Minnesota Hospital e-Health Report, 2015

ADOPTION AND USE OF ELECTRONIC HEALTH RECORD SYSTEMS AND HEALTH INFORMATION EXCHANGE

MDH Minnesota Department *of* Health
OFFICE OF HEALTH INFORMATION TECHNOLOGY

Minnesota Hospital e-Health Report, 2015

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Contents

Executive Summary

This report presents results from the 2015 Minnesota Health Information Technology (HIT) Hospital Survey, the annual survey of hospitals in the state regarding their adoption and use of electronic health record (EHR) systems, exchange of health information, and use of related HIT tools.

- All of Minnesota's hospitals have implemented EHR systems, a milestone achieved in 2014. All but two of these hospitals have implemented an EHR system that is certified by the Office of the National Coordinator for Health IT, meaning that the system uses the HIT standards, implementation specifications and certification criteria adopted by the Secretary of Health and Human Services.
- The Epic EHR system is predominant, used by more than half of hospitals.

EHR and Data Use

The real value from investing in and implementing an EHR system comes from using it to support efficient workflows and effective clinical decisions. Effective use means that the EHR has tools such as computerized provider order entry (CPOE), clinical decision support (CDS)tools, electronic prescribing, and there are processes in place to use these tools for improving health care.

- Nearly nine in ten Minnesota hospitals have fully implemented CPOE functionalities in all units of the hospital, but critical access hospitals (CAHs) have not fully implemented at the same rate as non-CAHs.
- Drug interaction tools are well-implemented in Minnesota's hospitals, with 91% using drug allergy alerts and 89% using drug-drug interaction alerts in all units
- Nearly nine in ten acute care hospitals (89%) sent patients' prescriptions for non-controlled substances electronically from their EHR directly to a pharmacy upon discharge.
- All acute care hospitals use an EHR that provides an updated medication list upon discharge, an important functionality for care coordination. Nearly all (98%) use an EHR that compares a patient's inpatient and preadmission medication lists, and generates summary

of care records for transitions. Ninety-one percent are able to send care summaries to an unaffiliated organization using a different EHR, up from 81% in 2014.

- Patients increasingly have access to their personal health information. Nearly all acute care hospitals (97%) provide patients with access to their personal health information through a patient portal, up from 79% in 2013.
- Three in four acute care hospitals (72%), or their associated health system, maintain a clinical data repository to support patient care management, population health, and/or research. More non-CAHs maintain repositories (87%) than do CAHs (62%).
- Hospitals most commonly use electronic clinic data from their EHR or other electronic systems to monitor patient safety, display measures of organizational performance, and to support quality improvement processes.

Health Information Exchange and Interoperability

Health information exchange (HIE) is the secure electronic exchange of clinical information between organizations using nationally recognized standards. Interoperability is achieved when the clinical information is "consumed" by the receiving EHR, meaning that the data elements are integrated into the EHR system.

- HIE with affiliated hospitals and clinics (83%) continues to be more common than with unaffiliated hospitals and clinics (72%). This activity has not changed from 2014.
- For situations where the primary physician practices within the same health system as the hospital, 54% of acute care hospitals routinely notified the primary care physician electronically when a patient visits the emergency department.
  - When the primary physician *does not* practice within the same health system as the hospital, 28% of acute care hospitals routinely notified the primary care physician electronically when a patient visits the emergency department.
- 62% of acute care hospitals indicated that providers at their hospital routinely have necessary clinical information available electronically from outside providers or sources when treating a patient that was seen by another health care provider.
  - Much of this appears to be due to the common use of the Epic EHR system, which provides access to a broad network of data from other Epic users, assuming appropriate patient consent has been secured. Hospitals not using Epic do not have this access.
- 71% of hospitals experienced challenges exchanging across different vendor platforms.
- 26% of acute care hospitals indicated they routinely integrate clinical information into their EHR without need for manual data entry. More non-CAHs (42%) do this than CAHs (14%).

Introduction

Electronic health record (EHR) systems and other health information technology (HIT) are essential to improving the quality of health care and patient safety, decreasing health care costs, and supporting healthier communities. In 2008, the Minnesota e-Health Initiative, a public-private collaborative to accelerate the adoption and use of health information technology, 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 grouped into three major categories:

- **Adopt**: assessment of needs and readiness, planning, and selecting an EHR system.
- **Utilize**: implementing an EHR system to "go live" and learning how to use it effectively.
- **Exchange**: determining readiness to exchange information electronically with other partners, and implementing regular, ongoing exchange between interoperable EHR systems.

To help inform progress toward these goals and identify guidance needed by providers to meet Minnesota's Interoperable EHR Mandate (§62J.495), the Minnesota Department of Health (MDH), in conjunction with the Initiative, established a framework for assessment and evaluation of EHR adoption and use across multiple health care settings that is based on the Minnesota Model. The Minnesota e-Health Profile is a series of online surveys of health and health care settings designed to uniformly collect and share the progress of Minnesota's providers in adopting and implementing EHR systems, and exchanging electronic health information.

The assessment information is used to:

- Measure Minnesota's status on achieving state and national goals to accelerate adoption and use of electronic health records and other HIT and to achieve interoperability of health information;
- Identify gaps and barriers to enable effective strategies and efficient use of resources;
- Help develop programs and inform decisions at the local, state and federal levels of government; and
- Support community collaborative efforts.

Data presented in this report are from the HIT Hospital Survey (hospital survey) conducted by the American Hospital Association and MDH Office of Health Information Technology, in collaboration with the Minnesota Hospital Association and Stratis Health. The hospital survey has been conducted since 2006, and annually since 2010. The 2015 survey includes responses from 140 of 145 Minnesota hospitals, for a response rate of 97%. Result in this report focus on Minnesota's 132 non-federal acute care hospitals, of which 129 responded to the survey. Complete methodology information is presented in Appendix A.

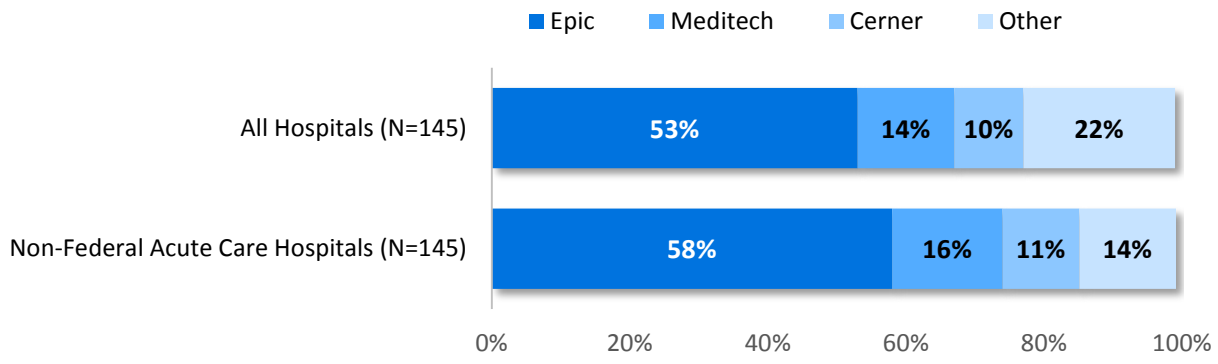
EHR Systems Used

All of Minnesota's hospitals have implemented EHR systems, a milestone achieved in 2014. All but two of these hospitals (96%) have implemented an EHR system that is certified by the Office of the National Coordinator for Health IT, meaning that the system uses the health IT standards, implementation specifications and certification criteria adopted by the Secretary.[1]

The Health IT market in Minnesota is dominated by the Epic EHR system. Exhibit 1 shows that 53% of all hospitals and 58% of non-Federal acute care hospitals use Epic, representing 70% of Minnesota's acute care beds. The market dominance offers several advantages for Minnesota's hospitals. For one, Epic offers a "Care Everywhere" tool that enables health information exchange and view-only access to other Epic users whether or not they are in the same health system (assuming the patient has authorized that access). This has facilitated a great amount of information sharing in Minnesota. A second advantage is that Minnesota health providers have formed an Epic user group to collaborate on best practices and EHR system development. This provides a community for education and collaboration on EHR optimization.

Market dominance also comes with disadvantages. Notably, the "Care Everywhere" network is not available to non-Epic systems, so hospitals, clinics and other health providers that do not use Epic cannot participate in this vendor-assisted health information exchange. This creates a structural inequity in the state, notably for Critical Access Hospitals (CAHs). Among Minnesota's non-Federal acute care hospitals, fewer CAHs use Epic (49%) compared to non-CAHs (71%). Note that we have EHR adoption information on all hospitals, regardless of their participation in this survey.

Exhibit 1: EHR Systems Used by MN Hospitals, 2015



[1] Office of the Coordinator for Health IT, ONC Health IT Certification Program web page; https://www.healthit.gov/policy-researchers-implementers/about-onc-health-it-certification-program; accessed May 13, 2016.

