

Health Information Exchange:

Opportunities and Challenges for Health Centers

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The National Association of Community Health Centers promotes the provision of high quality, comprehensive health care that is accessible, coordinated, and culturally and linguistically competent, and community directed for all underserved populations.

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Introduction/Overview

We are experiencing a historic transformation of the health care delivery system. The focus on the Triple Aim—improving quality, enhancing the patient experience, and reducing costs—has been ingrained in the new relationship between the patient and the provider and between the payer and provider. Health Center Program grantees (organizations that receive grants under the Health Center Program as authorized under section 330 of the Public Health Service Act, as amended) have been an integral part of the primary care delivery system for decades, and they must embrace these changes in order to live their missions successfully. They need to position their services to provide a centralized point of care for vulnerable populations which requires a greater level of understanding based on data about their patients, enrollees, and communities, and they must also capitalize on financial incentives and data efficiencies.

This transformation has been particularly evident in the implementation and expanded use of health information technology (Health IT) in health centers. Starting with the support for electronic health record (EHR) adoption through the Health Information Technology for Economic and Clinical Health (HITECH) Act, which enabled the Medicare and Medicaid EHR Incentive Programs, and continuing most recently with the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) there has been a steady movement to expand the meaningful use of Health IT to support the coordination of care and ultimately allow for a shift to value-based payments.

Health information exchange (HIE) allows multiple providers across different care settings to appropriately, efficiently, and securely share and access the patient's information with each other and with their patient. Incentive payments linked to new care and payment models such as Patient-Centered Medical Homes (PCMH) and Accountable Care Organizations (ACOs) that were included in the Affordable Care Act (ACA) in 2010 often require, or are dependent upon, the ability of participating providers to utilize HIE. Health centers have made tremendous progress in the adoption of certified EHRs, but the ability of health centers, as well as many other providers who are not in large integrated delivery systems, to meaningfully use their EHRs to electronically exchange information has been harder to achieve. There is no one solution because of the different models of HIE in different communities and regions. Where a health center once may have operated in a silo, providing for patients that were not able to get care anywhere else, today there is both a desire and need to provide coordinated care across different settings to improve the quality of care.

HIE can give providers access to patient information in a timely manner, leading to better informed care plans that can lead to the following positive outcomes:

- Avoid readmissions to a hospital or care facility
- Avoid medication errors
- Reduce duplicate diagnostic tests and other unnecessary evaluation costs
- Improve the accuracy of diagnosis¹

¹ <https://www.healthit.gov/providers-professionals/health-information-exchange/what-hie> (accessed 3/23/16)

Sharing health information between providers has been common practice for years, usually accomplished by copying the paper record and then mailing or faxing it to another provider. This system was not effective because data may be in multiple clinical specialties or provider locations. Furthermore, the data was often in a format that was unfamiliar to treating providers and, therefore, it was hard for them to quickly find the data they needed at the point of care. Even if the mechanisms were in place to get all the information into the paper chart of the receiving provider, there was a significant manual process to integrate the data into the record to allow the provider to easily identify care gaps, lab results, and other important data points.

When moving to the electronic environment several new issues have emerged including:

1. A faxed image of a paper document is harder to manipulate and understand electronically than it is on paper.
2. Computer systems are inherently designed to efficiently move data. That relative ease needs to be mitigated by appropriate privacy and security policies and electronic “gates” to align the technology with the relevant state and federal policies, regulations, and law, i.e., Substance Use treatment programs, HIV data in some states, etc.
3. Legacy EHRs generally have one methodology of sharing the entire chart and limited ability to deal with many sets of data formatted differently.
4. Data that is very standardized is more easily exchanged (encounters, scheduling information, transcription, and lab results etc.) through real-time sharing of just that element of data.
5. Data sharing requires a very detailed specification and, unfortunately, some of the initial HIE standards did not include the necessary level of specificity to avoid confusion by developers.

It is important to note that even an exchange between two instances of the same EHR vendor product is an episode of HIE because the data in each one of these systems may not be completely standardized, and the information is being shared across organizations. EHR databases remain systems with nonstandard vocabularies (even within a vendor product line) used to describe key aspects of clinical care.

Types of Exchange

This section attempts to provide a high level overview of the common types of exchange currently used in health centers and other health care settings. It is not a comprehensive examination of all the uses and challenges of each of the types of exchange, but is designed to provide an overview. Footnotes and the Resources page provide additional materials.

HL7 Interface

Interfaces that conform with standard libraries of HL7, ANSI X12, and XML are connected into an EHR via an interoperability specification for health and medical transactions such as Lab orders (ORD), Lab results (ORU), scheduling (SIU), radiology summaries (RAD), discharge summaries (MDM), demographics (ADT), etc. These standards are usually called out by their three-letter code as indicated above. In most cases, HL7 interfaces pass through an interface engine on each end of the transaction. This allows each system to transform the message to meet their particular implementation of HL7. This may include remapping codes or duplicating a message segment from one segment to another segment because the systems have not interpreted the HL7 standard in the same way and the interfaces allow the sender or receiver to transform or route the data to be compatible within their system.

