Michigan Care Improvement Registry
HL7 2.5.1 v1.5
Specification for Vaccination Messages

Message types supported:

- Vaccination Update (VXU)

The MCIR interface is currently at version 2.5.1 and is backwards compatible to earlier versions.

Document Description

This guide is intended for immunization providers and their vendors to assist in connecting to the Michigan Care Improvement Registry (MCIR). MCIR is an immunization registry that compiles complete immunization histories for children and adults in Michigan. Electronic Health Record (EHR) systems that comply with Stage 1 Meaningful Use requirements must be able to submit immunization administration data to their state registry. This document explains technical details of this interface. The recommendations here are in line with CDC and HL7 standards and should be compatible with EHR Systems that are following Meaningful Use guidelines.

MCIR HL7 Submission Information and References
MCIR Vaccine Codes including U.S. Licensed CVX, and MVX documents

It is very important to select specific codes for currently administered vaccines. Vaccine (CVX) codes are required in your file. Do not use Unspecified or Historical vaccine codes for current data.

Reference and Resource Information

- MCIR HL7 Submission Information & References

- MCIR Vaccine Codes including U.S. Licensed CVX, and MVX Documents

MCIR Codes are a reflection of those maintained at the CDC National Immunization Program HL7 Standard Code Set Mapping CVX to Vaccine Groups.

Additional Resources

- Visit CDC IIS|Code Sets regarding Code Sets.
- Visit CDC NDC Crosswalk Tables for NDC Crosswalk information.
- Visit CDC NDC Table Access for up to date value sets.

MCiR
Michigan Care Improvement Registry

Page Intentionally Left Blank

Table of Contents

Michigan Care Improvement Registry

Introduction and History

MCIR was created in 1998 to collect reliable immunization information and make it accessible to authorized users online. In 2006, MCIR was expanded to include adults. By state law, providers are required to submit childhood immunizations within 72 hours of administration. In addition, providers are allowed and highly encouraged to report adult vaccinations.

MCIR benefits health care organizations, schools, licensed childcare programs, and Michigan's citizens by consolidating immunization information from multiple providers. This reduces vaccine-preventable diseases, over-vaccination, and allows providers to see up-to-date patient immunization history.

MCIR also has the ability to assist with pandemic flu preparedness and can track vaccines and medications during a public health emergency.

Transfer Interfaces Available

This document primarily describes the interface for accepting reports of administered and historical vaccinations via a VXU real-time or batch update. Query by Parameter (QBP) will be developed soon and will be documented in an updated version of this document.

How to Format Data

The MCIR interface is currently at HL7 version 2.5.1.

Version Compatibility

HL7 is built to be backwards compatible with older versions. New fields that are introduced should be ignored by older versions and older messages should still process correctly in new systems. The version number in HL7 version 2 messages indicates the standards release that the message is associated with. A system built using the HL7 v2.5.1 should still be able to accept 2.3 messages, although it may not support improvements made in v2.5.1.

Meaningful Use

MCIR is able to receive submissions for sites who are looking to attest for meaningful use in regards to submitting immunization messages. For more information please visit https://www.mcir.org/mu/ .

Note: HL7 Version Information: HL7 version 2.5.1 is required to meet Stage 2. However, "if Eligible Professionals (EP) prior to Calendar Year 2014 and Eligible Hospitals (EH) prior to Fiscal Year 2014 have achieved successful on-going follow-up submission using EHR technology certified to the 2011 Edition EHR certification criteria (HL7 2.3.1 only), it is acceptable to continue this on-going submission and meet the Stage 2 measure for as long as HL7 2.3.1 continues to be acceptable by the Immunization Information System (IIS) or Immunization Registry".

How to Send Data

As HL7 specifically avoided defining how messages should be transported, there is no definitive national standard for doing so.

MCIR requires connectivity through a Qualified Organization/Sub-State Health Information Exchange. Click on this link for a list of Qualified Organizations:
- visit http://mihin.org/exchanges/

Please contact the MCIR Help Desk 1-888-243-6652 option 3 or via E-mail MU_MCIRHelp@mphi.org for questions about information on how to establish an interface account.

Required MSH-11.1 Modifications for MCIR Pre-Production Onboarding
Effective June 1, 2014

Submitters are advised to include this requirement in any internal project scope or contract with an external organization conducting the configuration of the MCIR interface.

Data Quality Assurance (DQA) Testing
Prior to entering into full production, submitters are required to go through a data/message quality phase for Pre-Production Onboarding. During this phase real messages are sent, just as in production, but MSH-11.1 "Processing ID" to be set to the literal value of **"T"**. Messages are reviewed for completeness and quality by MCIR staff. Click on this link to view the MCIR DQA Process document: https://www.mcir.org/wp-content/uploads/2014/08/DQA-Steps.pdf.

Production
Once a submitter has completed Pre-Production Onboarding and received the approval to enter into production from MCIR staff, they must change MSH-11.1 "Processing ID" to be set to the literal value of **"P".**

Testing After Entering into Production
If for any reason a submitter wishes to test messages after entering into production (e.g., during an EHR upgrade) they must make special arrangements with MCIR before sending test message information.

Note: Messages sent without a "P" or a "T" in MSH-11.1 will be rejected.

Health Information Exchanges (HIE) and MCIR HL7 Messaging Requirements
<u>Effective May 1, 2013</u>

The Michigan Care Improvement Registry (MCIR) is built to identify issues in incoming data and reject messages that do not meet minimum standards. ***Health Information Exchanges or Intermediaries should evaluate the message header for required fields before submission to the State.***

For example, if the MSH-4 does not contain a valid HL7 Facility ID that was issued by MCIR, then this is an Error. This means that a message with a missing HL7 Facility ID would be rejected.

MSH Field	Field Name	Requirements
MSH-4	Sending Facility	Must be populated, should be in the format of '####-##-##'
MSH-5	Receiving Application	Must be populated with 'MCIR'
MSH-6	Receiving Facility	Must be populated with 'MDCH'
MSH-12	Version ID	Must be populated with a valid HL7 version.

Health Information Exchanges or Intermediaries will receive ACK messages from MCIR and should return these messages back to the provider site that submitted them to MCIR. <u>This will become a mandatory function on October 1, 2013.</u>

In cases where returning the ACK to the original sender site would cause undue harm, this requirement can be waived on a case by case basis.

If there are any other errors anywhere, especially in the RXA segment, then the message is rejected and MCIR will respond with an ACK error message. The MSA-1 field will be set to "AE" to indicate that there were errors and details of those errors will be reported in the ERR segment in accordance with HL7 standards.

Examples of issues that may cause a message to be rejected include:

- Message violates HL7 2.3.1 or HL7 2.5.1 standards.
- Message is missing field required by MCIR.
- Value is not valid for the given type (e.g. there is an alphanumeric data value in a date field) or is not a recognized valid value.
- Value is inconsistent with other values given in the same message.

MCIR has developed a list of all known or potential issues that may be identified in an incoming message and has assigned them one of the four following states:

- Error - entire message should be rejected.

- Warning - message may be accepted but with a comment.
- Accept - message may be accepted.
- Skip - message, segment, or associated concept should not be processed but no error needs to be generated (rarely used by MCIR).

Warnings

If there are any warnings in the VXU message, such as an invalid data type in an optional field or an invalid data code value in an optional field, MCIR will note these issues on data quality reports but will still process the message. The warnings will not cause MCIR to reject the message. However, those warnings will be reported in both the ERR segment and the MSA-3 field of MCIR's response message in order to facilitate the HL7 data exchange partner's integration testing of their system to promote data quality.

Health Level Seven (HL7)

History

HL7 was first formed as a standard in the late 1980's as a collaboration between vendors of health systems and hospitals. The goal was to create a standard message format that disparate systems could use to exchange health data.

The name of HL7 was settled on because HL7 was originally conceived to define message structures in the seventh level of the ideal model of networks. At that time, the Internet was not widespread and there was quite a lot of variation in hospital networks. It was decided that HL7 would only define messages and not how these messages were sent.

Within a year HL7 version 2 was released. This version has been in use for over 20 years. HL7 version 3 is a new standards track with major improvements over version 2. It is not fully completed. MCIR is currently using HL7 Version 2.5.1 messages.

Message Specifications

There are three controlling documents that define how the MCIR interface works. They are arranged in a hierarchy of documents, each refining and constraining the standard:
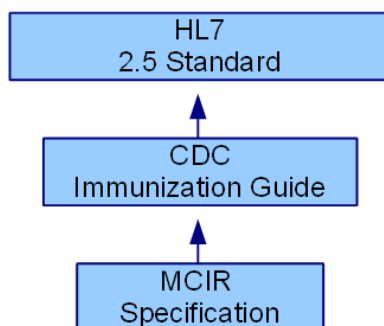
The first is the HL7 2.5.1 standard, which was developed by Health Level Seven, a not-for-profit ANSI-accredited standards developing organization. This standard defines the structure and content of immunization messages but leaves many specific implementation details undecided. Contact HL7 in order to obtain a version of the HL7 Standard: http://www.hl7.org/

The second document is the CDC HL7 Version 2.5.1 Implementation Guide for Immunization Messaging. This guide gives specific instructions regarding how to report to immunization registries, but still leaves some implementation decisions to each state registry. This guide and other technical information can be found at this CDC website: http://www.cdc.gov/vaccines/programs/iis/technical-guidance/hl7.html

What you are reading now is the third document. It finalizes all implementation decisions and defines exactly what MCIR will and will not accept. It is written in accordance with the standards set in the first two documents.