EHR Utilization

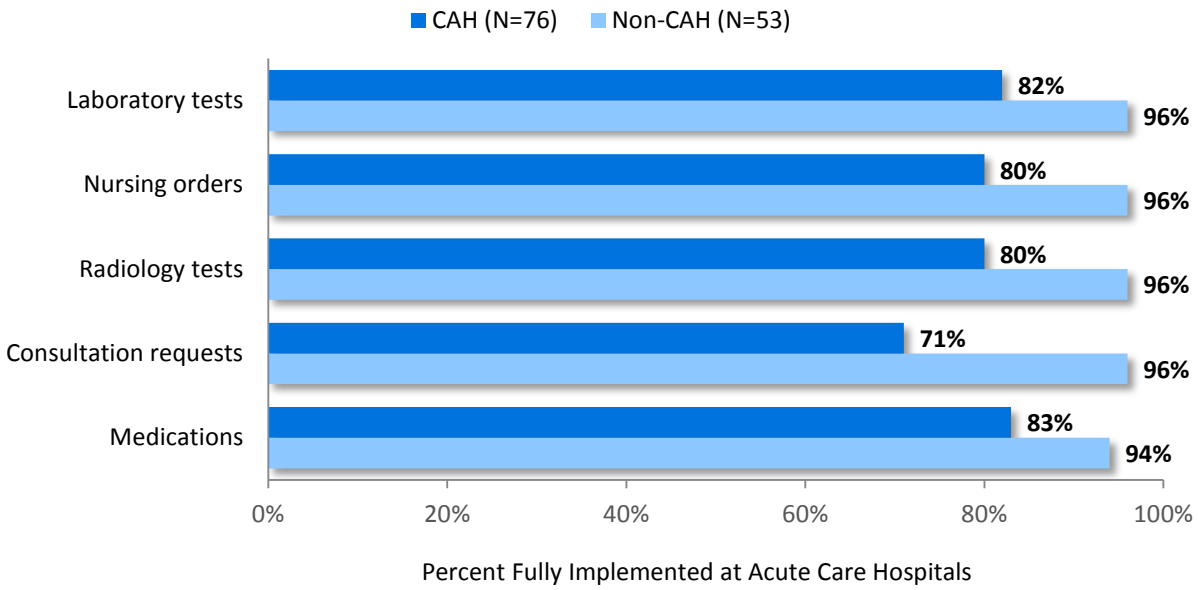
The real value from investing in and implementing an EHR system comes from using it to support efficient workflows and effective clinical decisions. Effective use means that the EHR has tools such as computerized provider order entry (CPOE), clinical decision support (CDS) tools, and electronic prescribing, and there are processes in place to use these tools for improving health care. This section presents the extent of implementation of EHR functionality for CPOE, clinical decision support, and other tools to support care coordination, engage patients, streamline reporting, and using EHR data. See Appendix B for definitions of these tools.

Tools for Patient Care

Computerized Provider Order Entry

Nearly nine in ten Minnesota hospitals have fully implemented CPOE functionalities in all units of the hospital, but critical access hospitals have not fully implemented at the same rate as non-CAHs. Exhibit 2 shows that lab tests, nursing orders, radiology tests, consultation requests and medications are fully implemented by almost all non-CAHs. About four in five CAHs have fully implemented these orders in their EHRs, and even fewer (71%) have fully implemented consultation requests.

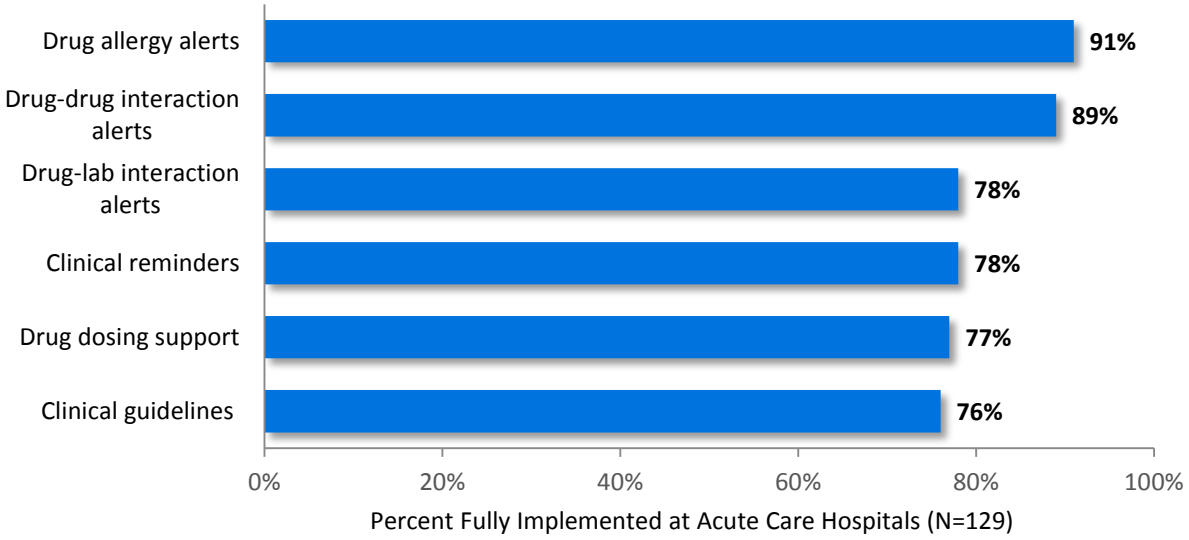
Exhibit 2: Computerized Provider Order Entry (CPOE) Implemented, 2015



Clinical Decision Support

Electronic clinical decision support (CDS) tools provide support for providers in identifying issues such as drug interactions, as well as recommended guidelines for care. Drug interaction tools are well-implemented in Minnesota's hospitals, with 91% using drug allergy alerts and 89% using drug-drug interaction alerts in all units (Exhibit 3). CDS tools that are fully implemented in all units include drug-lab interaction alerts (78%), clinical reminders (78%), drug dosing support (77%), and clinical guidelines (76%). Most hospitals have implemented, or are beginning to implement, these tools in at least one unit (data not shown). There are no statistical differences between CAHs and non-CAHs on the implementation of CDS tools.

Exhibit 3: Clinical Decision Support (CDS) Tools Implemented, 2015



Electronic Prescribing

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

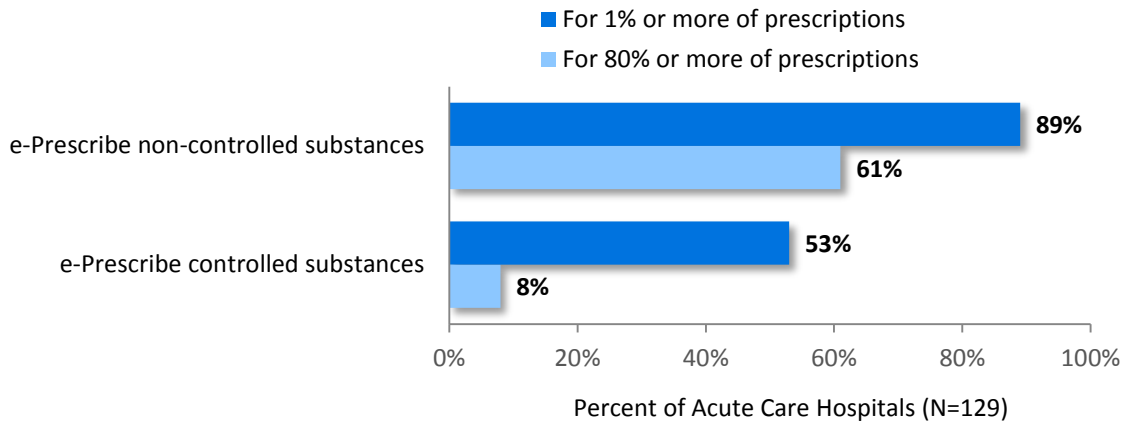
- Improve the quality, safety and cost-effectiveness of the entire prescribing and medication management process.
- Reduce potential adverse drug events and related costs.
- Reduce burden of callbacks and rework needed to address possible errors and clarify prescriptions.
- Increase efficiency of the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

Exhibit 4 shows that nearly nine in ten acute care hospitals (89%) sent patients' prescriptions for non-controlled substances electronically from their EHR directly to a pharmacy upon discharge. Sixty-one percent of Minnesota's acute care hospitals e-prescribed 80% or more of discharge prescriptions that do not include controlled substances, up from 47% in 2014. Ninety-seven percent of pharmacies in Minnesota e-prescribed.[2]

Minnesota now allows electronic prescribing of controlled substances (EPCS), but not all pharmacy and EHR systems currently support the security and technology requirements to do so. E-prescribing rates for controlled substances were much lower, with 53% of hospitals e-prescribing these medications, but this is up from just 26% in 2014. That said, EPCS is still not common practice, with just 8% of Minnesota's hospitals e-prescribing for 80% or more of discharge prescriptions that include controlled substances. Three in four acute care hospitals (74%) have support for two-factor authentication, a necessary functionality for e-prescribing controlled substances. This is an increase from 58% in 2014, suggesting that ability to EPCS will increase in the future.

E-prescribing continues to show some disparity by geography. CAHs can electronically prescribe at the same rate as non-CAHs, but do not make this a common practice. Just 52% of CAHs e-prescribe for 80% or more of discharge scripts, compared to 73% of non-CAHS. Few CAHs electronically prescribe controlled substances, at 45% compared to 60% of non-CAHs.

Exhibit 4: e-Prescribing for Discharged Patients, 2015



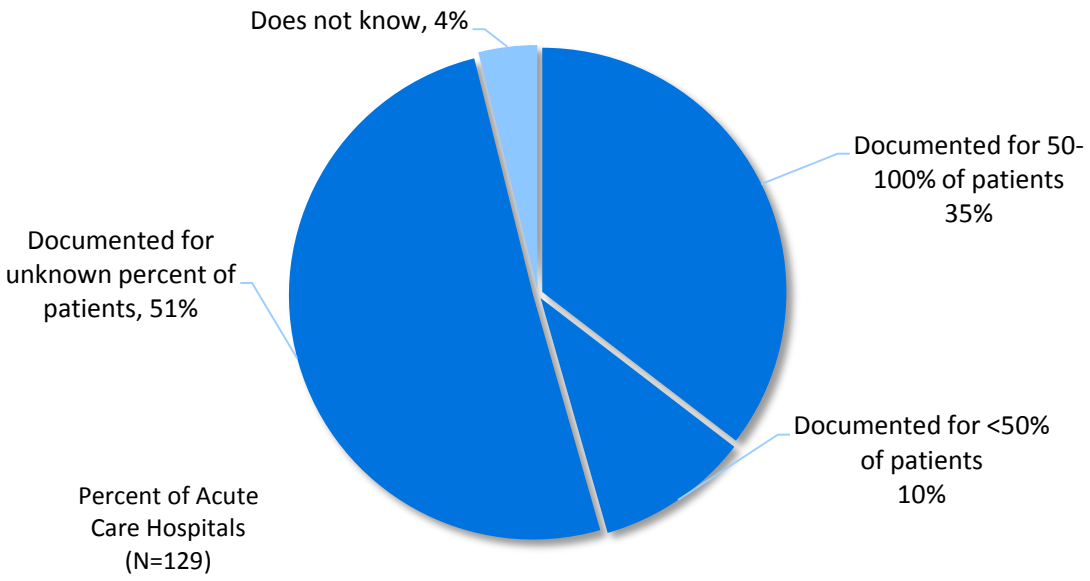
[2] Source: Surescripts, 2015.

