Immunizations Data Exchange Solution

Implementation Guide

Version 26

August 24, 2026

Table of Contents

Introduction

Purpose

Enables healthcare organizations to electronically and securely submit vaccination data through MIHIN to the Michigan Care Improvement Registry (MCIR), Michigan's statewide immunization information system (IIS).

The Immunization Data Exchange Solution enables healthcare organizations to electronically and securely submit vaccination data through MiHIN to the Michigan Care Improvement Registry (MCIR), Michigan's statewide immunization information system (IIS).

This data allows MCIR to maintain timely, accurate, and comprehensive immunization records for individuals across Michigan. Complete and current records can help healthcare providers make informed vaccination decisions, identify patients who may be due for recommended immunizations, and reduce the risk of unnecessary or duplicate vaccinations.

Immunization data submitted to MCIR also provides important value for public health. A comprehensive statewide immunization record helps public health agencies monitor vaccination coverage, identify gaps in protection, support targeted outreach and vaccination efforts, and respond more effectively to emerging public health needs.

The solution supports applicable CMS Promoting Interoperability (PI) Program requirements, Inpatient Prospective Payment System (IPPS) public health reporting requirements, and state-level immunization registry mandates related to electronic immunization data submission.

Message Content

For this data exchange solution, Message Content consists of conforming HL7® 2.5.1 messages:

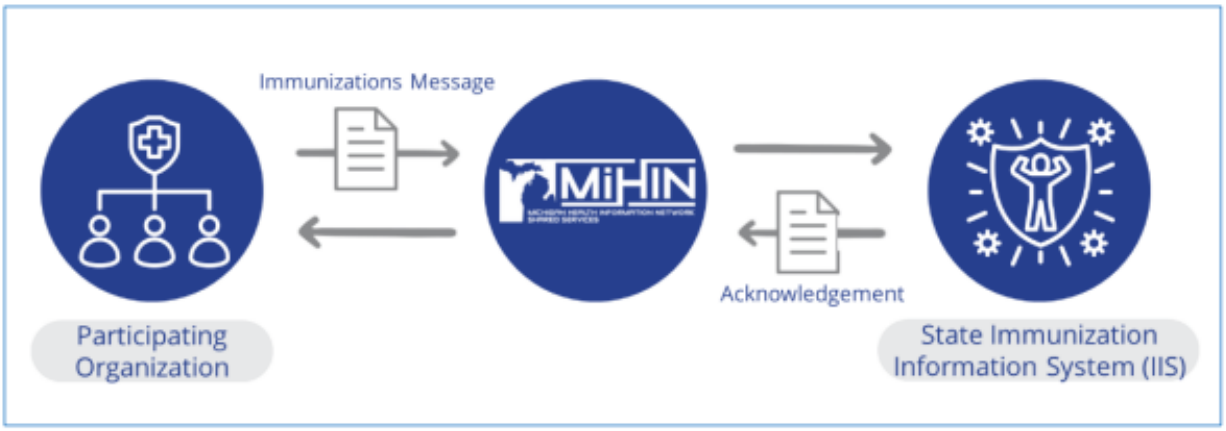
1. Unsolicited Vaccine Update (VXU) messages: VXU^V04 (sent by participating organizations to MCIR to report administered immunizations).
2. Acknowledgement (ACK) messages: ACK^V04^ACK (returned by MCIR to

confirm receipt and processing status).

All messages must conform to MCIR's HL7 implementation standards.

Data Flow

Functional Data Flow



Data Flow for Immunizations

1. The participating organization sends an HL7 VXU to MiHIN.
2. MiHIN sends the HL7 VXU to Michigan Care Improvement Registry (MCIR).
3. MCIR returns an acknowledgment (ACK) message back to MiHIN.
4. MiHIN routes the acknowledgement to the participating organization.

Onboarding

Prerequisites

Participating organizations must complete legal onboarding prior to beginning the technical onboarding process. Once all required legal agreements are fully executed, the participating organization will proceed to the technical onboarding phase.

Universal Legal Prerequisites

Upon a participating organization indicating interest in onboarding, MiHIN will review the organization's legal status to confirm whether the appropriate agreements are in place. If required legal agreements have not yet been executed, a MiHIN staff member will work with the participating organization to complete the necessary pre-onboarding legal steps.

Prior to initiating technical onboarding, the participating organization must have an executed Participation Agreement or the applicable legacy master data-sharing agreement plus applicable Use Case Exhibits (UCEs) executed. In some cases, execution of a Statement of Work (SOW) may also be required.

