Behavioral Health Data Exchange in Colorado

June 2017

Cooperative Agreement 90IX0012

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Introduction

Colorado sought an Advanced Interoperability Grant from the Office of the National Coordinator (90IX0012/01-00) to enhance the data available in the community health record hosted by the state's two Health Information Exchanges (HIEs), the Colorado Regional Health Information Organization (CORHIO) and Quality Health Network (QHN). The data in the Colorado HIE infrastructure includes vast amounts of inpatient and outpatient data, lab results and, on a lesser scale, information from providers. The data contained in the HIE is of great value to providers and makes available a clinical picture of the patient. However, other key data such as ambulatory encounters, long-term care summaries and behavioral health is more limited but would help complete the clinical picture. Including this key data would increase HIE adoption among providers, enhance the data available in the HIE and promote interoperability.

The overall goal of this project was to engage 1,000 providers and 70 facilities. The provider mix included those sending encounter data to the HIEs and those using the encounter data in the HIEs. The number of providers who accessed data in the HIEs well exceeded projections (more than several thousand at the time of publication), proving the hypothesis that more robust data available via HIE is valuable to those providing care. Further, the goals for the grant included adding 30 long-term care and home health entities as participants and the final number of participating entities was 33. Additionally, Colorado achieved the goal of adding exchange with two behavioral health systems encompassing 10 facilities.

The focus of this paper, however, is the behavioral health solutions chosen by CORHIO and QHN to meet the goals of this grant funding project. Two different models for the behavioral health integration work were developed, one that includes tools enabling patient-driven/patient updated consent and one that uses a patient-driven/provider updated focused consent model.

Partners
The exchange of behavioral health documents required the development of workflows and interfaces between disparate technology systems and numerous organizations. As such, the projects required vendors to develop consent exchange platforms, document and consent repositories, an enterprise master patient index (eMPI), peer counselors to guide patients, patient and provider collateral and a number of interfaces. Without these partners, listed below, this work could not have been accomplished.

Technology Partners
- CORHIO: data exchange organization serving the front range and eastern plains of Colorado
- Quality Health Network: data exchange organization serving the western slope of Colorado
- FEi Systems: provides the Consent2Share® platform used by patients to manage their behavioral health information consents

- Medicity: CORHIO's health information exchange platform vendor
- Mirth: QHN's health information exchange platform vendor
- NetSmart Technology: Electronic Health Record vendor (CORHIO project)
- Qualifacts: Electronic Health Record vendor (QHN project)
- Signal Behavioral Health Network: Expertise regarding development of patient and provider education materials and oversight of compliance with 42 CFR Part 2

<u>Partners from the Department, CORHIO and QHN</u>
- Health Care Policy and Financing
  - Chris Underwood, Health Information Office Director
  - Micah Jones, Medicaid Health IT Coordinator
  - Veronica Menard, Medicaid HIT Project Manager
  - Leah Spielberg, Grants Manager
  - Stephanie Sanders, Grants Administrator
  - Nelson Lopez, Grants Accountant
- CORHIO
  - Morgan Honea, CEO
  - Kate Horle, COO
  - Kelly Joines, CSO
  - Peggy Micklich, CFO
  - Robert Denson, CIO
  - Paul Marola, VP of Innovations
  - Toria Thompson, Behavioral Health Information Exchange Coordinator
  - Heather Culwell, State Health Initiatives Project Manager
  - Drew Currie, VP of Sales and Marketing
  - David DeRoode, Solutions Architect
  - Kamika Kelly, VP support and QA
- QHN
  - Dick Thompson, CEO
  - Marc Lassaux, CTO
  - Justin Aubert, CFO
  - Rich Warner, Director Project Management

Summary of Behavioral Health Projects

QHN and CORHIO decided, during the grant application process, to use differing methodologies for onboarding behavioral health participants to the HIEs. This section of the report will discuss those methodologies, lessons learned and outcomes.

QHN Behavioral Health Project

QHN's objectives were to work with the largest behavioral health organization within QHN's service area, Mind Springs Health (MSH), to receive inpatient and ambulatory data and electronically exchange the information, based upon patient consent, with the appropriate providers. As a comprehensive behavioral health provider, MSH provides services at a 32-bed inpatient psychiatric hospital based in Grand Junction, Colorado and at 13 outpatient locations dispersed throughout the vast, rural western Colorado region. In 2016, MSH provided services to more than 22,500 people.

QHN was acutely aware that the electronic exchange of behavioral health information, via HIE, creates some unique patient consent challenges. This exchange is regulated by HIPAA and by special privacy protections afforded to alcohol and drug use patient records by 42 Code of Federal Regulations (CFR) Part 2. The challenge for HIEs is patient consent management; assuring the consent is accurately completed, the consent timeframe recorded and adhered too, and that the notification of the additional consent requirements are constantly connected to, and follow, the information in the electronic system.

Having a dedicated and committed partner in this challenging work, such as MSH, allowed QHN to reduce some of the initial barriers to sharing this type of data. By giving the MSH providers the responsibility to collect the consent and to update and maintain consent — in the QHN system — MSH became an invested and trusting partner in the project. They understood the need and importance of exchanging data electronically with primary care providers, but knew their strict adherence to patient privacy laws, and trust relationship with their patients, was protected and in their control. They could update, change and completely revoke consent instantly, as needed.

The project goals focused on several aspects of the electronic exchange of health information to improve care coordination for patients accessing behavioral health services. The first was to electronically send behavioral health data to the HIE, which would trigger the HIE to deliver the data to the authorized provider's (consented provider) EHR. All data sent to the HIE was also incorporated into the HIE longitudinal record, making it query-accessible, by authorized providers. Throughout the electronic exchange process, it was QHN's responsibility to ensure these sensitive records maintained the notice of re-disclosure to assure compliance with 42 CFR Part 2. An additional goal was to allow behavioral health providers query access and familiarize them with the HIE longitudinal record to better coordinate care for their patients.

