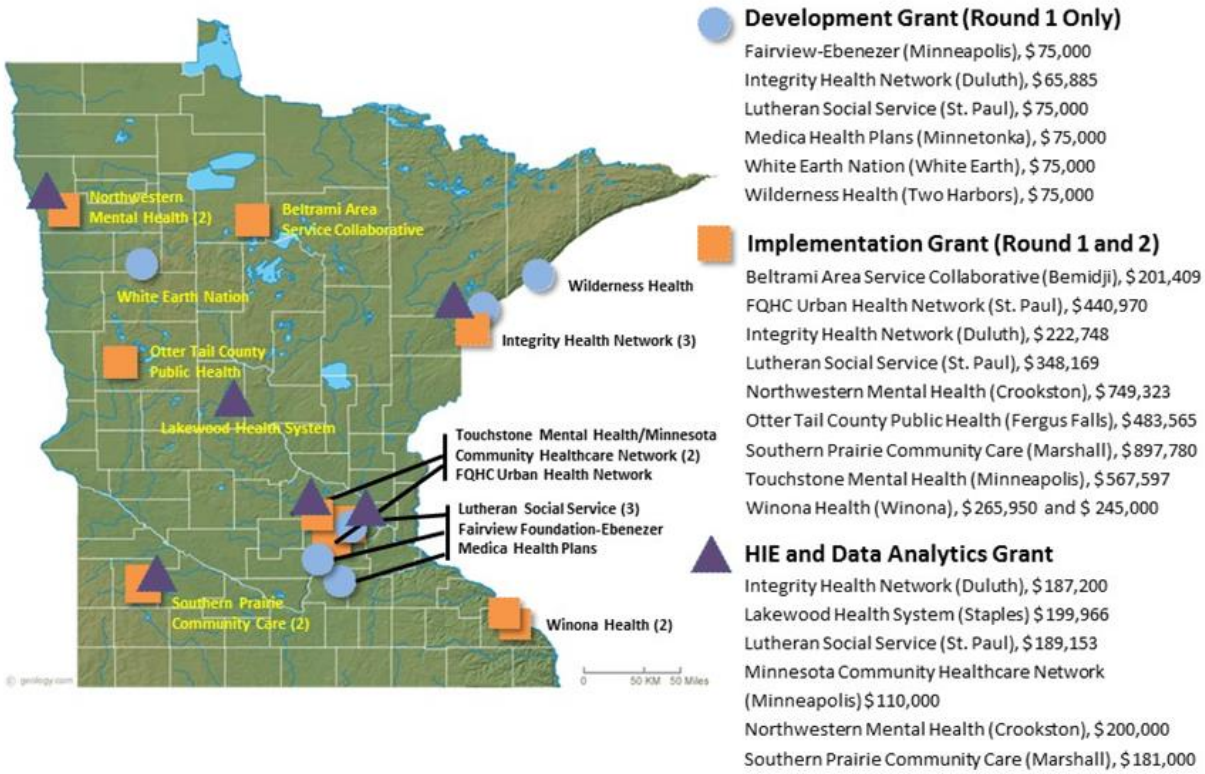
While none of these recommendations were enacted by the 2018 Legislature, the advisory committee and its stakeholders will continue to prioritize work to mitigate the opioid epidemic. In the coming months, it will move forward with the findings of the legislatively mandated study on HIE, which improves the seamless flow of information to prescribers and dispensers. It will continue to monitor and provide input into state and national activities regarding e-prescribing of controlled substances, Prescription Monitoring Program, and related issues. In addition, MDH will work with the advisory committee to identify actions that could be taken, using existing authority and resources, to move forward with these recommendations.

Minnesota Accountable Health Model is moving ahead

E-health grants

Over the last four years, Minnesota was able to take dramatic steps forward on e-Health and HIE using federal funds from Minnesota's State Innovation Model (SIM) grant, which tested the Minnesota Accountable Health Model[1]. E-Health was one of five domains of work considered critical to the success of the model; MDH awarded e-health grants between October 2014 and September 2017 to support that work. Grants were designed to help community collaboratives that included multiple health and health care settings use HIE and other HIT to better meet the needs of patients and communities.

Exhibit 2: Map of SIM Grantees



MDH awarded three rounds of grants (Exhibit 2) to:

- Support secure exchange of medical or health-related information among organizations participating in, or preparing to participate in, *accountable care models;*

---

1 http://www.dhs.state.mn.us/main/idcplg?IdcService=GET_DYNAMIC_CONVERSION&RevisionSelectionMethod=LatestReleased&dDocName=SIM_Home

- Expand HIE to *priority settings* (long-term and post-acute care, behavioral health, local public health and social services);
- Support use of HIE to more effectively identify opportunities for improvement and *coordination*, to improve health and health care.

In 2014, MDH awarded $3.8 million to 12 community collaboratives for development or implementation; in 2015, MDH awarded approximately $1 million to four community collaboratives for implementation only. In 2016, MDH awarded an additional six grants for just over $1 million for implementing a connection to a Minnesota state-certified health information organization (HIO) and/or data analytics work.

These grants increased connections to Minnesota's state-certified HIE service providers and data analytics expertise by community collaboratives and Department of Human Services Integrated Health Partnerships resulting in:

- Increased ***use of information*** obtained through HIE for care coordination
- Expanded relationships through broad e-health community collaboratives
- Enhanced data analytics use to improve population health

Fourteen communities in Minnesota spent thousands of hours developing plans for better connections, exchange, and use of information and care coordination. Nine of these communities, some receiving multiple grants, implemented connections to state-certified health information organizations (HIOs) or state-certified health data intermediaries (HDIs). As of September 2017, 98% of these implementation grantee collaborative organizations are using a state-certified HIE solution (see Exhibit 3).

Exhibit 3: SIM e-Health Community Collaborative Connections to State-Certified HIE Options

E-health Community Collaboratives	Number of organizations in collaborative	Organizations using a certified HDI	Organizations using a certified HIO
Southern Prairie Community Care	24		24
Otter Tail County Public Health	8	8	
Northwestern Mental Health Center	14		14
Minnesota Community Healthcare Network	5	5	
Federally Qualified Health Center Urban Health Network (FUHN)	10		10
Winona Regional Care	6	6	
Beltrami County Area Behavioral Health Practice Alignment and Collective Transformation	11	11	
Integrity Health Network	12	10	
Lutheran Social Service of MN (Altair Accountable Care Organization	7	7	

E-health Community Collaboratives	Number of organizations in collaborative	Organizations using a certified HDI	Organizations using a certified HIO
Total	97	47	48
% of Total		49%	49%

Lessons Learned

- Connections and coordination among grant focus areas (data analytics, HIE, Accountable Communities for Health) demonstrated how integrating all three helped collaboratives be more successful. Future work would benefit from more comprehensive approaches.
- Shifting the focus from collecting information to ***using information,*** enabled through HIE, is a key component of accountable health models.
- Minnesota's HIE landscape is evolving with increased technical and organizational capacity.
- Building long-term relationships in e-health community collaboratives is essential as these collaboratives can provide an important path forward.
- HIE requires organizations to have flexible implementation plans, optimize workflow and streamline processes.
- Care coordination efforts can be improved through use of HIE-enabled information and real-time alerts, as simply "sharing data" does not necessarily result in coordinated care.

Next steps for e-health and HIE

MDH will build on the successes of the SIM e-health collaboratives by monitoring and promoting connections to HIOs, and providing guidance and education opportunities to Minnesota providers in 2018.

Privacy, security and consent management for health information exchange

In September 2017, the law firm Gray Plant Mooty finished its work under an MDH SIM grant awarded in 2015. The grant assisted providers with understanding Minnesota and Federal privacy, security, and consent laws.

Gray Plant Mooty completed a legal analysis of 11 health use case stories and scenarios, reviewing approximately 50,000 pages of laws, regulations, commentary, and other guidance to identify which laws apply in each scenario. The use cases identified a total of 15 reoccurring legal issues and barriers to HIE throughout the use cases, along with best practices to address the barriers and challenges.

The primary deliverable, the Foundations in Privacy Toolkit[2] was released in February 2017. The Toolkit provides practical solutions to address common issues faced by providers and contains template policies and procedures, flow charts, template agreements and checklists, and other resources. The resources are intended to help Minnesota providers address the 15 identified reoccurring legal issues that impede the flow and exchange of health information.

