

# Immunizations Immunization History-Forecast Implementation Guide

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# **Document History**

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# 1. Introduction

# 1.1 Purpose of the Data Exchange Solution

Allows participating organizations to send electronic queries through the statewide health information network to an Immunization Information System (IIS) to retrieve electronic data containing a patient's immunization records.

Immunizations are vital to the maintenance of public health due to their power to prevent and sometimes eradicate deadly diseases and potential epidemics. Immunizations must be closely monitored to ensure they are administered correctly and in a timely fashion because vaccination errors can hurt and possibly kill patients.

Using a message standard known as Query by Parameter (QBP), the Immunization History-Forecast Data Exchange Solution allows participating organizations to find electronic vaccination histories and forecasts in real-time through MiHIN from an IIS.

With this data exchange solution, an organization can query the IIS (via MiHIN) to retrieve electronic information containing a patient's immunization records.

This includes an up-to-date list of immunizations received by the patient (history), as well as a list and schedule of vaccinations that the patient should receive in the future (forecast).

An immunization query with this data exchange solution follows the path below:

- 1. A participating organization sends an immunization query to MiHIN.
- 2. MiHIN passes the query to the State of Michigan Data Hub (Data Hub).
- 3. The Data Hub sends the query to the Michigan Care Improvement Registry (MCIR).
- 4. MCIR processes the query and generates responses to the Data Hub.
- 5. The Data Hub returns the response from MCIR to MiHIN.
- 6. MiHIN then routes the response to the participating organization that. originally requested the vaccination information.

### 1.2 Message Content

For this data exchange solution, Message Content means a conforming HL7® 2.5.1 message with a message type of QBP Z34^CDC, RSP Z32^CDC.

#### 1.3 Data Flow

#### 1.3.1 Functional Data Flow



Figure 1. Data Flow of Immunization Query (QBP)

- 1. The Participating Organization (e.g., a healthcare provider or EHR vendor) sends an HL7 QBP (Query by Parameter) message to MiHIN..
- 2. MiHIN routes the QBP to the State of Michigan Data Hub.
- 3. The Data Hub forwards the query to the Michigan Care Improvement Registry (MCIR), also known as the State Immunization Information System (IIS).
- 4. MCIR processes the QBP and generates a response.
- 5. The response travels back through the State Data Hub  $\rightarrow$  MiHIN  $\rightarrow$  Participating Organization.
- 6. An ACK (acknowledgment) message is also returned through the same path to confirm receipt and processing of the original query.

#### **1.3.2** *Actors*

- **Actor:** Participating Organization
  - Role: Review patient's immunization history at every health care visit to assess for needed vaccines. Generate and send a QBP message to MiHIN, then receive the returned Immunization History-Forecast message.
- Actor: HIN (MiHIN)

- Role: Receives query (QBP) messages and routes patient query to the Michigan Data Hub. Also responsible for receiving Immunization History-Forecast messages from the Michigan Data Hub and routing it back to the requesting care provider.
- Actor: Michigan Data Hub
  - Role: Receives query (QBP) messages and routes patient query to the Michigan Care Improvement Registry (MCIR). Responsible for receiving requested Immunization History-Forecast from MCIR and returning it to MiHIN.
- Actor: Michigan Care Improvement Registry (MCIR)
  - Role: Receives query request from the Michigan Data Hub and attempts to locate the appropriate Immunization History-Forecast record (RSP-Query results), returning it to the State Data Hub if successful.

The data exchange solution summary is available online at: <a href="https://mihin.org/immunization-lmmunizati

You can contact MiHIN at <a href="https://www.mihin.org/requesthelp">www.mihin.org/requesthelp</a> for more information.

# 2. Onboarding

#### 2.1 Prerequisites

Participating organizations will need to complete two onboarding tracks, in the following order:

- 1. Obtain, review, and execute legal agreements, then
- 2. Establish technical transport and testing.

# 2.1.1 Universal Legal Prerequisites

The following legal documentation will need to be executed prior to Kick-off or any connectivity being established between MiHIN and participating organizations.

- Statement of Work (SOW), where applicable
- MiHIN's Exhibit A Agreement (Found on the MiHIN Legal Portal)
- Participant Agreement (Found on the MiHIN Legal Portal)
- Must select the appropriate data exchange solution (Immunization Immunization History-Forecast) on the MiHIN Legal Portal in addition to the above agreements.

To initiate the legal onboarding contact, email <a href="mailto:help@mihin.org">help@mihin.org</a>.