To further enhance the HIE-supported electronic exchange of information, MSH chose to participate in QHN's subscription services. They have subscribed their highest-utilizing, highest-risk group of clients with frequent hospitalizations, which allows for all care event information, such as lab, radiology results and transcription to be sent to their authorized providers.

"The integration of behavioral healthcare and primary care is a long-term strategic goal of Mind Springs Health," says David Hayden, VP of Quality and Compliance at MSH. "Initially the big

driver for us to get information into QHN was really the recognition that primary care providers need to know what medications their patients are on upon discharge from West Springs Hospital and they need to know their patient was discharged."

He went on to say "Statistics show that behavioral health conditions have a tremendous impact on physical health outcomes. With the sharing of information via QHN, we help providers adjust their physical health interventions to be more effective as they can take the patient's behavioral health condition into account. This is the first step into a new era; we look toward to more collaboration with QHN in our population health management work using QHN services such as alerts and subscription."
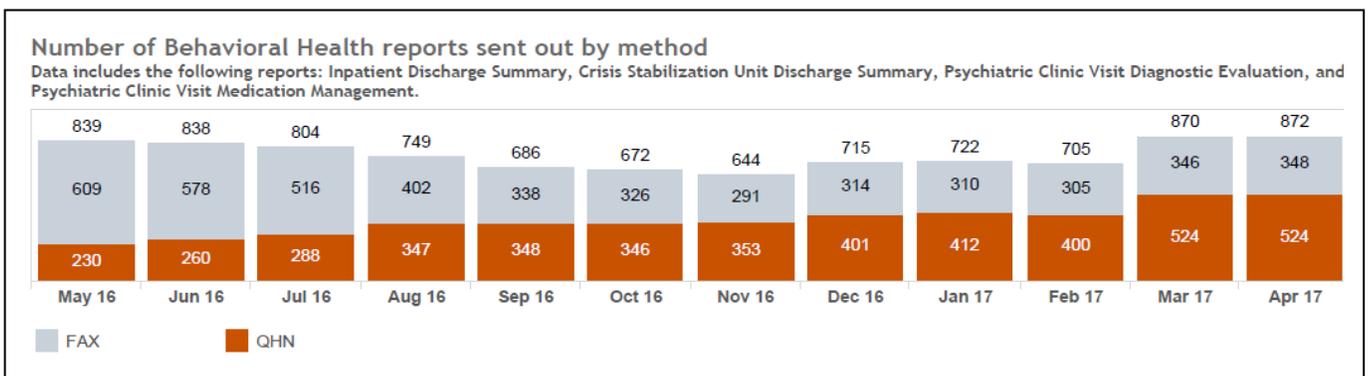
QHN is currently in the process of replicating and expanding upon this model with other behavioral health providers in the region.
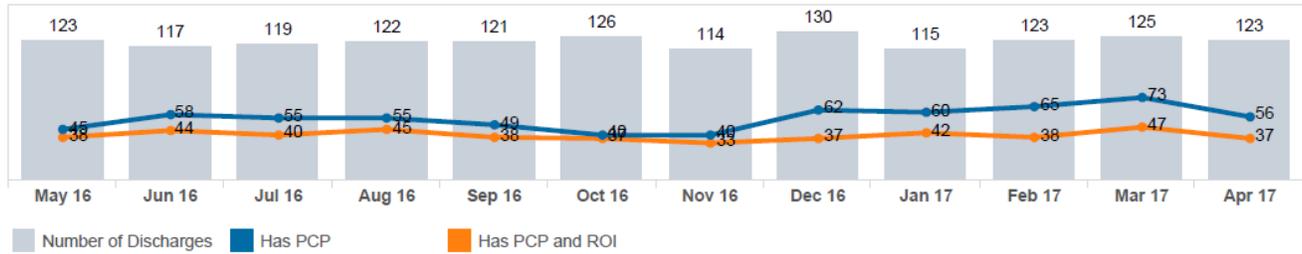
Metrics

As stated above, the project goals focused on several aspects of the electronic exchange of health information to enhance care for patients receiving behavioral health services. This included the electronic exchange of behavioral health data and delivery, via interface, to authorized providers EHR systems, the incorporation of the behavioral health data into the longitudinal health record and behavioral health providers query access to the clinical data in the longitudinal health record.

To date, consent has been set up for 48 distinct organizations for 1,845 unique patients. The direct interface for delivery to providers' EHR systems has been established for 43 practices. Since May 2016, more than 4,400 reports have been sent electronically in lieu of faxing, with these numbers increasing at a steady growing pace.

The goals included an increase in the total number of reports sent electronically, an increase in the number sent electronically in relation to the number faxed, and an increase in the number of behavioral health clients who allow for release of information (ROI) at intake. The ROI metric, requires that the patient have an established primary care physician, which in this patient demographic often presents an additional challenge. Please note MSH dashboards below.

Number of Behavioral Health reports sent out by method
Data includes the following reports: Inpatient Discharge Summary, Crisis Stabilization Unit Discharge Summary, Psychiatric Clinic Visit Diagnostic Evaluation, and Psychiatric Clinic Visit Medication Management.

	May 16	Jun 16	Jul 16	Aug 16	Sep 16	Oct 16	Nov 16	Dec 16	Jan 17	Feb 17	Mar 17	Apr 17
Total	839	838	804	749	686	672	644	715	722	705	870	872
FAX	609	578	516	402	338	326	291	314	310	305	346	348
QHN	230	260	288	347	348	346	353	401	412	400	524	524

West Springs Hospital PCP

Chart showing monthly data from May 16 to Apr 17 with three series: Number of Discharges (bars), Has PCP (blue line), Has PCP and ROI (orange line).