Documentation of Advance Directives

An advance directive is a document by which a person makes provision for health care decisions in the event that he/she becomes unable to make those decisions. These documents serve to convey a patient's wishes for care to the care team; therefore, they should be available in the patient's electronic medical record. As shown in Exhibit 5, 96% of Minnesota's hospitals document the existence of a patient's advance directive in their EHR.

Despite these capabilities of the EHR to document advance directives, just 35% of hospitals have an advance directive for 50-100% of their patients age 65 and older, 10% have an advance directive for less than half of patients in this age group, and 51% document the advance directive but for an unknown percent of patients. Nine in ten hospitals that document advance directives in the EHR (92%) have the directive electronically accessible in the EHR, and 5% incorporate it in the EHR but not in a consistent location.

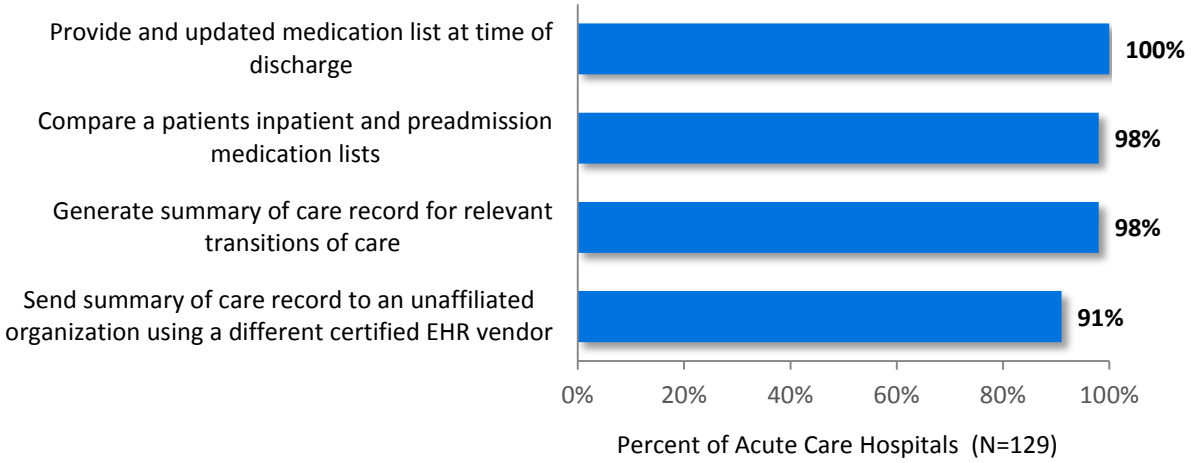
Exhibit 5: Documentation of Advance Directive in the EHR, 2015



Tools for Care Coordination

Exhibit 6 shows EHR functionalities for care coordination on admission and discharge. All acute care hospitals use an EHR that provides an updated medication list upon discharge. Nearly all use an EHR that (98%) compares a patient's inpatient and preadmission medication lists, and generates summary of care records for transitions. Ninety-one percent are able to send care summaries to an unaffiliated organization using a different EHR, up from 81% in 2014.

Exhibit 6: EHR Functionalities for Coordination during Care Transitions, 2015

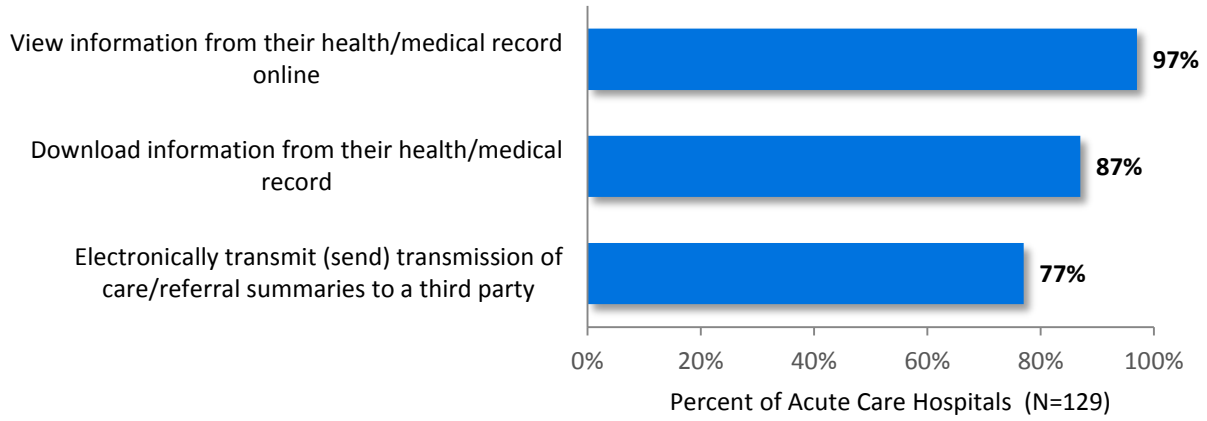


Tools for Patient Engagement

With the implementation of EHRs, health care providers have the opportunity to provide patients with their health information in an electronic format. These tools can help patients take responsibility for their own health and aid in keeping the health records updated with current information. The hospital survey assessed two aspects of consumer engagement: patient access to their personal information, and the mechanisms available for that access.

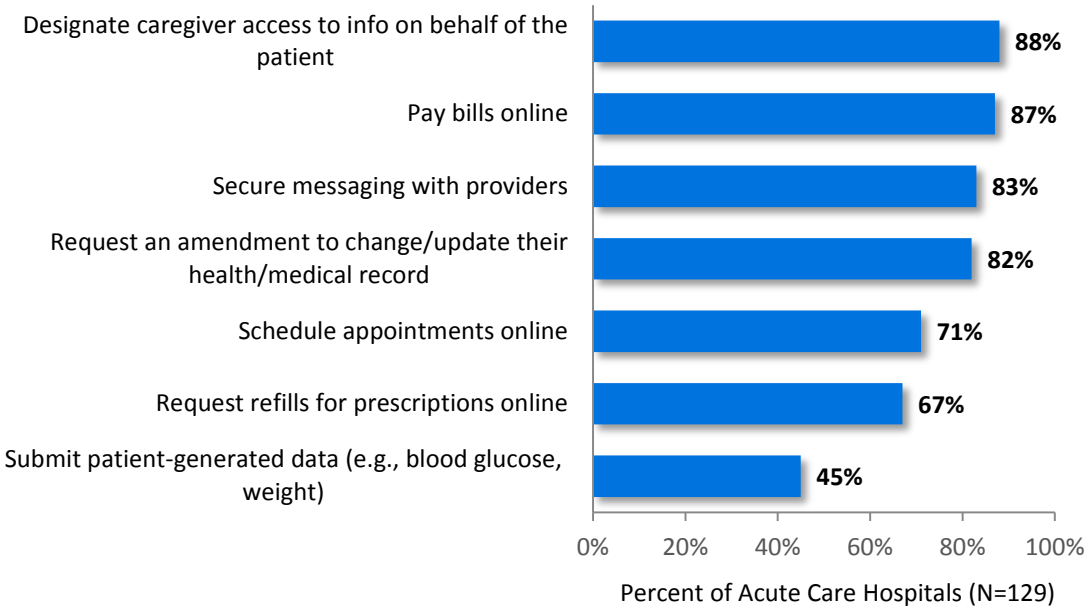
Nearly all acute care hospitals (97%) provide patients with access to their personal health information (Exhibit 7), up from 79% in 2013. Many more hospitals now provide the added functionality of downloading information from their medical record (87%, up from 47% in 2013) and electronically transmitting a care or referral summary to a third party (77%, up from 12% in 2013).

Exhibit 7: Patients' Electronic Access to Health Records – Meaningful Use Functionality, 2015



Aside from meaningful use functionalities for patient access to information, Exhibit 8 shows the most common electronic portal functionalities available to patients are to designate caregiver access to info on behalf of the patient (88%), pay bills online (87%), secure messaging with providers (83%), and requesting an amendment to change/update their health/medical record (82%). More than two-thirds of acute care hospitals allow patients to schedule appointments online (71%, up from 50% in 2014), and request refills for prescriptions online (67%). Just 45% of hospitals allow patients to submit their own health information online.