Throughout the remainder of 2017, the focus of the grant shifted to widespread dissemination of the information to providers through education forums, training sessions and webinars.

Next steps for privacy, security and consent management

MDH-OHIT will build on the successes of the SIM e-health privacy, security and consent work by promoting use of the Foundations in Privacy toolkit and providing guidance and education opportunities to Minnesota providers in 2018.

Public Health Prevention and Response through MDH Information System Modernization and Interoperability

State health departments across the country play an important role in supporting health care providers who are working to meet federally required "meaningful use" expectations. These expectations are designed to promote the effective use and exchange of electronic health information to improve the quality of care. For state health departments, this includes being responsible for registering a provider's intent to submit data electronically for meaningful use, and working with providers to successfully connect them for data submission to various information systems/registries at the health department. In Minnesota, this includes data submission for:

- Electronic laboratory reporting of reportable, communicable diseases
- Immunization data
- Cancer surveillance information
- Blood lead screening results
- Newborn screening (Critical Congenital Heart Disease and Hearing Screening)

The MDH meaningful use program continues to expand as federal rules and e-health standards (Appendix E) evolve and as demand increases for MDH programs to be able to support standardized electronic data exchange.

---

[2] http://www.gpmlaw.com/Practices/Health-Law/Foundations-in-Privacy-Toolkit

MDH is currently using federal "90/10" funding to support enhancements to a subset of meaningful use programs at MDH. This funding, available until 2021, provide 90 percent of funding for efforts that support meaningful use, with state agencies responsible for the remaining 10 percent of the cost. For MDH, 90/10 funding currently supports:

- Connecting providers and hospitals to Minnesota's immunization program
- Connecting providers and hospitals to the electronic laboratory reporting (ELR) program
- Enhancements to the public health lab's information system to support providers receiving standardized lab results

In addition to this work, in 2017, MDH launched an effort to implement a new vision for interoperability, "***Improved public health through standardized secure electronic data exchange with our partners***." These efforts have come about in direct response to concerns among health and health care providers that MDH's current, fragmented approach to data submission leads to inefficiencies and extra costs. It also slows MDH's ability to identify and respond to emerging public health threats such as measles and tuberculosis outbreaks.

In the future, MDH would like to continue to support public health reporting for meaningful use, but also ensure that interoperability efforts are as efficient and consistent as possible, and leverage the state's existing HIE infrastructure and certified entities where appropriate.

Next steps with MDH Modernization

In the coming year, MDH will pursue additional federal 90/10 funding to support this work through provision of technical assistance to providers for electronic reporting to MDH, enhancing MDH staffing and technical capabilities to support electronic data submission in a standardized way, and developing a strong governance process for achieving the interoperability vision. While federal 90/10 dollars are only available through 2021, MDH will also explore additional funding mechanisms to enhance and sustain this work.

Health Care Administrative Simplification

MDH is responsible for two statewide, statutory electronic health care data initiatives. One – the subject of this e-Health report and led by the MDH-OHIT – is accelerating the adoption and effective use of electronic health record (EHR) systems and other HIT to improve individual and population health. The second initiative, led until July 2017 by the MDH Center for Health Care Purchasing Improvement (CHCPI), is actively reducing health care administrative costs by streamlining and simplifying the exchange of large amounts of routine health care business data used primarily for billing and payment.

As described below, in July 2017, the administrative simplification functions and staff of CHCPI were merged with OHIT. The result is a single, broader policy and implementation resource for

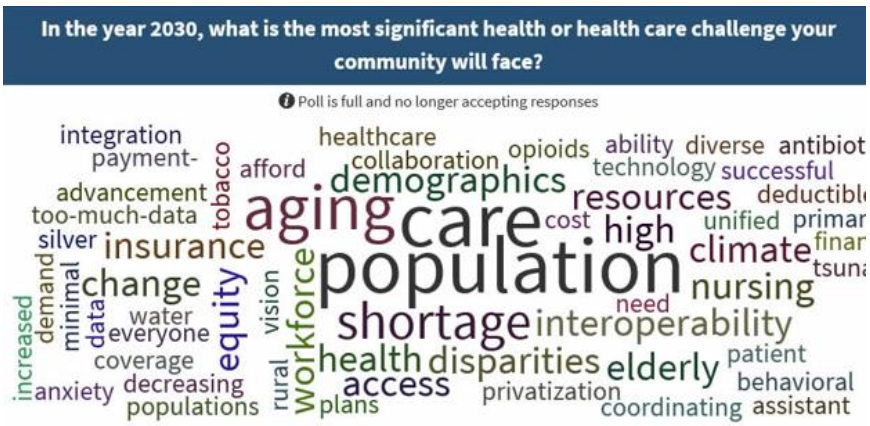
Minnesota HIT and e-Health, building on and bridging the specialized experience and knowledge of each of the previous units to accomplish more together than was possible separately. (Appendix C)

2017 annual e-Health Summit: Connectivity. Equity. Health

The e-Health Initiative's annual summit "Connectivity. Equity. Health," held June 15, 2017, shared experiences of Minnesota's communities in optimizing e-health to transform health care and advance population health. More than 270 attendees participated in the Summit, which included 18 sessions highlighting topics on e-health with practical information, insights, tools and resources to connect communities and transform health and health care. Dr. Karen DeSalvo, former Assistant Secretary for Health, was this year's keynote, discussing *Public Health 3.0, A Call to Action to Create a 21st Century Public Health Infrastructure*[3], which proposed a range of actions to define what is most needed to support and modernize health departments and the broader public health system.

Throughout the 2017 Summit, participants were encouraged to consider the future and what the year 2030 might look like for e-health, health care and public health. A poll invited attendees to text words that stood out to them as challenges that technology and e-health can help address. The associated word-cloud in Exhibit 4 gives a clue to the types of issues on people's minds while at the Summit: aging population, health disparities, rising costs of care and insurance, interoperability, and a range of other topics.

Exhibit 4: 2017 Minnesota e-Health Summit Word Cloud



Next steps

In 2018, as the e-Health Initiative moves forward on efforts to advance HIE and reduce opioid misuse, we look forward to what the June 14, 2018, e-Health Summit: *Act Today, Impact*

[3] https://www.healthypeople.gov/2020/tools-resources/public-health-3

Tomorrow will bring in terms of lessons learned and action steps to address these challenges and others identified by many of the participants.

Fast forward to the future: 2030 planning project

The e-Health Initiative has been recognized as a model public-private collaborative providing guidance to the community and policy recommendations to the commissioner of health. The world of e-health is changing at a rapid pace. Therefore, to assure that the e-Health Initiative is relevant into the future, the Minnesota e-Health 2030 Planning Project was established in 2017. The purpose is to recommend improvements that will help assure a more agile e-Health Initiative that can better lead, influence, anticipate and respond to future challenges, opportunities, and uncertainties that are significant to e-health.

A 10-member 2030 Steering Team leads the planning project. The steering team met during 2017 to provide input into the approach and interpreted the findings. The work focused on recommending:

1. Actions for change to prepare for e-health 2030 and advancing health equity
2. Principles to guide future decision-making
3. Updates to the e-Health Initiative's vision and goals, structure, function, and communication strategies.

The steering team also identified a list of ongoing and emerging issues that will need to be addressed by the e-Health Initiative to be effective as 2030 approaches (right).

The input and findings of the project led to proposed updates to the vision, mission, and guiding principles for the e-Health Initiative (see below). These proposed changes incorporate health equity; acknowledge the importance of community, family, and caregivers; and consider the emerging technologies and expanding understanding of what creates health and wellness. In the coming year, the advisory

ONGOING AND EMERGING ISSUES

- Telehealth, telemedicine, and virtual visits
- Implementation of evidence-based and science-based interventions
- Broadband access
- Ethical issues
- Patient or individual generated information
- Data analytics and application
- Emerging technology and standards
- Precision medicine and health
- Learning health system and research
- Workforce training gaps and needs
- Factors that influence health such as genetics, geography, and gender

committee plans to approve the final vision, mission, and principles while implementing operations and other actions to improve the advisory committee and prepare for 2030.

Proposed Vision

All communities and individuals benefit from and are empowered by information and technology, which advances health equity and supports health and wellbeing.