Month	Number of Discharges	Has PCP	Has PCP and ROI
May 16	123	45	38
Jun 16	117	58	44
Jul 16	119	55	40
Aug 16	122	55	45
Sep 16	121	49	38
Oct 16	126	40	40
Nov 16	114	40	33
Dec 16	130	62	37
Jan 17	115	60	42
Feb 17	123	65	38
Mar 17	125	73	47
Apr 17	123	56	37

Outpatient Therapy Assessment PCP
Data includes both Adult and Child/Adolescent assessments

Month	Number of Assessments	Has PCP	Has PCP and ROI
May 16	510	327	244
Jun 16	484	317	245
Jul 16	462	306	232
Aug 16	492	306	226
Sep 16	517	338	252
Oct 16	523	333	233
Nov 16	474	297	217
Dec 16	454	311	220
Jan 17	425	259	178
Feb 17	477	306	214
Mar 17	547	371	233
Apr 17	481	315	205
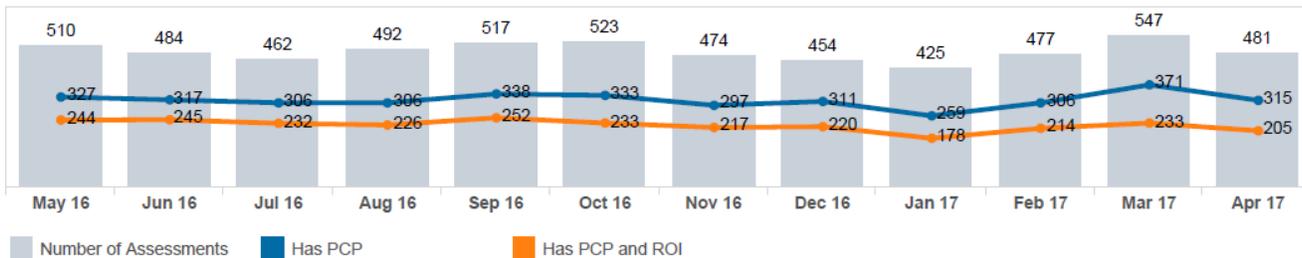
The number of behavioral health providers at MSH who have access to the QHN longitudinal record is 42, which is 100 percent of their clinical staff. Over the last 12 months they have averaged more than 3,100 unique longitudinal record queries per month.

Colorado's healthcare ecosystem is focused on integrating behavioral health and physical healthcare for improved outcomes. To be successful in this cause, enabling care providers to have faster and more complete access to one another's records is a key to this projects' success. However, the more stringent requirements for safeguarding the privacy of those patients receiving substance use treatment requires that Colorado providers move beyond HIPAA-based exchange and into managing the exchange of these more sensitive records only when the patient has granted permission to release those records to certain providers.

CORHIO Behavioral Health Project

In most care settings, the patient signs a release at the practice where they receive behavioral health services. If they later want to revoke or modify their permissions for disclosing their records, they need to return to the practice to enable those changes. CORHIO wanted to develop a different model – one where the patient can directly manage the disclosure of their information so they created a web-based portal for patients to directly indicate to whom and

for how long they would like their information disclosed. Using this model, consent changes take place immediately and the patient can update their preferences at any time.

For example, remember when each time an individual wanted to transfer money from his or her bank accounts, they needed to visit the physical facility to initiate that transaction? Today, that would be enough of an impediment for most people that they would choose to make changes only in rare occasions. It's the same for the exchange of sensitive health records. In HIPAA-based exchange, most patients sign a paper and then forget about where and how their information is exchanged. However, just as access to online banking liberates the consumer to do more with their money, providing the patient with direct access to exchanging their sensitive health data encourages greater participation in care.

CORHIO decided to take a patient-centric approach to the behavioral health component, and specifically the consent aspect of this grant. They based decisions about how the consent process at Mental Health Center of Denver (MHCD), the pilot participant, would work, on the idea that patients who are engaged in their own health and healthcare are more likely to be healthier. Therefore, CORHIO gave the power of granting consent to the patients. In turn, CORHIO also wanted to hear from external providers that were granted access to the MHCD information. They wanted to make sure that this behavioral health data was important and impactful to the care that they provided to their patients.

Metrics

CORHIO worked with the Mental Health Center of Denver, a private, not-for-profit 501(c)(3) community mental health center providing mental health, substance abuse, housing, educational and employment services. The first goal was to educate at least 100 patients about the Choose2Share® application. (Choose2Share is CORHIO's rebranded name of the modified Consent2Share open source tool developed by SAMHSA.) Out of those 100 patients, CORHIO wanted 30 patients to create a login and password, and actually login to Choose2Share. These metrics assumed six months of time within which to conduct patient outreach and education. Because of technology challenges, the software was launched just 30 days prior to the grant end date. Therefore, to date, there are eight patients that have been educated about Choose2Share, and three patients that have logged into Choose2Share and created an account.

Technology and Architecture

Colorado is an opt-out state which means that, unless the patient takes steps to opt-out of the health information exchange (HIE), their healthcare information will be shared with healthcare organizations and providers for purposes of treatment, payment and operations, per federal HIPAA regulations[1]. However, information from organizations that provide substance use

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[1] In Colorado, mental health data can be exchanged under HIPAA guidelines. Only data subject to 42 CFR Part 2 is exempt.

treatment services is governed by the more stringent federal regulation, 42 CFR Part 2, which requires that specific patient consent be obtained before information from those organizations is released. Therefore, CORHIO and QHN, and any HIE from an opt-out state[2], needed to expand their HIPAA-based exchange to also include exchange based on a patient's authorization to release sensitive information.