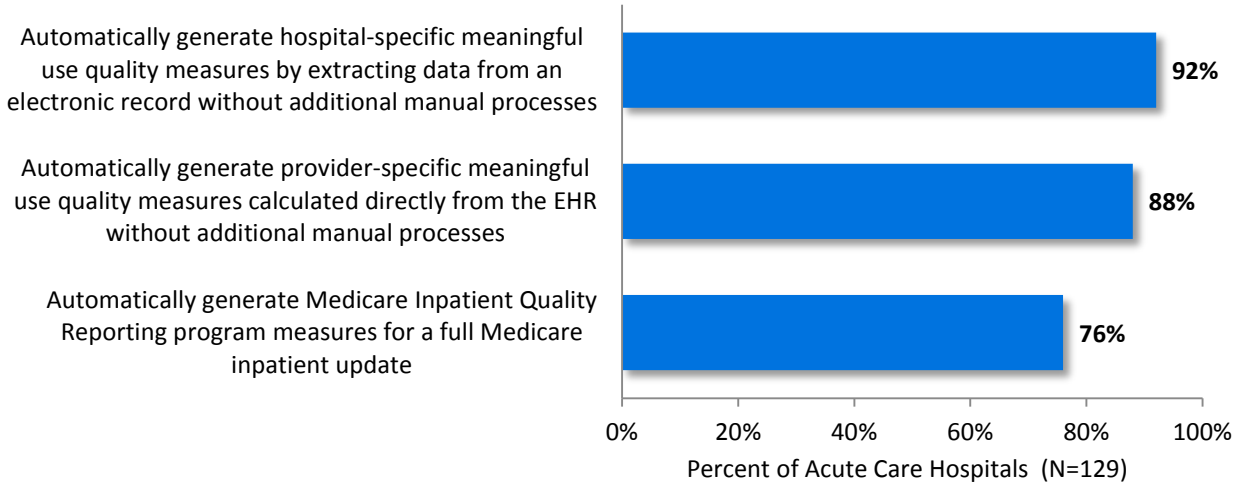
Exhibit 8: Patients' Electronic Access to Health Records – Other Available Functions, 2015



Tools for Reporting

Hospitals are required to report data to state and federal agencies for a variety of purposes. Exhibit 9 shows that about nine in ten hospitals automatically generate hospital-specific (92%) and provider-specific (88%) meaningful use quality measures by extracting data from an electronic system without manual processes. However, just 76% of acute care hospitals can automatically general Medicare inpatient quality reporting measures. This suggests a lack of alignment in these measures and ONC-certified EHR capabilities.

Exhibit 9: Meaningful Use Functionalities for Automated Quality Reporting, 2015

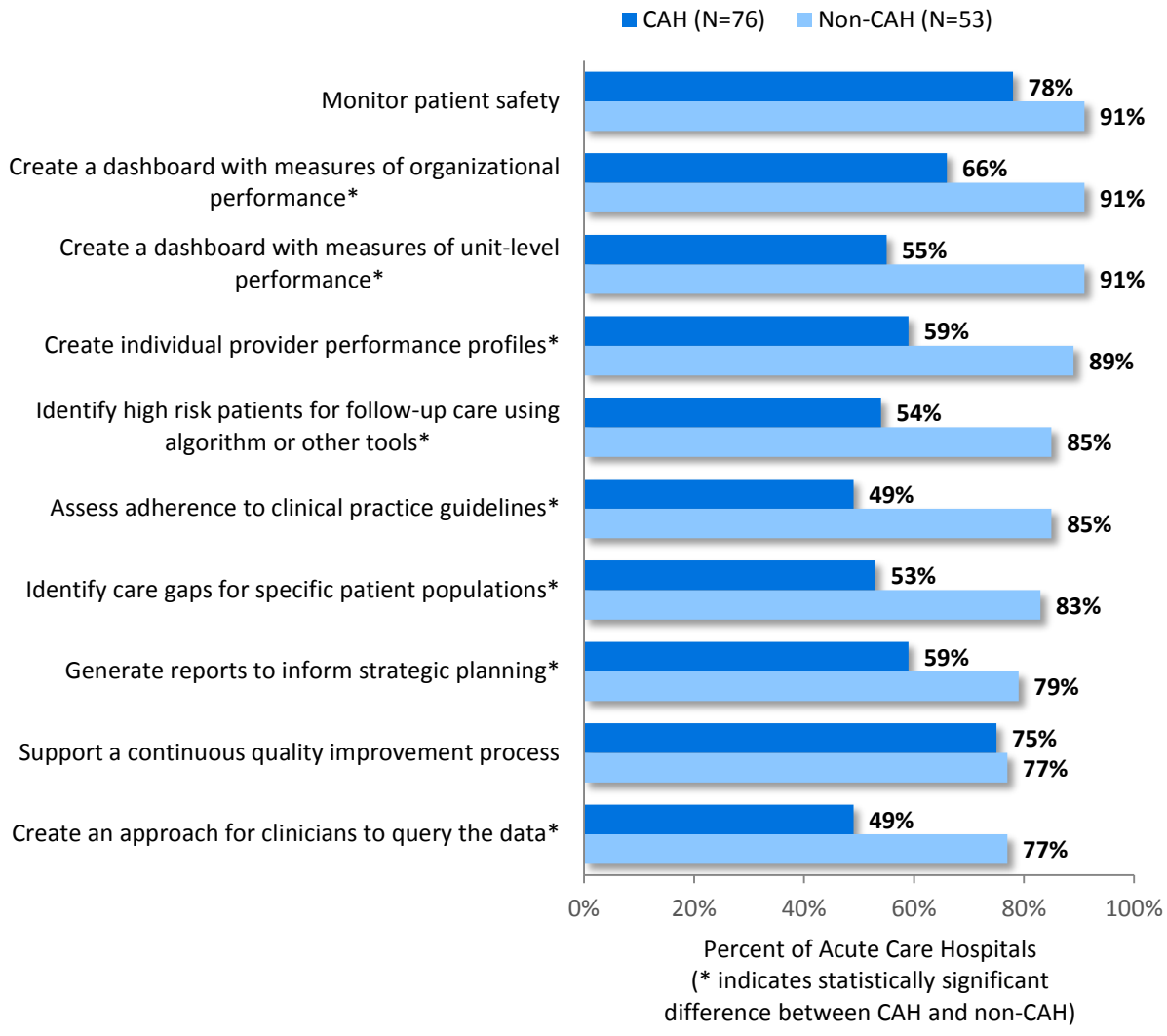


Tools for Improving

A secondary benefit of EHRs is that they provide clinical data that can be used to coordinate care, monitor and improve quality and outcomes, and conduct research. Three in four acute care hospitals (72%), or their associated health system, maintain a clinical data repository to support patient care management, population health, and/or research. More non-CAHS maintain repositories (87%) than do CAHs (62%).

Exhibit 10 shows how hospitals have used electronic clinic data from their EHR or other electronic systems in their hospital. Most common uses include monitoring patient safety, displaying measures of organizational performance, and supporting quality improvement processes. There are disparities in use of the data between CAHs and non-CAHs, with fewer CAHs reporting that they use their data for most of these actions.

Exhibit 10: Uses of Electronic Clinical Data in Hospitals, 2015



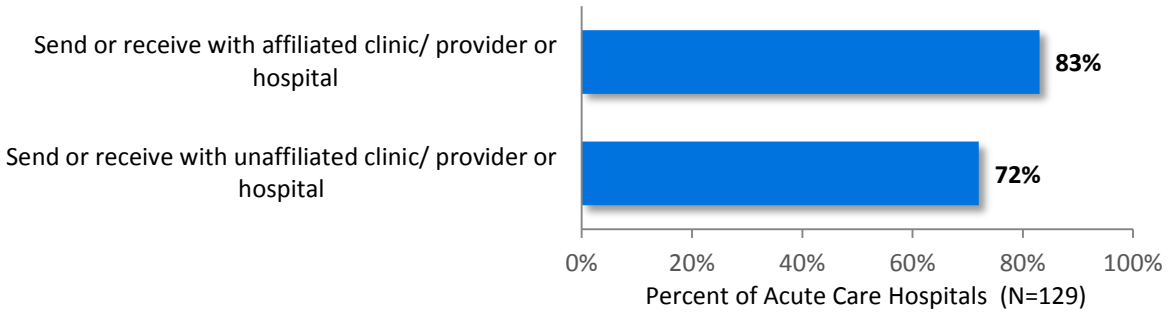
Findings: Health Information Exchange and Interoperability

Health information exchange (HIE) is the secure electronic exchange of clinical information between organizations using nationally recognized standards (Minn. Stat. §62J.498 sub. 1(f)). Interoperability takes this one step further, in that the organizations need to be able to *use* the information that has been exchanged, meaning that the data can be understood by all systems.[3] The goal of HIE is to help make health information available, when and where it is needed, to improve the quality and safety of health and health care. In Minnesota, many efforts are underway to help achieve the secure electronic exchange of health information between organizations using nationally recognized standards.

Health Information Exchange Activity

Exhibit 11 shows that HIE with affiliated hospitals and clinics (83%) continues to be more common than with unaffiliated hospitals and clinics (72%). This activity has not changed from 2014.