Proposed Mission

1. Ensure individuals, families, and caregivers have information and technology to make informed health and wellness decisions.
2. Promote research and implementation of evidence-based policies to support best practices and improve outcomes.
3. Improve community and public health through timely and actionable information.
4. Support providers, care teams, and services in the collection, use and sharing of information through technology and HIE.
5. Build the value of information into knowledge, wisdom, and practice by assuring
    a. Strong leadership and strategic collaborations that support innovation and stay informed of trends influencing health and technology
    b. Well-trained and educated workforce
    c. Sustainable and adaptable resources for guidance and implementation
    d. Standards and policies for collection, use and sharing of information, including factors that influence health
    e. Protection of health information and patient access to health information
    f. Measurement of progress on the adoption and use of HIT and HIE.

Proposed Guiding Principles

The e-Health Initiative takes collective action that meets the statutory requirements in Minnesota Statutes, Section 62J.495 to advise the commissioner of health and

1. Supports the vision and mission
2. Remains objective and aligns with science and data
3. Advances e-health equity and supports e-health across the care continuum
4. Values integrity, quality and collaboration
5. Considers all aspects of and factors influencing health and wellbeing
6. Leverages available resources
7. Promotes human dignity and cultural competency

Working together on assessments for healthy communities

Minnesota's local health departments and hospitals have a common need to develop actionable, outcomes-oriented, and collaborative community health assessments. Many Minnesota hospitals, being newer to this reporting requirement,[4] have reached out to their local health departments for support in developing these assessments and integrating social determinants of health.

Data housed within hospitals' and health systems' EHR systems have the potential to provide timely and complete data for sub-populations, geographic areas, and health conditions that are typically underrepresented in traditional assessment methods. For example, a rural Minnesota local public health department worked with a local provider to use EHR data to validate regional survey data related to smoking rates by zip code to assist public health in targeting outreach to a specific community.

Exhibit 5. Toolkit framework

With EHR adoption nearly universal in Minnesota clinics and hospital, there is a significant increase of the amount and type of data at varying levels of sophistication available for use. Providers and local public health can work together to use aggregated de-identified data to create knowledge about issues in the community to encourage action.

In 2018, MDH worked with a range of partners to create a health toolkit, *Connecting Communities with Data: A practical guide for using electronic health record data to support community health*[5]. The toolkit shares the stories and experiences of three collaborations between local public health and health care that are using EHR and public health data to improve health in their communities. Included in this toolkit are their lessons learned and tools, presented in a framework (Exhibit 5) that is relevant for small or large communities. The toolkit is intended to encourage community partners to use these data to enhance knowledge, and then apply that knowledge to practice in support of community health.

---

[4] http://www.mnhospitals.org/data-reporting/mandatory-reporting/community-health-needs-assessment

[5] http://www.health.state.mn.us/e-health/publications/docs/comdata-pophlth-toolkit.pdf

A rural Minnesota local public health department worked with a local provider to use EHR data to validate regional survey data related to smoking rates by zip code to assist public health in targeting outreach to a specific community.

By working together to understand how these EHR data can describe population health, local public health can develop strategies that can "move the needle" toward real outcomes, while local hospitals/clinics can understand how to apply meaningful strategies to support community health.

Next steps

MDH staff have presented this toolkit to local and national audiences, and have encouraged communities to test it out and share their experiences. Going forward, MDH will continue to share the resources with providers and their partners, and add more stories and resources over time.

Looking Ahead: Next Steps

The Legislature, in Minnesota Statutes, Section 62J.495, directed the Commissioner of Health to provide "recommended actions on policy and necessary resources to continue the promotion of adoption and effective use of health information technology" in order to improve the health of all persons in Minnesota, and to include those recommendations as part of its annual report.

The health information exchange (page 11) and opioid (page 12) recommendations in this report are based on the premise that e-health is a foundational element of Minnesota's health care and public health ecosystem. This ecosystem includes a wide array of health providers and health-related services that need to operate in synchronicity to support the health and wellbeing of individuals and our communities. In the high-tech digital era of today and the future, this ecosystem relies on uniform standards and procedures to communicate information and allow that information to be timely feedback that supports improved quality of care, understanding of disease and treatment, and individual engagement in health.

These recommendations are based on Minnesota's history as a leader in e-health resulting from strong public-private collaboration and leadership that recognizes that we will all go further if we go together.

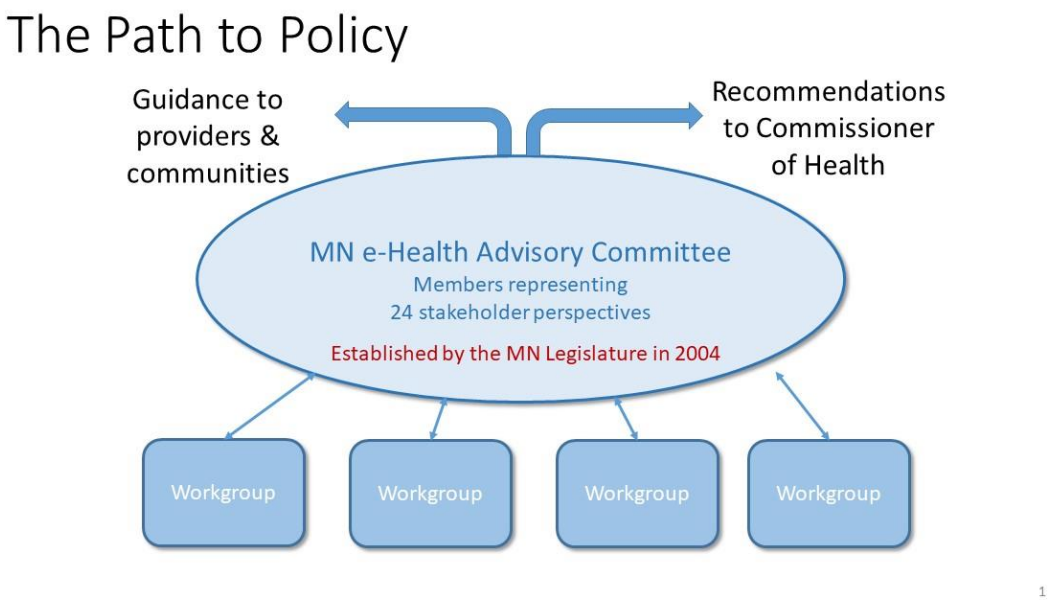
Each year the Advisory Committee discusses and prioritizes issues that provide opportunities to take action. In 2018, MDH will continue to build upon these efforts, while also working to ensure that Minnesota is effectively preparing for and responding to a rapidly-changing landscape of payment reform, state and federal policy changes, and an increasing need to coordinate care across the full continuum of health and health care.

Appendices

Appendix A: 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 and advise on policy and collaborative action needed to advance the adoption and effective use of EHRs and HIE needed to advance Minnesota e-Health vision. The committee is comprised of key stakeholders who represent the spectrum of Minnesota's health community. This includes providers, payers, public health, researchers, vendors, consumer, and more. Exhibit 6 shows how the Advisory Committee is organized.

Exhibit 6: The Path to Policy Diagram



For the past thirteen years the e-Health Initiative, led by the Minnesota e-Health Advisory Committee and MDH-OHIT, has pushed for and supported e-health across the continuum of care. Each year, the Advisory Committee charters workgroups on timely e-health topics comprised of subject matter experts, providers and patients to inform policy recommendations to the Commissioner of Health. The workgroups will also develop and endorse guidance to providers and communities of health. Because of collaboration and forward-thinking problem solving, Minnesota is a national leader in implementation and effective use of e-health.