Uses

HL7 standard interface exchange is most commonly used for admit discharge and transfer (ADT), pharmacy, transcriptions, and lab data exchange. These exchanges usually provide an update of the data set or provide an order and result formatted message. Two common examples follow:

1. Standard ADT use case: One organization needs to be aware of changes to the demographic data of the patients between two systems that share patients. In this case, any change to the demographic data, encounters, or insurance information may trigger an outbound message to a receiving system showing new patients or changes to existing patient data. Therefore, if a patient is seen in an Emergency Room, a message is triggered because of that encounter and sent to the corresponding primary care provider.
2. Standard ORD/ORU use case: A health care organization may contract with a lab for services. To improve the speed of the reporting system and avoid human error, they implement lab orders and results interfaces. A lab order (ORD) interface will send an electronic message to the lab that a particular test was ordered and will include a unique identifier for the patient, provider, and the order. In the home system on the provider end a label or bar code may be produced to be placed on the specimen collected, which is then sent the lab. The specimen is received by the lab with a label or bar code that contains the unique lab order identification and allows the lab system to identify that this specimen is attached to the order pending in the system. The results are gathered in the lab system and, when complete, an electronic lab results (ORU) message is sent back to the originating system with the unique order number, patient number, and provider number to the originating system to match the results to the order electronically. The round trip of these messages should not require human intervention and the provider and possibly the patient may be notified of the result within seconds of the final result.

Challenges and Barriers

Any of the HL7 message types, i.e., ORD, may be implemented using ADT to be sure that patient level data is up-to-date in both systems. Patient matching across systems can be one of the major points of unreliability for HL7 interfaces. Standard HL7 messages can fail to complete an exchange because the patient cannot be matched across the two disparate systems. If the systems do not share a single patient identifier that is maintained in both systems, then the messages need to be matched to the patient based on factors like spelling of name, sex, home address, telephone number, etc. Complex algorithms are used to match patients to their data and when that is not possible, those rejected messages must be matched by a human. Inconsistent data in multiple systems, the use of nicknames, or different spellings of provider or patient names are some reasons for a “false negative,” a situation where it is the same patient but the algorithm is not able to determine the match and it has to be handled by a human. Poorly designed matching algorithms may match the wrong data to a patient record, which is called a “false positive” and adds incorrect data to a patient record about another patient. That is a situation that should be avoided, so these complex algorithms err on the side of being very specific.²

HL7 is an extremely flexible standard. Each system could interpret the meaning of each data piece in a different way or it may collect data at a finer level of detail than HL7 requires for reporting. One example is race and ethnicity. The federal standard for race only includes the following five categories: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, and White. Some systems may capture more granular data such as specific Pacific Islander categories. The interface engine may be used to map the data back to the higher category of data, for example a Native Samoan may be mapped to Native Hawaiian or Other Pacific Islander in the interface so the initial system does not need to maintain both designations and the destination system gets the data in the form it needs to interpret the data.

The flexibility of HL7, and the different uses of fields by different systems, can require significant time for setting up HL7 interfaces with mapping to the various values that the interface engines on both sides might receive. This lack of standardization also requires ongoing maintenance. And finally, in many cases there are multiple semantic types of data that may be used in a particular field. One example would be an in-house coding system to identify lab tests while another system only accepts the logical observations identifiers and codes (LOINC) coding system for labs. Another example is the use of MEDCIN or SNOMED CT for clinical data elements. Both of these accepted terminologies are used in EHRs and there may not be a one-to-one mapping between these vocabulary systems. In that case, a custom crosswalk table needs to be built and maintained for the life of the interface.

This is not intended as a comprehensive list but is designed to help readers understand enough detail to understand how HL7 real time interfaces work and their strengths and weaknesses.

² https://www.healthit.gov/sites/default/files/patient_identification_matching_final_report.pdf

Direct

Directed exchange gives health care providers the ability to electronically send and receive health information over the Internet via encrypted, secure, and reliable messaging to support coordinated care. Providers can securely share laboratory orders and results, patient referrals, continuity of care documents, discharge summaries, and care plans with other health care providers involved in a patient's care. Certified EHRs need to have capability to access directed exchange via a Health Information Service Provider (HISP) using the Direct transport standards within the EHR.

Uses

Directed exchange is most commonly used to “push” electronic care summaries that meet Meaningful Use requirements of Transitions of Care (TOC). Directed exchange delivers a continuity of care document (CCD) to a Direct e-mail address with appropriate security certificates to assure only authorized individuals can exchange data. The CCD is a format to create a machine-readable historical record that theoretically can be uncoded by the recipient system into discrete elements. Certified EHRs need to have embedded capability to access directed exchange via a HISP. Some HISPs also provide web portal access for those providers without a certified EHR.