Exhibit 11: Hospitals' Electronic Health Information Exchange Activity, 2015



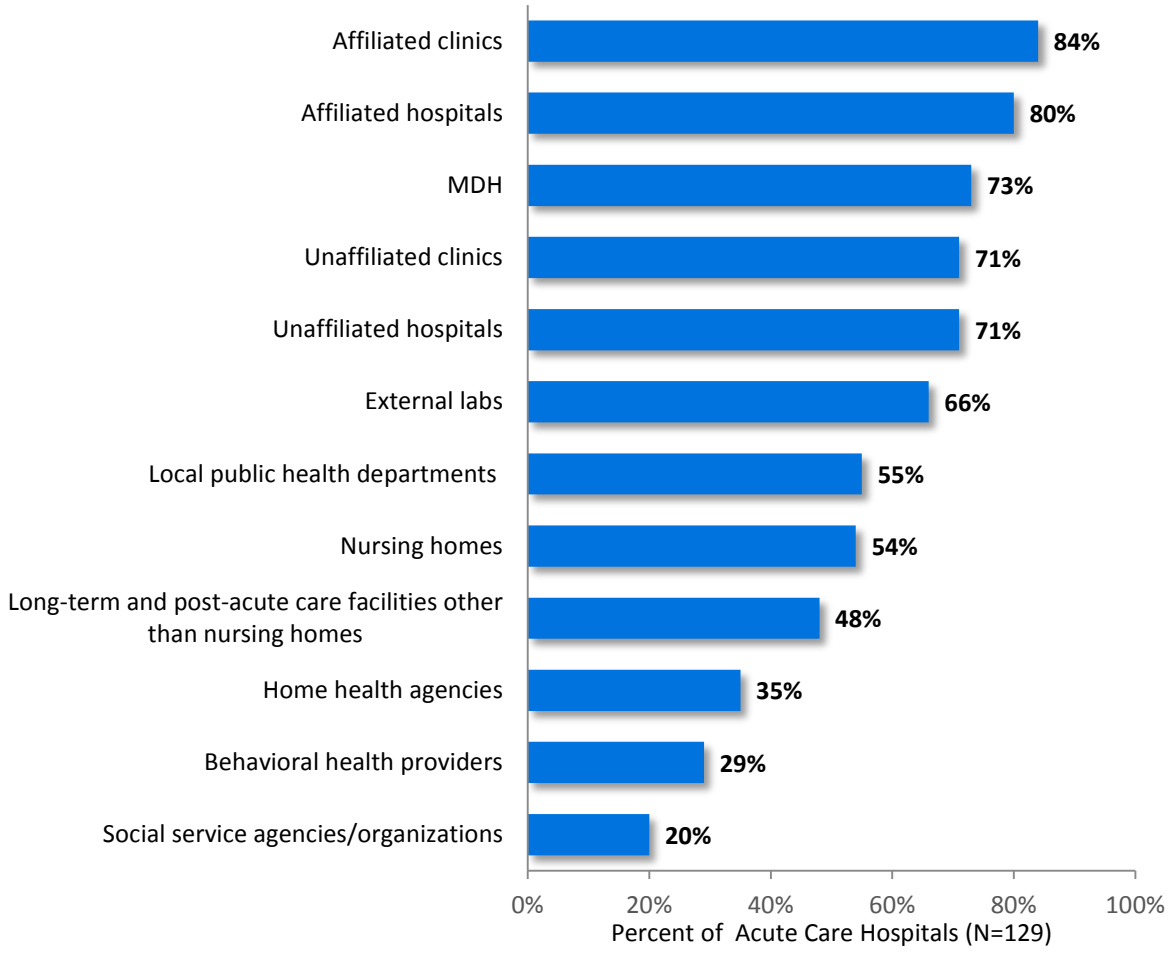
[3] Institute for Electrical and Electronics Engineering (IEEE). *IEEE Standard Computer Dictionary: A Compilation of IEEE Standard Computer Glossaries*. New York, NY: 1990.

Exhibit 12 shows exchange activity by type of organization. Minnesota's acute care hospitals most often electronically exchange health information with affiliated clinics (84%), affiliated hospitals (80%) and MDH (73%). These hospitals are also exchanging electronic transmissions with unaffiliated clinics (71%), unaffiliated hospitals (71%), and external labs (66%). This activity is unchanged from 2014, except for an increase in exchange with external labs (up from 55% in 2014).

Just over half of Minnesota's acute care hospitals electronically exchanged health information with local health departments (55%) and nursing homes (54%), and 48% exchanged with long-term post-acute care facilities other than nursing homes. Exchange with these three settings has increased since 2014.

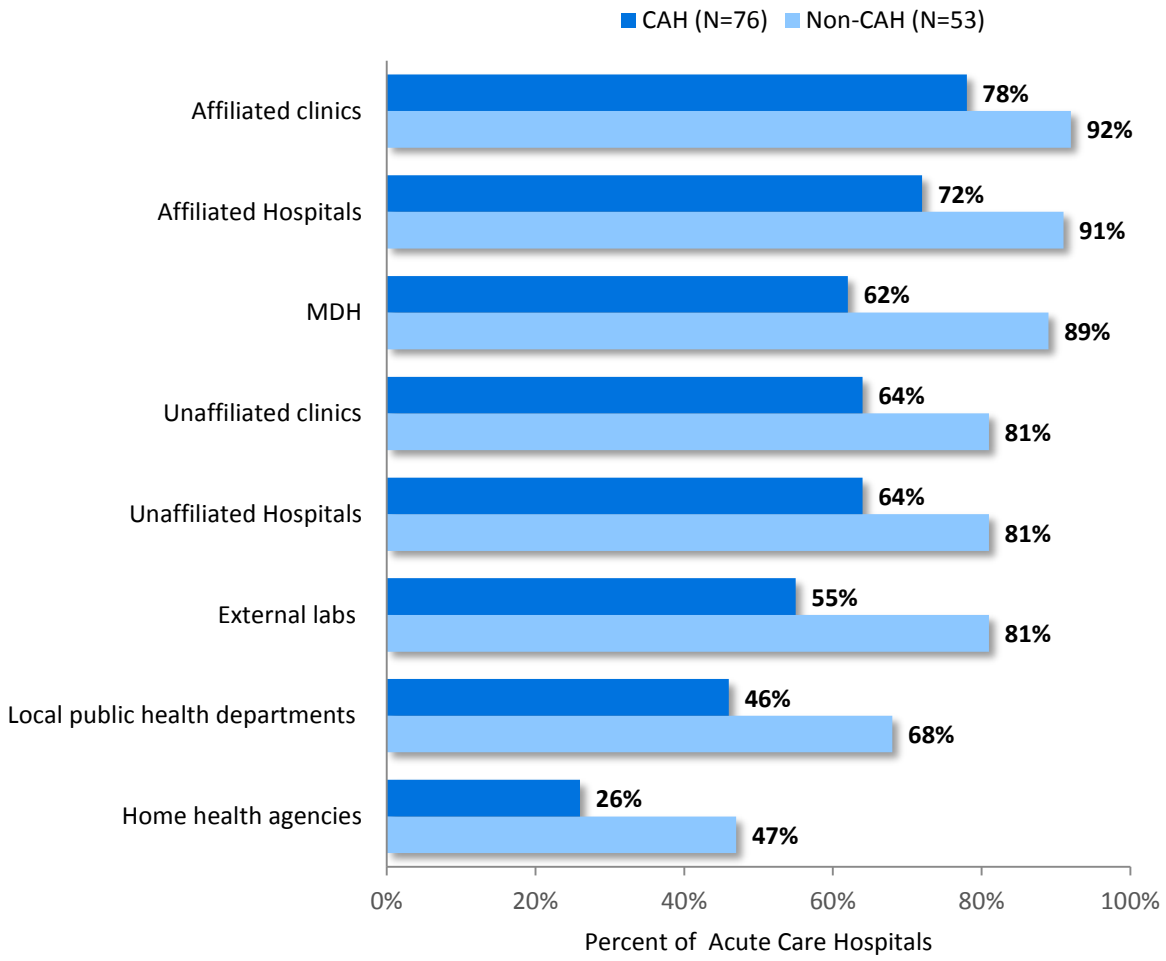
Few hospitals electronically exchanged health information with other care providers across the continuum, with just 35% of these hospitals exchanging with home health agencies, 29% with behavioral health providers, and 20% with social service organizations.

Exhibit 12: Hospitals' Electronic Exchange Activity by Type of Organization, 2015



Looking at electronic HIE by type of hospital, Exhibit 13 shows the settings for which CAHs have had less exchange activity with other providers than non-CAHS. However, CAHs showed increased exchange since 2014 with nursing homes, long-term and post-acute care facilities other than nursing homes, local health departments, behavioral health providers, and social services.

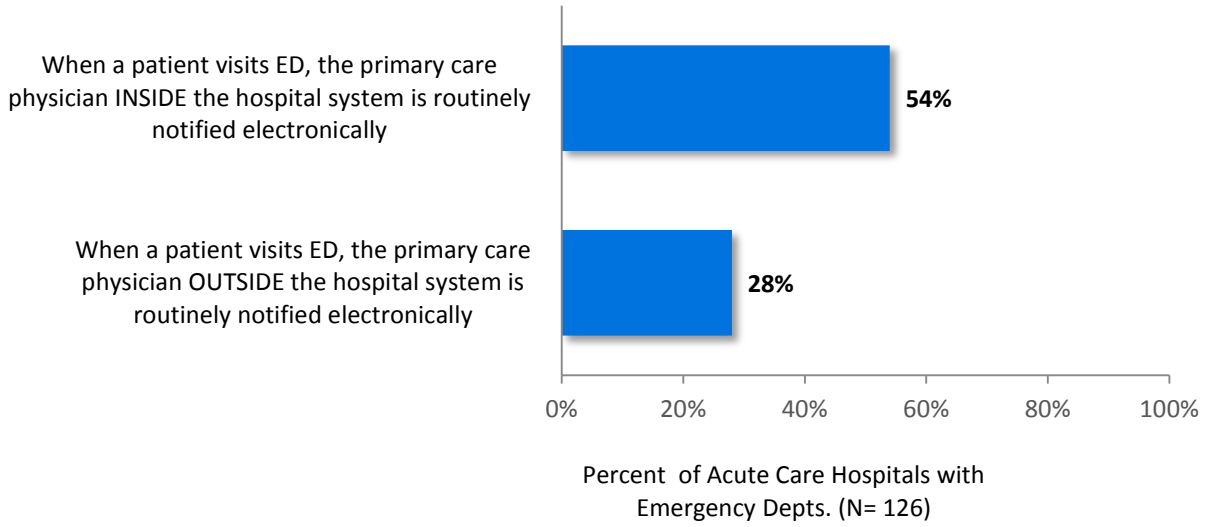
Exhibit 13: Hospitals' Electronic Exchange Activity, CAH and Non-CAH, 2015



(Chart shows only items that have statistically significant differences)

Exhibit 14 shows the use of electronic notification to a physician when a patient visits the hospital's emergency department. For situations where the primary physician practices within the same health system as the hospital, 54% of acute care hospitals routinely notified the primary care physician electronically when a patient visits the emergency department. When the primary physician *does not* practice within the same health system as the hospital, 28% of acute care hospitals routinely notified the primary care physician electronically when a patient visits the emergency department. There is no significant difference between CAHs and non-CAHs for either the within- or outside of system notification. However, 65% of hospitals with Epic systems provide within-system electronic notifications, compared to just 38% of non-Epic hospitals. There is no difference between these groups for notifications outside of their system.

