Care Plan-
Integrated Care Bridge Record (ICBR)

Implementation Guide

Version 20
July 21, 2019

Document History

Date	Version	Sections Revised	Description	Modifier
04/16/19	20	All	Revised into new template	S. Southard

Table of Contents

Acronyms and Abbreviations Guide

AA	Assigning Authority
CAH	Critical Access Hospital
CCD	Continuity of Care Document
CDA	Clinical Document Architecture
CGS	Common Gateway Service
DQ	Document Query
DR	Document Retrieve
DSM	Direct Secure Messaging
DS	Document Submission
HCID	Home Community ID
HIE	Health Information Exchange
HIE-QO	Health Information Exchange Qualified Data Sharing Organization
HITSP	Health Information Technology Standards Panel
HL7	Health Level Seven
ICBR	Integrated Care Bridge Record
ICO	Integrated Care Organization
ICT	Integrated Care Teams
IHE	Integrating the Healthcare Enterprise
IICSP	Individual Integrated Care and Supports Plan
MDHHS	Michigan Department of Health and Human Services
MiHIN	Michigan Health Information Network Shared Services
NHIO	Nationwide Health Information Organization
NwHIN	Nationwide Health Information Network

PIHP	Prepaid Inpatient Health Plans
QD	Query for Documents
QO	Qualified Data Sharing Organization
QRDA	Quality Reporting Document Architecture
RD	Retrieve Documents
SAML	Security Assertion Markup Language
SOAP	Simple Object Access Protocol
SSO	Sponsored Data Sharing Organization
SSSO	State Sponsored Data Sharing Organization
TDSO	Trusted Data Sharing Organization
UCA	Use Case Agreement
UCS	Use Case Summary
VPN	Virtual Private Network
XCA	Cross Community Access
XCAQ	XGQ Cross Gateway Query
XCAR	XGR Cross Gateway Retrieve
XDR	Cross-Enterprise Document Reliable Interchange
XDS	Cross-Enterprise Document Sharing
XGQ	XGQ Cross Gateway Query
XGR	Cross Gateway Retrieve
XML	Extended Mark-Up Language

Definitions

Applicable Laws and Standards. In addition to the definition set forth in the Data Sharing Agreement, the federal Confidentiality of Alcohol and Drug Abuse Patient Records statute, section 543 of the Public Health Service Act, 42 U.S.C. 290dd-2, and its implementing regulation, 42 CFR Part 2; the Michigan Mental Health Code, at MCLA §§ 333.1748 and 333.1748a; and the Michigan Public Health Code, at MCL § 333.5131, 5114a.

C32. HITSP Summary Documents Using HL7 Continuity of Care Document Component - http://www.hitsp.org/ConstructSet_Details.aspx?&PrefixAlpha=4&PrefixNumeric=32.

C62. The HITSP Unstructured Document Component is provided for the capture and storage of patient identifiable, unstructured document content, such as text, PDF, and images rendered in PDF. It is based on the Cross-Enterprise Sharing of Scanned Documents (XDS-SD) profile from IHE - http://www.hitsp.org/ConstructSet_Details.aspx?&PrefixAlpha=4&PrefixNumeric=62

C83. The HITSP CDA Content Modules Component. The CDA Content Modules Component defines the content modules for document based HITSP constructs utilizing clinical information- http://www.hitsp.org/ConstructSet_Details.aspx?&PrefixAlpha=4&PrefixNumeric=83

Common Gateway. The method by which data is sent and received by MiHIN using various national standard protocols (e.g. NwHIN SOAP, IHE XCA, IHE XDS.b).

CONNECT. An open source software solution that supports health information exchange – both locally and at the national level. CONNECT uses Nationwide Health Information Network standards and governance to make sure that health information exchanges are compatible with other exchanges being set up throughout the country (http://www.connectopensource.org/). This software solution was initially developed by federal agencies to support their health-related missions, but it is now available to all organizations and can be used to help set up health information exchanges and share data using nationally-recognized interoperability standards.

Data Sharing Agreement. Any data sharing organization agreement signed by both MiHIN and a participating organization. Data sharing organization agreements include but are not limited to: Qualified Data Sharing Organization Agreement, Virtual Qualified Data Sharing Organization Agreement, Consumer Qualified Data Sharing Agreement, Sponsored Shared Organization Agreement, State Sponsored Sharing Organization Agreement, Direct Data Sharing Organization Agreement, Simple Data Sharing Organization Agreement, or other data sharing organization agreements developed by MiHIN.

DS Message. A message specific to the document submission (DS) specification that conforms in content and format to the Integrating the Healthcare Enterprise's Cross-enterprise Document Reliable Interchange specification.

EdgeSim. Simulators that are utilized in a testing environment to simulate testing with a data sharing organization.

Exhibit. Collectively, a use case exhibit or a pilot activity exhibit.

FedSim. Simulators that are utilized in a testing environment to simulate testing with a federal partner e.g. SSA or VA

Health Level 7 (HL7). An interface standard and specifications for clinical and administrative healthcare data developed by the Health Level Seven organization and approved by the American National Standards Institute (ANSI). HL7 provides a method for disparate systems to communicate clinical and administrative information in a normalized format with acknowledgement of receipt

Health Information. Any information, including genetic information, whether oral or recorded in any form or medium, that (a) is created or received by a health provider, public health authority, employer, life insurer, school or university, or healthcare clearinghouse; and (b) relates to the past, present, or future physical or mental health or condition of an individual; the provision of health care to an individual; or the past, present, or future payment for the provision of health care to an individual.