The most common example of directed exchange is when a primary care physician refers a patient to a specialist. The patient's medications, allergies, problems, and immunizations can be reconciled with any information in the receiving provider's EHR, and a more complete history is available for viewing including health issues and diagnostic findings. This record is sent to the specialist to prevent duplication of tests, medication errors, redundant collection of information from the patient, and wasted visits. This is the classic example of a Meaningful Use TOC exchange.

Directed exchange is the transport mechanism and can be used for various types of attachments and secure messages to other providers, and it can also be used to transmit information such as immunization data to public health entities.

Challenges and Barriers

There was a slower than anticipated rollout of certified EHR products incorporating the required Direct standards within the EHR. This has made it challenging for many providers to move from Meaningful Use Stage 1 to Stage 2 and has required revised Stage 2 Rules, including a change in reporting deadlines.

There are ongoing challenges around Provider Directory standards to allow integration of lookup capability across organizations. Initial Healthcare Provider Directory (HPD) standards were not “standard” enough and different vendors interpreted the standards differently resulting in a lack of interoperability between some of the first Direct Provider Directories. Although there has been progress on refining the HPD standards and the definition of an HPD+ standard, there are continuing questions about whether this is a viable standard. Until the remaining questions about Provider Directory standards are resolved, vendors are reluctant to invest in specific solutions. Recent discussions have focused on the possibility of basing the solution on Fast Health Interoperability Resources (FHIR) (see p. 13). This will continue to be a challenge to the scalability of directed exchange until a definitive standard is developed and implemented.

Privacy and security policies around how to authenticate and designate individual providers as authorized users, as well as how digital certificates are assigned, can vary by organization. There are a couple of national organizations that either certify HISPs or define which HISPs meet the necessary criteria to allow for HISP to HISP exchange. If there is one statewide HISP that all providers are using, then everyone is agreeing to use the same policies. However, when some providers use a nationally based HISP, others use their EHR vendor's HISP, and still others use a statewide or regional HISP, then there have been challenges with exchanging information with providers using different HISPs.

In many states and regions, there has been a very slow adoption rate for directed exchange because of the various challenges. Significant work needs to be done to ensure that the information will not only flow between providers, but also that the quality of the data being received is relevant and accurate for patient care.

Query-based

Query-based exchange allows health care providers to request or search for information on a patient from other providers. Some query-based HIEs are data repositories where all patient records are shared through a common community health record. Others are structured in a federated model with a hub and spoke, and patient records are maintained by the individual organizations and requested data is pulled and sent. The eHealth Exchange is a national network of exchange partners who leverage a common set of standards, legal agreement, and governance to share health information in a federated model.³

Uses

The classic use case for this type of HIE is the emergency room visit. An emergency department (ED) physician or other hospital staff uses the query-based exchange to access information on a patient who presents unconscious. Instead of starting from scratch, the patient's record is available thus preventing medication reactions, duplicative testing, and giving the ED physician a context in which to provide care. This would be especially useful if the etiology of the unconsciousness was not known in the ED but had been experienced in the past and reviewed with another physician.

While the ED visit may be the classic case, there are many use cases for query-based exchange. When a provider receives a referral, his/her staff can query the HIE and request the information needed to prepare for the patient visit. Once the referral visit occurs, the specialist can notify the primary care provider that there are updates, and the primary care provider can access the information using the HIE.

Challenges and Barriers

The technology platform supporting HIE needs to be able to integrate seamlessly with the EHRs in the community, and that can be very challenging. Even before the technical implementation, there are many policies and agreements that need to be developed around data governance and data use between all the participants. This can be a very time-consuming process. One key decision is around the consent model. For example, in Rhode Island

3 <http://sequoiaproject.org/ehealth-exchange/about/>

patients need to “opt in” to have their data included in the statewide HIE, CurrentCare. In Maine, HealthinfoNet provides the option for patients to “opt out” of having their medical information available through the HIE. Many HIEs received funding through the HITECH Act and, with the ending of that funding, many HIEs are struggling to find a sustainable funding model. Some are expanding in the realm of data analytics, and others are taking on leadership roles of ACOs.

Despite the many challenges to query-based HIE, the need for organizations to help provide the infrastructure and legal and policy framework for interoperable sharing of clinical information across care settings is becoming more and more important as our delivery system moves to value-based payments. The ability to be able to search for and request patient information whether within a regional HIE, between HIEs, or through the national eHealth Exchange is a foundational component of successful accountable care relationships such as ACOs, Coordinated Care Organizations, etc.

Consumer Mediated

Consumer mediated exchange gives patients the ability to access, aggregate, and manage their health information, including sharing information with providers. Patients can help transfer information between providers, correct inaccurate demographic, medical, or billing information, and track and monitor their own health.

Uses

Patient portals are a key tool for engaging and empowering patients. Depending on the portal functionality, patients are able to access sections of their EHR record, receive lab results, and participate in bi-directional communication with the clinic and/or provider. Some organizations are electing to join the OpenNotes® movement, an initiative to share provider clinical notes directly with patients and their proxies. This has been implemented in some health centers through a patient portal tethered to the EHR.