Exhibit 14: Emergency Departments' Use of Electronic Notifications, 2015



A key component of interoperability in health IT is the consumption of clinical data received by an EHR. Exhibit 15 shows that 26% of acute care hospitals routinely integrated *any type* of clinical information into their EHR without need for manual data entry (another 33% do this but not routinely). More non-CAHs (42%) do this than CAHs (14%). Similarly, 19% of these hospitals routinely integrate summary of care records into their EHR without need for manual data entry (another 29% do this but not routinely). Again, more non-CAHs (30%) do this than CAHs (12%).

Exhibit 15: Integration of Clinical Data into EHR, 2015

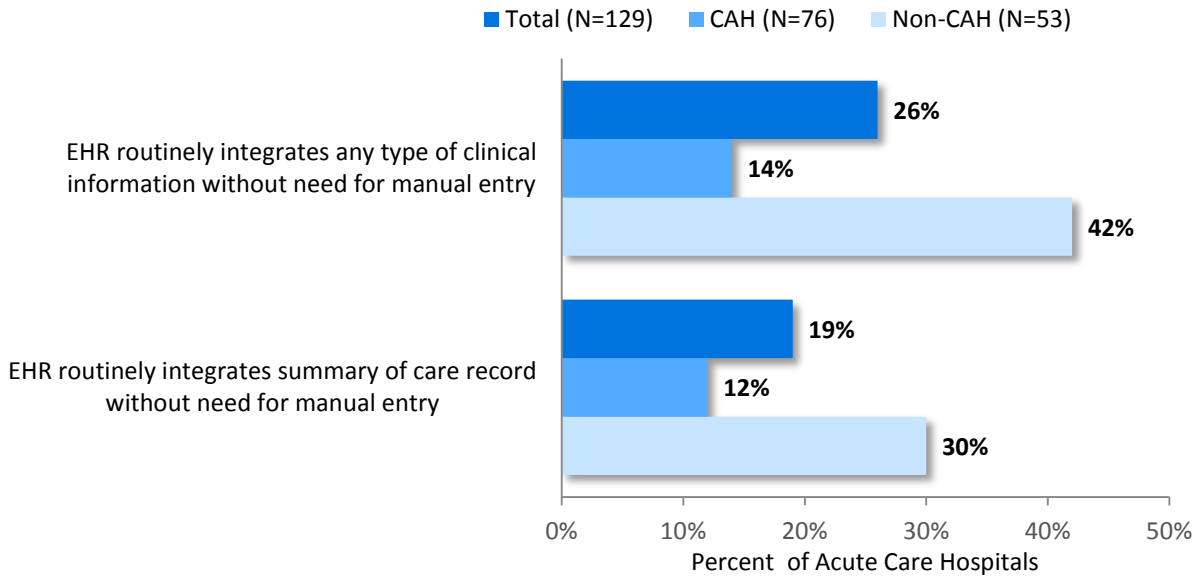
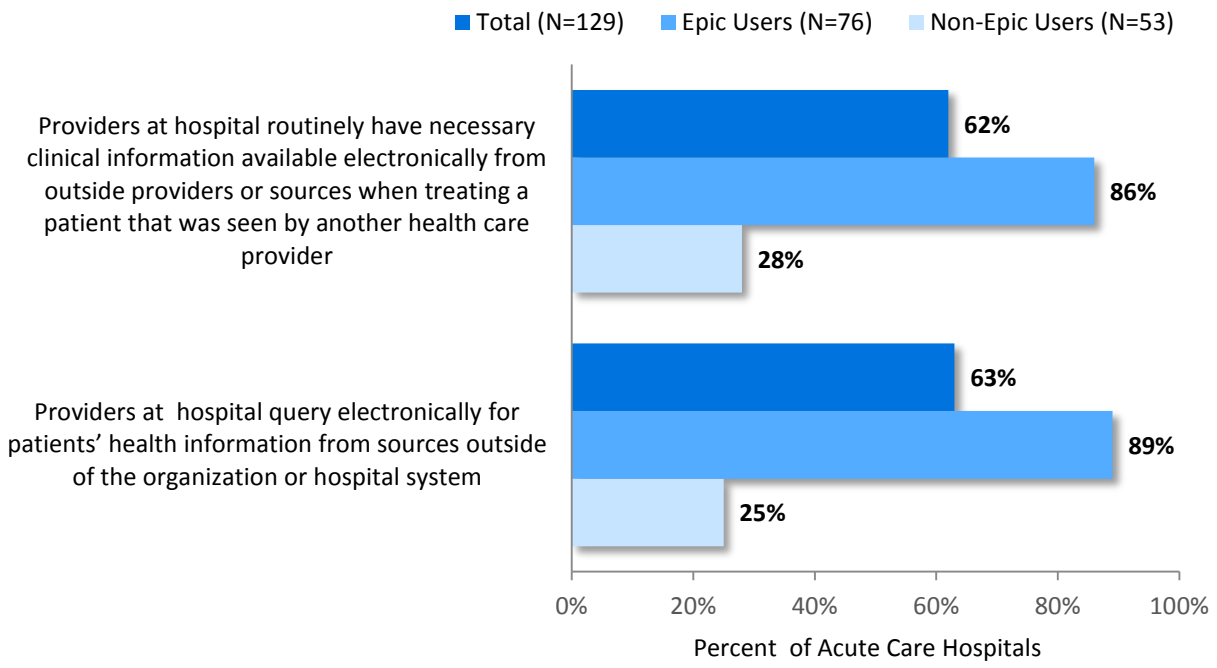


Exhibit 16 shows provider access to health information from other providers. About two in three acute care hospitals (62%) indicated that providers at their hospital routinely have necessary clinical information available electronically from outside providers or sources when treating a patient that was seen by another health care provider. The same number of hospitals (63%) indicated that providers at their hospital query electronically for patients' health information from sources outside of the organization or hospital system. There is a great disparity between Epic and non-Epic users, with about one in four non-Epic hospitals indicating these exchange activities.

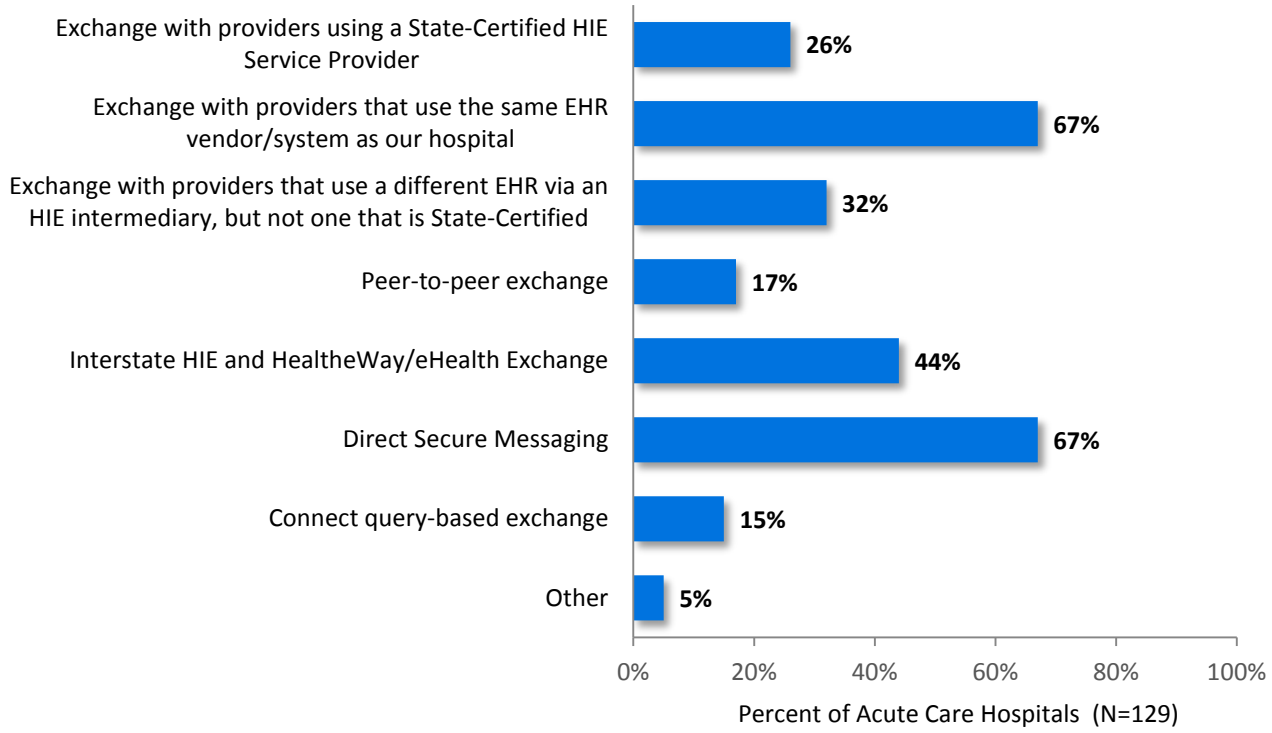
Exhibit 16: Exchange Activities and Infrastructure, 2015



Exchange Mechanisms Used

Health providers in Minnesota use several different mechanisms for HIE. Exhibit 17 shows that the most common mechanism used by acute care hospitals ass through a common EHR vendor/system (for example, Epic to Epic) and Direct secure messaging, with 67% of hospitals using either or both of these exchange mechanisms. Use of Direct Secure Messaging increased from 58% in 2014. One in four hospitals (26%) used a State-Certified HIE Service Provider.[4] Many hospitals (32%) exchanged with providers or hospitals that use a different EHR via an HIE intermediary that is not state certified, 44% used Interstate HIE and HealtheWay/eHealth Exchange, and 17% used peer-to-peer exchange. Just 15% used CONNECT query-based exchange.