Each of these standards should be consulted when developing an interface with MCIR.

Message Structure

- ✎ HL7 messages are made of multiple lines called **segments**. Each line/segment is separated by a carriage return.

> **Note** Windows systems separate lines by carriage returns + line feeds, so some Windows applications will not correctly display HL7 messages. Windows Notepad will display HL7 messages as one long continuous line. This is very hard to read. It is better to view an HL7 message in WordPad or some other text editor.

- ✎ Each segment starts with a three letter name that identifies the segment.

- ✎ Each segment is broken into **fields** that are normally separated by vertical bars |.

- ✎ Each field can also be broken into **sub-fields** by a caret ^.

- ✎ Separators are only sent to keep fields in their correct position. (For example: field1|||field4) Separators at the end of segments and fields are omitted if all the values there are empty.

- ✎ Some fields within a segment can also repeat. Repeating fields are separated by a tilde ~.

For more information about HL7 formatting please read the CDC and HL7 guides which can be found here: http://www.cdc.gov/vaccines/programs/iis/technical-guidance/hl7.html

Immunization Messages

Vaccination Update (VXU)

Unsolicited Vaccination Update (VXU) messages are the preferred method for MCIR to receive and send vaccination information. The VXU is based off a pharmacy message and can indicate a patient's demographics and zero or more vaccinations. VXU messages may also be used to register a patient who does not have vaccinations yet, by simply sending a VXU without any vaccinations.

Vaccination Query

A Vaccination Query is used to query or pull a patient record from another system. These type of messages will be supported in the future.

How to Read This Document

This document is written to be easy to read and implement. The finer details and explanations of HL7 have been glossed over and simplified. This guide is not a complete elaboration of HL7 rather it is a straight-forward how-to guide. To see this original information please review the HL7 standard and the CDC guide.

Each field and subfield in the message has a status. This status indicates what MCIR expects from a sending system. This status is descriptive and does not necessarily match the HL7 standard.

A few important points about these status messages:

- **Required** means that the sending system is required to send it, if available. The sending system should never send filler or "dummy" data in required fields. If there is no value in a required field, because it was not entered or because there is no value known, then empty should still be sent. Some required fields cannot be left empty or the message will be rejected. These are clearly indicated in the notes.
- **Highly recommended** means that ideally the information should always be sent, but it is recognized that in some cases the information is simply not available.

- **Optional** means that MCIR may read or use the information but does not require it to be sent. Nevertheless, some optional fields are necessary to support MCIR functions and reports and should be sent. Please send values for optional fields if they are available.
- **Ignored** means that MCIR currently does not read from this field. The sender may leave it blank. MCIR will not check it for conformance to any specification. Fields that are ignored may be used by MCIR in the future. MCIR recommends that all ignored fields conform to the CDC guide for future interoperability.

Code values also have their own status. These are slightly different:

- **Accepted** means that MCIR recognizes the value and will read it.
- **Ignored** means that MCIR does not use this value and will act as if no value was sent.
- **Not accepted** means that MCIR cannot accept the value and will generate some kind of error condition. Part or the entire message may be rejected.

In addition, code values listed in this guide represent all code values MCIR expects to receive. In some tables HL7 defines a larger set of permissible or expected values. These are not listed in this guide for brevity or clarity. In most cases MCIR does not expect to receive these codes and may reject messages with **invalid** or **unrecognized** codes. However, invalid or unrecognized codes in non-critical fields are normally ignored and the rest of message is processed normally.

In summary, the status messages are meant as a general guide. Please read the notes for further explanation.

Vaccination Update Message (VXU)

Message Structure

Segment	Description	Status
MSH	Message Header	required
PID	Patient Identification	required
[PD1]	Additional Demographics	optional
[{NK1}]	Next of Kin/Associated Parties	Required for patients up to 18 years of age
[PV1	Patient Visit	ignored
[PV2]]	Patient Visit Additional Information	ignored
[{IN1	Insurance	ignored
[IN2]	Insurance Additional Information	ignored
[IN3]	Insurance Additional information-Cert	ignored
}]		
[{[ORC]	Common Order	required
RXA	Pharmacy Administration	required
[RXR]	Pharmacy Route	highly recommended
[{OBX	Observation/Result	required where RXA-9 equals "00"
[{NTE}]	Notes (Regarding Immunization)	ignored
}]		
}]		

Each message must begin with a Message Header (MSH) segment. The MSH indicates the start of the message and gives meta data about the message, including message type, sender and other important message information.

Each message contains one Patient Identification (PID) segment. Only one patient at a time may be sent in a message. This segments gives identifying detail about the patient and is used to find matching patients in the registry. The Additional Demographics (PD1) segment is used to indicate reminder/recall participation. The Next of Kin/Associated Parties (NK1) must be sent at least once to identify the responsible party for patients under the age of 18.

The Pharmacy Administration (RXA) segment indicates that a single vaccination was given. Zero or more of these may be sent for each patient. Some systems send only one vaccination in a message (thus multiple messages are sent for a single patient), while others aggregate all received immunizations under one message. Either method is acceptable. The Pharmacy Route (RXR) segment should also be included to indicate where and how the vaccination was given.

HL7 version 2.5.1 Example Message

Note: Although most fields supported by MCIR are shown here, some of the ones less likely to be used are not shown. Please review the standard for complete information.

MCIR
Michigan Care Improvement Registry

```
MSH|^~\&|EXPRESSMED1.1|1234-56-78|MCIR|MDCH|20140225161706-
0500||VXU^V04^VXU_V04|200399.6371|P|2.5.1|
PID|1||S24C757^^^EHR^MR||Short^Aldo^Tovi^^^^L|Juniata^Gala|20130821|M|||96 Rodriguez
Pl^^Hadley^MI^48440^USA^P||^PRN^PH^^^810^6383109|
NK1|1|Short^Gala|GRD^Guardian^HL70063|
ORC|RE||S24C757.1^OIS|||||||I-23432^Burden^Donna^A^^^^^NIST-AA-
1||57422^RADON^NICHOLAS^^^^^^NIST-AA-1^L|
RXA|0|1|20131021||48^Hib^CVX|2|mL^milliliters^UCUM||01^Historical-source
unspecified^NIP001|||||||R8370VT||PMC^sanofipasteur^MVX||||A|
RXR|IM^Intramuscular^HL70162|LA^Leftarm^HL70163|
ORC|RE||S24C757.3^OIS|||||||I-23432^Burden^Donna^A^^^^^NIST-
A1||57422^RADON^NICHOLAS^^^^^^NIST-AA-1^L|
RXA|0|1|20131221||48^Hib^CVX|2|mL^milliliters^UCUM||00^Administered^NIP001|||||||K7164HI|
|PMC^sanofipasteur^MVX||||A|
RXR|IMLA^LeftArmIntramuscular^HL70162|LA^Left arm^HL70163|
OBX|1|CE|64994-7^Eligibility StatusVaccine fund pgm elig cat^LN|1|V02^VFC Eligible -
Medicaid^HL70064|||||||F||||||VXC40^vaccine level^CDCPHINVS|
```

> **Note:** HL7 requires that segments are separated by carriage returns <cr> but Windows
> automatically separates lines by carriage returns <cr> + line feeds <lf>. MCIR prefers the HL7
> standard separator but will accept the Windows ones as well. MCIR recommends using the proper
> HL7 separators when developing an new HL7 interface to any registry.

Master Field List

The Master Field List shows every field accepted by MCIR in one correlated table. For more details on each
field please see the documentation under the segment and field description. A few pointers on how to read
this table:

- ⚼ The field status is quick summary of the details contained further in the document. Use this table as
  a quick rule-of-thumb but read the expanded notes for more information.

- ⚼ The column labeled PI indicates that this information is used in Patient Identification. It is important
  that enough information is sent in order to identify and match the patient with records currently in
  MCIR. Please send all fields marked PI, if available.