Patients can also initiate a personal health record where they can compile data from a variety of sources, as well as adding additional information they report themselves, i.e., blood sugar levels. One source of information is the RSNA Image Share—an initiative of the Radiological Society of North America. This pilot allows radiologists to share medical images with patients using personal health record (PHR) accounts. Those patients can then share the images with other providers, hopefully reducing the need for duplicate images.⁴

Challenges and Barriers

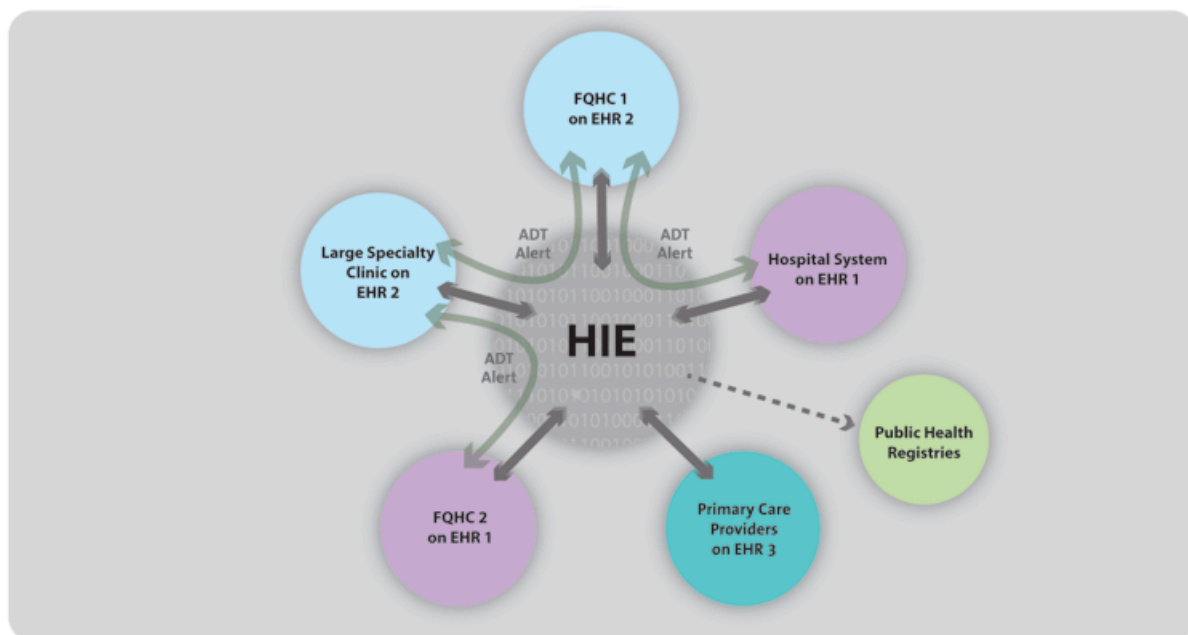
Health centers operate with a mission of serving the most vulnerable in our communities, and are committed to patient-centered care. However, it is always challenging to engage patients, and depending on patient/consumer mediated exchange as a primary means for sharing information across providers can raise concerns about the likelihood of having accurate information available when it is needed. There is also a question on the part of some providers of whether information that can be edited by patients should be considered complete.

⁴ http://www.hfma.org/Leadership/Archives/2013/Spring_2013/Meaningful_Health_Information_Exchange/

Community-based Scenarios

How HIE is being handled today varies community by community and organization by organization. Some states developed a strong statewide exchange under the HITECH HIE Program.⁵ In other states, regional HIEs exist, often developed around a hospital referral area and led by the hospital. However, in many parts of the country there is a patchwork approach to enabling the exchange of health information between and among organizations. This section will outline a few community-based scenarios. You may recognize some or all of these components as being relevant to your community.

Community 1



In this community there is a regional HIE that supports query exchange. Health care organizations include:

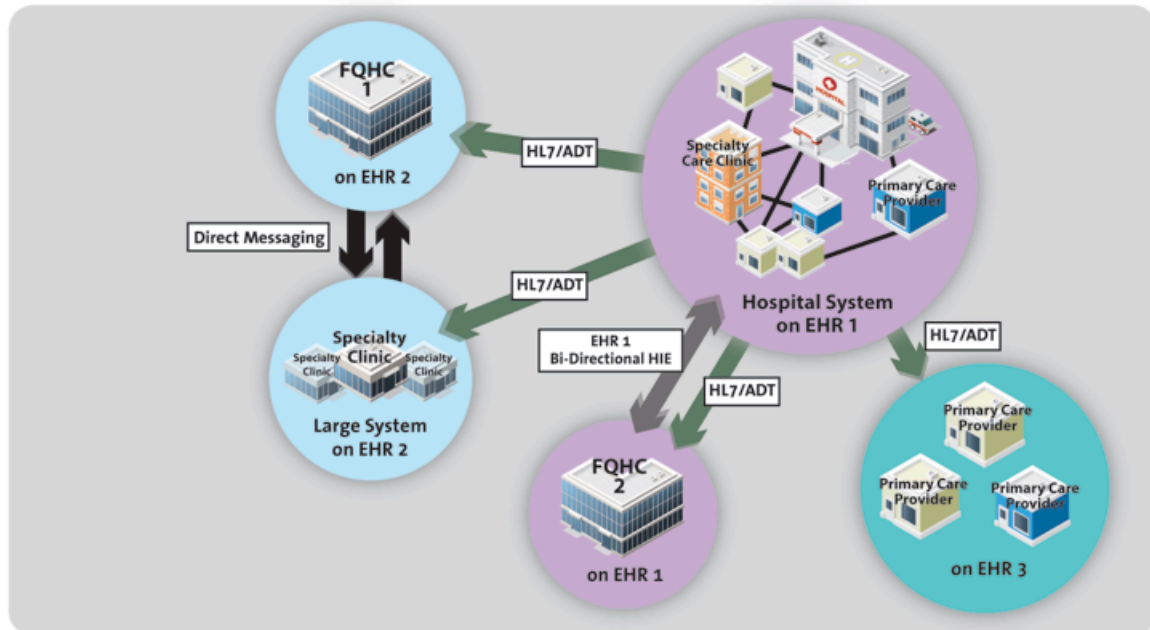
- 2 FQHCs
- 1 hospital system with employed physicians
- 1 large private specialty clinic
- Primary care providers, most of whom are on a hosted EHR
- Public Health Department with registries

There are three different EHRs being used in the community, but because of the bi-directional exchange through the HIE, clinical information can flow between providers to support referrals and other care coordination needs. One of the services offered by the HIE is ADT alerts that are currently in place between the specialty clinic and the

⁵ <https://www.healthit.gov/sites/default/files/reports/evalhiefinalreportexecsummaryamarch2016.pdf> (accessed 3/24/16)

FQHCs, as well as between the hospital and one of the FQHCs. The HIE also has another service in development that would allow providers to sign-up to have the HIE handle reporting to Public Health Registries.

Community 2



In this community there is not a regional HIE. A similar mix of health care organizations exists as in Community 1 including:

- 2 FQHCs
- 1 integrated delivery network (IDN), with a large hospital and multiple affiliated primary and specialty care clinics with employed physicians
- 1 large private specialty clinic
- Numerous primary care clinics on a hosted EHR

In this community, some HL7 interfaces are in place so that the hospital can push out ADT feeds to the FQHCs, as well as other primary care and specialty providers. One of the FQHCs has established a workflow using Direct Messaging to support referrals and care coordination with the specialty clinics that are on the same EHR platform. There is also bi-directional HIE between the hospital and FQHC 2 using their common EHR platform.

Communities 1 and 2 are fairly simple scenarios, and the community conversations around HIE options have developed into solutions that either allowed a regional HIE to emerge (Community 1) or for point-to-point exchange to develop (Community 2). However, most communities are not as simple as these, and look more like the next two communities.

Community 3

In this urban/suburban region there is a regional HIE that supports both query and directed exchange. The health care ecosystem includes:

- 2 ACOs and several Medicaid Managed Care plans
- 1 FQHC with 8 sites
- 3 FQHCs with 1-4 sites each
- 2 Public Health Departments, one of which operates several FQHCs and a School-Based Health Center
- 2 integrated delivery networks (IDN), both of which have multiple hospitals and numerous employed physicians
- 2 large private specialty clinics
- Several behavioral health providers, most of whom are not on a certified EHR

The two IDNs, one of the large specialty clinics, and the large FQHC are on the same certified EHR. There are three other certified EHRs being used by most of the other providers in the community and another six certified EHRs that are used by smaller numbers of providers. The hospitals, specialty clinic, and FQHC on the same EHR platform have had the ability to share patient records using their vendor's HIE platform for some time. The regional HIE initially launched Direct exchange, but it has been challenging to get providers to sign-up for those services because the hospitals, specialty clinic, and FQHC on the same EHR platform could meet the needs of Meaningful Use Stage 2 without participating in the Regional HIE. However, as the implementation of MACRA and the move towards value-based payment has become clearer, providers in the community are realizing that they need to be able to share information more efficiently. The Regional HIE is working with the ACOs and Medicaid Managed Care plans to develop tools that will support integrated care and population health. ADT (Admission Discharge and Transfer) alerts are one of the tools. Primary care providers, including those in the FQHCs that are participants in the HIE, receive an alert when one of their patients has been in the Emergency Room or has been discharged from the hospital. Specialists can query the patient record through the HIE after receiving a referral from a primary care provider. There are still challenges around sharing of some information, including Substance Use Disorder (SUD) treatment. At this time the HIE is not including any information from 42 CFR Part 2 programs⁶, so patient records that include such information cannot be easily shared. The Public Health Department is part of the HIE, so the School-Based Health Center is able to share information easily with students' primary care providers across town. There are still challenges with sharing information especially with behavioral health providers and long term care facilities that have not adopted certified EHRs.