To initiate the pre-onboarding legal process, please contact MiHIN's Help Desk by visiting our portal https://mihinhelp.refined.site/portal/50

Technical Requirements

The following implementation dependencies and technical requirements must be completed for the Immunizations Data Exchange Solution (DES) to operate in a production environment.

Data Exchange Solution Requirements

Participating organizations are not required to implement additional data exchange solutions beyond the Immunizations DES. Organizations only need to establish connectivity and meet the technical requirements outlined below.

Other Technical Requirements

Participating organizations seeking to onboard as data contributors must meet the following prerequisites and requirements:

1. Connection Requirements:
   a. MiHIN supports HL7 over Lower Layer Protocol (LLP) via IPsec Virtual Private Network (VPN)
   b. HL7 2.x messaging standards are required (HL7 v2.5.1 or newer preferred; HL7 v2.3.1 is also supported)
2. VPN Configuration:
   a. Organizations new to MiHIN: One VPN connection is required for Public Health Reporting
   b. Organizations already connected to MiHIN's HIE Platform (ITP): A second, separate VPN connection is required specifically for Public Health Reporting data exchange solutions
3. Message content
   a. Generate HL7 VXU^{V04} in accordance with MCIR conformance standards

MCIR Requirements

Prior to engaging in the technical onboarding, the participating organization must complete the MCIR registration process. To begin registration, please see the following link: https://mimu.michiganhealthit.org/. To review the most up-to-date requirements set forth by MCIR, please refer to the following: https://mcir.org

Immunization Onboarding Process

1. Express interest
   a. Contact MiHIN to express interest in participating in the Immunizations Data Exchange Solution
2. Legal onboarding
   a. Execute required legal documents (e.g. Participation Agreement, Statement of Work, etc., if applicable)

3. Kick-off meeting
    a. Participate in a kick-off meeting with a Customer Success Specialist to review the onboarding process, identify roles and responsibilities of all participating parties, review required documents, address questions, etc.

4. Technical/Connectivity documentation exchange
    a. The participating organization will return all required documentation needed to support the onboarding request (e.g. an onboarding contact form, a transport document, OID request form, etc.)

5. Establish connectivity
    a. The participating organization or vendor will establish connectivity with MiHIN via one of the supported transport mechanisms
    b. At this time, test messages shall be sent with a “T” value in the MSH-11 field

6. Data flow testing
    a. The participating organization or vendor will engage in the exchange of test messages to verify that the message exchange is functioning correctly

7. Data Quality Assurance (DQA)
    a. The participating organization or vendor will complete data quality assurance with MDHHS
    b. During this period, the participating organization will maintain dual submission, utilizing both the current method of transmitting data to MDHHS and MiHIN’s system

8. Go-Live
    a. The participating organization will receive production approval from MDHHS. At this time, production messages shall be sent with a “P” value in the MSH-11 field, and the participating organization shall discontinue their previous submission method.

9. Two-week post-production monitoring
    a. Following a successful go-live, the participating organization and MiHIN will engage in a two-week post-production monitoring phase. During this period, all parties will observe traffic and other metrics to ensure that data exchanges continue to be successful. Should any modifications be

necessary, the participating organization can request changes within this timeframe. For any change requests made after the two-week post-production monitoring period, the participating organization must submit a request to MiHIN's Help Desk.

Technical Connectivity Process

Currently, MiHIN offers support for the following transport method:

1. LLP over IPsec VPN – Lower-Layer Protocol over Internet Protocol Security Virtual Private Network
    a. The VPN request form from MiHIN needs to be filled out, submitted, and approved by MiHIN. After approval, a pre-shared key will be exchanged between your organization and MiHIN to establish the connection.

The following steps detail the technical onboarding process. Additionally, MiHIN will conduct a kick-off meeting with new participating organizations to explore the technical onboarding in greater depth.

1. Before establishing the chosen transport or dispatching any messages (whether for testing or other purposes), participating organizations must supply the following information to MiHIN to facilitate a smooth onboarding experience. The required information includes:
    i. LLP via VPN
        1. Source IP(s)
        2. Port(s)
    a. Facility name(s), the associated Organizational ID, and the Facility IDs that will be sending the Unsolicited Vaccine Update (VXU) to MiHIN.

2. The participating organization selects one or more transport mechanisms and establishes connectivity, or confirms existing connectivity with MiHIN.
    a. LLP over IPsec VPN

3. Testing requirements will vary based on the established transport configuration:
    a. LLP over IPsec VPN
        i. Testing will be conducted by having the onboarding facility (or facilities) send a test message to the pre-production endpoint specified in the

Specifications section. MiHIN will monitor inbound traffic for sent messages and return responses will be sent back to the organization upon receipt.