Entity	Field	Status	PI	HL7
MSH	**Sending Facility**	**Required**		**MSH-4**
Next-of-Kin	Address City	Optional	PI	NK1-4
Next-of-Kin	Address Country	Optional		NK1-4
Next-of-Kin	Address County	Optional		NK1-4
Next-of-Kin	Address State	Optional	PI	NK1-4
Next-of-Kin	Address Street	Optional	PI	NK1-4
Next-of-Kin	Address Street2	Optional		NK1-4
Next-of-Kin	Address Type	Optional		NK1-4
Next-of-Kin	Address ZIP	Optional	PI	NK1-4
Next-of-Kin	Business Phone	Optional		NK1-6
Next-of-Kin	**Family Name (Last)**	**Required** for patients up to 18 years of age.	**PI**	**NK1-2.1**
Next-of-Kin	**Given Name (First)**	**Required** for patients up to 18 years of age	**PI**	**NK1-2.2**
Next-of-Kin	Name Middle	Optional		NK1-2
Next-of-Kin	Name Prefix	Optional		NK1-2
Next-of-Kin	Name Suffix	Optional		NK1-2
Next-of-Kin	Phone	Optional	PI	NK1-5
Next-of-Kin	**Relationship**	**Required** for patients up to 18 years of age		**NK1-3**
Patient	**Address City**	**Required**	**PI**	**PID-11**
Patient	Address Country	Highly Recommended **Required** for CA (Canadian), or other countries outside USA		PID-11
Patient	Address County	Optional	PI	PID-11
Patient	**Address State**	**Required**	**PI**	**PID-11**
Patient	**Address Street**	**Required**	**PI**	**PID-11**
Patient	Address Street 2	Optional		PID-11
Patient	**Address ZIP**	**Required**	**PI**	**PID-11**
Patient	**Administrative Sex**	**Required**	**PI**	**PID-8**
Patient	Birth Order	Highly Recommended	PI	PID-25
Patient	**Date/Time of Birth**	**Required**	**PI**	**PID-7**
Patient	Ethnic Group	Highly Recommended		PID-22
Patient	**Patient Identifier List**	**Required**	**PI**	**PID-3**
Patient	Immunization Registry Status	Optional	PI	PD1-16

Entity	Field	Status	PI	HL7
Patient	Immunization Registry Status Effective Date	Optional		PD1-16
Patient	Last Update Date/Time	Optional		PID-33
Patient	Last Update Facility	Ignored		PID-34
Patient	Mother's Maiden Name	Highly Recommended	PI	PID-6
Patient	Multiple Birth Indicator	Highly Recommended	PI	PID-24
Patient	**Name First**	**Required**	**PI**	**PID-5**
Patient	**Name Last**	**Required**	**PI**	**PID-5**
Patient	Name Middle	Highly Recommended	PI	PID-5
Patient	Name Prefix	Ignored		PID-5
Patient	Name Suffix	Highly Recommended	PI	PID-5
Patient	Name Type	Optional		PID-5
Patient	Patient Death Date and Time	Highly Recommended		PID-29
Patient	Patient Death Indicator	Highly Recommended	PI	PID-30
Patient	Phone	Highly Recommended	PI	PID-13
Patient	Phone – Business	Optional		PID-14
Patient	Primary Care Provider Id	Optional		PD1-4
Patient	Primary Care Provider Name First	Optional		PD1-4
Patient	Primary Care Provider Name Last	Optional		PD1-4
Patient	Primary Care Provider Name Middle	Optional		PD1-4
Patient	Primary Care Provider Name Prefix	Optional		PD1-4
Patient	Primary Care Provider Name Suffix	Optional		PD1-4
Patient	Primary Facility Id	Ignored		PD1-3
Patient	Primary Facility Name	Ignored		PD1-3
Patient	Primary Language	Highly Recommended		PID-15
Patient	Protection Indicator (Consent)	Ignored		PD1-12
Patient	Protection Indicator Effective Date	Ignored		PD1-12
Patient	Publicity Code	Ignored		PD1-11
Patient	Publicity Code Effective Date	Ignored		PD1-11
Patient	Race	Highly Recommended		PID-10
Vaccination	Action Code	Highly Recommended		RXA-21
Vaccination	**Admin Date**	**Required**		**RXA-3**
Vaccination	Administered Amount	Highly Recommended		RXA-6

Entity	Field	Status	PI	HL7
Vaccination	Administered Code CPT	Optional		RXA-5
Vaccination	**Administered Code CVX**	**Required**		**RXA-5**
Vaccination	Administered Code NDC	Optional		RXA-5
Vaccination	**Administered Information Source**	**Required**		**RXA-9**
Vaccination	Administered Note (free text)	Ignored		RXA-9
Vaccination	Administered Units	Highly Recommended		RXA-7
Vaccination	Administered-at Location Address City	Highly Recommended		RXA-11
Vaccination	Administered-at Location Address Country	Highly Recommended		RXA-11
Vaccination	Administered-at Location Address County	Optional		RXA-11
Vaccination	Administered-at Location Address Street	Highly Recommended		RXA-11
Vaccination	Administered-at Location Address Street 2	Highly Recommended		RXA-11
Vaccination	Administered-at Location Address ZIP	Highly Recommended		RXA-11
Vaccination	Administered-at Location Name/Identifier	Highly Recommended		RXA-11
Vaccination	Administering Provider Id	Optional		RXA-10
Vaccination	Administering Provider Name First	Ignored		RXA-10
Vaccination	Administering Provider Name Last	Ignored		RXA-10
Vaccination	Administering Provider Name Middle	Ignored		RXA-10
Vaccination	Administering Provider name Prefix	Ignored		RXA-10
Vaccination	Administering Provider Name Suffix	Ignored		RXA-10
Vaccination	Administration Site (on body)	Highly Recommended		RXR-2
Vaccination	Completion Status	Highly Recommended		RXA-20
Vaccination	Confidentiality Code	Ignored		ORC-28
Vaccination	Contraindications/Precautions/Immunities	Highly Recommended		OBX
Vaccination	Route	Highly Recommended		RXR-1
Vaccination	Small pox take response date	Optional		OBX
Vaccination	Small pox take response type	Optional		OBX
Vaccination	Substance Expiration Date	Ignored		RXA-16
Vaccination	**Substance Lot Number**	**Required** for non-historical immunizations		**RXA-15**
Vaccination	**Substance Manufacturer Name**	**Required** for non-historical immunizations		**RXA-17**
Vaccination	Substance/Treatment Refusal Reason	Highly Recommended		RXA-18

Entity	Field	Status	PI	HL7
Vaccination	System Entry Date/Time	Optional		RXA-22
Vaccination	**Order Control**	**Required**		ORC-1
Vaccination	Vaccination Id Receiver	Optional		ORC-2
Vaccination	Vaccination Id Sender	Highly Recommended		ORC-3
Vaccination	**Vaccine Funding Source**	**Required**		**OBX**
Vaccination	VIS Date(s) presented	Highly Recommended		OBX
Vaccination	VIS Date(s) published	Highly Recommended		OBX

MSH: Message Header Segment

The Message Header (MSH) segment is required for each message sent. Multiple messages may be sent back-to-back. MSH segments separate multiple messages.

Position	Field Name	Status
1	**Field separator**	**Required**
2	**Encoding characters**	**Required**
3	Sending application	optional
4	**Sending facility**	**Required**
5	**Receiving application**	**Required**
6	**Receiving facility**	**Required**
7	**Date/time of message**	**required**
8	Security	ignored
9	**Message type**	**required**
10	**Message control id**	**required**
11	**Processing id**	**required**
12	**Version id**	**required**
13	Sequence number	ignored
14	Continuation pointer	ignored
15	Accept acknowledgment type	ignored
16	Application acknowledgment type	optional

Position	Field Name	Status
17	Country code	ignored
18	Character set	ignored
19	Principal language of message	ignored
20	Alternate character set handling scheme	ignored

MSH-1: Field separator

MCIR expects to receive standard character: |

> **Note** The CDC Immunization Guide requires senders to only use the standard character.

MSH-2: Encoding characters

MCIR expects standard encoding characters: ^~\&

> **Note** The CDC Immunization Guide requires senders to only use the standard characters.

MSH-3: Sending application

The sending application may be used to indicate the application name of the sending system. A human readable name should be sent as the namespace id. This information will be used for logging or debugging purposes.

Position	Field Name	Status
1	namespace id	optional
2	universal id	ignored
3	universal id type	ignored

MSH-4: Sending facility

MCIR controls and defines the value in this field. Please contact MCIR for details and to be assigned a facility id for this field. The value assigned by MCIR for your submitting system MUST be used for all messages sent.

Position	Field Name	Status
1	**namespace id**	**required**
2	universal id	ignored
3	universal id type	ignored

MSH-5: Receiving application

The receiving application may be used to indicate the application name of the receiving system.

Required value: MCIR

Position	Field Name	Status
1	**namespace id**	**required**
2	universal id	ignored
3	universal id type	ignored

MSH-6: Receiving facility

The receiving facility may be used to indicate the name of the facility where the data is being sent.

Required value: MDCH

Position	Field Name	Status
1	**namespace id**	**required**
2	universal id	ignored
3	universal id type	ignored

MSH-7: Date/time of message

The date and time when the message was created. This field is **required**. The degree of precision must be at least to the second including time zone:

Format: YYYYMMDDHHMMSS+/-ZZZZ

MSH-9: Message type

The type of message being sent.

Message type: `VXU`

Trigger event: `V04`

Message Structure: `VXU_V04`

Position	Field Name	Status
1	**message type**	**required**
2	**trigger event**	**required**
3	**message structure**	**required**

MSH-10: Message Control id (ST) 00010

Definition: This field contains the identifier assigned by the sending application (MSH.3) that uniquely identifies a message instance. This identifier is unique within the scope of the sending facility (MSH.4), sending application (MSH.3), and the YYYYMMDD portion of message date (MSH.7). The receiving system echoes this ID back to the sending system in the Message acknowledgment segment (MSA). The content and format of the data sent in this field is the responsibility of the sender.

A unique id for this message that is generated by the sending system. Must be unique for a given day.

Format: String

MSH-11: Processing id

Prior to entering into full production, submitters are required to go through a data/message quality phase for Pre-Production Onboarding. During this phase real messages are sent, just as in production, but with MSH-11 "Processing Id" to be set to the literal value of "T". Messages are reviewed for completeness and quality by MCIR staff.

