

Minnesota Health Information Exchange Framework and Guidance to Support Accountable Health

Version 2.0, 2016 edition



Minnesota
Department
of Health



Preface

The Health Information Exchange Workgroup, chartered by the Minnesota e-Health Initiative Advisory Committee, was tasked to develop a framework to promote accountable health in Minnesota. This “Minnesota Health Information Exchange Framework to Support Accountable Health” (Minnesota HIE Framework) provides recommendations for HIE to help support and achieve accountable health. The Framework was adapted from CCHIT’s “A Health IT Framework for Accountable Care” and Stratis Health’s “An Actionable Model for Health Reform-Preparing for the future of health care”.

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Executive Summary

Recent developments in health care delivery system financial arrangements, such as Accountable Care Organizations for Medicare and Integrated Health Partnerships (IHPs) for Minnesota's Medicaid program, have increased the focus on having health information available to make more informed decisions by both providers and individuals. Achievement of the Triple Aim, which includes improving the patient experience of care (including quality and satisfaction), improving the health of populations, and reducing the per capita cost of health care, are driving this work ([The Institute for Healthcare Improvement Triple Aim for Populations](http://www.ihl.org/explore/tripleaim/pages/default.aspx) (www.ihl.org/explore/tripleaim/pages/default.aspx).

The purpose of this document is to provide professionals, organizations and leaders the most current thinking on what is needed to achieve accountable care and health. The "Minnesota Health Information Exchange Framework to Support Accountable Health" (Minnesota HIE Framework) is designed to be a starting point for organizations, networks or collaboratives that are developing health information exchange (HIE) strategies and plans in Minnesota.

The Health Information Exchange Workgroup, chartered by the Minnesota e-Health Initiative Advisory Committee, was tasked to develop a framework to promote accountable health in Minnesota. Adapted from Certification Commission for Health Information Technology (CCHIT) document: *A Health IT Framework for Accountable Care* and Stratis Health's *An Actionable Model for Health Reform-Preparing for the future of health care*, the Minnesota HIE Framework provides recommendations for HIE to help support and achieve accountable health.

The Minnesota HIE Framework has five key elements across the health and health care continuum, and is intended to be adaptable to various types of organizations and HIE configurations. For each key element, specific HIE functions and capabilities considered necessary to achieve the Key Premise (desired outcomes) are grouped to create the functions in the framework. Details of HIE capabilities and considerations are listed by functional section. For example, Key Element A: Engaging and Activating Individuals and Caregivers, there is a table with the Key HIE Functions listed on the left and the associated HIE Capabilities and Considerations on the right.

This document is intended to be used as an assessment and planning tool for current and future HIE needs and as primary support and requirement to achieve the vision of accountable care and health. Each key element is based on the potential needs and possible roles within different organizations. Some organizations will see themselves in many key elements, others will only recognize and support one or two. Together, collaborative organizations and the roles within those organizations will form the framework to support accountable health.

Appendix A includes a tool for organizations to identify the functions and capabilities they and their partners use. Gaps in functions and capabilities across the organization(s) present opportunities to strategize with partners to close gaps to support accountable care and health.

The vision for the Minnesota e-Health Initiative is to improve health care quality, increase patient safety, reduce costs, and improve public health through the accelerated and effective use of health information technology. As providers, organizations, and vendors use the framework and make updates we encourage sharing of their successes and new innovative ideas. We thank you in advance for all the work being done to improve HIE.

Introduction

The American Recovery and Reinvestment Act of 2009 (ARRA), including the Health Information Technology for Economic and Clinical Health (HITECH) Act, acknowledged the importance of health information technology (HIT) in improving the quality and cost efficiency of health care. In addition, to help move from fee-for-service payment to value-for-service payment, the Affordable Care Act (ACA) includes payment reform policy in accountable care organizations (ACOs), as defined by the Centers for Medicare and Medicaid Services (CMS) like the Medicare Shared Savings programs and the Pioneer ACO program.

In addition, the [Minnesota Accountable Health Model](#) is what Minnesota is now testing as part of a State Innovation Model (SIM) testing grant awarded by the [Center for Medicare & Medicaid Innovation](#) to the Minnesota Department of Human Services (DHS) and Minnesota Department of Health (MDH) in 2013. The purpose of the SIM-Minnesota project is to provide Minnesotans with better value in health care through integrated, accountable care using innovative payment and care delivery models that are responsive to local health needs. The funds will be used to help providers and communities work together to create healthier futures for Minnesotans and drive health care reform in the state.

The Minnesota Accountable Health Model will test whether increasing the percentage of Medicaid enrollees and other populations in accountable care payment arrangements will improve the health of communities and lower costs of health care delivery. To accomplish this, the state will expand the [Integrated Health Partnerships \(IHPs\)](#) demonstration. The expanded focus will be on the development of integrated community service delivery models and use coordinated care methods to integrate health care, behavioral health, long-term and post-acute care, local public health, and social services centered on patient needs.

To achieve the vision of shared cost and coordinated care, the Minnesota Accountable Health Model includes key investments in drivers that are necessary for accountable care models to be successful. E-health is one of these areas. The e-health driver outlines foundational requirements for health information technology, stating that “providers will have the ability to exchange clinical data in a secure manner for treatment, care coordination, quality improvement and population health.”

The Minnesota Accountable Health Model will test and evaluate whether investments in e-health, data analytics used for population health and HIE can be used to accelerate the movement of health care providers and organizations to shared cost, shared savings or Total Cost of Care (TCOC) arrangements. In addition, these investments build upon and align with the vision of the Minnesota e-Health Initiative to accelerate the adoption and use of HIT to improve health care quality, increase patient safety, reduce health care costs and improve public health. Using the foundation of the Minnesota Interoperable Electronic Health Record (EHR) Mandate, these e-health investments can move all providers to adopt and use e-health to support participation in the Minnesota Accountable Health Model.

What is the Minnesota HIE Framework to Support Accountable Health?

The Health Information Exchange Workgroup, chartered by the Minnesota e-Health Initiative Advisory Committee, was tasked to develop a framework to promote accountable health in Minnesota. Adapted from Certification Commission for Health Information Technology (CCHIT) document: *A Health IT Framework for Accountable Care* and Stratis Health’s *An Actionable Model for Health Reform-Preparing for the future of health care*, the “Minnesota HIE Framework to Support Accountable Health” (Minnesota HIE Framework) provides recommendations for HIE to help support and achieve accountable health.

While the CCHIT’s *Health IT Framework for Accountable Care* acknowledged the need for HIT and HIE capability and capacity, the Minnesota HIE Framework is focused on HIE as a primary support and requirement to achieve a vision of accountable health. Among the many factors that will contribute to the success of an accountable care organization, or collaborative working towards accountable health, is a focused HIE plan that aligns the organization’s limited resources with its goals and objectives for accountable care and health.

The Minnesota HIE Framework has five key elements across the health and health care continuum and is intended to be adaptable to various types of organizations and HIE configurations. For each key element, specific HIE functions and capabilities considered necessary to achieve the desired outcome are grouped to create the functions in the framework.

A one-page summary of the Minnesota HIE Framework (Table 1) shows the Key Element, Desired Outcome, Key HIE Functions and Capabilities to Achieve Desired Outcomes. The Key Elements include:

Engage and Activate Individuals and Caregivers—Individuals and their caregivers get involved in their health through electronic bi-directional communication with their providers through the use of personal health records (PHRs), self-monitoring tools, disease management tools, and disease specific and preventative education materials.

Engage and Activate all Health Providers—Providers would have clinical decision support rules and access to medication histories, have the ability to communicate with patients electronically and receive timely public health alerts.

Extend Care Coordination into the Community - Supports the decisions of providers and coordinators of care within the organization and the community. Care coordinators would have access to individual health information needed to provide better care including transitions between settings. Through care coordination, individuals are encouraged to participate in decisions about their health and health care.

Monitor Cohorts and Attributed Populations - Focus on access to combined data on specific populations, and use it to identify ways to improve processes and outcomes.

Management of Population Health--Population health assessment, evaluation and education for health policy, emergency preparedness, and public programs will be supported by this key element. Timely access to repositories of population data is necessary for this key element of the HIE framework. Finally, researchers in academia, non-profit or large organizations may access population health data for scientific, technical and process improvement in this key element.

There are overarching requirements that are not specific to any one key element including: transactions and standards, patient safety practices, privacy and security, Total Cost of Care (TCOC), administrative simplification, and the Learning Health System. This is not a prescriptive listing of required functions and HIE capabilities for every organization, it may be adapted for specific settings and situations. The Minnesota HIE Framework is a work in progress and is intended to be updated as needed.

In this document, details of HIE capabilities and considerations are listed by functional sections. For example, Key Element A: Engaging and Activating Individuals and Caregivers, there is a separate table with the associated key HIE functions listed on the left and the associated HIE capabilities and considerations on the right.