4. Upon successful completion of testing, the organization will enter the Data Quality Assurance (DQA) phase with MCIR. During DQA:
   a. Submit five live patient query records with MSH-11 (Processing ID) set to "T" (Test).
   b. Maintain dual submission by continuing your current MDHHS submission method while simultaneously testing through MiHIN.
   c. Address any data quality, completeness, or conformance issues identified by MCIR.

5. Following successful data quality review, a go-live will take place. During this phase, configuration settings will be transferred to MiHIN's production environment. This action will trigger a two-week post-production monitoring period.
   a. MiHIN will monitor inbound traffic and return the appropriate responses upon receipt. Once the HL7 VXU messages and any applicable responses have been successfully received, and production messages are accepted, the organization will be considered live/in-production.

Onboarding Additional Sending Facilities

If an existing organization wishes to onboard additional sending facilities, those facilities must first register with MCIR. https://mimu.michiganhealthit.org/

Once successful, the registration information (including the Organization ID, site number, etc.,) must be submitted to www.mihin.org/requesthelp. After submitting a formal request, a designated MiHIN team member will assist with the pre-onboarding and technical onboarding effort.

For specific information regarding testing with the IIS, refer to the MCIR HL7 Implementation Guide: https://mcir.org/

Specifications

Overview

Environments

- MiHIN Pre-Production
  - 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

General Message Requirements

The Message Header (MSH) is the only segment for which MiHIN enforces specific formatting requirements. MiHIN does not validate, review, or verify the clinical content contained in other segments of the message.

For general rules that apply to the entire message, refer to the MCIR HL7 Implementation Guide located at: https://mcir.org/

Message Trigger Events

The HL7 message type for an immunization is VXU and trigger event is VXU^V04^VXU_ V04.

Specific Segment and Field Definitions

The following segment and field values are required for messages submitted to the Michigan Care Improvement Registry (MCIR).

Segment 1 – Message Header

The table below summarizes the MSH segment requirements enforced by MiHIN for HL7 message routing and processing.

Sequence	Element Name	Cardinality	Usage	Conformance / Requirements
MSH-1	Field Separator	[1..1]	R	Shall be `
MSH-2	Encoding Characters	[1..1]	R	Shall be ^~\&
MSH-3	Sending Application	[0..1]	RE	Sending application identifier assigned/configured for the submitting system
MSH-4	Sending Facility	[0..1]	RE	MSH-4.1 must contain the MCIR-assigned Organization ID (numeric); MSH-4.2 must be blank
MSH-5	Receiving Application	[0..1]	RE	Shall be MCIR
MSH-6	Receiving Facility	[0..1]	RE	Shall be MDCH
MSH-7	Date/Time of Message	[1..1]	R	Precision must be at least to the second (YYYYMMDDHHMMSS[+/-ZZZZ])
MSH-8	Security	[0..1]	O	Not used by MCIR
MSH-9	Message Type	[1..1]	R	VXU messages: VXU^V04^VXU_V04
MSH-10	Message Control ID	[1..1]	R	Unique identifier for each message
MSH-11	Processing ID	[1..1]	R	T during testing and Data Quality Assurance; P after

				production approval
MSH-12	Version ID	[1..1]	R	Shall be 2.5.1
MSH-13	Sequence Number	[0..1]	O	Not used by MCIR
MSH-14	Continuation Pointer	[0..1]	O	Not used by MCIR
MSH-15	Accept Acknowledgment Type	[1..1]	R	Shall be ER
MSH-16	Application Acknowledgment Type	[1..1]	R	Shall be AL
MSH-17	Country Code	[0..1]	O	Not used by MCIR
MSH-18	Character Set	[0..1]	O	Not used by MCIR
MSH-19	Principal Language of Message	[0..1]	O	Not used by MCIR
MSH-20	Alternate Character Set Handling Scheme	[0..1]	O	Not used by MCIR
MSH-21	Message Profile Identifier	[1..*]	R	Shall be Z34^CDCPHINQBP for QBP messages; Z22^CDCPHINVS for VXU messages
MSH-22	Sending Responsible Organization	[0..1]	RE	Must be blank
MSH-23	Receiving Responsible Organization	[0..1]	RE	Must be blank unless otherwise specified by MCIR

Note: During MCIR onboarding, testing, and Data Quality Assurance, all messages should be submitted with **MSH-11 = T**. After MCIR approves the interface for

production, the submitting organization or vendor must update **MSH-11 = P** before transmitting production data.