Health Information Network (HIN). An organization or group of organizations responsible for coordinating the exchange of protected health information (PHI) in a region, state, or nationally.

Health Plan. An individual or group plan that provides, or pays the cost of medical care (as "group health plan" and "medical care" are defined in section 2791(a)(2) of the Public Health Service Act, 42 U.S.C. 300gg-91(a)(2)). Health plan further includes those entities defined as a health plan under HIPAA, 45 C.F.R 160.103.

Health Professional means (a) any individual licensed, registered, or certified under applicable Federal or State laws or regulations to provide healthcare services; (b) any person holding a nonclinical position within or associated with an organization that provides or coordinates healthcare or healthcare related services; and (c) people who contribute to the gathering, recording, processing, analysis or communication of health information. Examples include, but are not limited to, physicians, physician assistants, nurse practitioners, nurses, medical assistants, home health professionals, administrative assistants, care managers, care coordinators, receptionists and clerks.

Health Provider means facilities/hospitals, health professionals, health plans, caregivers, pharmacists/other qualified professionals, or any other person or organization involved in providing healthcare.

IHE. IHE (Integrating the Healthcare Enterprise) is an initiative by healthcare professionals and industry to improve the way computer systems in healthcare share information (http://www.ihe.net/). IHE promotes the coordinated use of established standards such as DICOM and HL7 to address specific clinical needs in support of optimal patient care. Systems developed in accordance with IHE communicate with one another better, are easier to implement, and enable care providers to use information more effectively.

The NwHIN specifications utilize underlying IHE specifications for various services for health data exchange

Information Source. Any organization that provides information that is added to a MiHIN infrastructure service.

Master Use Case Agreement (MUCA). Legal document covering expected rules of engagement across all use cases. Trusted data sharing organizations sign master use case agreement one time, then sign use case exhibits for participation in specific use cases.

Message. A mechanism for exchanging message content between the participating organization to MiHIN services, including query and retrieve.

Message Content. Information, as further defined in an Exhibit, which is sent, received, found or used by a participating organization to or from MiHIN services. Message content includes the message content header.

Message Header ("MSH") or Message Content Header. The MSH segment present in every HL7 message type that defines the Message's source, purpose, destination, and certain syntax specifics such as delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

Michigan Care Improvement Registry (MCIR). The IIS for the State of Michigan operated by the Michigan Department of Health and Human Services (MDHHS).

Michigan Health Information Network Shared Services. The MiHIN for the State of Michigan.

MiHIN Infrastructure Service. Certain services that are shared by numerous use cases. MiHIN infrastructure services include, but are not limited to, Active Care Relationship Service (ACRS), Health Directory, Statewide Consumer Directory (SCD), and the Medical Information DIrect GATEway (MIDIGATE®).

MiHIN Services. The MiHIN infrastructure services and additional services and functionality provided by MiHIN allowing the participating organizations to send, receive, find, or use information to or from MiHIN as further set forth in an exhibit.

Nationwide Health Information Network (NwHIN). See the definition for Sequoia Project.

Nationwide Health Information Organizations (NHIO). Nodes on the eHealth Exchange that use the NwHIN web services to facilitate exchange of information with other nodes in the network.

NwHIN Authorization Framework Specification. The purpose of this specification is to define the required exchange of information describing the initiator of a request between HIOs participating in the eHealth Exchange network. This enables a responding NHIO to evaluate the request based on the initiating NHIOs assertions and its own local policies and permissions.

NwHIN Document Submission (DS) Web Service Interface Specification. The purpose of this specification is to provide the ability to "send" data for a given patient from an exchange partner to an HIE using configuration on the sender side.

NwHIN Gateway. An implementation of the Nationwide Health Information Network specified web service interfaces. These web service interfaces communicate over secured HTTPS using Public Key Infrastructure supported by the NwHIN Operational Infrastructure.

NwHIN Interface. An implementation of the NwHIN specified web service interfaces. These web service interfaces communicate over secured HTTPS using Public Key Infrastructure supported by the NwHIN Operational Infrastructure.

NwHIN Messaging Platform Specifications The purpose of this specification is to define a base set of messaging standards and web service protocols which must be implemented by each node in the eHealth Exchange network and applies to all eHealth Exchange transactions.

NwHIN Patient Discovery Web Service Interface Specification. The purpose of this specification is to define the mechanism by which one eHealth Exchange node can query another to reciprocally establish patient identity and to determine if a node may be a source of information for a specific patient.

NwHIN Query for Documents Web Service Interface Specification. The purpose of this specification is to define the mechanism by which an initiating eHealth Exchange node can request a patient-specific list of available documents from a responding node using the patient ID obtained by a prior Patient Discovery transaction.

NwHIN Retrieve Documents Web Service Interface Specification. The purpose of this specification is to define the mechanism by which an Initiating eHealth Exchange node can retrieve specific documents from a responding node using the Document Reference IDs obtained using a prior Query for Documents transaction.

Negative Acknowledgment (NAK or NACK). "Not acknowledged" and is used to negatively acknowledge or to reject previously received message content or to indicate some kind of error.

Notice. A message transmission that is not message content and which may include an acknowledgement of receipt or error response, such as an ACK or NACK.

OID. Object Identifier, as issued by Health Level 7 (HL7) (http://www.hl7.org/oid/index.cfm)

Query for Documents Message. A message specific to the Query for Documents Web Services Interface Specification that references the Integrating the Healthcare Enterprise's Cross-Community Access specification.