Minnesota e-Health Advisory Committee Members, 2016-17

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

Paul Kleeberg, MD, *Advisory Committee Co-Chair through November 2017*, Medical Director, Aledade
Representing: Physicians

Bobbie McAdam, *Acting Advisory Committee Co-Chair as of December 2017,* Senior Director, Business Integration Medica
Representing: Health Plans

Sunny Ainley, Associate Dean, Center for Applied Learning Normandale Community College
Representing: HIT Education and Training
Co-Chair: e-Health Workforce Workgroup

Constantin Aliferis, MD, MS, PhD, FACMI, Chief Research Informatics Officer, University of Minnesota Academic Health Center
Representing: Academics and Clinical Research

Laurie Beyer-Kropuenske, JD, Director Community Services Divisions
Representing: Minnesota Department of Administration
Co-Chair: Privacy & Security Workgroup

Lynn Choromanski, PhD, RN-BC, Nursing Informatics Specialist, MVNA
Representing: Nurses

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

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

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

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

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

Heather Petermann, Division Director, Health Care Research & Quality, Minnesota Department of Human Services
Representing: Minnesota Department of Human Services

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

Peter Schuna, Chief Executive Officer, Pathway Health Services
Representing: Long Term Care
Co-Chair: Health Information Exchange Workgroup

Jonathan Shoemaker, Information Services Director of Clinical Application, Allina Health
Representing: Large Hospitals

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

Adam Stone, Chief Privacy Officer, Secure Digital Solutions
Representing: Expert in HIT

Meyrick Vaz, Vice President, Healthcare Solutions, Optum Global Solutions
Representing: Vendors

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

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

John Whitington, South Country Health Alliance
Representing: Health Care Purchasers and Employers
Co-Chair: e-Health Workforce Workgroup

Ken Zaiken, Consumer Advocate
Representing: Consumers
Co-Chair: Consumer Engagement Workgroup

2017-2018 Minnesota e-Health Advisory Committee – Designated Alternates

Karl Anderson, Global Digital Health Senior Manager, Medtronic
Alternate Representing: Vendors

Sarah Cooley, MD, MS, Assistant Professor of Medicine, Division of Hematology, Oncology and Transplantations, University of Minnesota

Alternate Representing: Clinical Research

Kris Dudziak, CHCE, Senior Manager Business Operations, Home Care, Hospice, and Geriatric Services, HealthPartners Medical Group and Clinics
Alternate Representing: Home Health

Oyin Hansmeyer, Consultant
Alternate Representing: Experts in Health IT

George Klauser, Executive Director, Altair-ACO, Lutheran Social Services
Alternate Representing: Social Services

Sonja Short, Associate CMIO, Fairview Health Systems
Alternate Representing: Physicians

Mark Sonneborn, Vice President, Information Services, Minnesota Hospital Association
Alternate Representing: Hospitals

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

Ann Warner, Manager, Data Engineering, HealthEast
Co-Chair: Health Information Exchange Workgroup

LaVonne Wieland, Compliance and Privacy Officer, HealthEast
Co-Chair: Privacy & Security Workgroup

Workgroups

Committee members participate in workgroups to dive into detailed topics such as privacy and security, and HIE. 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, are open to the public via in-person meetings, and dial-in options.

Minnesota e-Health Initiative milestones

2004 Convened the Minnesota e-Health Initiative Steering Committee, a public-private collaboration with representatives from representatives from hospitals, health plans, physicians, nurses, other healthcare providers, academic institutions, state government purchasers, local and state public health agencies, citizens, and others with expert e-health knowledge. This committee developed a roadmap and

preliminary recommendations to address the many challenges, gaps and opportunities for Minnesota.

2005 Minnesota e-Health Initiative is formally established in Minnesota Statutes, section 62J.495. At this time, approximately 17% of clinics and 9% of hospitals in Minnesota had adopted EHRs.

2007 Governor Pawlenty declares, "Comprehensive reform this year should move Minnesota toward an interoperable electronic health record system." (State of the State Address, January 17, 2007). Minnesota's Interoperable EHR mandate is passed into law (§62J.495), requiring providers in Minnesota to adopt an interoperable EHR by January 1, 2015.

2008 The Minnesota Legislature enacted the electronic prescribing mandate, requiring all prescribers, pharmacies and payers to participate in electronic transmission of prescriptions by January 1, 2011. The Minnesota e-Health Initiative developed and published the "Statewide Plan to Achieve the EHR Mandate".

2009 On February 17, 2009, President Obama signed the American Recovery and Reinvestment Act of 2009 (ARRA). A portion of the law creates the Health Information Technology for Economic and Clinical Health Act, or the HITECH Act. 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.

2010 Minnesota received federal $65 million in HITECH funding under the State HIE Cooperative Agreement Program and four other programs in the state. This was the highest single-state award in the nation. Centers for Medicare and Medicaid Services (CMS) EHR incentive program also began this year.

2011 Minnesota's electronic prescribing mandate took effect on January 1. By end of year, Minnesota received the National Safe Rx Award. By end of this year Minnesota's hospitals and clinics also led the country in EHR adoption rates.

Glacial Ridge Health System in Glenwood is the first Minnesota hospital to attest for meaningful use.

2013 Minnesota was awarded a $45 million as part of the State Innovation Model program of the Center for Medicare & Medicaid Innovation.

2014 The Minnesota e-Health Initiative celebrated its 10-year anniversary.

2015 The Minnesota Legislature updated three key components of the Minnesota e-Health Initiative, including: 1) extension of the e-Health Advisory Committee until June 30, 2021, 2) exemption from the Interoperable EHR Mandate for individual

healthcare providers in a solo, private practice, and for those who do not accept reimbursement from a group purchaser; and 3) updates to the Minnesota HIE Oversight Law to streamline the certification process, fee structure, and update statutory definitions.

2016 The Minnesota e-Health Initiative developed the Minnesota HIE Framework to Support Accountable Health, guidance for professionals, organizations and leaders on what is needed to achieve accountable care and health. The Minnesota e-Health Advisory Committee also endorsed a Health Information Exchange Strategy Roadmap, aimed at advancing HIE in Minnesota, as well as the Minnesota e-Health Roadmap for SIM Priority Settings.

2017 The Advisory Committee developed and endorsed recommendations that are included in this report. Governor Mark Dayton wrote a letter to the Minnesota e-Health Advisory Committee Co-Chairs requesting actionable recommendations leveraging e-health to help address the opioid epidemic which are also detailed in this report.

Appendix B: e-Health Profile of EHR Adoption, Use and Health Information Exchange

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 electronically sharing health information with a patient's other providers.

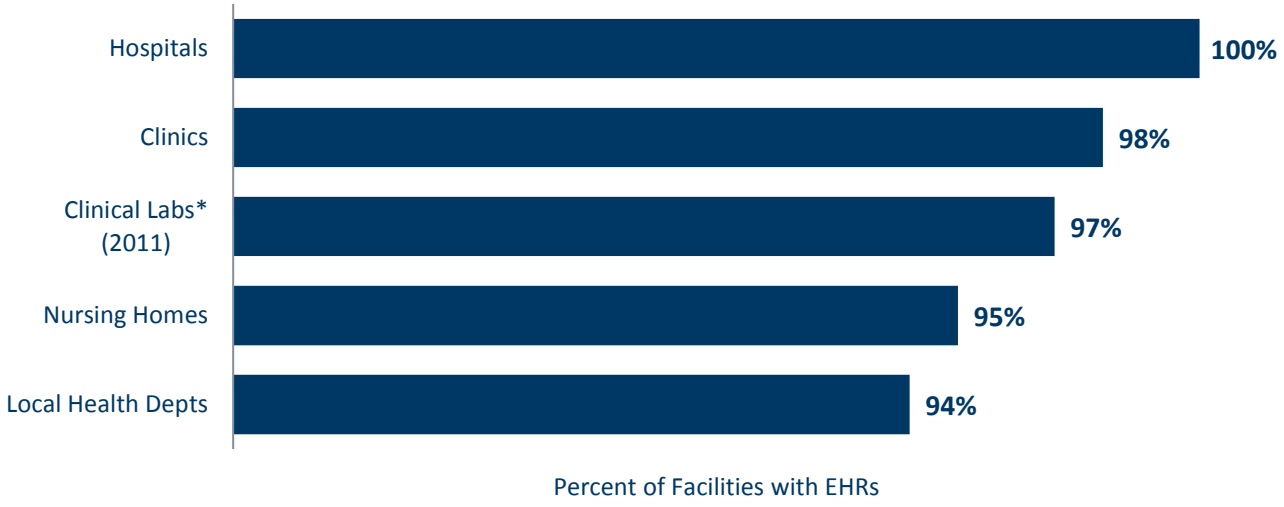
These assessments are designed to measure Minnesota's status on achieving state and national goals relating to e-health; identify gaps and barriers; help develop programs and inform decisions at the local, state and federal levels of government; and support community collaboration efforts.

Since 2010, OHIT has conducted annual HIT assessment studies among Minnesota's hospitals, ambulatory clinics, community health boards, and nursing homes. Data for other health settings is provided from previous years' surveys. These studies show that 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.

Adoption of electronic health records

Minnesota has high rates of EHR adoption rates. Exhibit 8 shows adoption rates across health and health care settings in the state.