⁶ <http://www.samhsa.gov/about-us/who-we-are/laws/confidentiality-regulations-faqs> (accessed 3/23/15)

Community 4

In this community there is no regional HIE. Many of the other elements are the same as in Community 3, but it is a slightly smaller community. Health care organizations include:

- 1 ACO and 2 Medicaid Managed Care plans
- FQHC system with 5 sites
- 3 smaller FQHCs, each with 1 or 2 sites
- Public Health Department that operates two FQHC sites, but no School-Based Health Centers
- 1 large IDN with two hospitals and a significant number of employed physicians (that system is the lead of the ACO)
- 1 large private specialty clinic
- Several behavioral health providers, most of whom are not on a certified EHR

There are a number of EHRs being used in the community, without any one being a dominant factor. Each organization has been working with its technology vendor to get a HISP in place to be able to meet Meaningful Use Stage 2 requirements around Transitions of Care. Care continues to be quite siloed. However, as the implementation of MACRA and the move towards value-based payment has become clearer, providers in the community are realizing that they need to be able to share information more efficiently, but they aren't sure of the best ways to do it. There are concerns on the part of some of the providers that the hospital system and its ACO will expand its control if it also manages HIE in the community.

The issues raised in these scenarios are challenges faced by many health centers and other provider organizations across the country. Health centers need to understand the options around HIE and be able to engage with partners from a position of understanding and strength in community discussions.

New and Emerging Technologies

FHIR

FHIR (Fast Health Interoperability Resources) is an open health care data standard developed by HL7 (Health Level Seven International) and is the next generation standards framework designed to enable EHRs to provide standardized interfaces for data submission, query, and retrieval. There is a strong focus on fast and easy implementation and a strong foundation in Web standards. The goal is that FHIR will allow for the rapid development of new Web tools and mobile applications that can improve health outcomes. The Office of the National Coordinator for Health Information Technology (ONC) launched developer challenges in early 2016 focusing on both patient-facing and provider applications.⁷ One of the current discussions is around the possibility of developing a provider directory standard based on FHIR to allow for expanded lookup capability at the clinic and provider level.

Carequality Interoperability Framework⁸

Carequality is a public-private, multi-stakeholder collaborative that is using a consensus-based process to develop a framework to support interoperability and data sharing across systems. The Carequality Interoperability Framework is a series of legal and governance documents and implementation guides that are used to operationalize data sharing across organizations. Carequality is meant to be the framework that can be used to efficiently connect data sharing networks, which can include HIEs, Lab networks, Personal Health Records, and other consumer-facing applications, networks supported by EHR vendors, networks supported by payers, etc. In January 2016, several major vendors announced that they would be the first implementers of the Carequality Interoperability Framework.⁹ The first use case that is being implemented is query-based document exchange. Carequality Implementers sign the Carequality Connected Agreement, assuring that there are common policies and rules being followed by all participants. The Carequality use case implementation guides specify the technical requirements, policies, and business practices for a particular use case. Plans for 2016 include automating directory services, providing event notifications, and sharing patient authorization status.¹⁰

How to Support HIE Within Health Centers

Today it is essential for health centers to actively engage with and explore the options available to them to expand their HIE capacity so that they are able to fulfill their missions of serving the most vulnerable in their communities by providing quality, coordinated care.

During the past several years, our health centers have done a remarkable job in embracing the adoption of electronic health records (EHRs), with almost 92% of Health Center Program award recipients reporting for 2014

7 <https://www.healthit.gov/techlab/innovation/connecting-accelerating-fhir-app-ecosystem>

8 <http://sequoiaproject.org/carequality/resources/>

9 <https://ehrintelligence.com/news/will-carequality-lead-ehr-vendors-to-ehr-interoperability>

10 <http://sequoiaproject.org/wp-content/uploads/2016/03/HIMSS16-Carequality-Overview-Final.pdf> (accessed 3/31/16)

Uniform Data System (UDS) that all sites had adopted EHRs.¹¹ Support from the Bureau of Primary Health Care for Health Center Controlled Networks (HCCNs), along with the Meaningful Use (MU) incentive funds, has played a significant role in the success of health centers adopting EHRs. However, many continue to struggle with using the full potential of their EHR, and few have the staff resources to effectively optimize and maintain it¹². Despite federal investments in technical assistance and the availability of financial resources, according to 2014 UDS reports, Eligible Providers in 10% of health centers were not participating in the Centers for Medicare and Medicaid Services (CMS) EHR Incentive Program, and many more had not yet achieved MU Stage 2 usually because of HIE measures including Transitions of Care and Patient Engagement, i.e., patient portal.