# 2.1.2 Technical Requirements

# 2.1.2.1 Data Exchange Solution Requirements

- If the participating organization administers vaccines, the participating organization must also onboard to the Submit Immunizations Data Exchange Solution
  - A Customer Success Specialist can confirm participation, if necessary.
- If the participating organization does not administer vaccines, no data exchange solution implementations are required.

# 2.1.2.2 Other Technical Requirements

- The participating organization must be able to establish a connection with MiHIN via virtual private network (VPN).
- The participating organization must be able to generate a QBP Z34^CDC message detailing the Immunization History-Forecast records that are requested.

■ The participating organization must be able to receive an RSP Z32^CDC Immunization History-Forecast response message and download it into their system. Please see Appendix B for MCIR conformance standards.

# 2.2 Immunization History-Forecast Onboarding Process

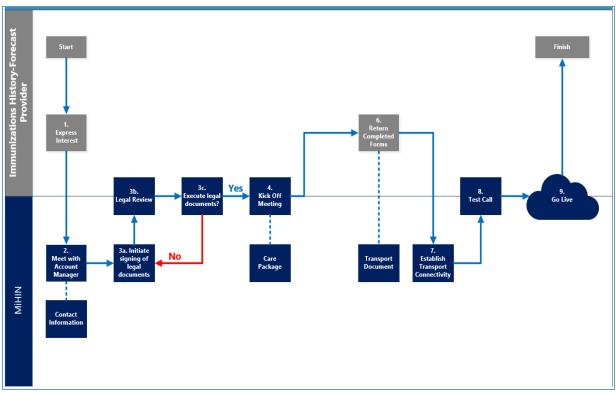


Figure 2. Immunization History-Forecast (QBP) Workflow

- Express interest in participating in the data exchange solution
- Meet with an account Manager
  - Distribute Immunization History-Forecast Data Exchange Solution package
  - Exchange contact information
- Execute legal documents
- Have a kick-off meeting with the Customer Success Team
- Exchange required documents
  - Transport Document
    - VPN Request Form

- Secure File Transfer Protocol (SFTP) Request Form
- Testing
  - Test HL7 QBP Messages
- Complete Data Quality Assurance (DQA) with the Michigan Department of Health and Human Services (MDHHS)
- Go Live

# 2.3. Initial Technical Connectivity Process

MiHIN considers itself "transport agnostic" and offers multiple options for organizations to establish technical connectivity to transport data to MiHIN. Organizations should select one or more connectivity methods for message transport based on their technical capabilities and put in a service request at <a href="https://www.mihin.org/requesthelp">www.mihin.org/requesthelp</a>. Currently MiHIN accepts the following transport methods:

- **LLP over IPsec VPN** Lower-Layer Protocol over Internet Protocol Security Virtual Private Network
- **SFTP** MiHIN Hosted Secure File Transfer Protocol

For VPN connectivity, two VPNs are required. A primary VPN will facilitate regular traffic. A secondary will be established for fail-over purposes.

The following steps describe the technical onboarding process. However, MiHIN typically conducts onboarding kick-off-onboard meetings with new organizations to go through each of these steps in detail and answer any questions.

- 1. The organization selects one or more supported transport methods and establishes connectivity with MiHIN. This step varies based on the method selected:
  - a. **LLP over IPsec VPN** MiHIN's site-to-site VPN request form must be completed, sent over to, and approved by MiHIN. Send a request via <a href="https://www.mihin.org/requesthelp">www.mihin.org/requesthelp</a> to obtain the VPN request form. A preshared key is then exchanged between the organization and MiHIN to initialize the connection. The LLP over IPsec VPN is the most efficient transport for very high volumes of messages.
  - b. **SFTP** MiHIN-Hosted Secure File Transfer Protocol on the HIE Platform. All connectivity testing flows are accomplished through the

transfer of files via SFTP folder and confirmation of receipt. Unless otherwise requested, all testing communications can be done via email.