Exhibit 17: Exchange Mechanisms Used by Minnesota's Hospitals, 2019

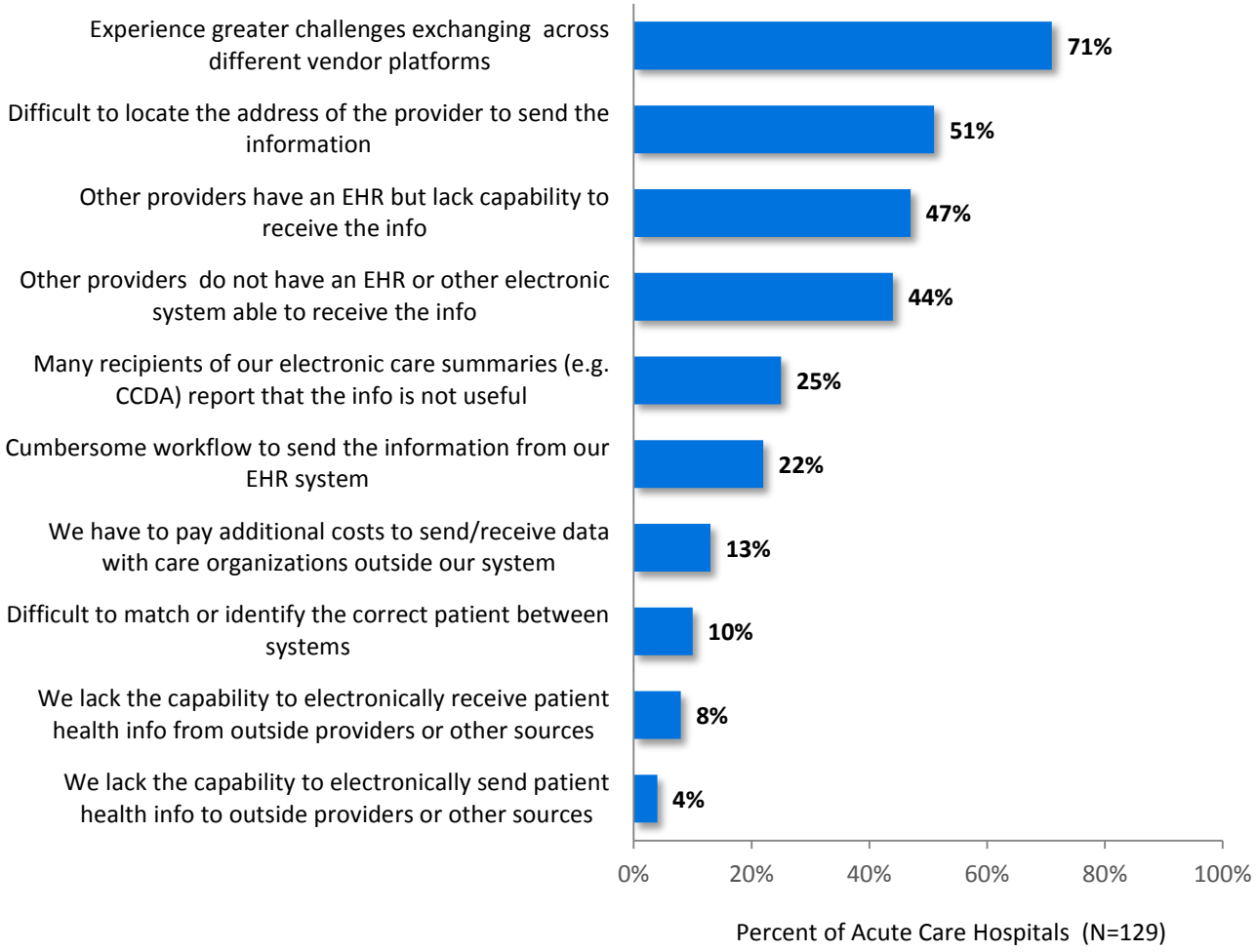


[4] A complete list of state-certified HIE service providers is at: http://www.health.state.mn.us/divs/hpsc/ohit/certified.html

HIE Issues

Hospitals faced several issues when exchanging health information. Exhibit 18 shows that 71% of hospitals experiences challenges exchanging across different vendor platforms. Half of hospitals (51%) indicated it is difficult to locate a provider's address. Other common issues related to capabilities of the receiving party, either because the recipient's EHR cannot consume the information (47%) or because they don't have an EHR or other electronic system (44%). One in four (25%) indicated the recipients did not find the care summaries to have useful information, and 22% indicated the workflow to send information from the EHR is cumbersome.

Exhibit 18: Issues Hospitals Face when Exchanging Health Information, 2015



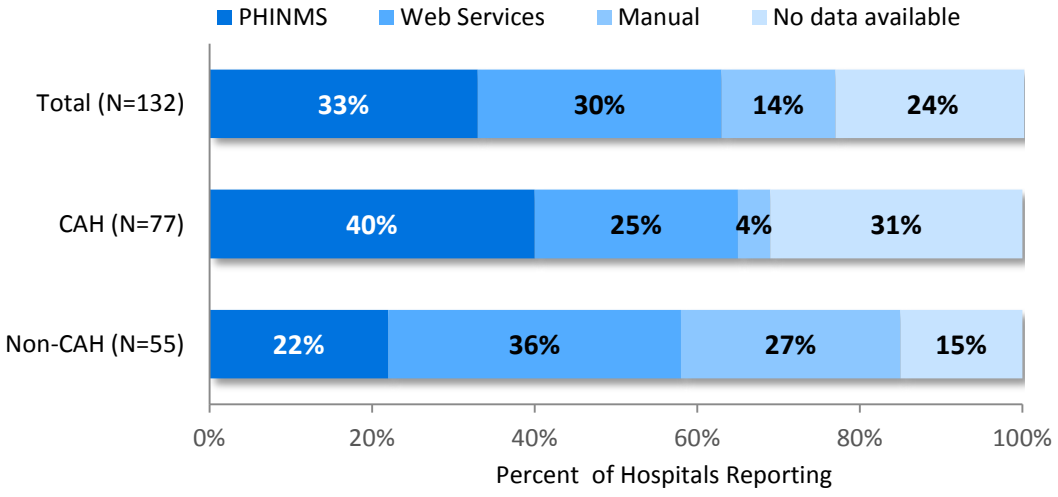
Use of Exchange Standards

Use of standard data structure and terminologies are important aspects in interoperability of EHR systems. These components are referred to as syntactic and semantic interoperability. Syntactic interoperability refers to structuring data in such a way that the receiving system can interpret and assimilate the information correctly, using standards established by organizations such as Health Level Seven (HL7), the National Council for Prescription Drug Programs (NCPDP), and the American National Standards Institute (ANSI). Semantic interoperability refers to communicating information in a form that will be understood in exactly the same way by both sender and receiver, and requires standard representation of data using content terminologies such as ICD-9, SNOMED CT®, CPT-4, and LOINC®.

Example Use of Standards for Immunization Reporting

Electronic reporting of immunizations is an important public health transaction. The Minnesota Immunization Information Connection (MIIC) is the statewide immunization information system that stores electronic immunization records for Minnesota health service providers and for the public. Looking at data for 76% of acute care hospitals that reported to MIIC in early 2016, Exhibit 19 shows that 63% of hospitals are electronically reporting immunization information in real time, including 33% using the Public Health Information Network Messaging System (PHINMS) and 30% using web services. CAHs are more active users of PHINMS compared to non-CAHs, but non-CAHs are more active users of web services.

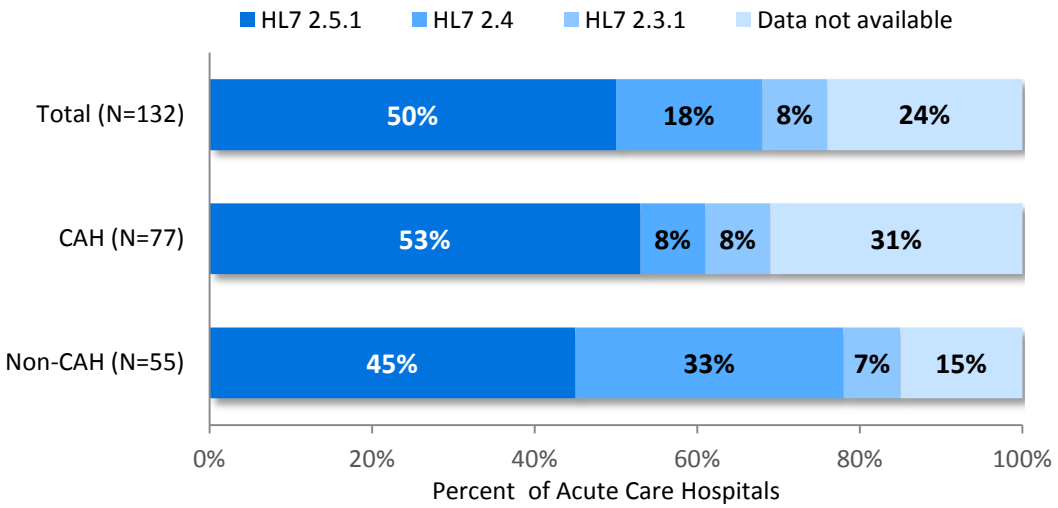
Exhibit 19: Exchange Transport Used for Submissions to Minnesota Immunization Information Connection (MIIC)



*Public Health Information Network Messaging System
Source: Minnesota Immunization Information Connection, January-April 2016. Information on transport options is at http://www.health.state.mn.us/divs/idepc/immunize/registry/hp/datasub.html

The recommended data structure standards for clinical data transmission includes HL7; data from MIIC show that use of HL7 for immunization reporting is increasing. Exhibit 20 shows that 50% of acute care hospitals use the preferred version of HL7 standards for immunization submissions to MDH (v. 2.5.1). Another 26% use an older version of the HL7.