Exhibit 8: Percent of Minnesota Providers Using Electronic Health Records

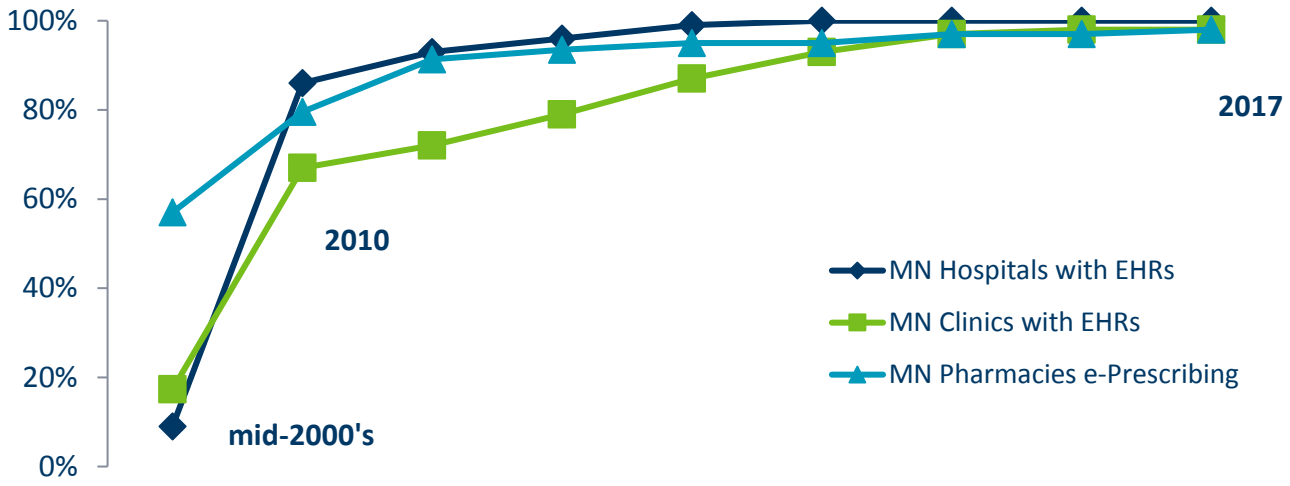


** Clinical Labs use lab information systems rather than EHRs*
Source: Minnesota e-Health Profile, MDH Office of Health IT, 2011-2017

It should be noted that EHR systems are not a “one size fits all” type of product. For example, a system that works for primary care clinics does not necessarily work well for behavioral health or long-term care due to the nature of care provided. Federal funding incentives from the HITECH Act of 2009 drove vendors to develop EHR solutions for clinics and hospitals, but not for other settings. As such, EHR options for providers across the full spectrum of care, and standards to support them, have developed more slowly and these providers have not had the same funding incentives. Despite these barriers, the Minnesota e- Health Initiative recognizes the need for all providers to use e-health in support of patient safety, accountable care models, and community health.

The adoption rate is very strong among hospitals, clinics and pharmacies (Exhibit 9). While the rate of adoption is leveling off as it approaches 100%, there was tremendous progress in adoption over the past decade.

Exhibit 9: Trends in EHR Adoption: Hospitals, Clinics, Pharmacies



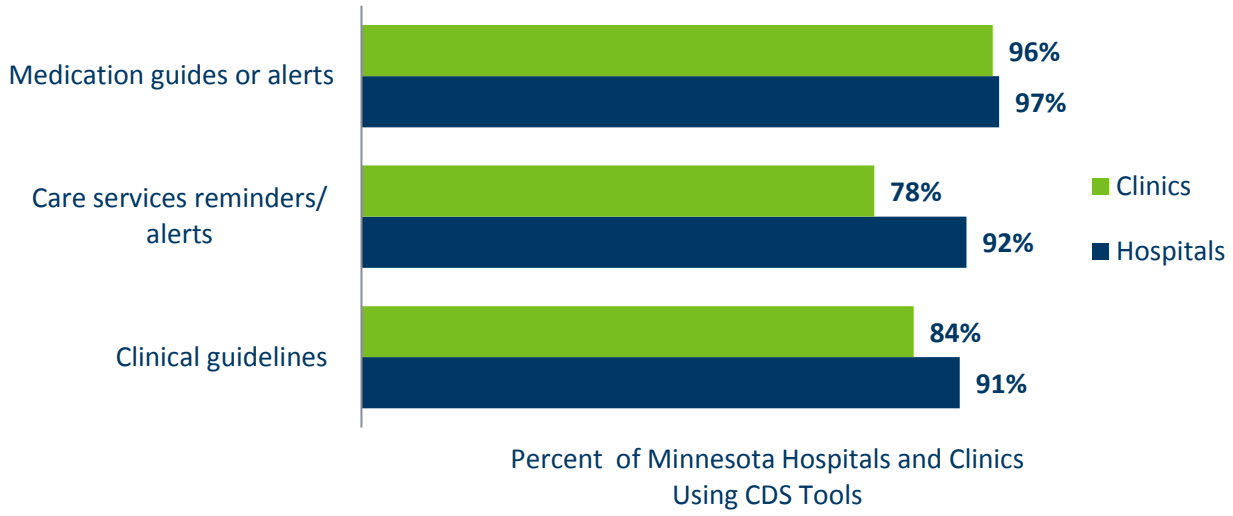
Source: Minnesota e-Health Profile, MDH Office of Health IT, 2004-2017; Surescripts 2017

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 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. Exhibit 10 shows key clinical decision support tool indicators in clinics and hospitals. The number of clinics and hospitals using these tools has increased over time, and earlier gaps between urban and rural rates of implementation have declined.

Exhibit 10: Use of Clinical Decision Support Tools among Providers with EHR Systems

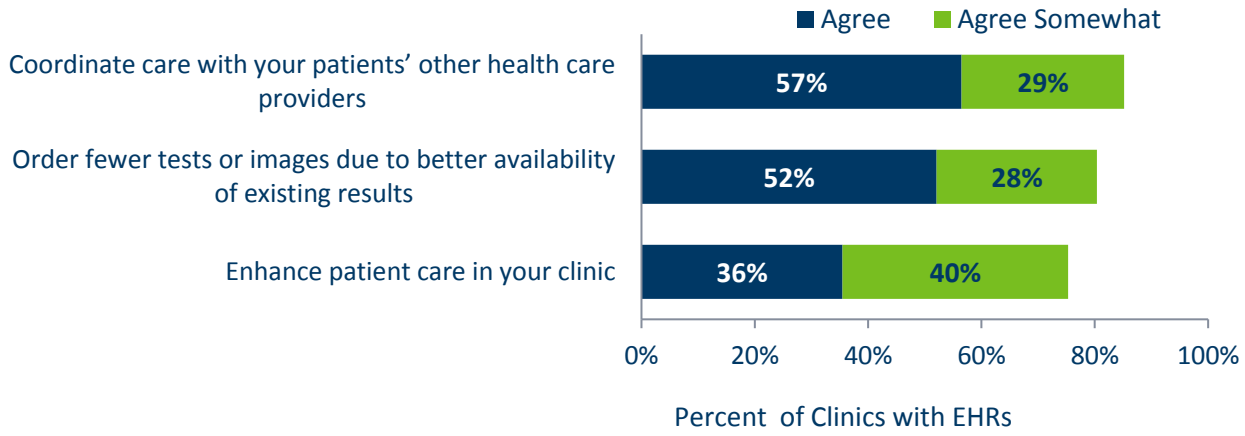


Source: Minnesota e-Health Profile, MDH Office of Health IT, 2017

Impact of EHRs on clinical practice

The clinic HIT study includes some 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: more than 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 the items shown in Exhibit 11.

Exhibit 11: Impact of EHRs on Clinic Practice



Source: Minnesota e-Health Profile, MDH Office of Health IT, 2017

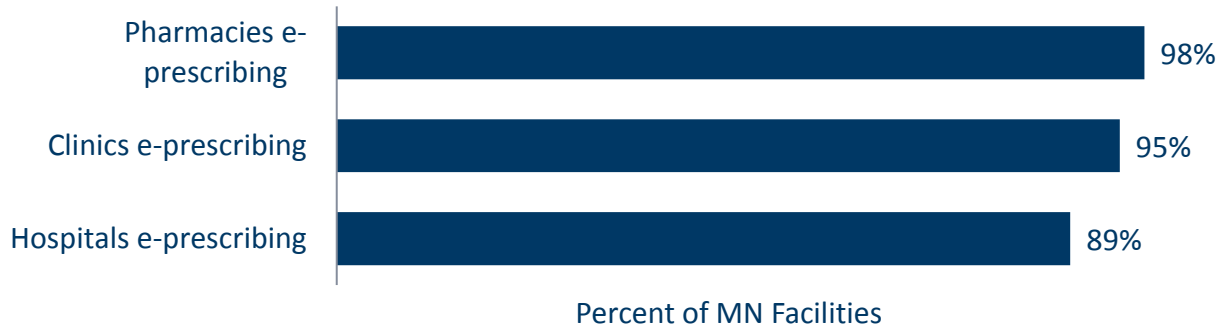
E-prescribing

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.