REST. REST stands for Representational State Transfer, which is an architectural style, and an approach to communications that is often used in the development of web services.

Retrieve Documents Message. Retrieve documents web services interface specification that references the Integrating the Healthcare Enterprise's Cross-Community Access specification.

Send / Receive / Find / Use (SRFU). Means sending, receiving, finding, or using message content. Sending involves the transport of message content. Receiving involves accepting and possibly consuming or storing message content. Finding means querying to locate message content. Using means any use of the message content other than sending, receiving and finding. Examples of use include consuming into workflow, reporting, storing, or analysis. Send/Receive/Find/Use (SRFU) activities must comply with Applicable Laws & Standards or State Administrative Code as that term is defined in this agreement and the data sharing agreement.

Service Interruption. A party is unable to send, receive or find message content for any reason, including the failure of network equipment or software, scheduled or unscheduled maintenance, general Internet outages, and events of force majeure.

SOAP. SOAP originally defined as Simple Object Access Protocol is a lightweight protocol intended for exchanging structured information in a decentralized, distributed environment. It uses XML technologies to define an extensible messaging framework providing a message construct that can be exchanged over a variety of underlying protocols. The framework has been designed to be independent of any particular programming model and other implementation specific semantics. For the eHealth Exchange to be a truly scalable, secure and interoperable network, a common transport layer is essential. The messaging platform is based on SOAP 1.2 messages over HTTP.

Specifications. Specifications provide a standard set of service interfaces that enable the exchange of interoperable health information among the health information exchanges.

Target HIE. The HIE or eHealth Exchange Node that the message or feedback is being addressed.

Trusted Data Sharing Organization (TDSO). An organization that has signed any form of agreement with MiHIN for data sharing.

Use Case. (a) A use case agreement previously executed by a participating organization; or (b) the use case summary, use case exhibit and a use case implementation guide that participating organization or TDSO must follow to share specific message content with the MiHIN.

Use Case Exhibit. The legal agreement attached as an exhibit to the master use case agreement that governs participation in any specific use case.

Use Case Implementation Guide (UCIG). The document providing technical specifications related to message content and transport of message content between participating organization, MiHIN, and other TDSOs. use case implementation guides are made available via URLs in exhibits.

Use Case Summary. The document providing the executive summary, business justification and value proposition of a use case. Use case summaries are provided by MiHIN upon request and via the MiHIN website at www.mihin.org.

XCA. The IHE (Integrating the Healthcare Enterprise®) standard for Cross-Community Access which provides specifications to query and retrieve patient relevant health information held by other communities.

XDS.b. The IHE (Integrating the Healthcare Enterprise®) standard for Cross-Enterprise Document Sharing revision b, which provides specifications to query and retrieve patient relevant healthcare data held within a community.

1. Introduction

1.1 Purpose of Use Case

> *Allows any participating organization to connect to MiHIN a single time and exchange documents with any other organization also participating in the use case.*

Approximately 200,000 Michigan residents are dually enrolled in Medicaid and Medicare. These "dual-eligible" beneficiaries often have complex diagnoses that require communication and coordination among physical, behavioral health and social service organizations, including integrated care organizations (ICOs) and prepaid inpatient health plans (PIHPs). MI Health Link is an initiative to coordinate care for these dual-eligible residents.

Because care management occurs independently within ICOs and PIHPs via integrated care teams, there is a need for a streamlined way to exchange beneficiary health information and, in particular, integrated "care plans."

With care management occurring independently within organizations via integrated care teams there is a need for a streamlined way to exchange patient information to ensure the patient's needs are being met.

An integrated care team includes:

- ICO care coordinators
- Long-term supports and services coordinator
- Primary care and other treating providers
- Repaid inpatient health plans

Every member of the integrated care team will have access to a member's care plan through a care coordination platform. A care plan provides a comprehensive and detailed overview of a consumer's physical health, behavioral health, long-term care, and relevant services and supports. Specifically, a care plan contains:

- Consumer's history
- Conditions list
- Lab results
- Medications
- Assessments
- Individual Integrated Care and Supports Plan (IICSP)
- Specialty provider reports
- Referrals
- Progress notes

■ Status changes

Integrated care teams monitor the care plan and develop the IICSP.

ICOs are responsible for coordinating integrated care teams and provisioning medical and long-term care services and support (LTSS) for eligible participants. The ICOs also create and update care plans for eligible participants, and then either grant access to the care plan and/or share some or all of the care plan with the care team, dependent on the access control rules in place for that ICO. Therefore, a participant's care plan will be accessible through a local ICO platform and can be shared between the integrated care team members. Should a patient move to a different ICO, then the participant's care plan will be moved electronically to the new ICO.

The health information network serves as the transport mechanism for the care plan. The health information network does not store data; it simply routes the requests for a care plan from one ICO or PIHP to another and transports the care plan from the reporting ICO/PIHP to the requesting ICO or PIHP.

The care plan initiative operates in the following four regions of Michigan: Upper Peninsula, Southwest Michigan, Macomb County, and Wayne County. The Upper Peninsula and southwest Michigan were the first regions to initiate the care plan.

This use case promotes care coordination by sharing this beneficiary information in a care plan called an Integrated Care Bridge Record (ICBR) between ICOs and members of integrated care teams.

1.2 Message Content

For this use case, message content refers to a document conforming to Clinical Document Architecture standards and adhering to the Integrated Care Bridge Record document implementation guide (separate from this document and available at www.mihin.org/care-plan-icbr/).