Once a submitter has completed Pre-Production Onboarding and received the approval to enter into production from MCIR, they must change MSH-11 "Processing Id" to be set to the literal value of "P".

Note: Messages sent without a "P" or a "T" in MSH-11.1 will be rejected.

Position	Field Name	Status
1	**processing id**	**required**
2	processing mode	ignored

Table 0103 - Processing Id

Value	Description	Status
D	Debugging	ignored
P	Production	Accepted
T	Training	Accepted

MSH-12: Version id

The MCIR interface is currently at 2.5.1 and is backwards compatible to earlier versions. Please indicate here the version that was used to construct this message.

Position	Field Name	Status
1	**version id**	required
2	internationalization code	ignored
3	international version id	ignored

MSH-16: Application acknowledgment type

Indicates whether or not a response should be returned, and if so under what conditions. If not valued the default is `AL` (always).

Currently MCIR always returns an ACK. In the future this field may be used to control weather an ACK is generated or not.

Table 0155 - Accept/Application acknowledgment conditions

Value	Description	Status
AL	Always	accepted
NE	Never	accepted
ER	Error/Reject conditions only	accepted
SU	Successful completion only	accepted

PID: Patient Identifier Segment

The Patient Identifier segment includes essential information for matching an incoming patient record to patient records previously sent by other providers. It also includes information that may be used for reminder/recall or other outreach activities.

Position	Field Name	Status
1	Set id	ignored
2	Patient id	ignored
3	**Patient identifier list**	**required**
5	**Patient name**	**required**

MCIR
Michigan Care Improvement Registry

6	Mother's maiden name	highly recommended
7	**Date/time of birth**	**required**
8	**Sex**	**required**
9	Patient alias	highly recommended
10	Race	highly recommended
11	**Patient address**	**required**
13	Phone number - home	highly recommended
14	Phone number - business	optional
15	Primary language	highly recommended
22	Ethnic group	highly recommended
23	Birth place	optional
24	Multiple birth indicator	highly recommended
25	Birth order	highly recommended
29	Patient death date and time	highly recommended
30	Patient death indicator	highly recommended
33	Last Update Date/Time	optional

PID-3: Patient identifier list

Many different patient identifiers can be sent but MCIR will process only one of them based on the order of the value listed under Table 0203 – Identifier type below. MR (Medical Record Number) is preferred.

Please do not send Social Security Numbers.

Position	Field Name	Status
1	**id**	**required**
2	check digit	ignored
3	code identifying the check digit scheme employed	ignored
4	**Assigning authority** - *Identify the organization that assigned the id in position 1. This is likely to be further defined based on national requirements currently under discussion.*	**required**
5	**identifier type code**	**required**
6	assigning facility	ignored

Table 0203 - Identifier type

Value	Description	Status
MR	Medical Record Number	accepted
PT	Patient External Identifier	accepted
PI	Patient Internal Identifier	accepted
SR	State Registry Id	accepted
MA	Medicaid Number	accepted
WC	WIC identifier	accepted

MCIR
Michigan Care Improvement Registry

MCIR requires that at least one id be sent. If more than one is sent, then each must be differentiated by the identifier type code in PID-3.5. MCIR will also accept the MCIR id, Medicaid number, and WIC number in this field. If more than one id is sent, MCIR will look for ids identified as such:

Patient Id	Description	PID-3.5
Patient id	Also known as Medical Record Number (MRN), patient id, chart number.	MR, or PT, or PI
MCIR id	Unique id assigned by MCIR (not normally sent)	SR
Medicaid number	Number assigned by Medicaid. Should be sent if known.	MA
WIC number	Number assigned by WIC program. Should be sent if known.	WC

Patient ids may be sent in any order. Other patient ids not listed here may also be sent but will be ignored.

It is important that the sending system's patient id be unique in the sending system. This number should not **be reused for different patients. It is not ideal, but okay for one patient to have more than one patient id** (e.g. when there is a duplicate patient record.) The patient id does not have to be unique outside of this sending system. For example, two different submitters can send patients in with the same patient id, as a random coincidence, and MCIR will keep them separate because they are from different systems.

PID-5: Patient name

The legal name must be sent in the first repetition. The last, first and middle names must be alpha characters only (A-Z).The last name or the first name should not contain the patient's suffix (e.g. JR or III). The first name should not include the patient's middle name or middle initial. These should be sent in their appropriate fields. **Warning** This message will be rejected if the first and last name are missing.

Position	Field	Status
1	family name	required
2	given name	required
3	middle initial or name	required, if known
4	suffix	required, if known
7	name type code	required

Table 0200 – Name type

Value	Description	Status
A	Alias name	accepted
L	Legal name	accepted
M	Maiden name	accepted

Note: If the patient **Alias name** is sent, it must be documented after the legal name in PID-5 and should be given a **name type code of A.**

Position	Field	Status
1	family name	optional
2	given name	optional
3	middle initial or name	optional

MCĨR
Michigan Care Improvement Registry

4	suffix	optional
7	name type code	**required**

PID-6: Mother's maiden name

The patient's mother's maiden name. This field only contains the maiden name. It does not include the mother's current first and middle name.

This field is used for patient matching. This field contains the family name under which the mother was born (i.e., before marriage).

Position	Field	Status
1	family name	optional
2	given name	ignored
3	middle initial or name	ignored
4	suffix	ignored
5	prefix	ignored
6	degree	ignored
7	name type code	**Required,** *if family name is sent.*
8	name representation code	ignore

PID-7: Date of birth

The patient's date of birth. This date is required because it is critical to several functions including immunization recommendations/forecast. This field must be:

- ✦ a valid date
- ✦ on or before date of submission (recorded in MSH-7)
- ✦ on or before today
- ✦ on or before indicated death date

Format: **YYYYMMDD**

The date may contain additional time information but this will be ignored.

PID-8: Sex

The patient's sex.

Value	Description	Status
F	Female	accepted
M	Male	accepted
O	Other	not accepted

U	Unknown	not accepted

Table 0001 - Sex

PID-10: Race

The patient's race is sent in this field. While this field may repeat to indicate additional races, MCIR currently only reads the first repeat.

Position	Field	Status
1	identifier	highly recommended
2	text	optional
3	name of coding system	optional, should be HL70005

Table 0005 - Race

Value	Description	Status
1002-5	American Indian or Alaska native	accepted
2028-9	Asian	accepted
2076-8	Native Hawaiian or Other Pacific Islander	accepted
2054-5	Black or African-American	accepted
2106-3	White	accepted
2135-2	Hispanic or Latino	accepted
2186-5	not Hispanic or Latino	accepted
2131-1	Other Race	accepted
2034-7	Chinese	accepted
2039-6	Japanese	accepted
2036-2	Filipino	accepted
2076-8	Hawaiian	accepted

PID-11: Patient address

MCIR requires that the patient's address is sent in PID-11.

> **Warning:** Messages that do not indicate an address segment will be rejected. If the address indicates a state other than Michigan, or any Canadian province, or any country other than the USA it is not required to have a street, city, state/province, or ZIP postal code. Otherwise the address is assumed to be in Michigan and must indicate a street, city, state and ZIP.

All addresses without country indicated will be assumed to be USA. The city may not be "Anytown" and must consist of alpha characters (no digits or special characters). The correct format for a numeric ZIP+4 code, by United States Postal Service (USPS) standards, is five digits, a hyphen, and four digits (optional): NNNNN[-NNNN]. All Post Offices are assigned at least one unique 5-digit ZIP code. A 5-digit ZIP code is required. The 4-digit extension is optional but if sent it MUST include the hyphen.

Format for first repetition:

Position	Field	Status
1	street address	required

MCIR
Michigan Care Improvement Registry

2	other designation	required, if known
3	city	required
4	state or province	required
5	ZIP or postal code	required
6	country	optional - use USA or CA for Canadian
7	address type	optional
9	county/parish code	optional

The address field may be repeated to indicate birth county. In this case the address type should be BDL for Birth Delivery Location.

Format for indicating birth county:

Position	Field	Status
1	street address	ignored
2	other designation	ignored
3	city	ignored
4	state or province	ignored
5	ZIP or postal code	ignored
6	country	optional
7	address type	required, must be BDL
9	county/parish code	optional

PID-13: Phone number - home

The patient's phone number should be sent in PID-13. The area code is required when the phone number is sent. Format for phone number: ^PRN^PH^^^734^6777777

Position	Field	Status
1	phone number	optional
2	use code	ignored
3	equipment type	optional
4	email	ignored
5	country	ignored
6	area	highly recommended
7	phone	highly recommended
8	extension	optional
9	any text	ignored

MCIR
Michigan Care Improvement Registry

PID-15: Primary language

The primary language of the patient or responsible party (if child.) This information is used to ensure that the appropriate language is used in mailings or other contacts.