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 98% in 2017. Minnesota measures the status of e-prescribing in several ways, including pharmacy and provider e-prescribing practices. Exhibit 12 shows high rates of adoption among pharmacies (98%), clinics (95%), and hospitals (89%).

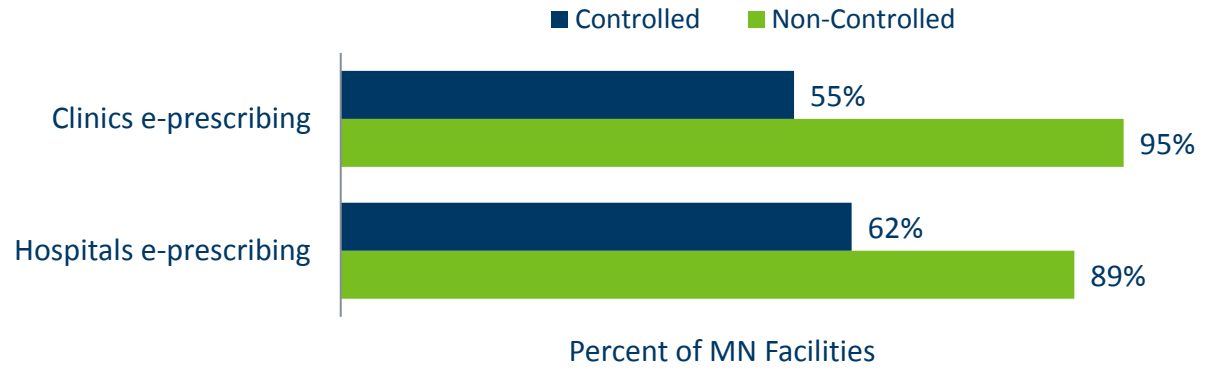
Exhibit 12: Use of E-Prescribing Among Minnesota Pharmacies, Hospitals and Clinics



Source: Minnesota e-Health Profile, MDH Office of Health IT, 2017; Surescripts 2017.

Despite these high rates of e-prescribing, many clinics and hospitals struggle with barriers to e-prescribing controlled substances due to system requirements for appropriate security functionality (two-factor authentication). Exhibit 13 shows the rates of e-prescribing for controlled versus non-controlled substances.

Exhibit 13: Use of E-Prescribing for controlled substances among Minnesota Hospitals and Clinics



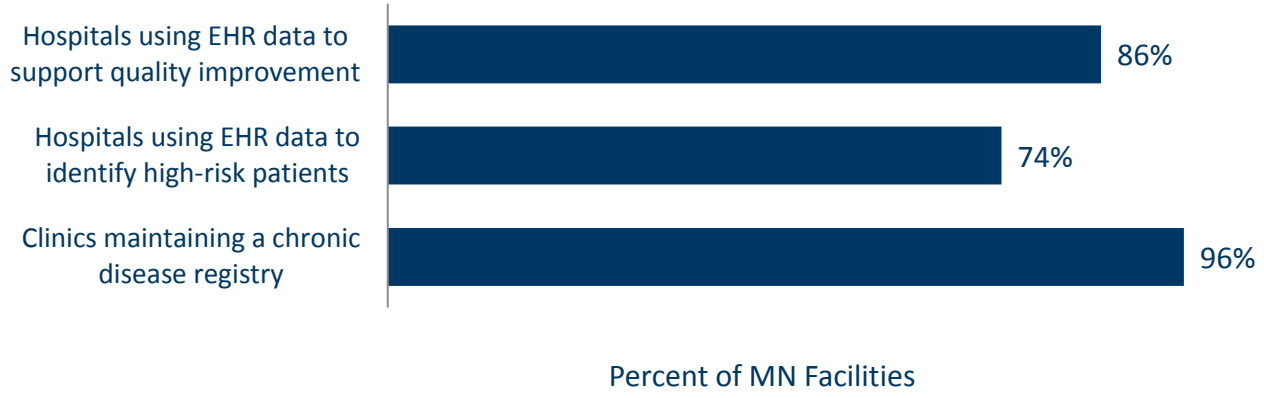
Source: Minnesota e-Health Profile, MDH Office of Health IT, 2017

This gap in e-prescribing of controlled substance (EPCS) is a concern. As described earlier in this report, paper scripts allow opportunity for narcotic prescriptions to be fraudulently duplicated and/or misdirected, and is considered by the e-Health Initiative to be a contributing problem to the state's opioid misuse and abuse epidemic. EPCS requires an added level of security – two-factor authentication – that many organizations have struggled to implement. Clinics and hospitals in Minnesota are increasingly implementing this update and rates of EPCS enablement are expected to increase in 2018. However, it will also be important to ensure that other prescribers such as dentists also implement EPCS.

Data utilization

A secondary benefit of EHRs is that they provide clinical data that can be used to coordinate care, monitor and improve quality and outcomes, and conduct research. Exhibit 14 shows that 86% of hospitals use EHR data to support quality improvement; and 74% use EHR data to identify high-risk patients. Nearly all clinics with EHRs (96%) use EHR data to maintain a chronic disease registry.

Exhibit 14: Use of EHR Data to Advance Population Health



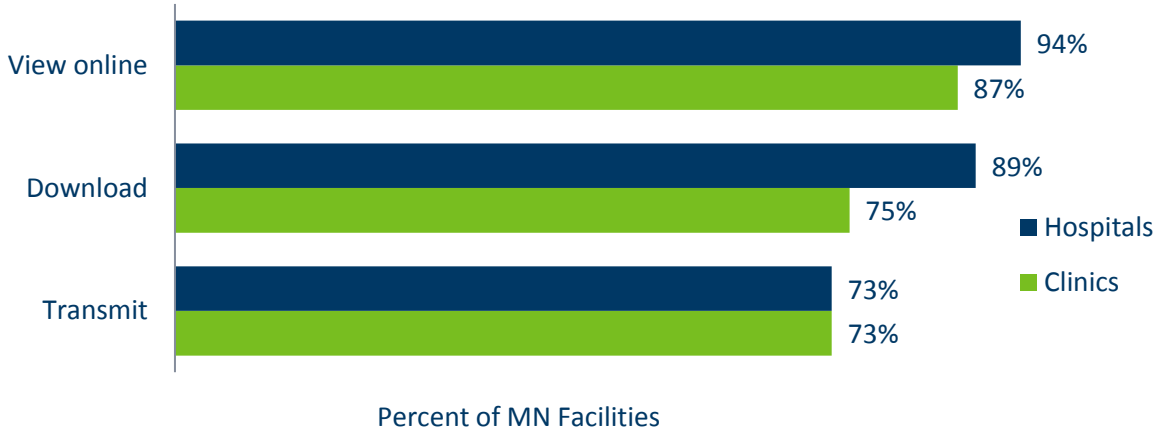
Source: Minnesota e-Health Profile, MDH Office of Health IT, 2017

Patient access to information

With the implementation of EHRs, health care providers have the opportunity to provide patients with their health information in an electronic format. These tools can help patients take responsibility for their own health and aid in keeping the health records updated with current information. One way in which this is accomplished is by allowing patients to electronically view, download, and/or transmit their personal health information.

Exhibit 15 shows that 87% of clinics and 94% of hospitals provided patients with the option to view their patient health information online. Fewer clinics (75%) and hospitals (89%) offered the option to download that information to a physical electronic media, and even fewer clinics (73%) and hospitals (73%) offered the option to electronically transmit their patient health information. These results have increased in recent years; particularly the percent of organizations that offer download and transmit functionalities.

Exhibit 15: Patient's Electronic Access to Their Personal Health Information



Source: Minnesota e-Health Profile, MDH Office of Health IT, 2017

For the most part, the amount of information available to the patient is limited to basic content such as medications, lab results, and visit summaries. An emerging trend is an option referred to as "Open Notes[6]", whereby the provider allows patients to see their full health record, including provider notes. In Minnesota, 69% of clinics allow patients access to the provider notes.