How to use the Framework

The Minnesota HIE Framework is designed as a starting point for ACOs, IHPs or other similar types of arrangements developing HIE strategies and plans. It is intended to be used as an assessment and planning tool for current and future HIE needs. The Minnesota HIE Framework is intended to evolve as more information is known about the role of HIE in ACOs and accountable health. Please send any comments or feedback to mn.ehealth@state.mn.us

Table 1: Summary Minnesota HIE Framework

Minnesota HIE Framework to Support Accountable Health^{1,2}

Key Element	A. Engage and Activate Individuals and Caregivers	B. Engage and Activate all Health Providers	C. Extend Care Coordination into the Community	D. Monitor Cohorts and Attributed Populations	E. Manage Population Health
Key Premise (Desired Outcomes)	Individuals who have access to their health information are more engaged, more responsible for their health and have better health outcomes.	Providers who are engaged, with access to all necessary information at the point of care, help contribute to better health outcomes for patients.	Individuals are healthier when health care and related services are coordinated across providers.	Cohorts and attributed populations have better health and financial outcomes when program decisions are made using information generated with enhanced data analytics.	Health policy, emergency preparedness, and public program decisions are improved when based on accurate & timely population health information.
Key HIE Functions and Capabilities to Achieve Desired Outcomes	<ol style="list-style-type: none"> 1) Patients have access to bi-directional communication with providers. 2) Individuals have access to their personal health information that is understandable, in a useable form and actionable. 3) Individuals and patients have access to information about their providers and health care services 4) Individuals have access to tools to actively monitor and care for themselves and are able to share health activity monitoring information with providers. 5) Individuals have easy access to chronic disease management tools 6) Individuals have easy access to disease specific and preventative education materials 	<ol style="list-style-type: none"> 1) Providers have access to bi-directional communication with patients. 2) Providers have ability to communicate/share information within their own organization 3) Providers have the ability to communicate/share information outside their organization 4) Providers have access to user friendly, timely clinical decision support (CDS) 5) Providers have access to public health alerts 6) Providers have access to comprehensive patient medication histories 	<ol style="list-style-type: none"> 1) Providers have closed loop referral capability 2) Individuals and providers have access to identified social & community supports (for referral) that address social as well as medical needs 3) Providers have the information needed for care coordination in standard and/or shared terminologies where possible 4) Providers participate in care teams 5) Providers have access to bi-directional care coordination support services to/from MDH 6) Providers have access to information on targeted patients (e.g., cohorts) for follow-up/support 7) Individuals and patients have access to financial information needed for care management 8) Care coordinators have access to shared care management plans 	<ol style="list-style-type: none"> 1) Access to information to identify and monitor cohorts; share trends with care coordinators 2) Access to financial risk sharing models use predictive analytics 3) Access to shared care management plan and transparency of data analyzed 4) Ability to normalize and integrate data, including social determinants of health 5) Ability to provide care coordinators and providers performance reports 6) Access to information that allows for participation in reimbursement systems for other than fee for service (ACO, value-based payment) 7) Access to and ability to use repository and data warehouse 	<ol style="list-style-type: none"> 1) Access to information for health assessment of entire population 2) Ability to evaluate effectiveness of public health programs 3) Ability to report measures to external designated entities 4) Ability to report adverse events to Patient Safety Organization 5) Access to emergency preparedness monitoring and assessment information 6) Access to information needed to react to emergency disasters and outbreaks more quickly 7) Access to and ability to share research protocol information 8) Access to and ability to share comparative effectiveness research 9) Access to and ability to share population health analysis
Overarching Requirements	F. Transactions and Standards Recommended transactions and national standards are supported				
	G. Patient Safety Practices HIE and e-health protocols and procedures are supportive and enhance patient safety				
	H. Privacy and Security Protect all health information; any data sharing includes patient permissions (shared with whom and for what purpose).				
	I. Total Cost of Care (TCOC) HIE and e-health protocols and procedures support TCOC model (clinical decision support, program evaluation etc.)				
	J. Administrative Simplification Providers, patients and individuals can easily access information for appointment, insurance eligibility and benefits among other needs				
	K. Learning Health System moving toward an “ecosystem where all stakeholders can securely, effectively and efficiently contribute, share and analyze data and create new knowledge that can be consumed by a wide variety of electronic health information systems to support effective decision-making leading to improved health outcomes ³				

¹ Adapted from CCHIT's A Health IT Framework for Accountable Care http://www.healthit.gov/FACAS/sites/faca/files/a_health_it_framework_for_accountable_care_0.pdf

² Adapted from: Stratis Health's An Actionable Model for Health Reform-Preparing for the future of health care <http://www.stratishealth.org/pubs/qualityupdate/f13/reform.html>

³ Source: Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap January 2015

Key Element A: Engage and Activate Individuals* and Caregivers

Key Premise: Individuals who have access to their health information are more engaged, more responsible for their health and have better health outcomes

As charged by the 2014-2015 Minnesota e-Health Initiative Advisory Committee, the Consumer Engagement Workgroup drafted a definition (April 15, 2015) for Consumer engagement in e-health: Empowering people to maintain and improve both their health and health care through health information technology by: increasing individuals' access to useable and comprehensive data, enabling informed decision making using health information, and facilitating strong partnerships between individuals and providers of care and other services that impact health.

Table 2: Key Element A

Engage and Activate Individuals and Caregivers	Key HIE Functions		HIE Capabilities and Considerations	
	1. Patients have access to bi-directional communication with providers.		<ul style="list-style-type: none">As patients, individuals have access to electronic provider directories and services (including online/mobile to maps/directions).Individuals have a list of providers with whom patient/individual is identified.Individuals have a contact for health information 24 hours per day and 7 days per week.Individuals have opportunities to provide electronic feedback regarding health care services received.Individuals have access to communication options for visually or hearing impaired individuals.	
	2. Individuals have access to their personal health information that is understandable, in a useable form and actionable.		<ul style="list-style-type: none">Individuals have access to their personal health information (e.g., through a patient portal) that includes information from all their providers to use for health monitoring and communications.Information available individuals and patients is accessible by language and reading level.A patient portal, or other access, may be used to send health maintenance reminders or for scheduling appointments.Individuals have access to information shared between providers.The individual may determine amount of interaction desired through the patient portal.	

Key HIE Functions	HIE Capabilities and Considerations
(continued from previous page)	
2. Individuals have access to their personal health information that is understandable, in a useable form and actionable	<ul style="list-style-type: none"> Individuals should receive education on legal rights and access to health information under HIPAA rules. The PHR needs to be patient-centric, so accountable care organizations need to find out what individuals want and provide that in the PHR. Individuals are involved in developing uses of technology for health improvement. Information about accessing a PHR should be delivered in format that fits patient and caregiver's learning style (audio, visual, graphic, etc.)
3. Individuals and patients have access to information about health care services and disease specific and preventative patient education	<ul style="list-style-type: none"> Individuals have access to information about general health concerns and preventive health recommendations. Individuals have access to disease-specific information with full disclosure about options and outcomes of various modes of treatment. Individuals should have electronic access to public health alerts. Individuals have access to, or are sent automatically, targeted, pertinent, and customizable information for their health status, condition(s), and circumstances.
4. Individuals have easy access to chronic disease management tools	<ul style="list-style-type: none"> Individuals have electronic access to chronic disease management tools, and Care Coordinators to help them manage their chronic disease(s). Individual has access to consolidated care plan.
5. Individuals and patients have access to information about their providers and health care services	<ul style="list-style-type: none"> Provider/Hospital patient satisfaction surveys results are easily available. The process for patient complaints is easy to find and complete electronically. Individuals have access to list of care-givers who have access to their personal health information.
6. Individuals have access to tools to actively monitor and care for themselves and are able to share health activity monitoring information with providers	<ul style="list-style-type: none"> Individuals have ability to view, download, and transfer their health information to other providers, caregivers, or applications through a PHR. Individuals have access to journals or other tools to track intake, exercise, activity, sleep, and. Individuals have the ability to share individual "results" from personal technology (e.g., Fit Bit, etc.) to PHR. Individuals have ability to submit point of care documentation (e.g., home glucose testing). Individuals have ability to share long term goals and self-reported outcomes as well as attributes.

Key Element B: Engage and Activate all Health Providers

Key Premise: Providers who are engaged, with access to all necessary information at the point of care, help contribute to better health outcomes for patients.

A provider in this key element is defined as any clinician who can bill for their services and has a National Provider Identifier (NPI) number. This function reflects the need for providers to track, understand, and respond appropriately to patients. This includes those who do not keep appointments, fill prescriptions, follow up with diagnostic testing or referral, or follow their care plans.

Table 3: Key Element B

Engage and Activate all Health Providers	Key HIE Functions		HIE Capabilities and Considerations	
	1. Providers have access to bi-directional communication with patients		<ul style="list-style-type: none">▪ The patient's preference is recorded and stored in the providers' electronic health record (EHR) regarding consent to share health data, and is easily accessible and/or centralized and incorporated.▪ Provider can easily and accurately access a patients' advanced directive information.▪ Provider has access to current medication list.▪ Provider has the ability to schedule care on behalf of the patient in the EHR.▪ Provider has access to timely notification of patient calls, texts, and messages, and is informed about the process for responding to patient inquiries.▪ Provider has the ability to communicate results and summaries to patients electronically within a designated timeframe.▪ Provider has the ability to be notified when patient does not keep appointment or follow through on a referral.▪ Provider has the ability to be notified when patients do not fill a prescription, complete a lab or other test that was part of their care plan.▪ Provider has access to patient's data at point of care.	