QHN Technology and Architecture

QHN's health information exchange system platform, Mirth, provides an embedded consent module. This capability allows for those granted consent management role-based access to manage consent (the release of information to and from the HIE), by individual patient and provider organization, and delineate precise timeframes. Under 42 CFR Part 2 consent, organizations must list the date, event, or condition upon which the consent will expire, if not revoked before. The MSH Authorization for Use and Disclosure of Health Information (ROI) from states - *I understand this authorization may be revoked at any time, in writing. If not revoked, I understand this authorization will expire in two (2) years*. Therefore, the system default timeframe was set at two years; however the practice consent manager may change the revocation date at any time.

The EHR vendor for MSH was unable to provide a CCD or HL7 note to QHN. The QHN tech team worked with the available report file format, .csv, sent by MSH to transform it into an HL7 transcription for direct delivery to providers EHR systems and integration into the patient longitudinal record in the QHN HIE.

Daily, QHN receives the reports from MSH and ingests them into the Mirth platform. The informatics teams at both organizations worked closely together to ensure the Prohibition of Redisclosure statement is embedded in each report and established the custom workflows required for quality assurance. The MSH Medical Records team is responsible for creating the database that determines which reports are pushed to the HIE, based on completed patient ROI and provider's EHR capability (interface) to receive data. All behavioral health data delivered from MSH to QHN is pushed directly to the providers EHR system or an establish Secure File Transfer Protocol (SFTP) file established for the provider. The convenience and accessibility of the data, not having to query a repository, has made for very high provider satisfaction with the integration process and remarkable utilization of the information in care coordination and medication management.

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[2] States with an opt-in model, where patient authorization to participate in the HIE needs to be obtained before their information can be shared, often have a release process already built into their technology. However, the releases to authorize the exchange of substance use treatment information are often more granular in nature and therefore updates to those HIE architectures is also often warranted to begin exchanging behavioral health information.

Both organizations committed substantial resources to the resolution of the significant legal issues. This required intentional, dedicated collaboration among the organization's executives, tech and legal teams to move the project to the place where behavioral health data could be exchanged.
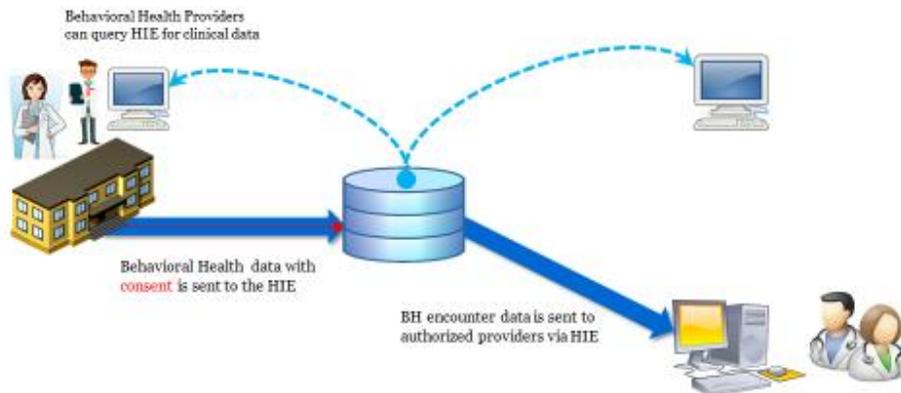
The project team's initial conceptual workflow, a "break the glass" scenario, ultimately had to be reworked as it was deemed too unwieldy by primary care providers. In this process, before providers could view the data, they had to schedule to see the patient, get the consent signed, and manage consent retention. As the workflow was rethought, it became clear that having MSH manage the entire consent procedure and push the appropriate reports to the HIE was the preferred process.

MSH was committed to undertake the consent process responsibility. At the request of primary care providers, they had been exchanging some behavioral health information, with authorized providers, via fax for five years. They understood that faxing created security, access and workflow problems and incurred significant staff expense for MSH.

Quality Health Network Architecture

Behavioral Health Providers
can query HIE for clinical data

Behavioral Health data with
consent is sent to the HIE

BH encounter data is sent to
authorized providers via HIE

CORHIO Technology and Architecture

CORHIO's health information exchange vendor Medicity provides the capability to manage the release of information from the exchange on a granular basis by patient and specific provider. However, that process only pertains to hospital information obtained via HL7 and not to continuity of care documents (CCDs) obtained from behavioral health organizations. Also, the process of updating the rules for release of information is an entirely manual process and therefore time-consuming and prone to error. For these reasons, CORHIO decided to create an architecture that holds the release process separate from the main health information exchange architecture.

The CORHIO architecture for behavioral health exchange utilizes a separate health information exchange that is then connected with CORHIO's main health information exchange via an XCA (Cross Community Exchange-Sequoia/eHealth Initiative) connection. When a user queries a patient through the CORHIO provider portal (PatientCare 360®), they can select to query external documents. When they do, a query will be initiated to several XCA-connected exchanges such as the Department of Defense, Kaiser Permanante, other HIEs as well as the behavioral health repository. If the patient has authorized a release using the CORHIO Patient Managed Consent Portal (Choose2Share.com), the appropriate behavioral health CCDs will be shared with the PatientCare 360 user. A separate document repository (XDS.b) was established to house the sensitive behavioral health documents (C-CDAs). Documents are sent from the EHR vendor directly into that repository where they are registered to a Master Patient Index (MPI) and then stored. There are several trigger events within the EHR that cause a CCD to be sent into the behavioral health repository. Primarily, however, it occurs when an encounter takes place, is documented and an encounter note is signed in the EHR.

The EHR vendor sends comprehensive CCDs meaning that the CCDs list all encounters that this patient has had in the current episode of care – not just the encounter that has just taken place. For the pilot, all CCDs are stored and then shared when a provider queries the repository. In the near future, CORHIO would like to replace previous CCDs when new CCDs for a patient are received. That way only the most recent CCD, which is a comprehensive summary, will be shared with the provider.