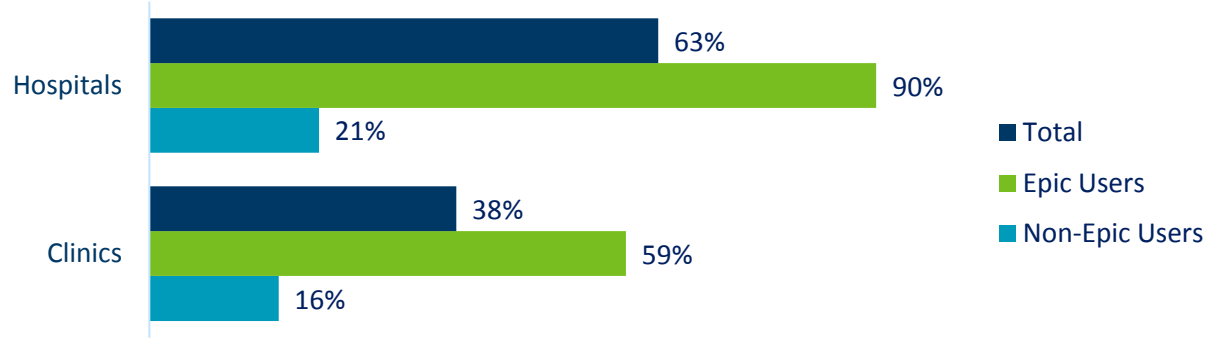
Providers electronically sharing health information

HIE is the secure electronic exchange of clinical information between organizations using nationally recognized standards. HIE allows providers to securely share information with other providers or organizations according to patient preferences. As such, it is an essential tool to support care coordination so that the right information is available to the right provider at the right time. There are many types of information that can be shared, ranging from simple notices when a patient is admitted to the hospital, to complex sets of conditions and treatments. Preparing to exchange information can be a complex process of establishing legal and technical readiness, and providers across the country are challenged to implement these processes.

[6] http://www.opennotes.org/

Many health organizations in Minnesota can share information, but fragmented electronic connections do not allow information to flow with the patient. The foundational HIE happening in Minnesota is driven largely by organizations that use the Epic EHR system, which has built-in HIE functionality among Epic users. More than half of Minnesota's 146 hospitals and 1,500 clinics use Epic, with a much larger percent of the population being served by these organizations. Further, most of the large health systems have connected to national HIE networks to support exchange of clinical health information. Exhibit 16 shows an example of the impact of these connections. While just 63% of hospitals and 38% of clinics in Minnesota indicated that their providers routinely have the necessary clinical information available electronically, Epic users have much more access to this information than non-Epic users. Minnesota's health care market is expected to continue to be served by multiple EHR vendors because, at this time, a single vendor does not meet the varied needs of providers across the care continuum.

Exhibit 16: Percent of MN hospital and clinics that routinely have necessary clinical information from outside providers available electronically, 2017



Source: Minnesota e-Health Profile, MDH Office of Health IT, 2017

Health Information Organizations connecting providers in Minnesota

For foundational HIE to move forward, all providers must establish a relationship and connection to a State-Certified Health Information Organization. To better understand the Health Information Organization (HIO) landscape in Minnesota and identify gaps in connectivity among health providers in the state, HIO reporting has been added to the OHIT website[7]. Currently over 250 facilities have participation agreements with HIOs, and are listed on the website with city, county, HIO, and onboarding status. Onboarding status is listed as 'not started', 'in progress' or 'completed'. The downloadable version is searchable by organization, city, county and HIO.

[7] http://www.health.state.mn.us/e-health/hie/certified/hioconnections.html

Appendix C: Health Care Administrative Simplification as Part of e-Health Planning and Oversight

The introduction and growth of HIT has historically proceeded along two generally parallel, separate tracks. One track has been the development, implementation, and effective use of HIT-enabled exchange of clinical data such as medical histories, medications, allergies, lab and test results, and other related information to improve patient outcomes and population health. The other track has focused on similar steps to bring about the computerized, automated exchange of health care business and financial data ("administrative data") for more efficient, accurate health care billing and payment.

Similarly, Minnesota's HIT policy has also followed the course of these historical developments with two parallel tracks. The state's e-Health Initiative has focused for the most part on accelerating and improving the HIT-enabled exchange and use of clinical data. Simultaneously, on a separate parallel track, MDH has also been responsible for administering state laws designed to accelerate and improve the use of the computer-enabled exchange of health care business and financial data.

Recently however, a number of developments and changes have led to questioning of the traditional separate, parallel, siloed approach above to HIT. For example:

- Effective HIT requires considerable standardization of data content, format, and workflow for computers to best communicate with one another, and to provide the greatest value to their end-users. While there is variation in the underlying technology and its applications, the processes for establishing such standards and the stakeholders involved are often similar for both the exchange of clinical and administrative data. Both of Minnesota's electronic health data initiatives have substantial experience in adopting and implementing standards, and there is much to be gained from sharing this experience in a closer, more integrated working relationship and program administration.
- New health care payment and delivery models such as Accountable Care Organizations (ACOs) rely on combined financial and clinical data to assess and demonstrate their value, and to be correspondingly paid and rewarded. Increasingly, ACOs will need new forms of integrated, comprehensive data for planning and innovating to be successful. Incorporating administrative simplification experience with a clinical data exchange focus provides a more unified, robust resource to help plan and guide statewide data exchange for health care delivery and financing innovations like ACOs.
- The health care system needs the power of seamless financial, clinical, and other "big data" to meet modern challenges, whether they are sudden public health emergencies or fulfilling the goals of the 21st Century Cures Act. As with the ACO example above, an important first step to assuring that critical data needs are met is to assure that previously siloed data exchange activities are interrelating and working closely together.

- At a very practical level, data bottlenecks have emerged that impede the flow of vital health care data, resulting in unnecessary costs and poor outcomes. For example, insurers often require that health care providers complete prior authorization (PA) requests as a condition of receiving payment. The requests often require documentation (health reports, lab and test results, etc.) that reside in the provider's electronic health record, but that is often inaccessible by the HIT system and standards developed to submit bills to the insurer. Providers often have to transmit the requested PA data manually, resulting in greater administrative costs and potential delays in patient care. Clearing the PA bottleneck and other similar data bottlenecks requires new, more comprehensive cooperation and problem solving than has often previously been the case.

Incorporation of administrative simplification staff and functions with OHIT

As the developments above and their implications have become more apparent, OHIT and CHCPI began exploring options in 2016 for sharing experience and ideas, learning from one another, and working more closely together. The discussions identified benefits from not only sharing skills and experiences, but also potential operational efficiencies and new synergies.

The impetus to share resources and complementary skills and knowledge, and more closely synchronize efforts, became an imperative in the spring of 2017 with the need to address an unprecedented epidemic of opioid misuse, abuse, and overdose in Minnesota. In response, OHIT and CHCPI worked rapidly and closely to: research and develop possible strategies for leveraging both clinical and administrative health data to address the epidemic; convene stakeholders and subject matter experts to prepare recommendations to the Governor; and participate in and plan for follow-up as part of a larger MDH and state response.

In response to the rapidly changing health care and HIT landscape described above, as well as the favorable hands-on experience in jointly addressing the opioid abuse epidemic, the decision – based on a mutual recommendation - was made in July 2017 to merge the smaller administrative simplification functions and staff of CHCPI with OHIT. The expanded OHIT will continue to plan and lead the state's electronic health care data initiatives while at the same time offering new combined experiences, skills, and resources to better meet 21st century health care data needs and challenges.

Appendix D: Health Information Exchange Oversight

HIE is the electronic transmission of health-related information between organizations according to nationally recognized standards (Minn. Stat. §62J.498 sub. 1(f)). The goal of HIE 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 health information between organizations using nationally recognized standards. This section of the report specifically addresses implementation of Minnesota Health Information Oversight law (Minn. Stat. §§62J.498-4982).

HIE landscape in Minnesota: a market-based strategy with government oversight

Minnesota's approach to HIE has been to support a market-based strategy that allows for private sector innovation and initiative, yet uses government oversight to ensure fair practices, availability of HIE options and compliance with state and federal requirements, including privacy, security and consent protections.