Message examples are available in a separate document. It can be found online at https://mihin.org/care-plan-icbr-use-case-2/.

1.3 Data Flow and Actors

In this use case, MiHIN brokers the transport of ICBR messages between ICOs and PIHPs.

Each ICO/PIHP supports outbound submission, as well as both inbound and outbound query-based care plan exchange. This means that each organization can request information about a patient's care plan from another ICO/PIHP as well as respond to queries for information and send requested information to one of these participating organizations.

Figure 1: MiHIN Data Flow

1.4 Web Services between MiHIN and ICO/PIHP

Three of the primary component web services of the document exchange process between the ICO/PIHP and MiHIN are:

- Document Submission (DS/XDR)
- Query for Documents (QD/XGQ)
- Retrieve Documents (RD/XGR)

1.4.1 Document Submission (Outbound)

The Document Submission (DS) web service interface is used by the submitting entity (ICO/PIHP) to send a patient's ICBR care plan to another participating organization. In this case, the ICO/PIHP acts as the requesting client with the participating organization acting as the receiving gateway.
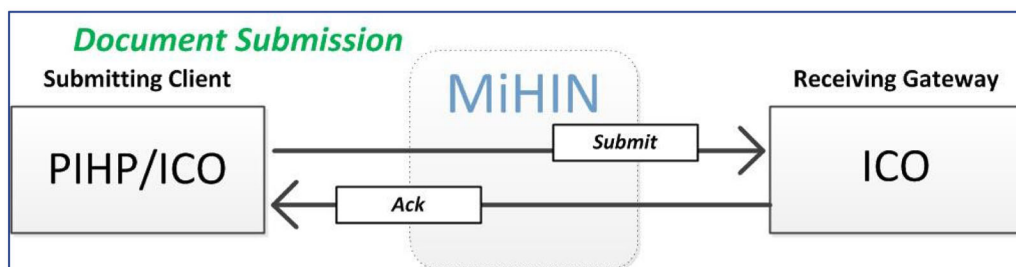
Figure 2: Outbound Document Submission

1.4.2 Query for Documents (Inbound and Outbound)

The Query for Documents (QD) web service interface identifies the medical documents available in the responding entity's system (ICO/PIHP) for the patient specified by the Patient ID in the Patient Discovery transaction. The ICO/PIHP acts as the requesting client querying for documents from the participating organization's system, using the known beneficiary ID for the first part of the patient ID (second part would be the targeted systems assigning authority [AA] explained in the Message section). The participating

organization's gateway can also initiate a QD request for patient documents from the ICO/PIHP system.

1.4.3 Retrieve Documents (Inbound and Outbound)

The Retrieve Documents (RD) web service interface obtains the patient's medical documents from the responding entity's system (participating organization or ICO/PIHP). This is accomplished using the document metadata in the QD response. e.g., the ICO/PIHP gateway acts as the requesting client retrieving documents from the participating organization's system, using the document ID and repository ID from the prior QD response. The participating organization's gateway can also initiate a RD request from the ICO/PIHP system.
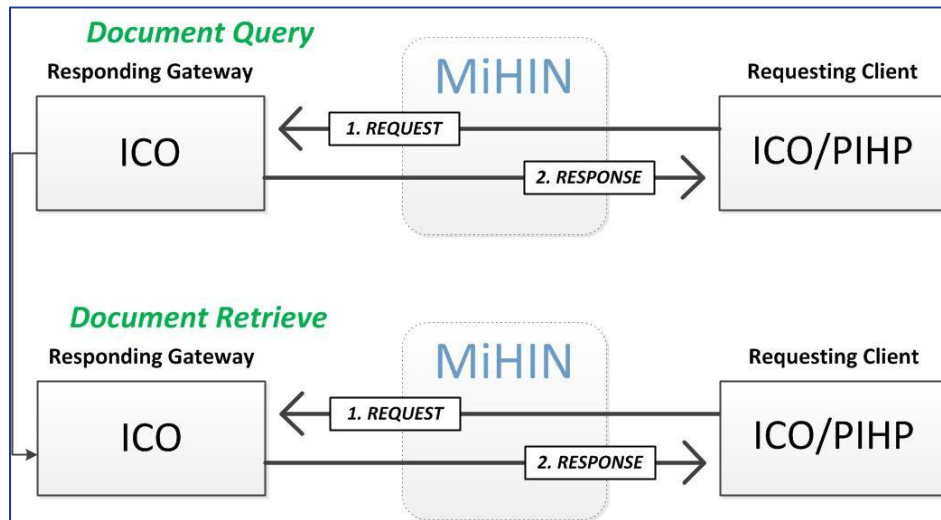

Figure 3: Query/Retrieve Workflow

2 Standard Overview

2.1 Message

MiHIN requires certain elements within the transaction request for routing and policy decisions.

In the DS messages the XDSSubmissionSet.sourceID must be the home community ID (HCID) of the sending organization. The patientID in the submission set and in each entry must match the known beneficiary ID and the assigning authority of the sending organization. The AA is the identifier for the sender's patient index system. This value can be the same as the HCID if the organization does not have multiple patient indexes. The format for the patientID is:

> **"<beneficiary ID>^^^&<sender AA/HCID>&ISO**

Please see "Message Examples" document, available at https://mihin.org/care-plan-icbr-use-case-2/

The message content and notices sent to and received from MiHIN's Common Gateway Service must conform to one or more of the following standards:

- IHE Cross-Community Access (XCA) specifications, supplemented with the message content required for a Nationwide Health Information Network (NwHIN) Security Assertion Markup Language (SAML)assertion
- IHE Cross-Enterprise Document Sharing (XDS.b) specifications, supplemented with the message content required for a NwHIN SAML assertion
- Exchange Specifications - the NwHIN specifications set forth on the Sequoia Project website at http://sequoiaproject.org.