An architectural decision that was made was to store the Mental Health Center of Denver CCDs in a CORHIO repository rather than simply passing the provider query to the EHR and querying from there directly. This decision was made primarily for efficiency since adding an interface to a separate system could have caused a delay in the query process and would require yet another vendor to be in the mix for the infrastructure. In the future, CORHIO will be creating a service whereby providers can query for a consolidated CCD from the CORHIO data repositories. The plan would be to include hospital, ambulatory and behavioral health information in that CCD. To be able to do this effectively will require that documents be parsed into discrete data elements (for instance medications, diagnosis, procedure codes, etc). Therefore, by having the documents directly in a CORHIO repository, CORHIO will be able to

add a step to parse those CCDs upon ingest into discrete data elements. Once discretely stored, provided the patient has granted consent, the data could be used for several use cases including analytics, population health, public health, etc.

The consent portal is based on an open source tool developed for the ONC by FEi Systems called Consent2Share. For this pilot, CORHIO substantially customized and trimmed down the functionality of Consent2Share so that it now mainly consists of a single screen where patients select a provider with whom to share their information.
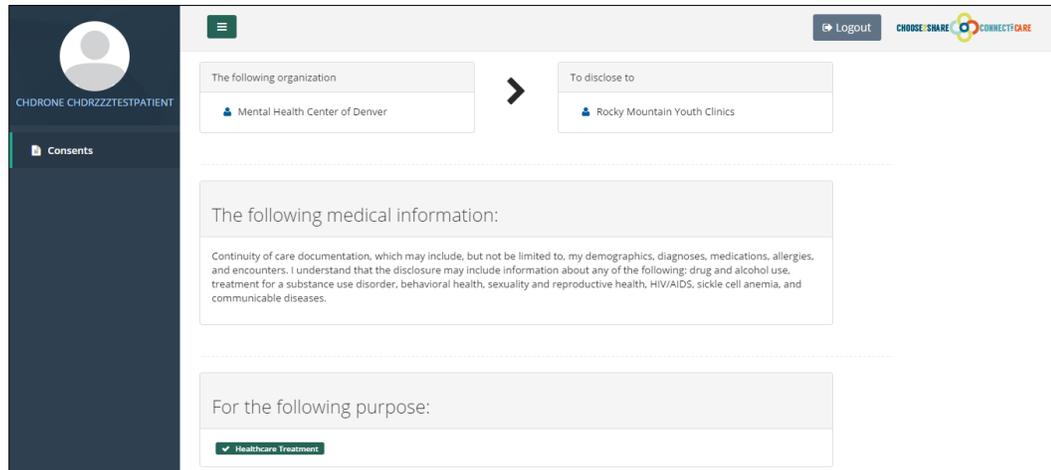
The default for the pilot is to share all information which may include, but is not limited to, demographics, diagnoses, medications, allergies, and encounters.

Although Choose2Share has the functionality that could allow the patient to pick and choose which information they would like to share, CORHIO opted to not include that level of granularity in the pilot for several reasons. First, CORHIO wanted to initiate the consent interface process in the easiest and most understandable form possible for patients. If a patient isn't comfortable with all of their information being shared, then they simply don't participate in the pilot and their information can be shared on a more granular basis through existing sharing policies within the community mental health center (CMHC). Also, although the Choose2Share tool enables segmenting based on types of data, the C-CDA documents coming from the CMHC did not pass the Choose2Share validations that are required for data to be segmented. For instance, certain LOINC codes were not being delivered by the EHR in a way that would enable those LOINC codes to drive more granular exchange. Correcting these issues would have required workflow changes which would have been time-consuming and beyond the scope of the pilot. In future, CORHIO plans to enact this more granular level of consent and to work through the validation issues.