Key HIE Functions	HIE Capabilities and Considerations
2. Providers have ability to communicate and share information within their own organization	<ul style="list-style-type: none"> ▪ Patient data is triaged to “covering” clinician when designated clinician not available (Health Home Model). ▪ Provider has the ability to communicate through shared care plan within the EHR. ▪ Providers use CPOE for medications, radiological exams, lab tests, and other procedures. ▪ Ordering clinician is notified of results of tests or interventions. ▪ Providers have the ability to communicate with other providers in a secure and timely manner (e.g., instant messaging, texting) within the EHR. ▪ Provider has assurance that all results (and all appointments or orders not acted on by patient) are tracked, acted upon, and communicated appropriately to designated parties in a timely manner. ▪ Provider has access to online EHR through mobile or remote secure access.
3. Providers have the ability to communicate/share information outside their organization	<ul style="list-style-type: none"> ▪ Provider is informed regarding which EHR fields are shared electronically, and when (e.g., at discharge, acknowledging lab or radiology results, etc.), as well as which fields are not, and never will be, shared. ▪ Provider has access to timely notification or automatic alert when patients present in any Emergency Department.
4. Providers have access to user friendly, timely clinical decision support (CDS)	<ul style="list-style-type: none"> ▪ Provider has the ability to access CCDA information from providers outside the organization, and integrate the information into the provider’s EHR. ▪ EHR identifies data source when a CCDA, or other type of transaction, is integrated into the provider’s EHR. ▪ Provider has the ability to send referrals electronically. ▪ Provider has the ability to “close the loop” on referrals from other providers. ▪ Provider has access to query/view where the provider’s patients are being seen in the community.
5. Providers have access to public health alerts	<ul style="list-style-type: none"> ▪ Clinical decision support tools alert the provider about possibly needed care that is timely, actionable, appropriately sensitive and specific, and is incorporated seamlessly into the workflow. ▪ Appropriately sensitive and specific clinical decision support is available for providers when ordering medications, lab and radiology tests, and other procedures. ▪ Provider has access to customized order sets. ▪ Provider has ability to adjust sensitivity to decrease “over-alerting” and “alert fatigue”, and incorporate “prediction rules”.

Key HIE Functions	HIE Capabilities and Considerations
<p>(continued from previous page)</p> <p>5. Providers have access to public health alerts</p>	<ul style="list-style-type: none"> ▪ Provider has access to Evidence Based Medicine (EBM) prompts and alerts. ▪ Provider has access to services and programs (links) determined to improve outcomes by the accountable care organization. ▪ Provider has access to diagnostic algorithms, which can be static, customized, or interactive, to flag clinically important drug-drug interactions, drug formulary checks, drug-allergy interactions, and drug-lab opportunities. ▪ Provider can update care plan that intervention has been accomplished. ▪ Provider, or designer, can build dashboards based on key patient information. ▪ Provider has increased skills needed in risk management with movement to value services payment.
<p>6. Providers have access to comprehensive patient medication histories</p>	<ul style="list-style-type: none"> ▪ Provider has links to programs that offer comprehensive clinical information on specific topics. ▪ Public Health alerts pertinent to the current patient in EHR given to provider at point of care. ▪ Public Health alerts may also include access to information on the health of the community, which may help the accountable organization differentiate itself in terms of care effectiveness. ▪ Monitoring technology can be updated to show intervention has been accomplished. ▪ Monitoring technology can be updated to show a result of intervention. Provider can assure that a single list of patient medications correlates with those the patient is actually taking and contains no medications with unintentional duplicative effects. This must be done in both inpatient (eMAR) and outpatient settings and should include OTC medications and supplements. ▪ Provider can incorporate patient supplied history or current active medications designate, date, and sign reconciled medication list. ▪ EHR accurately reflects active medications; allows discontinued medications to be removed from list at time of change and maintains a history of previous medications. ▪ Provider has access to notifications, or automatic responses, when a prescription is not picked up. ▪ Provider has access to real-time alerts when prescribing duplicate medications, or discontinuing medication, etc.

Key Element C: Extend Care Coordination into the Community

Key Premise: Individuals are healthier when health care and related services are coordinated among providers.

Extending care coordination into the community may involve at least two different but related aspects of patient/individual care. Providers need information from multiple relevant sources to develop appropriate next steps for diagnosis or treatment. As patients and individuals transition between settings or home appropriate information is needed to make decisions regarding best options for the necessary services. Both types are important to provide high quality care and must incorporate patient/individual needs and preferences. And possibly even more than the other Key Elements, this one is highly dependent on the ability to quickly and easily exchange health information to and from multiple organizations.

Table 4: Key Element C

Extend Care Coordination into the Community	Key HIE Functions	HIE Capabilities and Considerations
	1. Providers have closed loop referral capability	<ul style="list-style-type: none"> ▪ Care Coordinator has the ability to schedule care where and with preferred providers on behalf of patient as clinically appropriate and consistent with health plan coverage and operations. ▪ Care Coordinator can send clear indications for referral and requested recommendations. ▪ Care Coordinator can receive, incorporate, and acknowledge referral recommendations. ▪ Care Coordinator has the ability in the EHR to receive notification if appointment not kept. ▪ Care Coordinator has the ability to accept alert notification of patients, based on consent of patient.
	2. Individuals and providers have access to identified social & community supports (for referral) that address social as well as medical needs	<ul style="list-style-type: none"> ▪ Care Coordinator can identify patient with social and community supports for medical and social needs. ▪ Care Coordinator has the ability to add, edit, and incorporate social determinants of health information into the EHR, and use it to improve outcomes for patients and outcome measures for providers. ▪ Care Coordinator has ability to record patient and family needs and circumstances. ▪ Maintain current list of community services within each designated zip code. (Need to identify where this list will be maintained).

**Extend Care
Coordination
into the
Community**

Key HIE Functions

3. Providers have the information needed for care coordination in standard and/or shared terminologies where possible

HIE Capabilities and Considerations

- Providers or Care Coordinators, with consent, have access to:
 - Behavioral health assessments from outside organizations.
 - Transitions of Care use case CCD/CCDA and Hospital Transfer Form.
 - Care Coordinator, with consent, has access to care summary for MU transactions between care providers.
 - Intake or outbound document for each specific domain (i.e. OBRA level 1 screening for developmentally delayed or mental illness; functional status for Behavioral Health and Home Health including ADLs, cognitive and disability status
 - Transitions across settings and caregivers (use cases: caregiver, patient or parent; home to ED; ED to admit; lower level facility to higher level facility; among any of the following settings: hospital, clinic, primary care, health care home, homecare, LTC, SNF, rehab, therapy; providers and schools).
 - Access to automatic alerts such as ADTs (Admit, Discharge, Transfer) when appropriate and useful to improve outcomes
- HIE databases (from ACOs) have the ability to normalize and integrate data from multiple sources.
- Care Coordinators have the ability to identify patients for follow up using demographic information, diagnosis, medication, lab result, or specific symptoms.
- Ability to incorporate results from monitoring technology (e.g., from home or other site).
- Providers and Care Coordinators have access to bi-directional exchange with tertiary care centers.
- Provider organizations have robust reciprocal agreements in place for data sharing.
- Providers or Care Coordinators have ability to coordinate care across the continuum of care, clinical care as well as public health, long-term and post-acute care, social services and behavioral health.
- There are established provider relationships that allow for exchange data.

Key HIE Functions	HIE Capabilities and Considerations
4. Providers participate in care teams	<ul style="list-style-type: none"> Engage preferred providers and clinicians in care teams - As the organization builds a network of preferred providers willing to formally participate in coordinating care (include physicians and other licensed clinicians, ancillary providers of care (e.g., PT, OT, ST, imaging centers, emergency medical services, medical goods suppliers) in multiple settings and facilities, the clinician will have access to providers with similar goals and objectives with respect to coordinating care for a given patient. Providers or Care Coordinators can assess acuity of care necessary for using validated tools. Care Coordinators have the ability to share clinical information among preferred provider systems. Provider or Care Coordinator can flag and communicate needed interventions as appropriate. Care Coordinator can optimize and customize care based on patient need (e.g., health maintenance, chronic care management, minimize excess morbidity in complicated patients, advanced directives, etc.). Allows Providers and Care Coordinators to practice health business, not sick business.
5. Providers have access to bi-directional care coordination support services to and from MDH	<ul style="list-style-type: none"> Allows provider organization to meet required electronic reporting to MDH – Immunizations, labs, and other public health reporting. Allows provider organizations to meet required electronic registry reporting to MDH, e.g., cancer registry. Allows for electronic querying with MDH, e.g., immunizations for one individual. Allows for receipt of public health alerts and education requests for specific populations. In addition to CCD, agencies need history and physical, discharge summaries, and other pertinent documents required by regulatory agencies.
6. Providers have access to information on targeted patients (e.g., cohorts) for follow-up/support	<ul style="list-style-type: none"> Identify patients from cohort data to follow up with for improved outcomes - a critical step in population segmentation for the accountable care organization since each sub-population will be managed differently with different anticipated outcomes.