A 2014 *BMC Health Services Research* article found that providers thought that information available through HIE would improve care coordination. However, barriers to HIE use include regional, inter-organizational, and intra-organizational issues. At a regional level, the lack of regional HIE and/or partner organizations were cited as barriers. At the inter-organizational level, barriers included the need to build strong partnerships and develop a critical mass of users within the community, and intra-organizational barriers included the EHR platform and workflow integration. These are many of the same challenges that are facing most providers across the country, however, the article highlights that it has been particularly difficult to achieve the widespread adoption and use of HIE in FQHCs.¹³

A 2015 *Annals of Family Medicine* article discusses a possible “digital divide” that challenges our health centers, particularly those with limited resources. The article discusses that a lack of financial and workforce resources to sustain health IT efforts over time may contribute to health centers receiving incentive payments for Meaningful Use Stage 1, but not moving on to Stage 2 and beyond when HIE is more and more important for success.¹⁴

Interoperability and the use of HIE must be expanded to support transitions of care, improve care coordination, and allow health centers to manage and improve the health of the populations they serve. Building partnerships within your communities, and demonstrating the ability of the health centers to coordinate care for the population you serve will allow you to provide added value as we move towards value-based payment models. However, to be successful you will need to work closely with partners at the community, state, and national level to determine the best options to expand your use of HIE to provide care coordination for your patients across the health care continuum.

Deciding the right steps for your organization over the next few years to expand your HIE functionality depends on a number of factors including whether a regional or statewide HIE exists in your geographic area, what HIE services may be offered through your current EHR vendor, whether your EHR vendor is part of Carequality¹⁵ and/or the Commonwell Health Alliance¹⁶, and how your State Medicaid and/or Health IT state program is supporting health information exchange between providers. If there is a regional or statewide HIE, hopefully you are already involved in conversations with them, and may already have onboarded as a participant. If not, that would be a place to start.

11 <http://bphc.hrsa.gov/uds/datacenter.aspx?q=tehr&year=2014&state=>

12 Lee A. Green et al., “Sustaining “Meaningful Use” of Health Information Technology in Low-Resource Practices,” *Annals of Family Medicine* 13, no. 1 (Jan/Feb 2015): 17-22

13 McCullough et al.: Electronic health information exchange in underserved settings: examining initiatives in small physician practices & community health centers. *BMC Health Services Research* 2014 14:415

14 Lee A. Green et al., “Sustaining “Meaningful Use” of Health Information Technology in Low-Resource Practices,” *Annals of Family Medicine* 13, no. 1 (Jan/Feb 2015): 17-2

15 <http://sequoiaproject.org/carequality/what-we-do/>

16 <http://www.commonwellalliance.org/about/>

If you are part of a Health Centered Control Network (HCCN), be sure you are talking with your HCCN about how to maximize and/or expand your HIE functionality. Other health centers in your area can also be important partners in helping to figure out next steps, and perhaps your Primary Care Association has a workgroup on the issue. There are also national technical assistance opportunities through the Health Information Technology, Evaluation, and Quality Center (HITEQ) supported by the Health Resources and Services Administration (HRSA).¹⁷ Most importantly, as you are having conversations with payers and other organizations about structuring value-based payment models, be sure that your ability to electronically share information efficiently and effectively with other providers is part of the infrastructure that is built into the new model of care and payment.

¹⁷ See the Resource page for more information or visit <http://www.hiteqcenter.org/>.

Appendix

Glossary

Accountable Care Organization – a health care organization using a payment and care delivery model that links provider payments to patient outcomes.

Affordable Care Act – The Patient Protection and Affordable Care Act is major health care reform legislation that passed in 2010 to expand and improve access to care and control costs.

ANSI X12 –standards defining the structure, format and content of transactions using Electronic Data Interchange (EDI).

Continuity of Care Document (CCD) - a standardized HIE feature that contains a core data set of administrative, demographic, and clinical information facts about a patient’s health care.

Consolidated Clinical Document Architecture (C-CDA) - a standard developed by HL7 that defines the structure of certain medical records, including discharge summaries and progress notes.

Consumer Mediated Exchange - gives patients the ability to access, aggregate and manage their health information, including sharing information with providers.

Coordinated Care Organization (CCO) – a term being used for a value-based payment relationship, similar to an ACO, but for Medicaid.

Direct Standards – transport technical standards used to send authenticated, encrypted health information to known, trusted recipients using a HISP.

Directed Exchange – ability to electronically send and receive secure messages between providers to share information to support coordinated care using the Direct standards.

eHealth Exchange – formerly known as NHIN or NwHIN, it is the largest health information exchange infrastructure in the US. It began as an ONC project, but has transitioned to an independent initiative supported by The Sequoia Project.

Electronic Health Record – a digital version of a patient’s medical record. EHR is also used to refer to the system that stores and manages not only medical and treatment history, but other patient information.

Health Information Exchange – allows health care providers and patients to appropriately access and securely share patients’ medical information electronically.

Health Information Technology – is a broad concept that includes a wide array of technologies to store, share, and analyze health information. Often shortened to Health IT or HIT.

HIMSS - The Healthcare Information and Management Systems Society is a nonprofit organization focusing on the use of information technology and management systems in the health care industry.