The field "For the following purpose" is also not selectable by the client. To simplify the process this was set to a default option of "Healthcare Treatment." The main reason for hard coding this purpose is the method through which the behavioral health information is shared, which is through the HIE provider portal. Because HIPAA allows sharing of health care information for purposes of Treatment, Payment and Operations, CORHIO needed to create a purpose that was
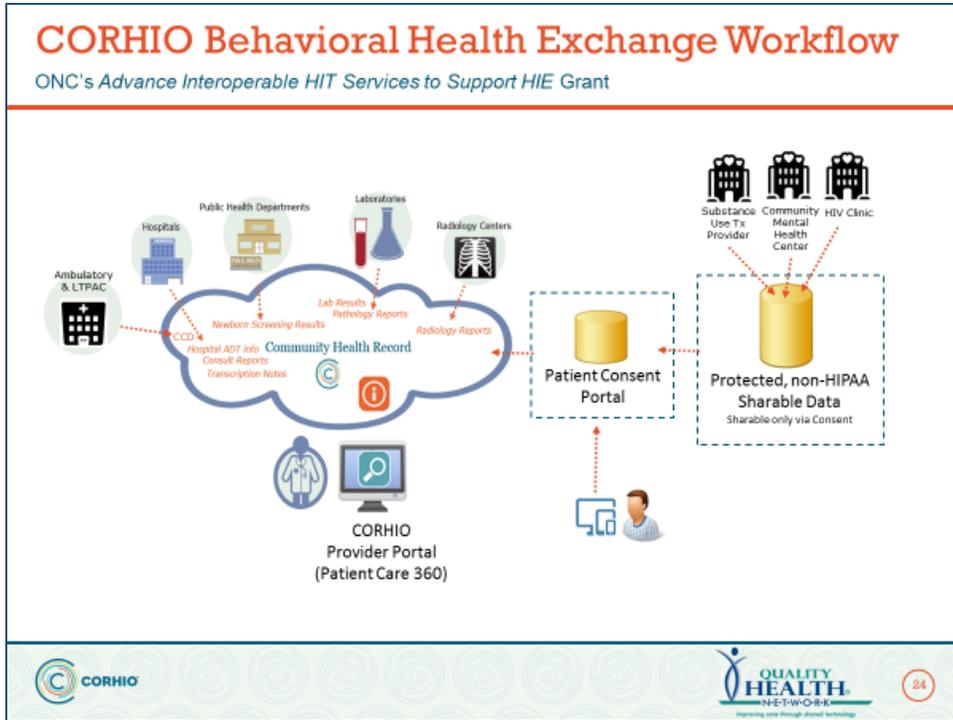
in line with one of those options and therefore "Healthcare Treatment" was the most obvious. As a way to enforce that users of the CORHIO portal are accessing the behavioral health information for healthcare treatment purposes, a separate mapping file was created. Only users at the organization that are treating providers or staff that support treating providers will see the sensitive behavioral health information.
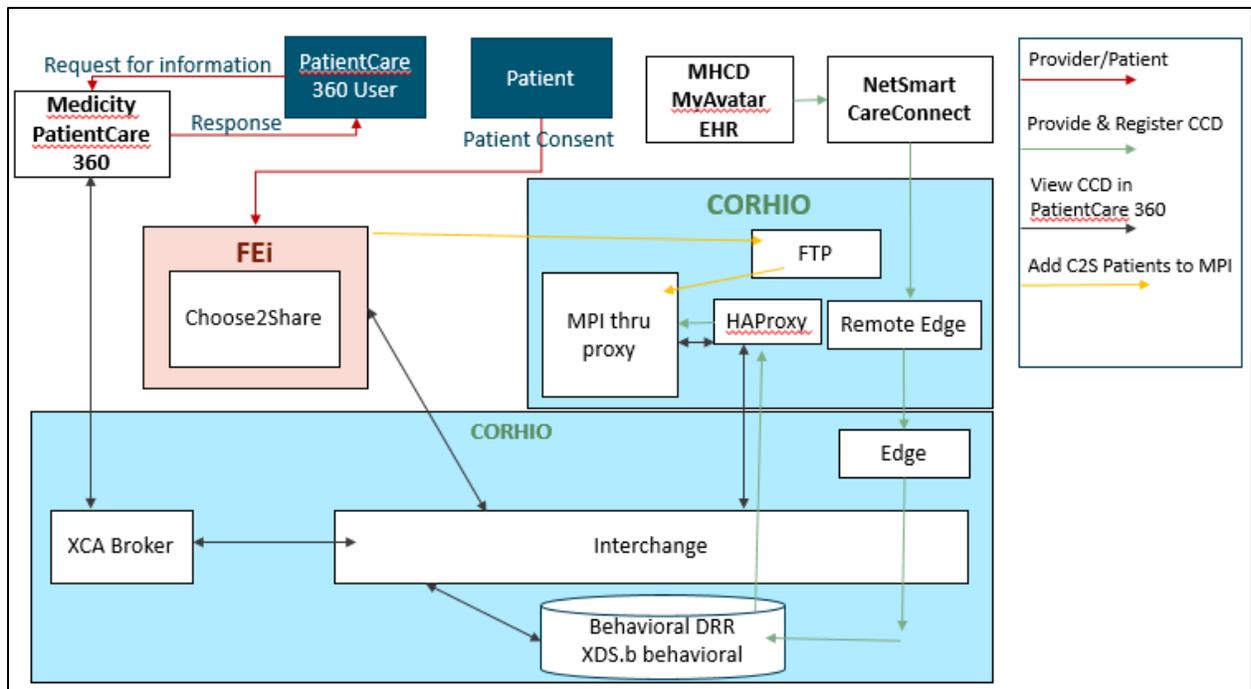
As discussed earlier, CORHIO chose to set up a separate document repository (XDS.b) to store the behavioral health documents. Although segmenting those documents within the CORHIO ambulatory repository was also an option, CORHIO chose a separate repository. This way they could ensure the enforcement of repository queries only through the consent module and that documents can only be retrieved if the patient consent is on file for the retrieving organization. For similar reasons, CORHIO decided to also set up a separate instance of their Master Patient Index tool to only be for patients with documents in the behavioral health repository and patients with consent in the Choose2Share online consent tool. Because CORHIO plans to offer MPI as a service functionality in the future whereby organizations can post to – and query – their MPI, disclosing patients associated with 42 CFR Part 2 organizations is not permitted without consent and so establishing a separate MPI seemed the most secure way to proceed.

The external behavioral health exchange includes the following components:

- XDS.b Document Repository: CCDs for all patients are sent from the pilot behavioral health center (Mental Health Center of Denver) into the repository.
- Master Patient Index (MPI): The MPI is updated with demographic and medical record number (MRN) information for patients who have enacted releases in the Choose2Share consent portal. The MPI is also updated with demographics and MRN from the CCDs from the MHCD. Then, when patient demographics are sent via the XCA connection with the CORHIO HIE, the patient's C2S record is matched via the MPI and, if a valid release is on file, the demographics are matched against the MHCD CCDs to pull that patient's documents for display.
- Choose2Share.com Consent Portal: The consent portal is a web-based application that patients can obtain access to via a representative from MHCD. MHCD employs peer specialists (former clients at MHCD) to work with patients and to provision them with user accounts to the Choose2Share system and to assist them in enacting consent with provider organizations.

Request for information → PatientCare 360 User

Medicity PatientCare 360

Response

Patient

Patient Consent

MHCD MyAvatar EHR

NetSmart CareConnect

Provider/Patient

Provide & Register CCD

View CCD in PatientCare 360

Add C2S Patients to MPI

CORHIO

FEi

Choose2Share

FTP

MPI thru proxy

HAProxy

Remote Edge

Edge

CORHIO

XCA Broker

Interchange

Behavioral DRR XDS.b behavioral

Contracting

Contracting for this work was challenging for CORHIO. Contracts were established for access to an outside MPI, a vendor to manage the data sharing portal (the patient access view) and a data repository. Further, agreements established to ensure that the documents would be visible in the provider portal of CORHIO's main system (Medicity). These contracts couldn't be guaranteed beyond the life of the project, and that has led to good discussions about sustainability and how the CORHIO team will keep the behavioral health data exchange functional.