**Extend Care
Coordination
into the
Community**

Key HIE Functions	HIE Capabilities and Considerations
(continued from previous page)	
6. Providers have access to information on targeted patients (e.g., cohorts) for follow-up/support	<ul style="list-style-type: none"> ▪ Receive information from those monitoring cohorts (key element D) related to identified conditions effecting a list of patients, and recommended interventions/follow up. ▪ Coordinate with individual patients and their caregivers, as appropriate, for recommended interventions/follow up.
7. Individuals and patients have access to financial information needed for care management	<ul style="list-style-type: none"> ▪ Encourage patient engagement with cohort; particularly important for those patients who must manage their own health and care outside of a clinical setting. ▪ Care Coordinators have ability to add newly eligible patients to the cohort. ▪ Care Coordinators have ability to remove patients no longer eligible for cohort (e.g., death).
8. Care coordinators have access to shared care management plans	<ul style="list-style-type: none"> ▪ Care Coordinators have ability and access to help with financial management for patients. ▪ Care Coordinator has access to present benefit and health plan provider network information to patient/individual. ▪ Ability to cross-reference the organization's preferred providers to patients' provider networks. ▪ Allow Care Coordinators access within their EHR to real-time information on available beds and personnel for different acuity levels of care. ▪ Allow Care Coordinator access to list of patient designated zip codes for specific clinical or public health alerts. ▪ Allow Care Coordinator to extract data from multiple sources: all payer claims, practice management and clinical systems, health risk assessments, etc. ▪ Allow Care Coordinators to manage and present data in multiple usable formats (graphs, charts, etc.), including trended information. ▪ Audit clinical and operational indicators to make sure Care Coordination happens.

Key Element D: Monitor Cohorts/Attributed Populations (including risk stratification)

Key Premise: Cohorts and attributed populations have better health and financial outcomes when program decisions are made using information generated with enhanced data analytics.

Cohort management starts with an assessment of the entire risk based population, to identify the specific cohorts on which the organization chooses to focus: high risk patients, those with specific chronic disease, and those in need of appropriate screenings and primary prevention interventions. As the health of each patient in a cohort improves, so does that of the whole cohort, ultimately leading to improved health of the entire population of the organization.

Source: CCHIT: A Health IT Framework for Accountable Care

Table 5: Key Element D

Monitor Cohorts/Attributed Populations	Key HIE Functions	HIE Capabilities and Considerations
	1. Access to information to identify and monitor cohorts; share trends with care coordinator	<ul style="list-style-type: none"> ▪ Within the ACO database, identify and monitor a cohort. Before clinical or financial management is started, provider groups will need to understand both the demographics and illness burden of its patient population. ▪ Identify cohort from within entire patient population of the ACO; what care the cohort receives; gaps with what they should be receiving; financial costs of those gaps and best practices to prevent the gap. ▪ Calculate quality measures to monitor obtain best health outcomes for the attributed cohort.
	2. Access to financial risk sharing models use predictive analytics	<ul style="list-style-type: none"> ▪ Payers participate in HIE by providing claims data to the ACO for risk sharing analysis and predictive analytics of attributed cohort. Claims data, in a usable form, needed to manage several drivers of success, such as practice pattern variation and out-of-network care. ▪ Data analytics – review retrospective or trends (what happened?), real time (what is happening?), and predictive (what may happen?). ▪ For financial analytics, include health care clearinghouse, DHS, and 3rd party payer data. ▪ Analytics team to perform risk sharing analytic, allowing contractual agreement between provider and payer on risk sharing formulas and computation of additional revenue or loss. ▪ Use shared-savings algorithms across an ACO. ▪ Use cost sharing algorithms across an ACO.

**Monitor
Cohorts/Attributed
Populations**

Key HIE Functions	HIE Capabilities and Considerations
2. Access to financial risk sharing models use predictive analytics (continued)	<ul style="list-style-type: none"> Allow analytical team access to validate analytical tools/cost reports, including ‘incurred but not reported’ (IBNR). Providers across the ACO collectively address the burden of poor health. Governance of data within the ACO includes convene, connect, integrate, and alignment between providers.
3. Access to shared care management plan and transparency of data analyzed	<ul style="list-style-type: none"> Move or consolidate information from across disparate systems while maintaining the meaning of the information – often driven by use cases. Present results of measures across entire population (ACO) to responsible clinician(s) on a regular basis, including benchmark measures and year to year progress. Analytics team to conduct ROI analyses on identified cohorts and interventions implemented. Analytics team to conduct risk stratification across the ACO. Share information related to changing marketplace: Traditional Open Access FFS system to value based contracting; greater transparency on provider performance – cost and quality – with need for greater focus on outcomes; shared savings used as a transitional methodology; new models include gain share, global payments, medical homes, bundles of care, and return to capitation; emphasis on being proactive versus reactive by exploring new ways to engage patients and focus on predictive and proactive disease management. Share program progress with individuals in cohorts. Shared care management plan and transparency of data analyzed allows for a single source of information about anticipated care in specific circumstances by provider for a specific patient.
4. Ability to normalize and integrate data, including social determinants of health	<ul style="list-style-type: none"> Normalized and Integrated Data, including social determinants of health (SDH), pulled from multiple clinical, financial, and operational system sources and integrated within the ACO. Standardize the care plan template within the ACO.

**Monitor
Cohorts/Attributed
Populations**

Key HIE Functions	HIE Capabilities and Considerations
5. Ability to provide care coordinators and providers performance reports	<ul style="list-style-type: none"> ▪ Offer Administrative Simplification for Operations Performance reports to providers and care coordinators, focusing on agreed upon clinical, financial, and operational measures and goals. ▪ Offer reports related to patient directed goals, patient preferences and directions, planned provider interventions, planned patient interventions, information on barriers to care, and Medical Orders for Life Sustaining Treatment (MOLST), if available. ▪ New data analytic skills needed – often not found in provider organizations. ▪ Integrated claims from all payers (access to an all payer data base) needed for ACO. ▪ Encounter data (or alert notifications) for all settings across the ACO. ▪ Structured clinical data available from multiple sources within organization, including patient-supplied data. ▪ Structured clinical data is available from providers external to the ACO. ▪ Focus on reimbursement systems for value based payment methods. ▪ Stakeholders’ voice concern for not just how to move to value service, but at what pace (sustainability through transformation). ▪ Top data-related challenges seem to be using data and analytics on a real-time basis, integrating population and clinical data, and connecting to the ACO (HIE database) as a launching point for analytics.
6. Access to information that allows for participation in reimbursement systems for other than fee for service (ACO, value-based payment) Access to and ability to use repository and data warehouse	<ul style="list-style-type: none"> ▪ ACO analytic teams require access and use of repository and data warehouse. ▪ Data may include any of the following – summary information, full data sets, or specific elements – driven by use case. ▪ Data exchange needed for local ACOs when individuals use tertiary providers. ▪ Include automated event notifications (ADTs) in the repository for analytics. ▪ Key quality indicators like preventive screening and chronic disease tests (lab and imaging) included in repository.

**Monitor
Cohorts/Attributed
Populations**

Key HIE Functions

HIE Capabilities and Considerations

- | | |
|---|--|
| <p>6. Access to information that allows for participation in reimbursement systems for other than fee for service (ACO, value-based payment) Access to and ability to use repository and data warehouse (continued)</p> | <ul style="list-style-type: none"> ▪ Information needs to be available for all types of providers that might provide care for the client – home care, hospice, public health, human services, mental health, nursing homes, detox, crisis units, pharmacy, assisted living, adult foster care, dentists, optometrists, and chiropractors. ▪ Stakeholders note financial and clinical risk for organizations when moving to value based payment system. ▪ Population health analytics and cohort reporting, individuals are identified by number, not names. |
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Key Element E: Manage Population Health

Key Premise: Public health policy, emergency preparedness, and public program decisions are improved when based on accurate and timely population health information.

An aim of population health management is to optimize the health and well-being of an entire community and reduce inequalities in health and well-being between population groups. A “community” may be either geographic regions and/or groups of people who share attributes (e.g., elderly, minorities, employees, disabled persons, students). Population health requires collaboration across all sectors of a community to address factors such as public infrastructure, the environment, education systems, social supports, and the health care system, to address all social determinants of health. Population health within an accountable care organization requires collaboration between all health care providers in the community, social support services within the community, and local public health.