Minnesota's HIE oversight law (Minn. Stat. §§62J.498-4982), enacted in 2010, and updated in 2015, provides a limited state government oversight to:

- Ensure standards-based exchange requirements are being met
- Create a level playing field to ensure access for all communities and providers and provide a transparent process to the certification of HIE service providers
- Facilitate coordination and collaboration among HIE service providers
- Allow market-driven innovation, connectivity and services
- Assess and report on the state and progress of HIE

The MDH Office of Health Information Technology manages this oversight role by:

- Monitoring national and state HIE activities
- Certifying HIE service providers that provide HIE product and/or services in Minnesota
- Providing education and technical assistance to applicants on the certification process and requirements
- Convening State-Certified HIE Service Providers to ensure coordination between entities and services, with establishment of Minnesota Health Information Network (MNHIN)
- Providing education to providers on implementation of Minnesota's HIE Oversight law

The certification process is intended to promote public trust in HIE activities, decrease fragmentation of health information in the state, and provide a state strategy for community-based HIE with State-Certified HIE Service Providers.

In 2017, two HDIs left the Minnesota market or are providing services other than HIE, two new HDIs and one new HIO were certified, and 3 HIOs and 13 HDIs were recertified. Currently, there are 4 HIOs and 15 HDIs for providers to choose from for HIE Products and Services in meeting the Interoperable Electronic Health Record Mandate[8] (Minnesota Statute §62J.495).

Specific information on each state-certified entity is posted to Minnesota State-Certified Health Information Exchange Service Providers[9] webpage.

As of January 2018, the following entities are certified as either a Health Information Organization or Health Data Intermediary.

Health Information Organizations

- Allina Health
- Koble-MN
- South Country Health Alliance
- Southern Prairie Community Care

Health Data Intermediaries

- CenterX
- Cerner
- Epic Systems Corporation
- Inpriva
- NextGen Healthcare
- MaxMD
- MedAllies
- Medicity
- Orion Health
- Relay Health
- Secure Exchange Solutions (SES)
- Simply Connect
- South Dakota Health Link
- Surescripts
- Wisconsin State Health Information Network (WISHIN)

[8] http://www.health.state.mn.us/e-health/hitimp/index.html

[9] http://www.health.state.mn.us/e-health/hie/certified/index.html

Minnesota Health Information Network (MNHIN)

As the network of State-Certified HIE Service Providers grows, new strategies for connecting providers and using health information must be created to assure a more coordinated, cohesive, and streamlined HIE infrastructure in Minnesota. This is an ongoing and evolving process, extending toward a learning health system to ensure HIE is happening in the most cost-effective, quality focused, and person-centered manner. This collaboration will reduce costly HIE implementations across Minnesota, and help meet the requirements of the Minnesota laws related to HIE.[10]

The Minnesota Health Information Network (MNHIN) is a network of Minnesota State-Certified HIE Service Providers collaborating, with input from HIE stakeholders, on infrastructure, design and implementation to improve interoperability in Minnesota and support implementation of HIE services under Minnesota statutes §§ 62J.498 – 4981.

[10] http://www.health.state.mn.us/e-health/lawsmn.html

Appendix E: E-health Standards for Interoperability

Interoperability is the capability of individuals and their families, communities, and providers to collect, use and share health information accurately, securely, and timely.[11] It supports decision-making, improves health outcomes, advances health equity, and lowers health care costs. A set of e-health standards are necessary for a single interoperability need such as sending a referral to a specialist or a prescription to a pharmacy.

E-health standards, which are common and repeated rules, conditions, guidelines or characteristics used for the collection, use, and sharing of health information are constantly emerging and therefore require ongoing monitoring and input. The Interoperability Standards Advisory (ISA)[12], released annually by the Office of the National Coordinator (ONC), provides clarity, consistency, and predictability for e-health standards. The ISA identifies four high level types of standards and over 50 interoperability needs including:

- **Vocabulary/Code Sets/Terminology Standards and Implementation Specifications** with 23 interoperability needs including allergies, medications, immunizations, social determinants of health, vital signs, and lab tests
- **Content/Structure Standards and Implementation Specifications** with 22 interoperability needs including care plan, electronic prescribing, public health reporting and clinical decision support
- **Standards and Implementation Specifications for Services** with 10 interoperability needs including "push" exchange, query, image exchange, and health care/provider directory.
- **Administrative Standards and Implementation Specifications** with five interoperability needs including health care claims and coordination of benefits and transactions to support financial exchanges, clinical care, and non-claims.

In addition, the ISA identified over 60 key sources[13] of security standards and security patterns commonly associated with the health data interoperability. These are supplemental to the standards described above.

Minnesota e-health standards process

MDH is responsible under Minnesota Statutes, section 62J.495, to monitor and recommend health data standards and submit an annual report to the legislature. This activity is coordinated with the

---

[11] Derived from The Office of the National Coordinator for Health Information Technology definition in Connect Health and Care for the National. A Shared Nationwide Interoperability Roadmap. FINAL Version 1.0. Accessed October 24, 2016. https://www.healthit.gov/sites/default/files/hie-interoperability/nationwide-interoperability-roadmap-final-version-1.0.pdf

[12] The Office of the National Coordinator for Health Information Technology. Interoperability Standards Advisory (ISA). https://www.healthit.gov/standards-advisory. Accessed December 4, 2017.

[13] https://www.healthit.gov/policy-researchers-implementers/interoperability

Minnesota e-Health Initiative, through the Standards and Interoperability Workgroup and OHIT. It accelerates the adoption and use of e-health standards by building on and aligning with the national work and sharing resources. This is achieved through a structured process with five key steps listed below. In addition, communication and education occur at each step.

1. **Identification and analysis** of e-health standards and implementation uniformity through the monitoring of federal and national activities, standards development organizations, industry trends and needs, and community input.
2. **Evaluation and classification** of e-health standards and implementation uniformity to assess applicability or use within Minnesota and to align with national use.
3. **Validation and consensus** of e-health standards and implementation uniformity from within the community and leveraging subject matter expert input.
4. **Recommendations** from the Minnesota e-Health Advisory Committee to the Commissioner and the Minnesota e-health community.
5. **Feedback to national organizations and agencies** including ONC, CMS, Centers for Disease Control and Prevention (CDC) and others.

The Minnesota e-health standards process in 2018 will focus on:

1. Identifying and addressing gaps in standards including the adoption and use of the ISA and needs of settings that lack standards and implementation specifications.
2. Reviewing and sharing implementation specifications and identifying gaps.
3. Adopting implementation uniformity to address implementation specifications gaps.

Glossary of Selected Terms

The full Minnesota e-Health Glossary is available online.[14]

Accountable Care

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

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

Care Coordination

Care coordination is a function that supports information sharing across providers, patients, types and levels of service, sites and periods. The goal of coordination is to ensure that patients' needs and preferences are achieved and that care is efficient and of high quality. Care coordination is most needed by persons who have multiple needs that cannot be met by a single clinician or by a single clinical organization, and which are ongoing, with their mix and intensity subject to change over time.

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.

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

[14] http://www.health.state.mn.us/e-health/glossary.html

surveillance and reporting. EHR is considered more comprehensive than the concept of an Electronic Medical Record (EMR).

e-Prescribing

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

Health Equity

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.

Health Information Exchange (HIE)

Health information exchange or HIE means the electronic transmission of health related information between organizations according to nationally recognized standards.

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.

Informatics - A general term used to refer to biomedical informatics and its many areas of application and practice (e.g., bioinformatics, clinical informatics, public health informatics)

The science of informatics drives innovation that is defining future approaches to information and knowledge management in biomedical research, clinical care, and public health.

Interoperability

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

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.

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)].

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

Common and repeated rules, conditions, guidelines or characteristics used for the collection, use, and sharing of health information. Sets of standards are required for interoperability (see above). Standards are categorized by the function:

- **Vocabulary/Code Sets/Terminology Standards and Implementation Specifications** with 23 interoperability needs including allergies, medications, immunizations, social determinants of health, vital signs, and lab tests
- **Content/Structure Standards and Implementation Specifications** with 22 interoperability needs including care plan, electronic prescribing, public health reporting and clinical decision support
- **Standards and Implementation Specifications for Services** with 10 interoperability needs including “push” exchange, query, image exchange, and health care/provider directory.
- **Administrative Standards and Implementation Specifications** with five interoperability needs including health care claims and coordination of benefits and transactions to support financial exchanges, clinical care, and non-claims.

Triple Aim

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