2.2 Content

This guide outlines how to exchange messages which contain ICBR documents. For information regarding message payload (C-CDA), refer to the supplemental implementation guide ICBR_CCDA_SUPP_IG_v1_JUN2015, available upon request.

3 Onboarding Process and Testing

3.1 Initial Onboarding

For organizations to share data with MiHIN under this use case, the organization undergoes two onboarding processes simultaneously. The two onboarding processes are legal onboarding and technical connectivity onboarding. These may occur in parallel – i.e., the organization can review and complete legal agreements with MiHIN while simultaneously establishing and testing technical connectivity. To initiate these two parallel onboarding processes, notify MiHIN via http://mihin.org/requesthelp/.

3.1.1 Initial Legal Process

The first time an organization undergoes the legal onboarding process with MiHIN, the organization negotiates and enters into a master organization agreement and master use case agreement which then allows the organization to enter into one or more use cases via use case exhibits.

Once an organization has entered into a master organization agreement, the organization can enter into an unlimited number of use cases with MiHIN. All of MiHIN's use cases are available at:

http://mihin.org/about-mihin/resources/

3.1.2 Initial Technical Connectivity Process

MiHIN typically conducts "onboarding kickoff" meetings with new participating organizations to go through each onboarding step in detail and answer any questions.

MiHIN requires two VPN (Virtual Private Network) connection be established between the participating organization and MiHIN – one primary and one secondary for high availability.

The process for connecting to the staging Common Gateway Service is as follows:

1. The participating organization requests and submits the MiHIN site-to-site VPN request form. (The request form includes technical contacts, reason for VPN request, and IP and port values for the connecting server).
2. The new participating organization is added onto the MiHIN primary and secondary VPNs. (Confirmation performed using telnet from both sides).
3. The participating organization supplies the following information to MiHIN:
   a. Self-signed certificate from organization server (to be added to Common Gateway trust store)
   b. Organization Home Community ID (unique Object Identifiers (OID))
   c. Organization Assigning Authority (unique OID)
   d. Organization Repository ID (unique OID)
   e. DS, QD, and RD service endpoints
   f. Organization assertion information
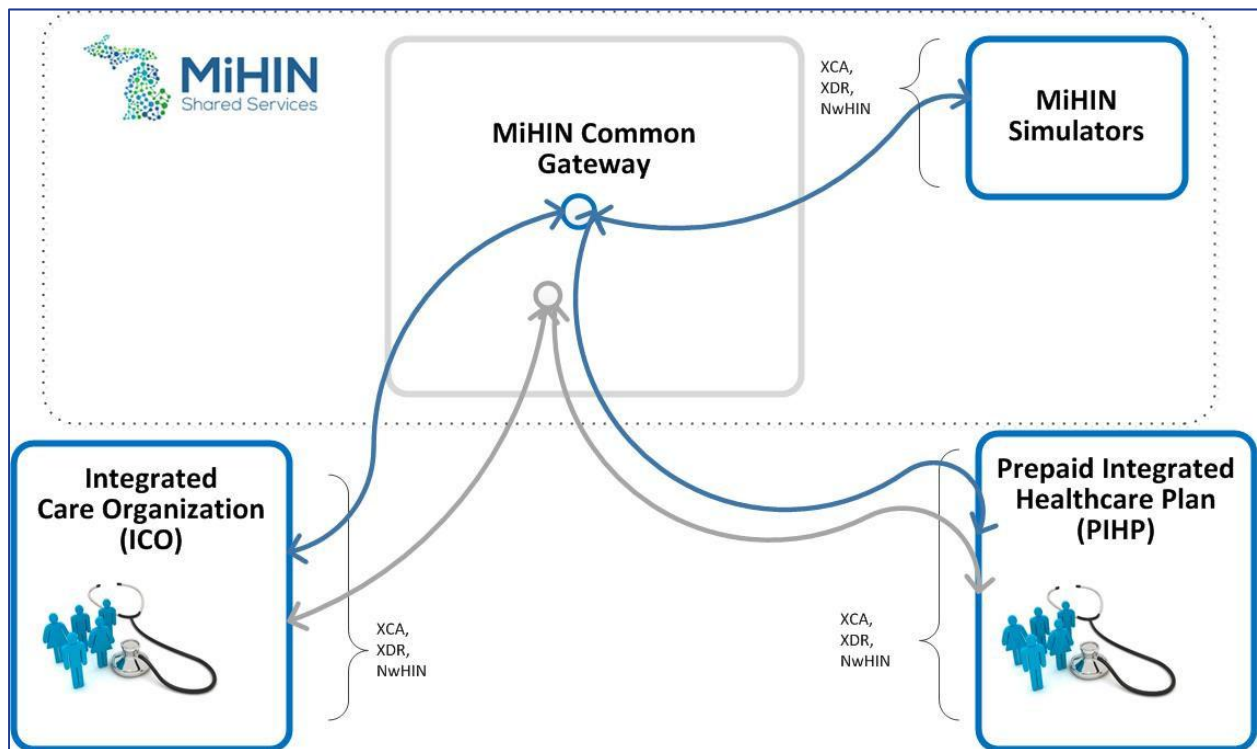4. The participating organization receives the following from MiHIN:

a. Self-signed Certificate from Common Gateway server (to be added to participating organization's server trust store)
b. Common Gateway DS, QD, RD service endpoints
c. Staging simulators' HCID, assigning authority, and repository ID for onboard testing
5. The organization selects one or more connectivity methods for message transport (e.g. DS, XDR, XDS-B) based on their technical capabilities, and should communicate the selection(s) to MiHIN.