Position	Field	Status
1	identifier	Highly Recommended
2	text	optional
3	name of coding system	optional, should be HL70296

Table 0296 - Language

Value	Description	Status
ASE	American sign language	ignored
ara	Arabic	ignored
arm	Armenian	ignored
chi	Chinese	ignored
eng	English	accepted
fre	French	ignored
ger	German	ignored
hin	Hindi	ignored
hmn	Hmong	ignored
jpn	Japanese	ignored
kor	Korean	ignored
rus	Russian	ignored
spa	Spanish	accepted
som	Somali	ignored
vie	Vietnamese	ignored

Click here for a complete list of language codes:
http://phinvads.cdc.gov/vads/ViewValueSet.action?id=43D34BBC-617F-DD11-B38D-00188B398520#

PID-22: Ethnic group

The ethnicity of the patient.

Table 0189 - Ethnic group

Value	Description	Status
2135-2	Hispanic or Latino	accepted
2186-5	not Hispanic or Latino	accepted

PID-23: Birth place

The name of the facility where the patient was born. This field is optional.

Format: String

PID-29: Patient death date and time

This field is currently ignored in MCIR. This optional field may be sent if the patient has died. Do not send any value in this field unless PID-30 is valued as Y (yes). Format: YYYYMMDD

PID-30: Patient death indicator

This field is currently ignored in MCIR. This optional field indicates that the patient has died. This field may be valued as N (no) if patient is not deceased or is not known to be deceased. This field should be valued Y (yes) if the patient is known to be deceased and the date should be sent in PID-29.

Table 0136 - Yes/No Indicator

Value	Description	Status
Y	yes	accepted
N	no	accepted

PID-33: Last Update Date/Time

This optional field indicates the date/time when this patient record was updated. This may be used by the registry to help verify that the data was entered correctly. For example, if the patient's birth date is after this date, an error may be generated.   Format: YYYYMMDD

PD1-11: Publicity code

This field indicates whether the patient wishes to receive reminder/recall notices. If this field is not sent then the patient or responsible party is assumed to have given consent. This field should not be auto-filled based on local policies. Use this field to indicate a specific request from the patient/parent or leave blank.

This field is currently ignored in MCIR. MCIR has a manual process in place to indicate whether the patient wishes to receive reminder/recall notices. Reminder/Recall preference cannot be indicated through an electronically submitted message to MCIR.

Position	Field	Status
1	identifier	optional
2	text	optional
3	name of coding system	optional, should be HL70215
4	alternate identifier	ignored
5	alternate text	ignored
6	name of alternate coding system	ignored

Table 0215 - Publicity code

Value	Description	Status
01	no reminder/recall	accepted
02	reminder/recall - any method	accepted

MCIR
Michigan Care Improvement Registry

PD1-12: Protection Indicator

Indicates whether the patient record should be protected. This field <u>should not</u> be auto-filled based on local policies. Use this field to indicate a specific request from the patient/parent or <u>leave empty</u>. This field is currently ignored by MCIR.

Value	HL7 Standard
(empty)	No indication that the record should be protected, the patient did not refuse to participate in MCIR, record will be included
Y (Yes)	The patient refused participation in MCIR. This field is currently ignored by MCIR. **MCIR will process records sent with a Y value.** MCIR has a manual process in place to mark a patient record as "protected". Patient protection cannot be indicated through an electronically submitted message to MCIR.
N (No)	The record does not need to be protected; the patient did not refuse to participate in MCIR.

PD1-16: Immunization registry status

Indicates the status of the patient in the reporting system. This is used to indicate if a patient is currently active at this site, and if not, why. This field can be used to indicate moved-or-gone-elsewhere (MOGE).

Table 0441 - Immunization registry status

Value	Description	Status
A	active	accepted
I	inactive	accepted
L	inactive-lost to follow-up (cannot contact)	accepted
M	inactive-moved or gone elsewhere (transferred)	accepted
P	inactive-permanently inactive (do not reactive or add new entries to this record)	accepted
U	unknown	accepted

NK1: Next of Kin/Associated Parties Segment

If the patient is a child (up to 18 years of age), the parent/legal guardian First and Last name is required. If this patient is an adult, this segment is not required.

Position	Field Name	Status
1	Set id - NK1	ignored
2	**Name**	**Required for patients up to 18 years of age**
3	**Relationship**	**Required for patients up to 18 years of age**
4	Address	optional
5	Phone number	optional
6	Business phone number	optional

NK1-2: Name

Name of the responsible party.

> **Warning** This message will be rejected for patients up to 18 years of age and does not have at least one NK1 segment with a family name indicated.

Position	Field	Status
1	**family name (Last)**	**Required for patients up to 18 years of age**
2	**given name (First)**	**Required for patients up to 18 years of age**
3	middle initial or name	optional
4	suffix	optional

NK1-3: Relationship

Indicates the relationship of the responsible person to the patient/client. Only relationships that indicate a "responsible party" are accepted (guardian, mother, father, parent), all others are ignored. A person who is listed as the guarantor in the sending system may be indicated here as "guardian".

It is important that this information is included in order to ensure a good patient match. NK1's with no relationship indicated here will be assumed to be a responsible party.

> **Warning** For patient's up to 18 years of age, at least one NK1 message must have a recognized relationship. If this field is left empty it will be assumed to be a responsible party.

Position	Field	Status
1	**identifier**	**Required for patients up to 18 years of age**
2	text	optional
3	name of coding system	optional, should be HL70063

Table 0063 - Relationship

Value	Description	Status
GRD	**guardian**	**accepted**
FTH	**father**	**accepted**
MTH	**mother**	**accepted**
PAR	**parent**	**accepted**
SEL	**self**	**accepted, if adult**
ASC	associate	ignored
BRO	brother	ignored
CGV	care giver	ignored
CHD	child	ignored
DEP	handicapped dependent	ignored
DOM	life partner	ignored
EMC	emergency contact	ignored
EME	employee	ignored
EMR	employer	ignored
EXF	extended family	ignored

FCH	foster child	ignored
FND	friend	ignored
GCH	grandchild	ignored
GRP	grandparent	ignored
MGR	manager	ignored
NCH	natural child	ignored
NON	none	ignored
OAD	other adult	ignored
OTH	other	ignored
OWN	owner	ignored
SCH	stepchild	ignored
SIB	sibling	ignored
SIS	sister	ignored
SPO	spouse	ignored
TRA	trainer	ignored
UNK	unknown	ignored
WRD	ward of court	ignored

NK1-4: Address

The patient address is required in the Patient Identifier (PID) segment. If sent here, it must be included with a NK1 with an accepted relationship.

All addresses without country indicated will be assumed to be USA unless a Canadian province is listed in the state or province field.

Format for first repetition:

Position	Field	Status
1	street address	optional
2	other designation	optional
3	city	optional
4	state or province	optional
5	ZIP or postal code	optional
6	country	optional
7	address type	optional
9	county/parish code	optional

NK1-5: Phone number

The phone number may be sent here or in the Patient Identifier (PID) segment. This field is highly recommended and should be sent in one of these locations. The area code is required when the phone number is sent. Format for phone number: ^PRN^PH^^^734^6777777

Position	Field	Status
1	phone number	optional
6	area	optional

MCIR
Michigan Care Improvement Registry

7	phone	optional

PV1: Patient Visit Segment

This field is ignored in MCIR.

PV1-2: Patient class

This field is required by HL7 but ignored by MCIR. Mark this as a R for recurring patient.

Table 0004 - Patient class

Value	Description	Status
R	recurring patient	expected, but ignored

PV1-20: Financial class

> Note: The use of this field for sending VFC status will not be supported. VFC program requires sending VFC status for every vaccination administered which requires that the VFC status be sent in an Observation. Please see the OBX section for more details.

ORC: Order Request Segment

The Order Request (ORC) segment is required for 2.5.1 messages and indicates information about the pharmaceutical order. While many of the elements don't apply directly to immunizations (as the immunizations are usually ordered, delivered, and administered at the same location) a couple of fields allow for better control of immunization data.

Position	Field Name	Status
1	**Order Control**	**required**
2	Placer Order Number	highly recommended, but currently ignored by MCIR
3	Filler Order Number	highly recommended, but currently ignored by MCIR

ORC-1: Order Control - SHALL contain the value "RE".

ORC-2: Placer Order Number

Use this field to indicate the vaccination id used by MCIR to uniquely identify this vaccination event. In most cases this will not be known and this field should be left blank. If known, this may be used by MCIR to associate this information with the correct immunization.

ORC-3: Filler Order Number

This field indicates the sending system's id for this vaccination. Every vaccination given should be assigned a id unique to the sending system. In this way, if an update is made to the vaccination, the receiving side (MCIR) can determine which vaccination to update.

In the past the only way to determine which vaccination to update was to match on vaccination code (CVX/CPT) and vaccination date. If one of these values changed it was often impossible to determine the original vaccination and it had to be added. That process led to incorrect data being added to patient records. For example: if a nurse entered an MMR given on 01/06/2009 and sent it to MCIR, and later realized that it really was given 01/06/2010 and correct it, his system may send it again but MCIR has no way of knowing that this change refers to original report. If both reports share the same vaccination id then the incorrect dose can be updated.

MCIR
Michigan Care Improvement Registry

RXA: Pharmacy Administration Segment

The Pharmacy Administration (RXA) segment is required to indicate which vaccinations are given. This segment is required if there are vaccinations to report. All vaccinations for a patient may be reported in one message, or in separate messages.