The current federal focus on reporting of quality measures and the technical specifications required by the Meaningful Use and ONC HIT Certification programs drive much of what is needed in HIT systems to report out quality measures. It is perhaps more critical that providers of all types have access to internal reports on their quality of care as well as reports on their resource consumption. Reporting to various registries and patient safety organizations (PSOs) are also functions that will not only lead to improved public health efforts, but to better health for the patients partnering with their provider organization.

Table 6: Key Element E

Manage Population Health	Key HIE Functions	HIE Capabilities and Considerations
	1. Access to information for health assessment of entire population	<ul style="list-style-type: none"> ▪ Unlike managing cohorts, which analyze sub-groups of the population, the management of population health requires health data and analytics of an entire population. ▪ The ACO will analyze data across the communities within the ACO for population health, while the State Department of Health will analyze the same data for trends in the population health across the state. ▪ Payer Alignment and claim integration is needed in community repositories for population health analytics. ▪ Emphasis is to involve all willing partners that impact health in the region – role of Support, Convene, Connect, Integrate, and Align. ▪ ACOs may develop with geographic location or for a special population group.
	2. Ability to evaluate effectiveness of public health programs	<ul style="list-style-type: none"> ▪ The State Department of Health uses population health data to evaluate effectiveness of public health programs across the state. ▪ State programs need to include strong evaluation plans before or soon after policy implementation with measures of intended and potential unintended consequences to determine timely effectiveness. ▪ Population health analytics may be used to identify reporting registries that could be future use priorities.
	3. Ability to report measures to external designated entities	<ul style="list-style-type: none"> ▪ Use population health analytics to report measures to external designated entities – e.g., ONC Certification for all CQM measure related criteria. ▪ Concept of Burden of Poor Health (first to the individual, then community burden of disease, drain on community resources, financial cost to the region and beyond, and economic burden on the community) ▪ The population health data from an ACO may provide access to regional status on triple aim measurements, identify needs and /or opportunities for improvement, and assist providers on their individual and collaborative interventions for improvement.

Key HIE Functions	HIE Capabilities and Considerations
4. Ability to report adverse events to patient safety organizations	<ul style="list-style-type: none"> ▪ Report adverse events to Patient Safety Organization by accessing AHRQ's Common Formats for reporting patient safety incidents as they become available for different settings and situations. ▪ Information has to move up and down; front line folks need decision support tools that drive evidence based care decisions based on changes in individual patient conditions and impact population health as a whole. ▪ Population Health Information going 'up' includes outcomes as determined by collected quality metrics. ▪ Population Health Information going 'down' includes changes in evidence based guidelines to update decision support tools and behavior due to changes in individual patient conditions.
5. Access to emergency preparedness, monitoring, and assessment information	<ul style="list-style-type: none"> ▪ Use population health analytics for emergency preparedness monitoring and assessment. ▪ Include appropriate training in population statistics and analytics for state coordinators.
6. Access to information needed to react to emergency disasters and outbreaks more quickly	<ul style="list-style-type: none"> ▪ Population health management and analytics allow for timely reaction to emergencies, disasters and outbreaks.
7. Access to and ability to share research protocol information	<ul style="list-style-type: none"> ▪ Research protocol needed for access to population health data for research projects. ▪ Research training for reliable, high-quality design methods needed for health policy development.
8. Access to and ability to share comparative effectiveness research	<ul style="list-style-type: none"> ▪ Population health analytics allows for comparative effectiveness research. ▪ Population health analytics allows use of time-series studies and graphical displays to inform policy decisions. ▪ Population healthy analysis and education needed within the State Department of Health and across the state to understand the potential uses of population health data to meet the triple aim.
9. Access to and ability to share population health analysis	<ul style="list-style-type: none"> ▪ Allow population health analysis of reported registries, public health and syndromic surveillance reporting. ▪ Need administrative claims data, clinical data from all settings, statewide data sources (SSIS, State Public Health Registries, and Prescription Monitoring Program) and social determinants of health within ACOs for most effective population health analytics and health management.

Overarching Requirements

Key Element F: Transactions and Standards

Support of recommended transactions and use of national standards

- The Minnesota e-Health Advisory Committee and MDH recommend providers focus on the exchange transactions identified by the HITECH Act and associated rules, including: electronic prescribing, public health transactions, laboratory data transactions, quality reporting transactions, and care coordination, transfer of care and referral summary transactions.
- To support accountable health, health information exchange transactions between providers follow the most recent national standards and use State-Certified HIE service providers.
- E-Prescribing transactions, including orders, prescription changes, refill and cancel transactions are sent between ordering providers and pharmacies. Medication histories and current medication lists are exchanged and used for Medication Therapy Management within pharmacies or within community patient consolidated health records.
- Alert notification (Admission, Discharge, and Transfer (ADT)) transactions between facilities and providers help to improve care coordination by alerting the receiver that a patient has been admitted to or discharged from an emergency department or hospital. The designated receiver can act on the alert by providing additional information to the facility to improve outcomes, by rescheduling home visits to decrease use of resources, and by changing care coordination interventions based on current needs of the patient. Some individuals have access through their PHR (personal health record) to give consent to other care givers, neighbors or community programs to be alerted when they are admitted or discharged from the emergency department or hospital.
- Consolidated Clinical Document Architecture (CCDA) transactions between providers help to share the most recent story of the patient through patient visit summaries, referrals and transfer of care use cases. The Health Information Organization where the individual's health information is stored (the clinical data repository (CDR)) includes a longitudinal view of past documents, as well as a consolidated view of current clinical data.
- At an aggregate level, the HIE data is monitored by cohorts and by population health analytics to improve overall health. This is possible through standards and normalization of the transactional data.
- Transactions for public health reporting and registries send individual non-public health information data to the Minnesota Department of Health based on specific required reporting conditions or diagnosis. This data is used for further care coordination and population health management. In addition, local or community programs may send program level (public) data to the Minnesota Department of Health based on program reporting requirements. This data is also used for population health management.

Key Element G: Patient Safety Practices

HIE and e-health protocols and procedures are supportive and enhance patient safety

- The individual verifies health data in Personal Health Record (PHR) and notifies provider if corrections are needed.
- Electronic communication between providers reduces misinterpretation of orders and results; helps prevent adverse events.
- The provider or care coordinator alerts patient safety advocate within the organization of identified or potential safety issues.
- Cohort data is used for assessment and monitoring program to identify patient safety risks within each organization.
- Costs of safety issues and benefits of patient safety program is analyzed within the organization.
- Certifying EHRs through ONC helps decision makers purchasing health IT have reasonable assurance that what they are purchasing is interoperable with other systems.
- Population health management allow for ongoing assessment and monitoring of statewide population safety issues and recommendations/education for improvements.

Key Element H: Privacy and Security

Protect all health information; any data sharing includes patient permissions (shared with whom and for what purpose).

- Individuals provide consent to providers to share data for treatment, payment and operations. Patient may check a box to opt-out of health information exchange or sharing, but, in most cases, this means health data is not available if the patient presents at an emergency department.
- Consent for sharing health data locally and across states includes patient permission for exchange with whom and for what purpose.
- Minnesota's Health Records Act gives patients access to "complete and current information possessed by that provider concerning any diagnosis, treatment, and prognosis", which includes access to psychotherapy notes in their medical records unless the provider believes that 'the information is detrimental to the physical or mental health of the patient, or is likely to cause the patient to inflict self-harm, or to harm another.' (Minn. Stat. 144.292, *subd.* 7).
- Providers and care coordinators access individual health information for the purpose of improving the individual's health.
- Providers and care coordinators use hardware and software security precautions when accessing EHRs for individual health information to protect the individual's privacy.
- Hardware and software security precautions are supported by vendor-neutral protocols with a wide variety of core services, including procedures, solutions and timelines for breach issues.
- Provider organizations using State-Certified HIE Service Providers have added assurance that adequate privacy and security policies and procedures are used for health information exchange to meet state and federal laws.
- Cohort analysts determine groups of individuals who might benefit from additional disease-specific intervention, and share this with care coordinators for follow up care and improved outcomes.
- Population health analysts use de-identified health information across large population databases to determine population health needs, evaluate programs, and research best practices for clinical care across the continuum of health care.

Key Element I: Total Cost of Care

HIE and e-health protocols and procedures support Total Cost of Care (TCOC) model (accountability and transparency of the cost of care across payers, providers and organizations for similar outcomes).

- For individual responsibility focused health care, costs of care need to be electronically available before performed or scheduled.
- Total cost of care analysis allows for continuous improvements to decision support within electronic health records.
- The use of dashboards and report queries allow continuous improvements to provider effectiveness and outcomes.
- To improve the total cost of care, feedback loops for all transactions allow continuous improvement of coordinated care – i.e. medication use, lab testing, and consultations.
- Total cost of care allows accountability for care provided to individuals and interoperability alignment of agencies who pay for the health services (i.e. CMS, DHS, clearing houses, 3rd party payers).
- Transparency of cost and quality of programs allows for improved program evaluation and effectiveness of operations across organizations – i.e. preventable emergency visits, improved operations for improved measures.
- Transparency of cost and quality of programs allows for improved program evaluation and effectiveness of population-based programs.