- 2. Test messages are sent by the organization to MiHIN.
  - a. All QBP test messages must include a "T" in MSH-11 (Processing ID) to indicate that the message is for testing purposes.
  - b. Test QBP traffic is routed from the Participating Organization to MiHIN, which forwards the message to the appropriate destination. For immunization queries, the destination is MCIR, via the State Data Hub.
  - c. The end destination (MCIR) monitors for inbound QBP test messages and confirms receipt with MiHIN. MiHIN then relays that confirmation back to the Participating Organization.
  - d. MCIR processes the test query, validates the message content, and returns an acknowledgment (ACK) to MiHIN. MiHIN then routes the ACK to the onboarding organization, which confirms final receipt.
- 3. For the Immunization History-Forecast (QBP) Data Exchange, MCIR considers a sending facility to have entered Data Quality Assurance (DQA) status once a properly formatted QBP test message is successfully received via MiHIN.
  - a. Unlike VXU (immunization submission) onboarding, no minimum number of patient records is required for QBP DQA. Once a valid test message is received, MCIR can validate and confirm readiness for production.
  - b. MCIR may move the facility to production status once VXU onboarding is complete and the QBP interface has been confirmed to work correctly.
  - c. At that point, the sending facility may begin sending production QBP messages, replacing the test indicator "T" in MSH-11 with "P".

# 2.3.1 Onboarding Additional Facilities:

When onboarding a new sending facility, it must first be registered with MCIR and assigned a Facility ID Number. Once registration is complete:

- Submit the registration details to: <a href="http://mihin.org/requesthelp/">http://mihin.org/requesthelp/</a>.
- Begin sending test QBP messages using "T" in MSH-11.
- MCIR will confirm DQA and then enable the facility for production.

For more information on QBP testing and requirements, please refer to the <a href="https://mcir.org/data-exchange/hl7-3/">https://mcir.org/data-exchange/hl7-3/</a>.

# 3. Specifications

#### 3.1 Overview

#### 3.1.1 Environments

- Pre-Production
  - o Private Rhapsody IP: 172.16.5.95
  - Public Rhapsody IP: 23.20.140.197
- MiHIN Production
  - Private Rhapsody IP: 172.16.5.125
  - Public Rhapsody IP: 52.204.207.180
- Secure File Transfer Protocol (SFTP)
  - Hostname: sftp.mihin.services
  - o Port: 22

# 3.2 General Message Requirements

For general rules that apply to the entire message, refer to the MCIR Testing and Submission Guide, located at:

https://www.michiganhealthit.org/public-health/mcir/

# 3.2.1 Message Trigger Events

The HL7 message type for Immunizations History-Forecast is QBP and the trigger event is Q11.

#### 3.2.2 Submission via SFTP

1. All connectivity testing is accomplished through the transfer of files via SFTP folder and confirmation of receipt. Unless otherwise requested, all testing communications can be done via email.

# 3.3 Specific Segment and Field Definitions

The definitions in the table below shall be conformed to by all HL7 messages communicating the message header (MSH) segment.

# 3.3.1 Segment 1- Message Header

The definitions in the table below shall be conformed to by all HL7 messages communicating the message header (MSH) segment.

Sequence	Length	DT	Usage	Cardinality	TBL#	Item#	Element Name	Comments
1	1	ST	R	11		00001	Field Separator	The MSH.1 field shall be
2	4	ST	R	11		00002	Encoding Characters	The MSH.2 field shall be ^~\&
3	180	HD	R	11	0361	00003	Sending Application	This is the system that created this message
4	180	HD	R	11	0362	00004	Sending Facility	MCIR Facility ID
5	180	HD	R	11	0361	00005	Receiving Application	MCIR
6	180	HD	R	11	0362	00006	Receiving Facility	MDHHS
7	26	TS	R	11		00007	Date/Time of Message	The degree of precision must be at least to the second, and the time zone must be included (format YYYYMMDDHHMMS S[.S[S[S[S]]]]+/-ZZZZ).
8	40	ST	Х	00		80000	Security	
9	7	CM	R	11	0076 0003	00009	Message Type	QBP^V04^QBP_ V04
10	20	ST	R	11		00010	Message Control ID	Should be repopulated (rather than pass-through) for outbound message header
11	3	PT	R	11		00011	Processing ID	<b>P</b> when in production, <b>T</b> for testing.
12	60	VID	R	11	0104	00012	Version ID	2.5.1
13	15	NM	Х	00		00013	Sequence Number	Optional
14	180	ST	Х	00		00014	Continuation Pointer	

15	2	ID	Х	00	0155	00015	Accept Acknowledgment Type
16	2	ID	Х	00	0155	00016	Application Acknowledgment Type
17	2	ID	Х	00		00017	Country Code
18	16	ID	Х	00		00692	Character Set
19	60	CE	Х	00			Principal Language of  Message
20	20	ID	Х	00		00356	Alternate Character Set Handling Scheme