Position	Field Name	Status
1	Give sub-ID counter	required, but ignored
2	Administration sub-ID counter	required, but ignored
3	Date/time start of administration	required
4	Date/time end of administration	required, but ignored
5	Administered code	required
6	Administered amount	highly recommended
7	Administered units	highly recommended
9	Administration notes	required
10	Administering provider	optional
11	Administered-at location	highly recommended
15	Substance lot number	Required when RXA-9 equals "00" for administered immunizations
17	Substance manufacturer name	Required when RXA-9 equals "00" for administered immunizations
18	Substance refusal reason	highly recommended
20	Completion status	highly recommended
21	Action code	highly recommended
22	System entry date/time	optional

RXA-2: Administration sub-ID counter

MCIR expects 1 in this field.

Format: Number

RXA-3: Date/time start of administration

The date/time start of administration is used to record the date of when the vaccination was given. Any time information is ignored, and need not be sent. It is important that this date be the actual date the vaccination was given and not the date that it was recorded or billed.

> Note The entire message will be rejected if a vaccination is recorded in the future, after the message was created, after the indicated death date, or before the patient's date of birth.

Format: YYYYMMDD

RXA-4: Date/time end of administration

HL7 requires this field, but MCIR ignores it. MCIR recommends giving this field the same value as RXA-3. This field was designed to support medications administered across time (such as an IV) and does not apply to immunizations. Do not use this field to record other kinds of dates.

RXA-5: Administered code

MCIR accepts vaccinations reported using CVX codes. CVX codes are assigned by the CDC and are preferred as they have more detail than CPT.

Position	Field	Status
1	**identifier**	**required**
2	text	optional
3	**name of coding system**	**required: CVX**
4	alternate identifier	optional
5	alternate text	optional
6	name of alternate coding system	optional: NDC

CVX codes are maintained by the CDC's National Center of Immunization and Respiratory Diseases (NCIRD) and can be found at the CDC website: http://www2a.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=cvx

New codes are added several times a year. CDC offers an email service that sends updates when new CVX codes are added. Information about this service is available on the websites listed above. It is critical to keep code sets in up-to-date in order to appropriate report vaccinations. Steps should be taken to ensure that someone is receiving these emails and keeping the code sets up-to-date.

RXA segment format example for CVX/NDC code submission:

```
RXA|0|1|20140221||115^Tdap^CVX^58160-0842-52^Boostrix
(Tdap)^NDC|2|mL^milliliters^UCUM||00^Administered^NIP001||||||K7164HI||SKB^GlaxoSmithKline^MVX||||A
```

RXA-6: Administered amount

The amount of vaccine that was given. This should be expressed in milliliters (ML). The amount should be placed here and the units in RXA-7. Do not put the units in this field.

Format: Number

RXA-7: Administered units

The units associated with the number in RXA-6. A value of ML is preferred.

Position	Field	Status
1	identifier	optional, should be ML
2	text	ignored
3	name of coding system	ignored
4	alternate identifier	ignored
5	alternate text	ignored
6	name of alternate coding system	ignored

RXA-9: Administration notes

This field is required.

Position	Field	Status
1	**identifier**	**required**
2	text	optional

MCIR
Michigan Care Improvement Registry

| 3 | name of coding system | optional, use **NIP001** |

NIP002 - Immunization information source ue of 00 must be sent to indicate a New Immunization Record. MCIR prefers a value of 01 be used to indicate an historical non-administered vaccine is being sent. If 02 through 08 values are sent, MCIR will convert the values to 01 to indicate historical source unspecified.

Value	Description	Status
00	**New immunization record**	**accepted**
01	**Historical information-source unspecified - preferred**	**accepted**
02	Historical information - from other provider	accepted
03	Historical information - from parent's written record	accepted
04	Historical information - from parent's recall	accepted
05	Historical information - from other registry	accepted
06	Historical information - from birth certificate	accepted
07	Historical information - from school record	accepted
08	Historical information - from public agency	accepted

RXA-10: Administering provider

This field indicates the id and name of the person who administered the vaccination.

This field is highly recommended if this vaccination was administered.

Position	Field	Status
1	id number	highly recommended, if using VIM and administered
2	family name	ignored
3	given name	ignored
4	middle initial or name	ignored
5	suffix	ignored
6	prefix	ignored
7	degree	ignored
8	source table	ignored
9	assigning authority	ignored
10	name type code	ignored
11	identifier check digit	ignored
12	code identifying the check digit scheme employed	ignored
13	identifier type code	ignored
14	assigning facility id	ignored
15	name representation code	ignored

RXA-11: Administered at location

The administered at location is used to indicate the facility at which the immunization was given. The MCIR Site ID, an 11 digit number, should be sent in position 4. Previously MCIR required this value, but now it is highly recommended and may be valued with any value assigned by the sending system.

Position	Field Name	Status
1	point of care	optional
4	facility (MCIR Site Id)	highly recommended
9	street address	highly recommended
10	other designation	highly recommended
11	city	highly recommended
12	state or province	highly recommended
13	ZIP or postal code	highly recommended
14	country	highly recommended

RXA-15: Substance lot number

The vaccine lot number is **required for administered vaccinations**. The actual lot number should be entered here, just as it appears on the vaccine vial.

Format: String

RXA-17: Substance manufacturer

The vaccine manufacturer is **required for administered vaccinations**.

Position	Field	Status
1	**identifier**	**Required if administered**
2	text	optional
3	name of coding system	optional, should be MVX
4	alternate identifier	ignored
5	alternate text	ignored
6	name of alternate coding system	ignored

The manufacturer codes are maintained by the CDC's National Center for Immunization and Respiratory Diseases (NCIRD) and can be found on the web here:
http://www2a.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=mvx

RXA-18: Substance refusal reason

The reason why a vaccine was not given. There are several components to messaging a refusal. The refusal reason is indicated in RXA-18. The Completion Status in RXA-20 indicates that the vaccine was not given. The amount given should be 0. RXA-2 is not used to indicate dose number, as it had in the past guide; it is constrained to have a value of 1.

The following example illustrates how to accomplish this. Note that the ORC is still required. Filler Order Number field (ORC-3) is still required, but meaningless and should send a value of "9999".

ORC|RE||9999^DCS|||||||^Clerk^Myron <CR>
RXA|0|1|20091010||107^DTAP-NOS^CVX|||||||||||||00^Parental refusal^NIP002||RE<CR>

Position	Field	Status
1	identifier	**Required if refused**
2	text	Optional
3	name of coding system	should be NIP002
4	alternate identifier	ignored
5	alternate text	ignored
6	name of alternate coding system	ignored

NIP002 - Substance refusal reason

Value	Description	Status
00	parental decision	accepted
01	religious exemption	accepted
02	other	accepted
03	patient decision	accepted

RXA-20: Completion Status

This field indicates the final status of the administration of the vaccination. <u>Normally a vaccination is CP for Complete.</u> <u>But if the vaccination was refused by the patient, or was wasted, or was partially administered, this can be indicated here.</u>

Position	Field	Status
1	id	highly recommended

Table 0322 – Completion Status

Value	Description	Status
CP	Complete	Accepted
RE	Refused	Accepted
NA	Not Administered	Accepted
PA	Partially Administered	Accepted

RXA-21: Action code

Action to take with vaccination information. This field is not required. If it is not sent then Add is assumed. An update status has the same effect as Add. MCIR determines for each vaccination whether to add or update based on what is currently in the registry.

Here is an example of how an immunization record that is reported incorrectly can be updated appropriately.

- First, the incorrect encounter information is sent with an "A" (Add).
- Next, after the mistake is corrected locally the previously submitted incorrect encounter information is sent with a "D" (Delete).
- Finally, the correct encounter information is sent with an "A" (Add).

MCIR
Michigan Care Improvement Registry

This order (A-D-A) will insure the correct information is recorded and will support properly inventory functions in MCIR.

There are few important pointers about sending adds and deletes:

- Some submitting systems are capable of sending Adds and Deletes to detail the history of edits on a single immunization record. MCIR prefers to receive the latest corrected record, and would rather not see the entire edit history.

- MCIR assumes the last update for add or delete is the final decision on whether an immunization is part of the record or not. Sending Add then Delete on the record will result in the record being removed from the patient's immunization history.

- When sending both adds and deletes, order matters. Add and then delete will result in no immunization history added, and D-A will result in it being added. The submitting system must ensure that it is sending these in the correct order.

- MCIR recommends, as best practice, to always use the A-D-A method listed above in the example to update immunization records.

Value	Description	Status
A	Add	accepted
U	Update	accepted
D	Delete	accepted

RXA-22: System entry date/time

The date/time when this vaccination was recorded. Should be on a date on or after the vaccination date. Do not send reports of vaccinations that have not yet occurred. If this value is unknown it should be left blank. Do not use current date or vaccination date as the value here.

Format: YYYYMMDDHHMMSS

RXR: Pharmacy Route Segment

The Pharmacy Route (RXR) segment is a continuation of RXA segment and is highly recommended for administered vaccinations.

Position	Field	Status
1	route	highly recommended
2	site	highly recommended
3	administration device	ignored
4	administration method	ignored
5	routing instruction	ignored

RXR-1: Route

The route is the place or method that was used to give the vaccination. This is normally dependent on the type of vaccination given.