Key Element J: Administrative Simplification

Providers, patients, and individuals can easily access information about appointments, insurance eligibility/ benefits and other needs

- Encourage individual electronic access to benefits, appointments, and bill payment for administrative simplification.
- Electronic access to a personal Patient Billing Summary assures that care system is easy to navigate and all patient billing is accurate, timely, and understandable.
- Electronic access to a personal Patient Billing Summary assures that care system is easy to navigate and all patient billing is accurate, timely, and understandable.
- Electronic access to customer and employee experiences, satisfaction surveys, or other required forms may simplify administrative workflows for the individual as well as the organization.
- Many providers can't act if they do not have the appropriate paperwork, which can delay care and put outcomes at risk. Administrative simplification allows access for providers to patients' eligibility, plan benefits, and plan provider networks at time of ordering and providing care for uninterrupted care. This information includes co-pays and deductibles for contemplated services.
- Use of Computerized Provider Order Entry, Order Sets, and Prior Authorizations simplifies provider and care coordinator workflows and offers more efficient and effective care.

Key Element K: Learning Health System

This Minnesota Framework is part of moving toward an “ecosystem where all stakeholders can securely, effectively and efficiently contribute, share and analyze data and create new knowledge that can be consumed by a wide variety of electronic health information systems to support effective decision-making leading to improved health outcomes.” (Source: Connecting Health and Care for the Nation *A Shared Nationwide Interoperability Roadmap* January 2015)

- Individuals use personal patient health information to make informed health decisions.
- Individuals are empowered to be managers of their own health by providing and managing health information through mobile health, wearable devices, and online services.
- Providers improve care due to rapid dissemination of information from research to clinical practice “bench to bedside”.
- Providers and care coordinators have more timely and effective use of clinical decision support.
- Effective use of evidence-based practice in coordinated care.
- Allows more efficient development of public health policy to guide coordination of care.
- Query functionality of population-based repositories is a community asset.
- Research guidelines guide stratification models, while understanding various capabilities of various providers.
- Timely dissemination of population-based research, assessment, clinical guidelines, and prevention education (e.g., communities at risk for vaccine levels).
- Public policy based on interoperability needed to inhibit barriers to HIE and develop an effective and efficient learning health system.

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Selected Glossary of Key Terms

For more terms see [Glossary of Terms and Acronyms Related to e-Health](http://www.health.state.mn.us/e-health/glossary/s.html) (<http://www.health.state.mn.us/e-health/glossary/s.html>)

Interoperable EHR Mandate

The 2007 Minnesota Legislature mandated in Minnesota Statute §62J.495 (Electronic Health Record Technology), that “By January 1, 2015, all hospitals and health care providers must have in place an interoperable electronic health records system within their hospital system or clinical practice setting. The commissioner of health, in consultation with the Minnesota e-Health Advisory Committee, shall develop a statewide plan to meet this goal, including uniform standards to be used for the interoperable system for sharing and synchronizing patient data across systems.”

Source: [Guidance for Understanding the Minnesota 2015 Interoperable EHR Mandate](http://www.health.state.mn.us/e-health/hitimp/2015mandateguidance.pdf), (www.health.state.mn.us/e-health/hitimp/2015mandateguidance.pdf) accessed 09.10.13

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.

Source: Minnesota State Innovation Model Grant Request for Information on Health Information Technology and Data Analytics in Accountable Care Models, accessed 09.27.13

Accountable Care Organizations (ACOs)

Accountable Care Organizations (ACOs) are groups of doctors, hospitals, and other health care providers, who come together voluntarily to give coordinated high quality care to their Medicare patients. The goal of coordinated care is to ensure that patients, especially the chronically ill, get the right care at the right time, while avoiding unnecessary duplication of services and preventing medical errors. When an ACO succeeds both in delivering high-quality care and spending health care dollars more wisely, it will **share in the savings** it achieves for the Medicare program.

Medicare offers several ACO programs:

- *Medicare Shared Savings Program*—a program that helps a Medicare fee-for-service program providers become an ACO. Apply Now.
- *Advance Payment ACO Model*—a supplementary incentive program for selected participants in the Shared Savings Program.
- *Pioneer ACO Model*—a program designed for early adopters of coordinated care. No longer accepting applications.

Source: Centers for Medicare and Medicaid Services (<https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ACO/index.html?redirect=/aco/>) accessed 03.30.2015

Admit/Discharge/Transfer (ADT) messages

Admission, Discharge and Transfer (ADT) messages are used to communicate episode details. ADT messages carry patient demographic information for HL7 communications, but also provide important information about trigger events (such as patient admit, discharge, transfer, registration, etc.). ADT messages are extremely common in HL7 processing and are among the most widely used of all message types.

http://www.gillogley.com/hl7_glossary.shtml <http://www.corepointhealth.com/resource-center/hl7-resources/hl7-adt>

(Excerpted from: [Office of the National Coordinator for Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap Draft Version 1.0 Appendix G: HIT Glossary](http://www.healthit.gov/policy-researchers-implementers/interoperability) (<http://www.healthit.gov/policy-researchers-implementers/interoperability>))

Behavioral Health

The term “behavioral health” is a general term that encompasses the promotion of emotional health; the prevention of mental illnesses and substance use disorders; and treatments and services for substance abuse, addiction, substance use disorders, mental illness, and/or mental disorders. Behavioral health includes the identification, treatment of, and recovery from mental health and substance use disorders. It also increasingly refers to lifestyle changes and actions which improve physical and emotional health, as well as the reduction or elimination of behaviors which create health risks.

Source: Minnesota State Innovation Model Grant Request for Information on Health Information Technology and Data Analytics in Accountable Care Models, accessed 09.27.13

Care Coordination

Care coordination is a function that supports information-sharing across providers, patients, types and levels of service, sites and time frames. 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.

Source: U.S. Department of Health and Human Services, <http://www.ncvhs.hhs.gov/091013p9.pdf>

Care Plan

A care plan is the structure used to define the management actions for the various conditions, problems, or issues. A care plan must include at a minimum the following elements: problem (the focus of the care plan), goal (the target outcome) and any instructions that the provider has given to the patient. A goal is a defined target or measure to be achieved in the process of patient care (an expected outcome). Community-based Prevention/Community-based Interventions/Community-based Programs are terms used interchangeably to refer to programs or policies within a community that seek to improve the health of a population by addressing non-medical factors, or social determinants of health. Such programs often include the application of non-clinical preventive methods in non-traditional health care settings by non-clinical providers.

Source: [Financing Prevention: How states are balancing delivery system & public health roles](http://changelabsolutions.org/sites/default/files/Financing_Prevention-NASHP_FINAL_20140410.pdf)

(http://changelabsolutions.org/sites/default/files/Financing_Prevention-NASHP_FINAL_20140410.pdf)

Clinical Decision Support (CDS): CDS refers broadly to providing clinicians or patients with clinical knowledge and patient-related information, intelligently filtered or presented at appropriate times, to enhance patient care. Clinical knowledge of interest could range from simple facts and relationships to best practices for managing patients with specific disease states, new medical knowledge from clinical research and other types of information. **Reference:** http://www.himss.org/ASP/topics_clinicalDecision.asp

Community Engagement

Community Engagement is the process of working collaboratively with and through groups of people affiliated by geographic proximity, special interest, or similar situations to address issues affecting the well-being of those people. It is a powerful vehicle for bringing about environmental and behavioral changes that will improve the health of the community and its members. It often involves partnerships and coalitions that help mobilize resources and influence systems, change relationships among partners, and serve as catalysts for changing policies, programs, and practices. Source: [Fawcett et al., 1995](http://www.atsdr.cdc.gov/communityengagement/pdf/PCE_Report_508_FINAL.pdf) (http://www.atsdr.cdc.gov/communityengagement/pdf/PCE_Report_508_FINAL.pdf)

Continuum of care

The continuum of care is the full array of services, from prevention to treatment to rehabilitation and maintenance, required to support optimum health and well-being of a population.

Source: Adapted from [Alaska Health Care Commission](http://dhss.alaska.gov/ahcc/Documents/definitions.pdf) (<http://dhss.alaska.gov/ahcc/Documents/definitions.pdf>)

Determinants of health

Health is determined through the interaction of individual behaviors and social, economic, genetic and environmental factors. Health is also determined by the systems, policies, and processes encountered in everyday life. Examples of determinants of health include job opportunities, wages, transportation options, the quality of housing and neighborhoods, the food supply, access to health care, the quality of public schools and opportunities for higher education, racism and discrimination, civic engagement, and the availability of networks of social support.