QHN had a consent product that met their needs built into their Mirth base product and didn't need additional vendors to assist with their execution of the behavioral health integration project.

Lessons Learned

CORHIO and QHN wanted to answer the question "What is the best way to manage the exchange of patient consent for sensitive data and allow behavioral health information to be integrated into the respective HIEs?" There are a number of lessons learned in the successful execution of both models.

<u>QHN Model: The Health Practice Manages Consent</u>

The collective vision of improving the community standard of care through the exchange of behavioral health and physical health information, a dedicated multi-disciplinary project team and a cultivated trust relationships set the stage for the project's success. The project team, which included primary care physicians (PCPs), behavioral health providers and the technical teams from both QHN and MSH, felt the high-need behavioral health population was likely to have issues accessing, navigating and utilizing a patient-directed consent platform. They felt the personal interaction and opportunity for client-provider communication throughout the ROI process of significant value and likely to obtain quicker, appreciable success to get the data moving electronically.

"We asked our consumer focus groups for their input on this project;" said Hayden. "Their initial response was one of caution as they were worried about the stigma. Once they understood that they have control to opt out and that it's in their hands to decide whether or not to share information with their primary care providers, they have unanimously said yes, they think it's good that we are collaborating."

MSH has focused on the ROI process, how and when they are obtaining client consent and measuring process improvements, continually working to increase the number of consents collected. Through this continual improvement and measurement process they have been able to achieve significant success.

The MSH system presented the challenge of not being able to create a CCD or HL7 message, and this could have stalled the project. One option was to wait for the system to have the capability, and was perhaps strengthened by the argument that doing this type of exchange in any other method than a CCD is not scalable or maintainable, nor cost-effective. However, the team ultimately considered the more important question and that is "what is the cost if we wait?". Not waiting, choosing to adopt a push forward mindset, allowed us to better understand and overcome the challenges this work entails. Addressing the challenges now allows us to take advantage of future system enhancements and will help us realize savings and improvements as standards and vendor capabilities mature.

The obvious disadvantages to faxing behavioral health reports to providers helped the project team stay focused on electronic information exchange. Providers' persistent claims that faxes are not received, are misfiled and create workflow and privacy issues, made the electronic

exchange, via HIE, the clear option for improved efficiency and secure, appropriate exchange of this sensitive information. "We knew the faxing process wasn't efficient and didn't allow for close care coordination," noted Hayden.

"Prior to having mental health data pushed into my EHR I had to rely on faxed information," says Dr. Tom Moore, Family Medicine Physician with Western Medical Associates. "These reports had to be handled by my office staff, scanned and loaded into our EHR. Now they are automatically entered into the patient's record, the electronic transfer of information is more accurate, safer and confidential. This is a significant improvement in healthcare for my patients, having immediate access to their mental health data, as I do to information from other referral sources, is critical. In order to better coordinate a patients care, so there is no duplication of testing or medications, the mental health component of a patient's medication list is arguably the most important, as it may limit other medications that can be prescribed."

"The big advantage of a centralize health information repository, the HIE, is that we do have a much better understanding of the full scope of care our patients are receiving and which other providers are involved in their care. Patients are not good historians, especially if they have an inlaying mental illness," continued Moore.

The CORHIO Model: Patients Driving Consent Decisions

Since 2013, CORHIO has engaged providers, policy makers, technologists and patients interested in enabling more effective exchange of behavioral health information through a series of focus groups, learning collaboratives and one-on-one interviews. Because of those efforts, one theme emerged and that was the need for patients with mental health or substance use issues to have a say in who can access their health records. As previously stated, Colorado made legislative changes that would have enabled mental health information to be exchanged using HIPAA guidelines but consistently, constituents felt that continuing to enable patients to designate who they would prefer their information be released to, be a priority. Therefore, similar to QHN's architecture, CORHIO chose to implement a release management process that would sit alongside the existing HIPAA exchange architecture.

Unlike QHN, CORHIO chose to launch a web-based portal where patients could directly enact or revoke their consent to share their information. This additional step of enabling patients to have direct and immediate control over where their behavioral health information was being shared, while requiring additional infrastructure and patient education, was viewed as an important step in enabling patients to remain at the center – and in control of – their health care records and therefore of their health.

With the CORHIO model, patients are given an account within the consent portal (Choose2Share.com) and provided with education materials and, if desired, hands-on help in how to enable consent within the portal. The pilot site, Mental Health Center of Denver, hired peer specialists to outreach to patients who they knew received services at one of the two primary care practices that were participating in the pilot. Patients were shown a brief video

explaining the benefits to them for managing their own consent (https://youtu.be/82y4bbnPTtg) and the peer specialists are also there to answer any questions. When patients express an interest in trying the service, the peer specialists create their account and then walk them through the process of setting up their accounts. Informational brochures are also made available so that patients could finish up the process at home by following the instructions themselves.

One of the questions CORHIO hopes to answer is whether this extra time and expense leads to better outcomes. CORHIO wants to know if patients feel a greater degree of involvement and investment in their healthcare treatment as a result of being in direct control of which providers they give permission to see their sensitive records. With this model, patients would be able to enact a release for their primary care provider organization while in the waiting room and remove that same access when their appointment is over. The provider would then be able to see a medication change, for instance, by pulling up that patient's behavioral health information directly from the provider portal during the patients visit, but not afterwards. The theory behind this effort is this: if a patient has this level of control of their information, will they feel more empowered to speak about their behavioral health history with their primary care providers. In the limited time that this has been piloted at MHCD, patients seem to be wary of sharing their health information with anyone. This process will require extensive education for the patients in order to convince them that sharing their Behavioral Health data with their primary care provider will benefit them in the long run.