3.2 Technical Onboarding and Testing

Technical onboarding and testing is a three-step process:

1. Connectivity testing
2. Focused use case testing with the MiHIN simulators
3. End-to-end testing between the trading partners

All tests are done in the MiHIN staging environment. Upon completion of the onboarding process, the connectivity process (section 3.1.2) is repeated for the MiHIN production environment. Connectivity and basic partner testing will be administered after a newly onboarded organization is migrated to the production environment.

Figure 4: Technical Onboarding

3.3 Connectivity Testing

Connectivity testing confirms the existence and correct set-up of the VPN and firewall between MiHIN and the participating organization. MiHIN test resources will use ping and

telnet utilities to establish connectivity to the participant's server using the provided IP and port(s).

3.4 Simulator Testing

If the onboarding participant has not had any prior testing for any exchange use cases, smoke tests for connectivity are required. The smoke tests include basic tests into and /or out of the Common Broker, with the goal of hitting the Edge Simulator's DS/XDR, QD/XGQ, and RD/XGR endpoints. The participant's services are validated with the Edge Simulator acting as the initiator or as the recipient/responder (bidirectional testing of the ICO/PIHP). The results of the tests and various log files in the MiHIN servers are reviewed to confirm a successful transaction.

3.5 End-to-End Partner Testing (ICO to PIHP Zone)

The following tests gauge the full transport capabilities for the ICOs and PIHPs and their trading partners within their zone.

#	Scenario	Message Type	Request Parameters	Expected Response
1	**DS Happy-Path** ICO or PIHP initiates a DS request to the MiHIN Common Gateway Service	■ NwHIN Document Submission ■ IHE Cross-enterprise Document Reliable Interchange (XDR) Provided and Register Document ■ IHE Cross-Enterprise Document Sharing (XDS.b) provide and register document	■ Key document metadata ● sourcePatientId ● sourcePatientInfo ● typeCode (LOINC code for document) ● patientID (not populated) ● mime-type of document ■ CCDA payload	■ Document is sent to the responder registry ● PatientID is populated with target PatientID (beneficiary ID plus targets AA) ■ Requester receives a submission response with "Success" back
2	**DQ Happy-Path** ICO or PIHP initiates a QD request to the MiHIN gateway	■ NwHIN document query ■ IHE XGQ Cross Gateway Query (XCAQ)	■ Key request parameters ● sourcePatientInfo ● typeCode (LOINC code for document) ● patientID	■ Query for documents request is sent to the responder registry ● PatientID is populated with target PatientID ■ Requester receives a request response with document list
3	**DR Happy-Path** ICO or PIHP initiates a RD request to the MiHIN gateway	■ NwHIN document retrieve ■ IHE XGR Cross Gateway Retrieve (XCAR)	■ Key parameters ● RepositoryID ● DocumentID	■ RD request is sent to the responder registry ■ Requester receives a retrieve documents response with the document
4	**DS Connectivity Error Tests** Tests will determine if client services can handle connectivity outages related to DS messaging.	■ NwHIN document submission ■ IHE XDR provided and register document ■ IHE XDS.b provide and register document	Parameters will be the same as the happy path tests with simulated outages of the responder, the responder repository, and the MiHIN Common Gateway.	The requestor should be able to manage all produced error faults and responses.

#	Scenario	Message Type	Request Parameters	Expected Response
5	**DQ Connectivity Error Tests** Tests will determine if client services can handle connectivity outages related to DQ messaging.	■ NwHIN document retrieve ■ IHE XGR Cross Gateway Retrieve (XCAR)	Parameters will be the same as the happy path tests with simulated outages of the repository, the producer/consumer, and the MiHIN Common Gateway.	The requestor should be able to manage all produced error faults and responses.
6	**DR Connectivity Error Tests** Tests will determine if client services can handle connectivity outages related to DR messaging.	■ NwHIN document retrieve ■ IHE XGR Cross Gateway Retrieve (XCAR)	Parameters will be the same as the happy path tests with simulated outages of the repository, the producer/consumer, and the MiHIN Common Gateway.	The requestor should be able to manage all produced error faults and responses.
7	**DS Message Error Tests** Tests determine if error responses can be produced and consumed for issues with DS message metadata.	■ NwHIN document submission ■ IHE XDR provide and register document ■ IHE XDS.b provide and register document	Requests will have to be altered with test patients that allow for errors (for example, a patient that does not exist in targeted system, or produces a document ID that already exists in the targeted system). Need to review if errors are applicable for each system and whether or not they can even be produced.	The following error codes can be expected to be produced in the DS work flow: ■ DocumentQueued ■ PartialAppendContentNotProcessed ■ PartialFolderContentNotProcessed ■ PartialReplaceContentNotProcessed ■ PartialTransformNotProcessed ■ PartialTransformReplaceNotProcessed ■ XDSDuplicateUniqueIdInRegistry ■ XDSExtraMetadataNotSaved ■ XDSMissingDocument ■ XDSMissingDocumentMetadata ■ XDSPatientIdDoesNotMatch ■ XDSRegistryBusy ■ XDSRepositoryBusy ■ XDSRegistryDeprecatedDocumentError ■ XDSRegistryDuplicateUniqueIdInMessage ■ XDSRepositoryDuplicateUniqueIdInMessage ■ XDSRegistryError ■ XDSRepositoryError ■ XDSRegistryMetadataError ■ XDSRepositoryMetadataError ■ XDSRegistryNotAvailable