All Remaining Segments

For all remaining HL7 segments and fields not specifically addressed in this guide, organizations must follow the requirements defined by MCIR. Refer to the MCIR HL7 Specification & Implementation Guide for detailed segment definitions, field requirements, usage constraints, and conformance guidance. MCIR Implementation Resources: https://mcir.org/

Production Support

	Severity 1	Severity 2	Severity 3	Severity 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, is operating in a degregated 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 for a two or more TDSOs • A 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/requesthelp	**Call** (844) 454-2443 and **submit** a ticket online at www.mihin.org/requesthelp	**Submit** a ticket online at www.mihin.org/requesthelp	**Submit** a ticket online at www.mihin.org/requesthelp
Acknowledgement Communication	Within **30 minutes**	Within **30 minutes**	Within **3 business hours**	Within **6 business hours**
Resolution Goal	**<2** hours Restore Time from 8 am – 5 pm ET Monday-Friday and **<4** hours nights, weekends and holidays	**<4** hours Restore Time from 8 am - 5 pm ET Monday-Friday and **<8** hours nights, weekends and holidays	**<12** hours Restore Time from 8 am - 5 pm ET Monday–Friday and **<24** hours nights, weekends and holidays	Within **5 business days**

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

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

5. Legal Advisory Language

This reminder applies to all use cases 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:

1. 1. By health care providers for Treatment, Payment and/or Health Care Operations consistent with the requirements set forth in HIPAA.
2. 2. Public health activities and reporting as permitted by HIPAA and other Applicable Laws and Standards.
3. 3. To facilitate the implementation of "Meaningful Use" criteria as specified in the American Recovery and Reinvestment Act of 2009 and as permitted by HIPAA.
4. 4. 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.
5. 5. 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.
6. 6. For any additional purposes as specified in any use case, 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 MCL § 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 use case 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.

Appendices

Appendix A – Message Examples

Sample VXU messages Administered

MSH|^~\&|HEALTHLAND^2.16.840.1.113883.3.4272.14.1^ISO|SIISCLIENT1724|IIS|IIS|201609
09130000||VXU^V04^VXU_V04|123456|P|2.5.1|||ER|AL|||||Z22^CDCPHINVS|
PID|1||A69532^^^^MR||SMITH^MICK^D^^^^L||20140708|M||2106-3^White^HL70005|123 MAIN
STREET^^CHEYENNE^WY^82002||^PRN^PH^^^406^5551234|||||||||2186-5^not Hispanic or Latino^HL70189|

PD1||||||||||||02^Reminder/Recall - any method^HL70215|||||A|||||
NK1|1|SMITH^WALT|FTH^FATHER^HL70063|
IN1|1|PL02585|C8909|CIGNA|||||||||5|
ORC|RE|365412^^^|56789^^^|||||||SIISCLIENT3363^SMITH^MAGGIE||SIISCLIENT3396^WIL SON^MATT|||||SIISCLIENT1724|
RXA|0|1|201609080000|201609080000|20^DTaP^CVX|0.5|mL^milliliters^UCUM||00^New immunization
record^NIP001||^^^SIISCLIENT1724||||3923K|20171115|SKB^GlaxoSmithKline^HL70227|||C P|A|| RXR|IM^Intramuscular^HL70162|RT^Right Thigh^HL70163
OBX|1|CE|64994-7^Vaccine funding program eligibility category^LN|0|V04^VFC eligible American Indian^HL70064|||||F|||20160406|||VXC40^Eligibility captured at the immunization level^CDCPHINVS OBX|2|CE|30963-3^Vaccine purchased with^LN||VXC1^Federal funds^||||||F||||

OBX|3|CE|30956-7^vaccine type^LN|1|48^HIB^CVX|||||F

OBX|4|TS|29768-9^Date vaccine information statement published^LN|1|20070515|||||F

OBX|5|TS|29769-7^Date vaccine information statement presented^LN|1|201609068|||||F

NTE|||NTE COMMENT||
RXA|0|1|201407080000||20^DTaP^CVX|999|||01^Historical immunization|^^^3724|||||||||C|A||

Historical

MSH|^~\&||123456|MCIR|MDCH|20140225161706-0500||VXU^V04^VXU_V04|200399.6371|P|2.5.1|
PID|1||S24C999^^^EHR^MR||Short^Sport^M^^^^L|Ju^Stein|20130821|M|||96 Rodriguez Pl^^Hadley^MI^48440^USA^P||^PRN^PH^^^810^6383109|
NK1|1|Short^Mala^^^^^L|GRD^Guardian^HL70063| ORC|RE||S24C757.1^OIS|
RXA|0|1|20131021||48^Hib^CVX|2|||01^Historical sourceunspecified^NIP001|||||R8370VT||PMC^sanofipasteur^MVX|||A|

Appendix B – MCIR Conformance Specification

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