Practice Management: Provider Access and Workflow Considerations

QHN: With nearly 1 in 5 American adults suffering from mental illness, providers in western Colorado have long recognized the need to integrate behavioral health information into primary care to improve the quality and coordination of care. In 2012, MSH began exchanging some behavioral health information, inpatient hospital discharge summaries, with authorized providers via fax. However, faxing created security, access and workflow problems as the vast majority of providers in the MSH service area where in-process of adopting EHRs and opting to interface with QHN to receive their patient data from all disparate sources electronically. In 2015, the two entities initiated discussions and within the year established a joint commitment to share the expense, policy work and potential liability risk to explore the exchange of behavioral health information electronically utilizing QHN. "We knew the faxing process wasn't efficient and didn't allow for close care coordination, so once the legal framework was completed, a joint QHN, Mind Springs workgroup was convened and started to meet weekly," noted Hayden.

The initial process established by the workgroup was to have the MSH medical records staff login to the QHN system and manually enter the opt-in consent, then the mental health encounter data was sent electronically to QHN. This required the MSH practice staff to manually search for and identify the patient and establish opt-in for a specific practice to view,

for a delineated timeframe. Once this was completed the authorized providers could access the patient's behavioral health information in the QHN longitudinal patient record. As with many endeavors of this nature, what sounds good, and practical, during the planning process when implemented is cumbersome, time-consuming and error-prone.

The workgroup quickly explored their matrix of possible solutions to streamline and automate the process. The EHR system at MSH offered limited flexibility in the types of file extracts they could send to QHN; practically the only workable file type was a .csv. The two technical teams worked in concert to create an automated process were daily QHN receives a .csv file from MSH via Secure File Transfer Protocol (SFTP). QHN in turns extracts the data into HL7 segments. Included in the file is the report, a consent segment provided by the source and the providers ID for QHN routing. QHN is then able to route the behavioral health data directly to the providers EHR or SFTP through an interface. If the provider does not have QHN delivery capability, then the source, MSH, resorts back to faxing. If there is no consent the data never even comes through to QHN. Once the behavioral health data is routed to the consented provider(s) a copy is also placed in the patient's QHN longitudinal record for query access by authorized providers. All behavioral health documents, either delivered directly to the provider, or accessed in the longitudinal record contain a prohibition against redisclosure notice as required by 42 CFR Part 2.

A quality assurance process was established by the workgroup. Nightly QHN sends back to MSH a verification file which delineates the patient's name, where the file was delivered (practice) and consent date parameters. This process allows the MSH team to complete their quality and verification process as on occasion there are still issues of missing information to create the consent or the consent was not included in the message, however this is infrequent.

Currently more than 50 percent of the 850-1,000 reports sent out monthly by MSH, are being sent electronically via QHN. As QHN continues to complete the build out of the architecture for direct delivery into provider's EHRs this percentage will continue to increase. "We hope to reach 100 percent delivery of our reports electronically via QHN. We have put a lot of resources into this collaboration; this has been a big investment for us. While it is hard to say that we have saved FTEs... what we can say is that we save about two to three minutes for every report sent through QHN, as opposed to fax, so this amounts to a significant cost savings when we are sending hundreds of reports a month," said Hayden.

CORHIO: CORHIO is enabling access to the behavioral health documents via the CORHIO provider portal. Users of the portal navigate to the documents area of the patient record where they can see ambulatory and long-term post-acute care documents. The architecture requires that the behavioral health records are in a separate repository, the users select to "Find External Documents" which causes a query to be performed that passes information about the client and the logged in user to the behavioral health infrastructure. The patient demographics

from the query are used to determine if the patient has a consent in the Choose2Share portal. The logged in user credentials are used to determine if the consent, if one is there, is for the organization that this user is part of. If it is, then the document repository is queried and a list of documents is displayed to the logged in user. The user can then select which document to view and it is displayed within the portal interface. The document contains a prohibition against redisclosure notice that is required by 42 CFR Part 2. That notice is placed on all queried CCDs by the Choose2Share application.

CORHIO also would like to make the CCDs available by direct query and retrieve but for purposes of the pilot, opted to start by only making them available through the portal. However, the architecture for direct query of the document repository is already enabled and available without any modification to the architecture.

Moving Interoperability Forward: Impacts of the Project on Other Sectors

This project has significant implications for a national model for exchanging sensitive documents, and it teaches us about the level of interest patients have in directing which providers access their data. While the CORHIO model is in the process of being proven, the QHN model shows that, given the opportunity, patients will elect to share their sensitive data with other treating providers. Further, it is clear providers are interested in having access to behavioral health data and integrating the information into their clinical findings for improved coordination across the care continuum. It remains to be seen if CORHIO's model of patient activated access is as successful.

In addition, both CORHIO and QHN have been in active discussions with their participating practices and other stakeholders, regarding the full integration of information related to the fundamental drivers of health and disease. The move toward fully integrated care models has heightened the attention on the role social factors play in the health status of individuals and the connection between health and social services. Social determinants of health (SDOH) include factors such as economic stability, housing, education, transportation and other environmental influences. Today, both CORHIO and QHN are exploring opportunities to exchange SDOH data through their HIEs. These new data types, and levels of HIE user access, will require, and add new challenges, to the electronic exchange and delineation of consent. The models implemented and the outcomes documented in this project will prove invaluable as the organizations explore and challenge the world of electronic data exchange and communication facilitated by HIE.

Successfully achieving electronic exchange of consent across the nation is still a long way off, but today, Colorado is leading the way and moving national interoperability one step closer to reality.