Position	Field	Status

MCIR
Michigan Care Improvement Registry

1	identifier	highly recommended
2	text	optional
3	name of coding system	optional, should be HL70162

Table 0162 - Route of administration

Value	Description	Status
ID	intradermal	accepted
IM	intramuscular	accepted
NS	intranasal	accepted
IV	intravenous	do not use
PO	oral	accepted
OTH	other/miscellaneous	do not use
SC	subcutaneous	accepted
TD	transdermal	do not use
C38238	intradermal	accepted
C28161	intramuscular	accepted
C38284	nasal	accepted
C38276	intravenous	do not use
C38288	oral	accepted
C38676	percutaneous	accepted
C38299	subcutaneous	accepted
C38305	transdermal	Do not use

RXR-2: Site

The site is the place on the body that the vaccination was given. This is normally decided at time of administration. **Note:** the Site of Administration value shall be blank if there is an Oral, Nasal or Intranasal Route value sent in RXR-1.

Position	Field	Status
1	identifier	highly recommended
2	text	optional
3	name of coding system	optional, should be HL70163

Table 0163 - Administrative site

Value	Description	Status
LT	left thigh	accepted
LA	left arm	accepted
LD	left deltoid	accepted
LG	left gluteus medius	accepted
LVL	left vastus lateralis	accepted

MCiR
Michigan Care Improvement Registry

LLFA	left lower forearm	accepted
RA	right arm	accepted
RT	right thigh	accepted
RVL	right vastus lateralis	accepted
RG	right gluteus medius	accepted
RD	right deltoid	accepted
RLFA	right lower forearm	accepted

OBX: Observation Segment

The Observation segment includes additional information that could not be sent in the RXA. Any value can be sent in Observations but only a limited set will be recognized by MCIR. Unrecognized observations will be ignored by MCIR.

Position	Field Name	Status
1	**Set ID - OBX**	**required**
2	**Value Type**	**required**
3	**Observation Identifier**	**required**
4	Observation Sub-ID	optional
5	**Observation Value**	**required**
11	**Observation Result Status**	**required, should be F for Final**
14	**Date/Time of the Observation**	**required**

OBX-1: Set ID

Indicates the current sequence number for this OBX as it sits under the RXA.

OBX-2: Value Type

Indicates what kind of data will be sent in OBX-5. For Vaccine Inventory reporting (for example: VFC) use CE.

OBX-3: Observation Identifier

This indicates what kind of data is being sent in this OBX.

Position	Field	Status
1	**identifier**	**Required**
2	text	optional
3	**name of coding system**	**Required, should be LN**

Table NIP003 - LOINC

Value	Description	Status
64994-7	Vaccine funding program eligibility category	accepted
59784-9	Disease with presumed immunity	accepted

MCIR
Michigan Care Improvement Registry

75505-8	Disease with serological evidence of immunity	accepted

OBX-4: Observation Sub-ID

Indicates if this observation is part of a grouping.

OBX-5: Observation Value

Evidence of Immunity

Evidence of Immunity indicates that a person has plausible evidence that they have already developed immunity to a particular disease.

This example below shows that no dose of vaccine was given because the person had evidence of previous infection with varicella (Chicken Pox). The value populated in **OBX 5.1** for reporting disease with presumed immunity (LOINC: 59784-9) for History of Varicella infection is: 38907003.

```
ORC|RE||9999^DCS||||||^Clerk^Myron|

RXA|0|1|20090412|20090412|998^No vaccine administered^CVX|999||||||||||||||NA

OBX|1|CE|59784-9^Disease with presumed immunity ^LN|1|38907003^HISTORY OF
Varicella INFECTION^SCT||||||F|||20090412
```

The value populated in OBX 5.1 for reporting disease with serological evidence of immunity (LOINC: 75505-8) for confirmed varicella would be: 371113008.

VFC Status

This is where **VFC Status** is recorded at the vaccine level. The value of this observation of the type indicated into OBX-2. This is the answer to the question posed in OBX-3.

> **Please Note:** All new vaccines administered must include an accurate Financial Class Value in OBX 5.1 for VFC eligible and Non-VFC eligible patients **of any age**.

Go to Table 0064 - Financial class, for a list of accepted values required in position 1.

Position	Field	Status
1	**identifier**	**Required**
2	text	optional
3	name of coding system	optional, should be HL70064
4	alternate identifier	ignored
5	alternate text	ignored
6	name of alternate coding system	ignored

OBX-6: Units

If the value is numeric and indicates some kind of quantity the units should be indicated here.

OBX-14: Date/Time of the Observation

The date/time when the observation was made.

MCIR
Michigan Care Improvement Registry

What is VFC Status?

Vaccines For Children is a federally funded program that supplies vaccines without charge to primary care providers to administer to groups of children who would otherwise not be able to receive vaccinations. This program is critical to ensuring that all children are able to receive vaccinations. Before administering a VFC vaccination the provider is required to determine the VFC status of the patient. This information must be reported in aggregate by the provider on a regular basis to the VFC program as part of regular inventory review of usage. MCIR provides support to VFC providers by providing a mechanism to keep track of vaccine inventory and VFC status of each administered vaccination.

Federal regulations specify that patient vaccine eligibility status be assessed at each immunization encounter. Eligibility refers to what funding program should pay for the vaccine.

How to Send VFC Status

The original registry standard specified that the VFC status be sent at the patient level. This standard had limitations because:

- ⚴ While the PV1 indicates information associated with a visit, the vaccination message may contain information from previous visits. Simply filling in the VFC status only indicates that VFC status for the new vaccinations being reported.

- ⚴ Additional VFC codes from previous visits may be sent but requires advanced message construction and advanced message processing by the registry. Many submitters and immunization registries do not support a full list of VFC status history.

- ⚴ The field applies to all vaccinations given to the patient on a visit and cannot be used to indicate which vaccinations the VFC specifically applies to. It is possible for a patient to receive both private and VFC supplied vaccines in the same visit.

Because of these limitations, the immunization standard has been updated with the recommendation that VFC status be sent at the vaccination level as an observation. MCIR has adopted this recommendation in order to support current VFC (public) and Non-VFC (private) inventory functions. The following information is consistent with national standards.

> **Please Note:** MCIR receives VFC status at the Vaccination level in an OBX segment. MCIR is not supporting VFC status in PV1-20.

VFC Status Codes

There are two types of VFC codes that MCIR accepts in the OBX segment:

- ⚴ VFC codes defined by the CDC immunization guide that apply to all immunization registries.

- ⚴ VFC codes defined by MCIR in accordance with the guidance from the CDC.

Financial class refers to a patient's eligibility status at the time of vaccine administration.

Here is an example of how to report eligibility in the OBX segment:

OBX|1|CE|64994-7^Vaccine funding program eligibility category^LN||V03^VFC eligibility – Uninsured^HL70064||||||F|||20090706130100

MCIR
Michigan Care Improvement Registry

Table 0064 - Financial class

Value	Vaccine Eligibility/ All Hazard Purchase Type Description	Default MCIR inventory +	Status	Definition/Use
V01	Not VFC Eligible	Private	**required**	Patient has health insurance that covers some/all of the cost of vaccine, or the patient is paying for vaccine out-of-pocket.
V02	Medicaid VFC*	VFC/Public	**required**	Patient (<19 years old) is currently enrolled in Medicaid including MI-Child [S-CHIP] and is receiving a VFC vaccine.
V03	Uninsured*	VFC/Public	**required**	Patient (<19 years old) does not have any health insurance.
V04	Native American/Alaskan Native *	VFC/Public	**required**	Patient (<19 years old) is Native American or Alaskan Native.
V05	Under Insured*	VFC/Public	**required**	Patient (<19 years old) has health insurance, but the insurance does not cover any of the cost of vaccine.
V06	**DO NOT USE**. MI-Child	Private	**N/A**	**Discontinued on January 1, 2016 and replaced by V02.** Patient is enrolled in the MI-Child state health insurance program. [S-CHIP]
V07	317 Special Funds	VFC/Public	**required**	Used for special Local Health Department initiatives that is pre-approved by MDCH.
MIA04	MI-AVP (Michigan Adult Vaccine Program)	VFC/Public	**required**	Patient is receiving a MI-AVP vaccine (Td, Tdap, MMR, HepA, HepB, HPV, PCV13, PPSV23, Zoster) at a Local Health Department, Federally Qualified Health Center, or Migrant Health Center and is: • age 19 years or older • Uninsured or Underinsured.
MIA05	Medicare	Private	**required**	Patient is currently enrolled in Medicare
MIA08	Other Public Purchase	Private	**required**	Patient is receiving vaccine that was purchased by the local health department or MDCH. The patient and his/her health insurance is not paying for the cost of the vaccine.
MIA10	Public Purchase	All Hazard	**required**	All Hazard stock (vaccine, antiviral) purchased by federal funds (Strategic National Stockpile).
MIA14	Medicaid Non VFC	Private	**required**	Patient is currently enrolled in Medicaid and is either: • Age 19 years or older, or • Under 19 years and receiving a non-VFC vaccine

* The VFC (Michigan Vaccines for Children) Program includes patients in these four eligibilities, under the age of 19 years old.