Source: [MDH Health Equity Terminology webpage](http://www.health.state.mn.us/divs/chs/healthequity/definitions.htm) (<http://www.health.state.mn.us/divs/chs/healthequity/definitions.htm>)

Directed Exchange (push)

Organizations need to send information to one another, often in an unsolicited manner (i.e., without the recipient specifically asking for the information). The Direct protocol was developed by the S&I Framework and uses email standards, but in a secure manner, with the primary protocol utilizing secure mail transport (SMTP). Direct supports a secure e-mail transaction that is appropriate for many different uses, including provider-to-provider, provider-to-consumer, provider-to-payer and many other types of transactions. The Direct protocol is an all-purpose protocol; it does not care what type of information is transported. To be used effectively, however, a trust relationship must exist between participants to ensure that a message reaches the intended party and not someone else. Other technologies have also been in use for some time to support unsolicited transmission of information including, secure File Transfer Protocol (sFTP) and Simple Object Access protocol [SOAP] and Representational State Transfer (REST).

<http://www.healthit.gov/policy-researchers-implementers/direct-project> <http://wiki.directproject.org/>

(Excerpted from: [Office of the National Coordinator for Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap Draft Version 1.0 Appendix G: HIT Glossary](http://www.healthit.gov/policy-researchers-implementers/interoperability) (<http://www.healthit.gov/policy-researchers-implementers/interoperability>))

e-Health

E-health is the adoption and effective use of electronic health record (EHR) systems and other health information technology (HIT) including health information exchange to improve health care quality, increase patient safety, reduce health care costs, and enable individuals and communities to make the best possible health decisions.

Source: [Minnesota Department of Health](http://www.health.state.mn.us/e-health/) (<http://www.health.state.mn.us/e-health/>) accessed 2.19.14

Electronic Health Record (EHR)

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

Health

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.

Health Care Home

A "health care home," also called a "medical home," is an approach to primary care in which primary care providers, families and patients work in partnership to improve health outcomes and quality of life for individuals with chronic health conditions and disabilities.

Source: [Minnesota Department of Health Health Care Homes \(aka Medical Homes\)](http://www.health.state.mn.us/healthreform/homes/) (www.health.state.mn.us/healthreform/homes/) accessed 09.10.13

Health Information Exchange (HIE)- *Minnesota definition in statute*

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

Health Information Exchange (HIE) - *Office of the National Coordinator for Health Information Technology (ONC) definition*

Electronic health information exchange (HIE) allows doctors, nurses, pharmacists, other health care providers and patients to appropriately access and securely share a patient's vital medical information electronically—improving the speed, quality, safety and cost of patient care. <http://www.healthit.gov/providers-professionals/health-information-exchange/what-hie>

(Excerpted from: [Office of the National Coordinator for Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap Draft Version 1.0 Appendix G: HIT Glossary](http://www.healthit.gov/policy-researchers-implementers/interoperability) (http://www.healthit.gov/policy-researchers-implementers/interoperability))

Health Information Technology (HIT)

HIT is the application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information, data, and knowledge for communication and decision making. Source: [Office of the National Coordinator for HIT Glossary](http://www.healthit.gov/policy-researchers-implementers/glossary) (http://www.healthit.gov/policy-researchers-implementers/glossary) accessed 09.10.13

Interoperability

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

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

Local Public Health

In Minnesota, local public health services are provided through Community Health Boards, which have statutory responsibilities for public health (MN Stat. Chapter 145A), and by Tribal Governments, which are sovereign nations. Local public health responsibilities include prevention and

control of communicable disease; protection from environmental health hazards; promoting healthy communities and healthy behaviors (including maternal and child health); preparing for and responding to public health emergencies; and assessing, and sometimes addressing gaps in health services. Local public health professionals carry out these activities in collaboration with multiple systems including schools, law enforcement, social services, municipalities, non-profits and private health care providers to coordinate high quality, non-duplicative programs. Source: Adapted from [Minnesota Department of Health, Local Public Health Act](http://www.health.state.mn.us/divs/opi/gov/lphact/) (http://www.health.state.mn.us/divs/opi/gov/lphact/) accessed 2.19.14

Long-Term Post-Acute Care (LTPAC)

Long-Term and Post-Acute Care is characterized by a variety of settings, from complex care in long-term acute-care hospitals to supportive services in the community or home-based care. Typical services include rehabilitation, medical management, skilled nursing services, and assistance with activities of daily living due physical and/or cognitive impairments. Common types of LTPAC providers include but are not limited to: nursing facilities or skilled nursing facilities; home health agencies; hospice providers; inpatient rehabilitation facilities (IRFS); long-term acute care hospitals; assisted living facilities; continuing care retirement communities; home and community-based services; and adult day service providers.

Source: U.S. Department of Health and Human Services, [Opportunities for Engaging Long-Term and Post-Acute Care Providers in Health Information Exchange Activities: Engaging Interoperable Patient Assessment Information](http://aspe.hhs.gov/daltcp/reports/2011/StratEng.pdf) (http://aspe.hhs.gov/daltcp/reports/2011/StratEng.pdf), accessed 01.12.14

Long-Term Services & Supports (LTSS)

Assistance with activities of daily living and instrumental activities of daily living provided to older people and adults with disabilities that cannot perform these activities on their own due to a physical, cognitive, or chronic health conditions. LTSS may provide care, case management and service coordination to people who live in their own home, a residential setting, a nursing facility, or other institutional setting. LTSS also include supports provided to family members and other unpaid caregivers. LTSS may be provided in institutional and community settings.

<http://www.acl.gov/Programs/CDAP/OIP/docs/2402-a-Guidance.pdf>

(Excerpted from: [Office of the National Coordinator for Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap Draft Version 1.0 Appendix G: HIT Glossary](http://www.healthit.gov/policy-researchers-implementers/interoperability) (http://www.healthit.gov/policy-researchers-implementers/interoperability))

Minnesota e-Health Initiative

The Minnesota e-Health Initiative is a public-private collaborative whose Vision is to accelerate the adoption and use of health information technology to improve health care quality, increase patient safety, reduce health care costs and improve public health. Source: Minnesota Department of Health, [Minnesota e-Health Initiative](http://www.health.state.mn.us/e-health/abouthome.html), (http://www.health.state.mn.us/e-health/abouthome.html) accessed 09.11.13

Minnesota Model for EHR Adoption

In 2008, the Minnesota e-Health Initiative developed the Minnesota Model for Adopting Interoperable EHRs that is applied to all aspects of the Initiative's work and policy development. The model has seven steps which are grouped into three major categories:

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

Source: Minnesota Department of Health, www.health.state.mn.us/e-health/leg rpt2013.pdf, accessed 09.11.13

Population Health

An aim to optimize the health and well-being of an entire community and reduce inequalities in health and well-being between population groups. A “community” may be either geographic regions and/or groups of people who share attributes (e.g., elderly, minorities, employees, disabled persons, students). Population health requires collaboration across all sectors of a community to address factors such as public infrastructure, the environment, education systems, social supports, and the health care system, afford an opportunity to address all social determinants of health. Population health within an accountable care organization requires collaboration between all health care providers in the community, social support services within the community, and local public health.

Adapted from: K Hacker, DK Walker. Achieving Population Health in Accountable Care Organizations, Am J Public Health. 2013; 103(7):1163-1167. <http://ajph.aphapublications.org/doi/ref/10.2105/AJPH.2013.301254>; D Kindig, G Stoddart. What is population health? Am J Public Health. 2003;93(3):380–383; and M Stoto. Population Health in the Affordable Care Act Era. AcademyHealth, February 2013. <http://www.academyhealth.org/files/AH2013pophealth.pdf>

Provider

For purposes of SIM, the term “provider” is meant to include the broad notion of health care professionals within medicine, nursing, behavioral health, or allied health professions. Health care providers may also be a public/community health professional. Institutions include hospitals, clinics, primary care centers, long term care organizations, mental health centers, and other service delivery points.

Source: Minnesota State Innovation Model Grant Request for Information on Health Information Technology and Data Analytics in Accountable Care Models, accessed 09.27.13

Public Health

Public health is the practice of preventing disease and promoting good health within groups of people, from small communities to entire countries. Public health also entails policy development and health surveillance. Public health professionals rely on policy and research strategies to understand issues such as infant mortality and chronic disease in particular populations. In Minnesota, Local public health departments partner with multiple systems including schools, law enforcement, social services, municipalities, non-profits and private health care providers to coordinate programs.

Source: American Public Health Association, <https://www.apha.org/what-is-public-health->

Local Public Health Association of Minnesota, http://www.lpha-mn.org/FactSheets/MN_Local%20Public%20Health%20System_LPHAFacts.pdf

Social Determinants of Health

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. Source: 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.

Social Services

The system of programs, benefits and services made available by public, non-profit or private agencies that help people meet those social, economic, educational, and health needs that are fundamental to the well-being of individuals and families. Examples of social services, for the purposes of SIM, include but are not limited to organizations that provide housing, transportation, or nutritional services to individuals or families. Source: Minnesota State Innovation Model Grant Request for Information on Health Information Technology and Data Analytics in Accountable Care Models, accessed 09.27.13

Transitions of Care

The movement of a patient from one setting of care (hospital, ambulatory primary care practice, ambulatory specialty care practice, long-term care, home health, rehabilitation facility) to another.