# 3.3.2 All Remaining Segments

The message header is the only segment which MiHIN requires to be formatted in a certain way. MiHIN does not evaluate or verify any other part of the message. For all remaining segment and field, follow the IIS standards, which can be retrieved here: <a href="http://www.michiganhealthit.org/public-health/mcir/">http://www.michiganhealthit.org/public-health/mcir/</a>

# 4. Troubleshooting

	Severity Levels							
	1	2	3	4				
Description	A critical production system is down or does not function at all, and there is no circumvention or workaround for the problem; a significant number of users are affected, and a production business system is inoperable.	More than 90% of messages received and delivered successfully, but some messages are not delivered/received with required accuracy. Service component severely restricted in one of the following ways:  • High impact risk or actual occurrence of patient care affected or operational impairment • Business critical service has a partial failure for multiple TDSOs • A critical service is online however, operating in a degraded state and having a significant impact on multiple TDSOs	Service component restricted in one of the following ways:  A component is not performing as documented or there are unexpected results  Business critical service has failed two or more TDSOs  Critical service is usable however, a workaround is available, or less significant features are unavailable  .	No operational impact to MiHIN. A non-critical service component is malfunctioning, causing minimal impact, or a test system is down.				
Initiation Method	Call (844) 454-2443 and submit a ticket online at www.mihin.org/requ esthelp	Call (844) 454-2443 and submit a ticket online at www.mihin.org/request help	Submit a ticket online at www.mihin.org/requesthelp	Submit a ticket online at www.mihin.org/r equesthelp				
Initial Response	Within 30 minutes	Within <b>30 minutes</b>	Within 3 business hours	Within 6 business hours				
Resolution Goal	<2 hours Restore Time from 7 am - 6 pm EST Monday- Friday and <4 hours nights, weekends and holidays	<4 hours Restore Time from 7 am- 6 pm EST Monday-Friday and <8 hours nights, weekends and holidays	<12 hours Restore Time from 7 am -6 pm EST Monday – Friday and <24 hours nights, weekends and holidays.	Within 5 business days				

A list of common questions regarding the Immunization Immunization History-Forecast Data Exchange Solution can be found at: <a href="https://mihin.org/immunization-lmmunizati

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

- www.mihin.org/requesthelp
- Phone: (844) 454-2443
- Monday Friday 8:00 AM 5:00 PM (Eastern)

# 5. Legal Advisory Language

This reminder applies to all data exchange solutions covering the exchange of electronic health information:

The Data Sharing Agreement (DSA) establishes the legal framework under which participating organizations can exchange messages through the MiHIN 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
- f. For any additional purposes as specified in any data exchange solution, provided that such purposes are consistent with Applicable Laws and Standards

Under the DSA, "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 or self-regulatory agency, including the State of Michigan, the Michigan Health Information Technology Commission, or the Michigan Health and Hospital Association, 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. "Applicable Laws and Standards" includes but is not limited to 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 MCLA §§ 333.5131, 5114a.

It is each participating organization'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 data exchange solution is directed to the exchange of physical health information that may be exchanged without patient authorization under HIPAA, the participating organization 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 applies 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.

# 6. Appendices

# 6.1 Appendix A – Message Examples

#### 6.1.1 Sample QBP Messages

- Request complete immunization history (Z34)
  - MSH|^~\&| |1234-56-78|MCIR|MDCH|20120706131542-0400||QBP^Q11^QBP\_Q11|48077894|T|2.5.1|||NE|AL|||||Z34^CD CPHINVS|MYHEALTHSYS TEM|MYCLINIC QPD|Z34^REQUEST IMMUNIZATION HISTORY ^CDCPHINVS|QT216987|12345678910^^^EMR^LR~56979^^^EMR^MR ~MI12345^^^US^MA|S NOW^MADELINE^MARIE^^^L|SMITH^SARAH^^^^M|20100706|F|12 3 MAIN STREET^^LANSING^MI^48837^USA^L|^PRN^^^517^5551212|Y|1|20 120706121736-0400| RCP|||1^RD|
- Request evaluated immunization history and forecast (Z44)
  - MSH|^~\&| |1234-56-78|MCIR|MDCH|20120706131542-0400||QBP^Q11^QBP\_Q11|48077894|T|2.5.1|||NE|AL|||||Z44^CD CPHINVS|MYHEALTHSYS TEM|MYCLINIC QPD|Z34^REQUEST EVALUATED HISTORY AND FORECAST^CDCPHINVS|QT216987|12345678910^^^EMR^LR~56979^^^EMR^MR~MI12345^^^
     US^MA|SNOW^MADELINE^MARIE^^^^L|SMITH^SARAH^^^^M|20100706|F|123 MAIN STREET^^LANSING^MI^48837^USA^L|^PRN^^^517^5551212|Y|1|20120706121736-0400| RCP|I|1^RD|