#	Scenario	Message Type	Request Parameters	Expected Response
				■ XDSRegistryOutOfResources ■ XDSRepositoryOutOfResources ■ XDSUnknownPatientId
8	**DQ Message Error Tests** Tests determine if error responses can be produced and consumed for issues with DS message metadata.	■ NwHIN Document Query ■ IHE XGQ Cross Gateway Query (XCAQ)	Requests will have to be altered with test patients that allow for errors (if, for example, a certain patient or specific documents don't exist in the targeted system). Need to review if errors are applicable for each system and whether or not they can even be produced	The following error codes can be expected to be produced in the DQ work flow: ■ XDSMissingHomeCommunityId ■ XDSRegistryBusy ■ XDSRegistryError ■ XDSRegistryOutOfResources ■ XDSResultNotSinglePatient ■ XDSStoredQueryMissingParam ■ XDSStoredQueryParamNumber ■ XDSTooManyResults ■ XDSUnavailableCommunity(SQ) ■ XDSUnknownCommunity ■ XDSUnknownPatientId(XGQ) ■ XDSUnknownStoredQuery
9	**Document Retrieve Message Error Tests** Tests determine if error responses can be produced and consumed for issues with DS message metadata.	• NwHIN Document Retrieve • IHE XGR Cross Gateway Retrieve (XCAR)	Requests will have to be altered for incorrect metadata such as mismatched repository or document IDs. Need to review if errors are applicable for each system and whether or not they can even be produced	The following error codes can be expected to be produced in the DR work flow: ■ XDSMissingHomeCommunityId ■ XDSRegistryBusy ■ XDSRegistryError ■ XDSRegistryOutOfResources ■ XDSDocumentUniqueIdError ■ XDSUnavailableCommunity(SQ) ■ XDSUnknownCommunity ■ XDSUnknownRepositoryID

4 Transactions

4.1 Specifications and Transaction Types

4.1.1 Specifications

The transports must follow NwHIN specifications or underlying IHE specifications for the given transaction type. Please see Appendix A for direct links to these specifications.

4.1.2 Transactions

The MiHIN Common Gateway supports the following transaction types for this use case. Please see Appendix A for links to Web Service Description Language (WSDLs) and schemas.

- Provide and Register Document Set-b (ITI-41)
- NwHIN Document Submission (DS)
- Registry Stored Query(ITI-18)
- Cross Gateway Query(ITI-38)
- NwHIN Query for Documents service (QD)
- Retrieve Document Set(ITI-43)
- Cross Gateway Retrieve(ITI-39)
- NwHIN Retrieve Documents service (RD)

5 Troubleshooting

5.1 Production Support

	Severity Levels			
	1	**2**	**3**	**4**
Description	***Critical Impact/ System Down:*** Business critical software is down or critical interface has failed. The issue is impacting all production systems, causing all participating organizations' or other organizations' ability to function to be unusable.	***Significant Business Impact:*** Software component severely restricted. Entire organization is unable to continue business functions, causing all communications and transfer of messages to be halted.	**Partial Failure or Downtime:** Program is useable and less significant features unavailable. The service is online, though may not working as intended or may not currently working as intended or may not currently be accessible, though other systems are currently available.	**Minimal Business:** A non-critical software component is malfunctioning, causing minimal impact, or a test system is down.
Example	All messages to and from MiHIN are unable to be sent and received, let alone tracked	MiHIN cannot communication (send or receive) messages between single or multiple participating organizations, but can still successfully communicate with other organizations.	Messages are lost in transit; messages can be received but not sent.	Additional feature requested.
Primary Initiation Method	***Phone:*** (517) 336-1430	***Phone:*** (517) 336-1430	Web form at http://mihin.org/ requesthelp	Web form at http://mihin.org/ requesthelp
Secondary Initiation Method	Web form at http://mihin.org/ requesthelp	Web form at http://mihin.org/ requesthelp	Email to help@mihin.org	Email to help@mihin.org
Tertiary Initiation Method	Email to help@mihin.org	Email to help@mihin.org	N/A	N/A
Initial Response	Within 2 hours	Within 2 hours	1 business day	1 business day
Resolution Goal	24 hours	24 hours	3 business days	7 business days

A list of common questions regarding the Care Plan-ICBR use case can be found at:

https://mihin.org/care-plan-icbr-use-case-2/

If you have questions, please contact the MiHIN Help Desk:

- www.mihin.org/requesthelp
- Phone: (517) 336-1430
- Monday – Friday 8:00 AM – 5:00 PM (Eastern)

6 Legal Advisory Language

This reminder applies to all UCEs or PAEs covering the exchange of electronic health information:

The data sharing agreement establishes the legal framework under which PO can exchange messages through the HIN Platform, and sets forth the following approved reasons for which messages may be exchanged:

a. By health care providers for Treatment, Payment and/or Health Care Operations consistent with the requirements set forth in HIPAA;
b. Public health activities and reporting as permitted by HIPAA and other Applicable Laws and Standards;
c. To facilitate the implementation of "meaningful use" criteria as specified in the American Recovery and Reinvestment Act of 2009 and as permitted by HIPAA;
d. Uses and disclosures pursuant to an Authorization provided by the individual who is the subject of the Message or such individual's personal representative in accordance with HIPAA;
e. By Data Sharing Organizations for any and all purposes, including but not limited to pilot programs and testing, provided that such purposes are consistent with Applicable Laws and Standards; and
f. **For any additional purposes as specified in any UCE or PAE, provided that such purposes are consistent with Applicable Laws and Standards**.