Source: [CMS/EHR Incentive Program Menu Set Measures Measure 8 of 10-Transition of Care Summary](http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/8_Transition_of_Care_Summary.pdf) (www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/8_Transition_of_Care_Summary.pdf) accessed 09.11.13

Triple Aim

The Triple Aim is a framework developed by the Institute for Healthcare Improvement (IHI) that describes an approach to optimizing health system performance. It is IHI's belief that new designs must be developed to simultaneously pursue three dimensions, which we call the "Triple Aim": improving the patient experience of care (including quality and satisfaction); improving the health of populations; and reducing the per capita cost of health care.

Source: [Institute for Healthcare Improvement Triple Aim](http://www.ihl.org/offering/Initiatives/TripleAim/Pages/default.aspx) (www.ihl.org/offering/Initiatives/TripleAim/Pages/default.aspx) accessed 09.10.2

Appendix A

Minnesota HIE Framework to Support Accountable Health: A Checklist

The Minnesota HIE Framework is designed as a starting point for accountable care organizations (ACOs), integrated health partnerships (IHPs) or similar delivery and financial arrangements developing HIE strategies and plans. It is intended to be used as an assessment and planning tool for current and future HIE needs to meet the goals of accountable care and health. The Minnesota HIE Framework is intended to evolve as more information is known about the role of HIE in accountable care organizations and accountable health.

Instructions for completing checklist:

1. Enter the name of each organization in the spaces below. The form allows for up to 6 organizations, but more or less can be used.
2. Place an x in the box that represents the answer for each individual organization.

Enter organization names below

Organization 1:
Organization 2:
Organization 3:
Organization 4:
Organization 5:
Organization 6:

Key Element A: Engage and Activate Individuals and Caregivers

Desired outcome: Individuals who have access to their health information are more engaged, more responsible for their health and have better health outcomes.

	Org 1	Org 2	Org 3	Org 4	Org 5	Org 6
1. Do patients have access to bi-directional communication with their providers?						
2. Can patients access their personal health information in a way that is understandable, useable and actionable?						
3. Do patients have access to information about their providers and health care services?						
4. Do patients have access to tools to actively monitor and care for themselves? Can they share this monitoring information with providers?						
5. Do patients have access to disease-specific and preventive education materials including chronic disease management tools?						

Key Element B: Engage and Activate all Health Providers

Desired outcome: Providers who are engaged, with access to all necessary information at the point of care, help contribute to better health outcomes for patients

	Org 1	Org 2	Org 3	Org 4	Org 5	Org 6
1. Do providers have access to bi-directional communication with patients?						
2. Do providers have the ability to communicate/share information within their own organization?						
3. Do providers have the ability to communicate/share information outside their organization?						
4. Do providers have access to user-friendly, timely clinical decision support (CDS) including public health alerts?						
5. Do providers have access to comprehensive patient medication histories?						

Key Element C: Extend Care Coordination into the Community

Desired outcome : Individuals are healthier when health care and related services are coordinated across providers.

	Org 1	Org 2	Org 3	Org 4	Org 5	Org 6
1. Do providers have closed loop referral capability?						
2. Do individuals and providers have access to identified social & community supports (for referral) that address social as well as medical needs?						
3. Do providers have the information needed for care coordination in standard and/or shared terminologies where possible						
4. Do providers participate in care teams?						
5. Do providers have access to bi-directional care coordination support services to/from MDH?						
6. Do providers have access to information on targeted patients (e.g., cohorts) for follow-up/ support?						
7. Do individuals and patients have access to financial information needed for care management?						
8. Do care coordinators have access to shared care management plans?						

Key Element D: Monitor Cohorts and Attributed Populations

Desired outcome: Cohorts and attributed populations have better health and financial outcomes when program decisions are made using information generated with enhanced data analytics.

	Org 1	Org 2	Org 3	Org 4	Org 5	Org 6
1. Do analytics team members have access to information to identify and monitor cohorts and share trends and identified cohorts with care coordinators?						
2. Do analytics team members have access to financial risk sharing models to use predictive analytics?						
3. Do analytics team members have access to shared care management plan and transparency of data analyzed?						
4. Do analytics team members have the ability to normalize and integrate data, including social determinants of health?						
5. Do analytics team members have the ability to provide care coordinators and providers performance reports ?						
6. Do analytics team members have access to information that allows for participation in reimbursement systems for other than fee for service (ACO, value-based payment)?						
7. Do analytics team members have access to and ability to use repository and data warehouse?						

Key Element E: Manage Population Health

Desired outcome: Health policy, emergency preparedness, and public program decisions are improved when based on accurate & timely population health information.

	Org 1	Org 2	Org 3	Org 4	Org 5	Org 6
1. Do analytic team members have access to information for health assessment of entire population?						
2. Do State authorized members have access and ability to evaluate effectiveness of public health programs?						
3. Do analytic team members have the ability to report measures to external designated entities?						
4. Do analytic team members have the ability to report adverse events to Patient Safety Organization?						
5. Do State authorized members have access to emergency preparedness monitoring and assessment information?						
6. Do State and analytic team members have access to information needed to react to emergency disasters and outbreaks more quickly?						
7. Do analytic team members and authorized researchers have access to and ability to share research protocol information?						
8. Do analytic team members and authorized researchers have access to and ability to share comparative effectiveness research?						
9. Do State and analytic team members have access to and ability to share population health analysis?						

Key Element F: Transactions and Standards

Desired outcome : Recommended transactions and national standards are supported.

	Org 1	Org 2	Org 3	Org 4	Org 5	Org 6
1. Is ONC 2016 Interoperability Standards are used for HIE?						
2. Is a State-Certified HIE service provider used for HIE?						
3. Are e-Prescribing transactions implemented for providers and care coordinators?						
4. Are alert notification transactions implemented for care givers, providers and care coordinators?						
5. Are CCDA transactions implemented, normalized, and consolidated in the HIE database for query by providers, cohort analysis and population health management?						
6. Are public health reporting transactions implemented through HIE for care coordination and population health management?						

Key Element G: Patient Safety Practices

Desired outcome : HIE and e-health protocols and procedures are supportive and enhance patient safety.

	Org 1	Org 2	Org 3	Org 4	Org 5	Org 6
1. Do individuals have access to consolidated PHR with health information from multiple providers to verify if corrections needed?						
2. Is cohort data used to identify patient safety risks?						
3. Are costs and benefits of patient safety program analyzed within the organization?						
4. Has the organization tested the in-house electronic health record with ONC to verify interoperability and safety of accurate information exchanged?						
5. Is population health data analyzed for population safety issues?						

Key Element H: Privacy and Security

Desired outcome : Protect all health information; any data sharing includes patient permissions (shared with whom and for what purpose).

	Org 1	Org 2	Org 3	Org 4	Org 5	Org 6
1. Is a consent form used annually for patient visits to a provider to share individuals' data for treatment, payment and operations.						
2. Is a check box is available on consent form to opt-out of health information exchange?						
3. Is access to patient health information is determined based on role of the provider, care coordinator, data analyst, etc. needed access to information?						
4. Are there hardware and software security precautions built into the workflow of users of the data, including procedures, solutions and timelines for breach issues?						

Key Element I: Total Cost of Care (TCOC)

Desired outcome : HIE and e-health protocols and procedures support TCOC model (clinical decision support, program evaluation etc.).

	Org 1	Org 2	Org 3	Org 4	Org 5	Org 6
1. Is cost of care information available to patients before procedures are performed or scheduled?						
2. Is total cost of care analysis used to improve decision support tools?						
3. Are dashboards or report queries used to improve provider effectiveness and efficiencies?						
4. Is total cost of care analysis used to improve program evaluation and operations within an organization?						
5. Is total cost of care analysis used to improve program evaluation of population-based programs?						

Key Element J: Administrative Simplification

Desired outcome : HIE and e-health protocols and procedures support TCOC model (clinical decision support, program evaluation etc.).

	Org 1	Org 2	Org 3	Org 4	Org 5	Org 6
1. Do individuals have electronic access to benefits, appointments, bill payment, etc. for administrative simplification?						
2. Do providers have electronic access to patient's eligibility, plan benefits and plan provider networks at time of ordering and providing care?						
3. Are satisfaction surveys and other requested forms available electronically for patients and employees?						
4. Do providers and care coordinators have access to CPOE, Order sets, prior authorizations,etc. electronically to improve their workflows?						

Key Element K: Learning Health System

Desired outcome: moving toward an “ecosystem where all stakeholders can securely, effectively and efficiently contribute, share and analyze data and create new knowledge that can be consumed by a wide variety of electronic health information systems to support effective decision-making leading to improved health outcomes (Collect, share, use).

	Org 1	Org 2	Org 3	Org 4	Org 5	Org 6
1. Do individuals receiving health care within the system use personal health information to make informed health decisions?						
2. Are individuals empowered to be managers of their health through use of electronic health information, including mobile health, wearable devices, and online services?						
3. Do providers and care coordinators have access to rapid dissemination of information from research to clinical practice ('bench to bedside')?						
4. Is the system used to advance practice guidelines?						
5. Is the system used to advance public policy recommendations?						