# 6.1 Appendix B – Michigan Care Improvement Registry (MCIR) Conformance Specification

For specific information regarding specification and formatting with MCIR, refer to the MCIR HL7 Implementation Guide: <a href="https://www.mcir.org/hl7-landing-page/hl7-3/">https://www.mcir.org/hl7-landing-page/hl7-3/</a>

# **7. Acronyms and Abbreviations Guide**

HL7 Acknowledgment Message					
Centers for Medicare & Medicaid Services					
Data Quality Assurance					
Electronic Health Record					
Fast Healthcare Interoperability Resources					
Health Information Exchange					
Health Information Network					
Health Internet Service Provider					
Health Level Seven					
Health Provider Directory					
Michigan Department of Health and Human Services					
Michigan Health Information Network Shared Services					
Negative Acknowledgement					
Object Identifier					
Participating Organization					
Query By Parameter					
Secure File Transfer Protocol					
State of Michigan					
Trusted Data Sharing Organization					
Virtual Private Network					

# 8. 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.
- **Electronic Address.** A string that identifies the transport protocol and end point address for communicating electronically with a recipient. A recipient may be a person, organization or other entity that has designated the electronic address as the point at which it will receive electronic messages. Examples of an electronic address include a secure email address (Direct via secure SMTP) or secure URL (SOAP / XDR / REST / FHIR). Communication with an electronic address may require a digital certificate or participation in a trust bundle.
- **Electronic Medical Record or Electronic Health Record (EMR/EHR)**. A digital version of a patient's paper medical chart.
- Electronic Service Information (ESI). All information reasonably necessary to define an electronic destination's ability to receive and use a specific type of information (e.g., discharge summary, patient summary, laboratory report, query for patient/provider/healthcare data). ESI may include the type of information (e.g. patient summary or query), the destination's electronic address, the messaging framework supported (e.g., SMTP, HTTP/SOAP, XDR, REST, FHIR), security information supported or required (e.g., digital certificate) and specific payload definitions (e.g., CCD C32 V2.5). In addition, ESI may include labels that help identify the type of recipient (e.g., medical records department).

**End Point.** An instance of an electronic address or ESI.

- **Health Directory**. The statewide shared service established by MiHIN that contains contact information on health providers, electronic addresses, end points, and ESI, as a resource for authorized users to obtain contact information and to securely exchange health information.
- 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 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.
- **Information Source**. Any organization that provides information that is added to a MiHIN infrastructure service.
- **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 Health Information Network Shared Services.** The health information network (HIN) for the State of Michigan.
- **MiHIN Infrastructure Service**. Certain services that are shared by numerous data exchange solutions. 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 (MIGateway®).
- **MiHIN Services**. The MiHIN infrastructure services and additional services and functionality provided by MiHIN that allows the participating organizations to send, receive, find, or use information to or from MiHIN as further set forth in an exhibit.
- **Negative Acknowledgment (NAK or NACK).** "Not acknowledged" and is used to negatively acknowledge or to reject previously received message content or to indicate an 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.
- **Participation Agreement**. Legal agreement which outlines and applies to the message content used in any of MiHIN's data exchange solutions and products.
- **Patient Data**. Any data about a patient or a consumer that is electronically filed in a participating organization or participating organization participant's systems or repositories. The data may contain protected health information (PHI), personal credit information (PCI), and/or personally identifiable information (PII).
- **Person Record**. Any record in a MiHIN infrastructure service that primarily relates to a person.
- **Principal.** A person or a system utilizing a federated identity through a federated organization.
- **Provider Community**. A healthcare provider with an active care relationship with the applicable patient.
- **Query by Parameter**. Enables electronic querying of the Michigan Care Improvement Registry (MCIR) for a patient's immunization data.

- **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.
- **Source System**. A computer system, such as an electronic health record system, at the participating organization, that sends, receives, finds or uses message content or notices.
- **Transactional Basis.** The transmission of message content or a notice within a period of time of receiving message content or notice from a sending or receiving party as may be further set forth in a specific exhibit.
- **Trusted Data Sharing Organization (TDSO)**. An organization that has signed any form of agreement with MiHIN for data sharing.