Exhibit 20: Data Standard Used for Submissions to Minnesota Immunization Information Connection (MIIC)



Source: Minnesota Immunization Information Connection, January-April 2016.

Conclusion

Minnesota began measuring EHR adoption among the state's hospitals in 2010, and since then these hospitals have made great strides toward adoption and effective use of EHRs. This has been driven in part by federal incentive payments and in part by state policy actions. As of March 2016, organizations in the state have received over $700 million in federal incentive payments to implement and meaningfully use EHRs. Prior to this funding, policymakers in Minnesota recognized that more effective use of health information technology was needed to improve the quality and safety of care and to help control costs, and enacted legislation that requires all health care providers in the state to implement an interoperable electronic health records (EHR) system by January 1, 2015 (Minn. Stat. §62J.495). MDH has published guidance that describes this law, the types of providers impacted, what kind of information should be exchanged, privacy and security requirements, and how organizations can go about exchanging information.

Minnesota's hospitals reached a significant e-health milestone in 2014, with universal adoption of EHRs. The natural progression for these hospitals is to optimize the electronic tools and data to improve patient care, manage care coordination, engage patients, and improve quality. Effective use of EHRs has improved over time; however, workflow issuers persist and, as technology evolves, hospitals will need to continue to address training and optimization of EHR systems. Furthermore, hospitals are learning to use clinical data in their EHRs to support clinical care, quality improvement, and better understanding of outcomes.

Health information exchange with other hospitals and clinics has made tremendous progress, but still lags for other care settings, such as long-term post-acute care. There are some disparities between CAHs and non-CAHs, suggesting that CAHs continue to have resource constraints to develop the staff and skills needed to optimize EHR systems and advance HIE. There are also disparities between Epic users and non-Epic users, with Epic users having more patient information available from the mass of Epic users in the state. Minnesota's HIE environment continues to evolve, but use of Direct Secure Messaging has increased. The Minnesota e-Health Initiative is working to address barriers to HIE, engaging many of the hospitals and health systems in the state. The strong collaboration within MN's health community, along with transformation to value-based care and accountable care organizations is supporting the further development of e-health to support healthier communities.

Appendix A: Methods

The data in this summary contains the most up-to-date information on the adoption and use of EHRs and other health information technology and exchange of health information in Minnesota hospitals. The primary source of the data is the American Hospitals Association Annual Survey Information Technology Supplement (AHA Annual Survey), with supplemental questions developed by MDH in collaboration with the Minnesota Hospital Association and Stratis Health.

Hospitals licensed in Minnesota were required to complete the survey under the Minnesota Statewide Quality Reporting and Measurement System (Minnesota Rules, Chapter 4654). Fielding was conducted from December 14, 2015, to March 28, 2016, using an option of web-based or paper-based surveys. Data were collected and recorded by AHA. Invitations were sent to the chief health information officer of each hospital. Reminders were sent via emails by the American Hospital Association on multiple occasions during fielding. MDH also followed up with non-responding Minnesota hospitals. Data were analyzed using IBM© SPSS© Statistics v.22 and Microsoft© Excel v.2013.

The respondents were asked to respond to each question as of the day the survey was completed. The survey had 30 questions or question sets, with 22 developed by AHA and 8 developed specifically for Minnesota. The response rate was 97% with 140 of 145 acute care, specialty and federal hospitals responding. Among acute care hospitals, 129 of 132 responded (98% response rate). These include 76 critical access hospitals (CAHs) and 53 non-CAHs.

Analytic Definitions:

Critical Access Hospitals: The criteria and requirements for CAHs include:

- A licensed and operating not-for-profit hospital with no more than 25 inpatient acute care beds
- Currently participating in the Medicare program
- Located in a rural area (this does not include those hospitals in Metropolitan Statistical Areas)
- Located at least 35 miles from another hospital (or certified by the state as being a necessary provider)

Meaningful Use: The American Recovery and Reinvestment Act of 2009, authorized the Centers for Medicare & Medicaid Services to provide reimbursement incentives for eligible hospitals that are successful in becoming “meaningful users” of certified EHRs. The criteria for achieving meaningful use include accomplishing core objectives. To measure capability to achieve meaningful use criteria MDH developed a crosswalk between the AHA Annual Survey and hospital core meaningful use objectives. Hospitals were considered to have achieved an objective when it was either fully implemented in at least one unit.

Terms used in the report are defined in Appendix B and in the e-Health glossary found at: http://www.health.state.mn.us/e-health/glossary.html

More information on e-health assessment and activities in Minnesota can be found at: http://www.health.state.mn.us/e-health/assessment.html

Questions about this report and the data can be directed to Karen Soderberg, Research Scientist, karen.soderberg@state.mn.us or 651-201-3576.

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- Stratis Health

Appendix B: Glossary

Clinical Decision Support (CDS) tools: CDS tools provide clinicians or patients with clinical knowledge and patient-related information, intelligently filtered or presented at appropriate times, to enhance patient care. (Source: http://www.himss.org/ASP/topics_clinicalDecision.asp)

Computerized Provider Order Entry (CPOE): A computer application that allows a physician's orders for diagnostic and treatment services (such as medications, laboratory, and other tests) to be entered electronically instead of being recorded on order sheets or prescription pads. The computer compares the order against standards for dosing, checks for allergies or interactions with other medications, and warns the physician about potential problems. (Source: http://healthit.hhs.gov/portal/server.pt?open=512&mode=2&cached=true&objID=1256)

Data Repository: A database and a set of functions that consolidate data from clinical and other data sources and present a unified view of a single person.

Electronic Health Record (EHR) system: An 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 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. (Source: http://healthit.hhs.gov/portal/server.pt?open=512&mode=2&cached=true&objID=1256)

E-Prescribing (eRx): Sending prescriptions electronically from a provider's system to a pharmacy without an interim step from the hospital staff or patient. Prescriptions are for controlled or non-controlled substances; Minnesota now allows e-prescribing of controlled substances (Adapted from: http://www.health.state.mn.us/e-health/e.html)

Health information exchange (HIE): The electronic transmission of health related information between organizations according to nationally recognized standards. Health information exchange does not include paper, mail, phone, fax, or standard/regular email exchange of information. (Adapted from: http://www.health.state.mn.us/e-health/h.html)

Interoperability:
"The ability of two or more systems or components to exchange information and to use the information that has been exchanged."

Institute for Electrical and Electronics Engineering (IEEE), IEEE Standard Computer Dictionary: A Compilation of IEEE Standard Computer Glossaries. New York, NY: 1990; from http://www.healthit.gov/buzz-blog/meaningful-use/interoperability-health-information-exchange-setting-record-straight/

Patient portal: An internet application that allows patients to access their electronic health records and permits two-way communication between patients and their healthcare providers. (Source: www.healthit.gov/patients-families/faqs/what-patient-portal)

Secure messaging: Secure messaging is an approach to protect sensitive data using industry standards. It includes security features that go beyond typical email to (1) protect the confidentiality and integrity of sensitive data transmitted between systems or organizations and (2) provides proof of the origin of the data. Secure messages are encrypted bi-directionally and are stored on network or internet servers that are protected by login. Secure messaging functionality may be integrated with the EHR or maintained in a system separate and distinct from the EHR. (Source: http://www.health.state.mn.us/e-health/s.html)

Appendix C: Resources to Promote e-Health in Minnesota

There are many resources available to promote e-health in Minnesota as well as many actions that can be taken by health care professionals, their associations and consumers. This appendix offers suggestions and resources to help stakeholders participate in the process.

Health Care Professionals and Organizations

- Collaborate with organizations and other health care settings
- Participate in e-health training & education
- Use, adapt and share e-health tools
    - MN e-Health EHR information: http://www.health.state.mn.us/e-health/ehr.html
    - Stratis Health Toolkits: www.stratishealth.org/expertise/healthit/index.html
- Join/participate in the Minnesota e-Health Initiative http://www.health.state.mn.us/e-health/abouthome.html
    - Subscribe to e-Health updates at www.health.state.mn.us/e-health/index.html
    - Participate in e-Health Initiative workgroups: http://www.health.state.mn.us/e-health/wgshome.html

Associations

- Create roadmap that includes components to:
    - Modernize electronic health records systems
    - Implement secure, standard-based electronic health information exchange (HIE)
    - Ensure an informatics-savvy organization and workforce
- Draft model language for policies, contracts, use agreements, and best practices
- Create/support opportunities for collaboration statewide and regionally

Consumers

- Become engaged in managing your health and health care
    - Request a summary of your clinic visit
    - Ask for access to your personal health information electronically (e.g., patient portal)
- Use online tools to help manage your health and the health of your dependents or others you care for
- Learn about consumer engagement in health care from patients:
    - Office of the National Coordinator for HIT: http://www.healthit.gov/patients-families
    - National eHealth Collaborative: http://www.nationalehealth.org/patient-engagement-framework