Under these agreements, "*Applicable Laws and Standards*" means all applicable federal, state, and local laws, statutes, acts, ordinances, rules, codes, standards, regulations and judicial or administrative decisions promulgated by any governmental agency, including the State of Michigan, or the Michigan Health Information Technology Commission as any of the foregoing may be amended, modified, codified, reenacted, promulgated or published, in whole or in part, and in effect from time to time which is enforceable against a Party. Without limiting the generality of the foregoing, "Applicable Laws and Standards" includes HIPAA "; the federal Confidentiality of Alcohol and Drug Abuse Patient Records statute, section 543 of the Public Health Service Act, 42 U.S.C. 290dd-2, and its implementing regulation, 42 CFR Part 2; the Michigan Mental Health Code, at MCLA §§ 333.1748 and 333.1748a; and the Michigan Public Health Code, at MCL § 333.5131, 5114a.

It is each PO's obligation and responsibility to ensure that it is aware of Applicable Laws and Standards as they pertain to the content of each message sent, and that its delivery of each message complies with the Applicable Laws and Standards. This means, for example, that if a UCE is directed to the exchange of physical health information that may be exchanged without patient authorization under HIPAA, the PO must not deliver any message containing health information for which an express patient authorization or consent is required (e.g., mental or behavioral health information).

Disclaimer: The information contained in this implementation guide was current as of the date of the latest revision in the Document History in this guide. However, Medicare and Medicaid policies are subject to change and do so frequently. HL7 versions and formatting are also subject to updates. Therefore, links to any source documents have been provided within this guide for reference. MiHIN will apply its best efforts to keep all information in this guide up-to-date. It is ultimately the responsibility of the Participating Organization and Sending Facilities to be knowledgeable of changes outside of MiHIN's control.

Appendix A: Specifications and Web Services

A.1 Specifications

1. NwHIN (Nationwide Healthcare Information Network)
   a. NwHIN Document Submission v2.0 - http://sequoiaproject.org/wp-content/uploads/2014/11/nhin-document-submission-production-specification-v2-0-a.pdf
   b. NwHIN Query for Documents v2.0 - http://sequoiaproject.org/wp-content/uploads/2014/11/nhin-query-for-documents-production-specification-v3.0.pdf
   c. NwHIN Retrieve Documents v3.0 - http://sequoiaproject.org/wp-content/uploads/2014/11/nhin-retrieve-documents-production-specification-v3.0.pdf
   d. Authorization Framework v3.0- http://sequoiaproject.org/wp-content/uploads/2014/11/nhin-authorization-framework-production-specification-v3.0.pdf
   e. Web Services Registry v3.0- http://sequoiaproject.org/wp-content/uploads/2014/11/nhin-web-services-registry-production-specification-v3-1-508.pdf
   f. Messaging Platform v3.0 - http://sequoiaproject.org/wp-content/uploads/2014/11/nhin-messaging-platform-production-specification-v3.0.pdf
2. IHE XDR (Cross-enterprise Document Reliable Interchange)
   a. XDR TI 2009-8-10
      http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_Supplement_Cross_Enterprise_Document_Reliable_Interchange_XDR_TI_2009-08-10.pdf
   b. IHE ITI Vol 2b
      - http://www.ihe.net/uploadedFiles/Documents/ITI/IHE_ITI_TF_Vol2b.pdf
3. IHE XGQ (Cross Gateway Query)
   a. XCA 2009-8-10
      http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_Supplement_Cross_Community_Access_XCA_TI_2009-08-10.pdf
      IHE ITI Vol 2b
      - http://www.ihe.net/uploadedFiles/Documents/ITI/IHE_ITI_TF_Vol2b.pdf
   b. IHE ITI Vol 2b
      - http://www.ihe.net/uploadedFiles/Documents/ITI/IHE_ITI_TF_Vol2b.pdf
4. IHE XGR (Cross Gateway Retrieve)
   a. IHE XCA 20010-8-10 http://www.ihe.net/Technical_Framework/upload/IHE_ITI_Suppl_XCA_Rev2-1_TI_2010-08-10.pdf
   b. IHE ITI TF Vol 2b
      - http://www.ihe.net/uploadedFiles/Documents/ITI/IHE_ITI_TF_Vol2b.pdf

A.2. Web Services Description Languages (WSDLs) and Schemas

The below links lead you to the root directories for accessing WSDLs and schema for the supported Common Gateway messaging types.

- XCA/XDR/XDS.b WSDL ftp://ftp.ihe.net/TF_Implementation_Material/ITI/wsdl/
- XCA/XDR/XDS.b Schemas ftp://ftp.ihe.net/TF_Implementation_Material/ITI/schema/
- NwHIN WSDLs (github) https://github.com/CONNECT-Solution/CONNECT-Webservices
- NwHIN Schema (github) https://github.com/CONNECT-Solution/Common-Types
- NwHIN WSDLS and Schema (maven)
  http://repo1.maven.org/maven2/org/connectopensource/