HISP - Health Information Service Provider (HISP) has been used by the Direct project both to describe a function (the management of security and transport for directed exchange) and an organizational model (an organization that performs HISP functions on behalf of the sending or receiving organization or individual).¹⁸

HITECH Act - The Health Information Technology for Economic and Clinical Health was part of the American Recovery and Reinvestment Act of 2009 and passed to promote the adoption and meaningful use of health information technology.

HL7 – Health Level 7 refers to the set of international standards for the transfer of clinical and administrative data between software applications used by health care providers.

HPD - Healthcare Provider Directory (HPD) Profile standard supports queries against, and management of, health care provider information that may be publicly shared in a directory structure. Directories can include individual and organizational providers.

Interface - Hardware or software that facilitates interaction between disparate components of a system or between systems.

Interoperability – the ability to exchange and make use of information between technology systems.

Legacy EHRs –older technology that usually does not support current standards, particularly around interoperability.

MACRA – Medicare Access and CHIP Reauthorization Act of 2015 provided a two year solution to the health center “fiscal cliff.” It was a major piece of federal legislation that changes how Medicare payments are structured by ending the Sustainable Growth Rate formula, moving towards value-based payments, and consolidating quality reporting programs.

Meaningful Use – is often used as shorthand for the requirements to receive payments from the Medicare and Medicaid Electronic Health Record Incentive Programs. As defined by ONC, it is using certified electronic health record (EHR) technology to:

- Improve quality, safety, efficiency, and reduce health disparities
- Engage patients and family
- Improve care coordination and population and public health
- Maintain privacy and security of patient health information

Nationwide Health Information Network (NwHIN) – an earlier name for the national network now called eHealth Exchange.

ONC – Office of the National Coordinator for Health Information Technology is part of the US Department of Health and Human Services (HHS). It was created by Executive Order in 2004 and continued through the 2009 HITECH Act. ONC is charged with promoting and overseeing the development of a national Health IT infrastructure.

Patient-Centered Medical Home – a primary care model that provides patient-centered, team-based, integrated, accessible care with a focus on quality outcomes.

18 <http://wiki.directproject.org/Best+Practices+for+HISPs>

Query-based exchange - allows health care providers to request or search for information on a patient from other providers.

Veterans Health Information Exchange (VHIE) – The Veterans Administration’s national network. Part of the eHealth Exchange.

XML – Extensible Markup Language is a standard that defines how to encode documents in a format that can be both machine and human readable.

Resource List

Office of the National Coordinator of Health Information Technology (ONC) has many resources on its website. However, because this topic is constantly evolving, some of the general information may be dated. <https://www.healthit.gov/providers-professionals/health-information-exchange/getting-started-hie>

ONC has recently launched several new initiatives focusing on interoperability and HIE. One is the Interoperability Proving Ground, an open, community platform to share interoperability projects. <https://www.healthit.gov/techlab/ipg/>

ONC also has many resources for health centers including HIE scenarios, workflows and specifications for Transitions of Care, sharing lab results, sharing immunization data, etc. These can be found at [https://www.healthit.gov/providers-professionals/implementation-resources/fqhc-or-community-health-center?f\[0\]=health-it-topic%3A288](https://www.healthit.gov/providers-professionals/implementation-resources/fqhc-or-community-health-center?f[0]=health-it-topic%3A288)

Health Information Technology, Evaluation, and Quality Center (HITEQ) is funded through a national cooperative agreement (NCA) by Health Resources and Services Administration (HRSA), and managed by John Snow, Inc. (JSI). HITEQ services provide training and targeted technology assistance to support health centers in full optimization of their EHR/HIT systems for continuous, data driven quality improvement including HIEs, data interoperability, and data exchanges. Visit <http://www.hiteqcenter.org/> for more information.

The Healthcare Information and Management Systems Society (HIMSS) provides a number of resources for IT professionals to improve health care through the use of IT. HiMSS provides numerous resources on HIE including toolkits <http://www.himss.org/library/health-information-exchange>. One resource looked at PHRs and the Underserved Population in 2011 <http://s3.amazonaws.com/rdcms-himss/files/production/public/HIMSSorg/Content/files/PHR%20and%20the%20Underserved%20Population.pdf>.

The **Sequoia Project** is a non-profit formed in 2012 to advance the implementation of secure, interoperable nationwide HIE. ONC transitioned management of the eHealth Exchange to The Sequoia Project. The Sequoia Project is also involved in other initiatives including **Carequality** (see p. 13) and **RSNA Image Share** (see p. 8) <http://sequoiaproject.org/>.

FHIR (Fast Health Interoperability Resources) is an open health care data standard developed by HL7 (Health Level Seven International) and is the next generation standards framework designed to enable EHRs to provide standardized interfaces for data submission, query and retrieval. An overview can be found at <https://www.hl7.org/fhir/summary.html> and technical information at <https://www.hl7.org/fhir/index.html>.