+ Doses will deduct from inventory based on the lot number and vaccine eligibility code in the transfer file. Inventory deduction occurs when there is an exact match between the lot number being submitted, and the lot number that is already entered into the appropriate MCIR inventory. If the lot number is not found in the default inventory, MCIR will try to match it and automatically deduct from the next available inventory. Deductions from the non-default inventory will cause "borrowing" inventory transactions to occur.

MCIR
Michigan Care Improvement Registry

Data Models

All HL7 messages are mapped to a common data model which is a simplification of the HL7 structure. For detailed information follow the HL7 reference to the appropriate place in the HL7 section of this document. The requirements for each field is the same here as there.

Vaccination Update Message (VXU)

There are 4 basic entities that make up a VXU. Some of these may be repeated.

- **Header** indicates general message handling information. May not be repeated.
- **Patient** indicates identifying information about the patient. May not be repeated.
- **Next-of-Kin** indicates persons related to the patient. This may be repeated. Other methods, such as XML and HL7 can send more than 2 next-of-kins.
- **Vaccination** indicates details about a vaccination that was administered or was known to be administered. This may be repeated.

Header Fields

Field	Name	HL7 Pos
header.acknowledgment-type	acknowledgment type	MSH-16
header.message-id	message control id	MSH-10
header.message-type	message type	MSH-9
header.version	version id	MSH-12
header.processing-id	processing id	MSH-11
header.receiving-application	receiving application	MSH-5
header.receiving-facility	receiving facility	MSH-6
header.sending-application	sending application	MSH-3
header.sending-facility	sending facility	MSH-4
header.sent-date	date/time of message	MSH-7

Patient Fields

Field	Name	HL7 Pos
patient.address.city	patient address	PID-11
patient.address.country	patient address	PID-11
patient.address.county-province	patient address	PID-11
patient.address.state	patient address	PID-11
patient.address.street	patient address	PID-11
patient.address.street2	patient address	PID-11
patient.address.ZIP	patient address	PID-11
patient.alias.first	alias first name	PID-5
patient.alias.last	alias last name	PID-5
patient.alias.middle	alias middle name	PID-5
patient.alias.suffix	alias suffix	PID-5
patient.birth-country	patient address	PID-11
patient.birth-county-province	patient address	PID-11
patient.birth-date	date of birth	PID-7
patient.birth-indicator	birth is multiple type indicator	PID-24
patient.birth-location	birth place	PID-23
patient.birth-order	birth order for multiple birth	PID-25
patient.birth-state	patient address	PID-11
patient.death-date	patient death date	PID-29
patient.ethnicity.id	ethnicity	PID-22
patient.id.ma	patient identifier list	PID-3

Field	Name	HL7 Pos
patient.id.mr	patient identifier list	PID-3
patient.id.sr	patient identifier list	PID-3
patient.id.wc	patient identifier list	PID-3
patient.mother-maiden-name	mother's maiden name	PID-6
patient.name.first	patient name	PID-5
patient.name.last	patient name	PID-5
patient.name.middle	patient name	PID-5
patient.name.suffix	patient name	PID-5
patient.phone	phone number	PID-13
patient.primary-facility.id	primary facility id	PD1-3
patient.primary-language	primary language	PID-15
patient.primary-physician.id	primary physician id	PD1-4
patient.protection	protection indicator	PD1-12
patient.publicity	publicity code	PD1-11
patient.race.id	race	PID-10
patient.registry-status	immunization registry status	PD1-16
patient.sex	sex	PID-8

Next Of Kin Fields

Field	Name	HL7 Pos
next-of-kin.address.city	Address	NK1-4
next-of-kin.address.country	Address	NK1-4
next-of-kin.address.county-province	Address	NK1-4
next-of-kin.address.state	Address	NK1-4
next-of-kin.address.street	Address	NK1-4
next-of-kin.address.street2	Address	NK1-4
next-of-kin.address.ZIP	Address	NK1-4
next-of-kin.name.first	Name	NK1-2
next-of-kin.name.last	Name	NK1-2
next-of-kin.name.middle	Name	NK1-2
next-of-kin.name.suffix	Name	NK1-2
next-of-kin.phone	Phone number	NK1-5
next-of-kin.relationship	Relationship	NK1-3

Vaccination Fields

MCIR
Michigan Care Improvement Registry

Field	Name	HL7 Pos
vaccination.action-code	action code	RXA-21
vaccination.administered-amount	administered amount	RXA-6
vaccination.administered-date	date start of administration	RXA-3
vaccination.body-route	route	RXR-2
vaccination.body-site	site	RXR-3
vaccination.completion-status	completion status	RXA-20
vaccination.facility.id	admininistered at location	RXA-11
vaccination.id.receiver	vaccination id of receiver	ORC-2
vaccination.id.sender	vaccination id of sender	ORC-3
vaccination.information-source.id	administration notes	RXA-9
vaccination.location-facility	administered-ad location	RXA-11
vaccination.lot-number	substance lot number	RXA-15
vaccination.manufacturer-code.id	substance manufacture name	RXA-17
vaccination.provider.id	administering provider	RXA-10
vaccination.refusal-reason.id	substance refusal reason	RXA-18
vaccination.system-entry-date	system entry date/time	RXA-22
vaccination.vaccination-code.cpt	administered code	RXA-5
vaccination.vaccination-code.cvx	administered code	RXA-5
vaccination.vaccination-code.label	administered code	RXA-5
Vaccination.SetID.OBX	Sequence number	OBX-1
Vaccination.ValueType	Value Type	OBX-2
Vaccination.ObservationIdentifier	Observation Identifier	OBX-3
Vaccination.ObservationValue	Observation Value	OBX-5
Vaccination.ObservationResultStatus	Observation Result Status	OBX-11

MCĭR
Michigan Care Improvement Registry

Code Tables

Licensed Vaccine (CVX) & Manufacturer Codes

It is very important to select specific codes for currently administered vaccines. Please use Vaccine (CVX) codes in your file, if at all possible, to prevent conflicts. Do not use Unspecified or Historical vaccine codes for current data.

A copy of the "MCIR Vaccine Codes Including U.S. Licensed MVC, CVX, and CPT-4" in MCIR and "All Historical Vaccine Codes" document is attached. Updated revisions can be found at: https://www.mcir.org/wp-content/uploads/2014/09/All_Vaccine_codes.pdf

MCIR CVX codes and manufacturer codes are a reflection of those maintained at the CDC National Immunization Program website: http://www.cdc.gov/vaccines/programs/iis/code-sets.html

-- End of Document –

Revision History

Revised Date	Description
05-15-2014	Added MSH-11 Requirement notification: Modifications for MCIR Pre-Production Onboarding Effective June 1, 2014.
05-15-2014	MSH-11.1 Processing Id: Changed Status to Required. Changed the Value Status for P & T to Accepted
05-15-2014	MSH-12 Version Id: Changed Status to Required
05-15-2014	HL7 Version 2.5.1 example VXU message added
05-15-2014	MSH-9.3 Message Structure: Changed Status to Required
05-15-2014	RXA-18 Substance Refusal Reason: Example message segment added
05-15-2014	NK1-3 Relationship: Changed Status to Required
06-18-2014	ORC Order Request Segment: Changed Status to Required
07-21-2014	PID Patient Identifier Segment: Removed position 12 as reference for County Code. County Code is in PID 11 position 9 as indicated in the guide.
09-18-2014	Removed reference to ADT (Admission/Discharge/Transfer) support.
09-18-2014	Added Definition/Use column to Table 0064 – Financial Class.
01-07-2015	MSH-7: Date/Time Of Message. Added format to include time zone.
01-07-2015	Added a hyper link to the CDC MCIR Vaccine code list (Page #1)
05-14-2015	PD1-12: Protection Indicator. MCIR will process records sent with a Y value.
05-14-2015	RXA-18: Substance Refusal Reason. Position 1 Identifier: Required if Refused.
08-26-2015	ORC: Filler Order Number (ORC-3) is required when RXA 20 Completion Status indicates a non-administered or deferred immunization: RE. It should send a value of 9999 in ORC-3.
8-22-2016	Table 0064 – Financial class Value V06. Do not use. Will process as VFC/Public if used.
01-10-2018	Table NIP003 – Added LOINC value 59784-9-disease with presumed immunity; and 75505-8-disease with serological evidence of immunity. Added evidence of immunity OBX 5.1 values for History of Varicella (38907003) and Serological Confirmed Varicella (371113008).
8-23-2018	Corrected name of Table 0322: Completion Status
10-5-2018	Added RXA 5 format example for submitting CVX/NDC codes

MCIR
Michigan Care Improvement Registry

Michigan County Codes

County Code	County Name	County Code	County Name	County Code	County Name
01	Alcona	30	Hillsdale	59	Montcalm
02	Alger	31	Houghton	60	Montmorency
03	Allegan	32	Huron	61	Muskegon
04	Alpena	33	Ingham	62	Newaygo
05	Antrim	34	Ionia	63	Oakland
06	Arenac	35	Iosco	64	Oceana
07	Baraga	36	Iron	65	Ogemaw
08	Barry	37	Isabella	66	Ontonagon
09	Bay	38	Jackson	67	Osceola
10	Benzie	39	Kalamazoo	68	Oscoda
11	Berrien	40	Kalkaska	69	Otsego
12	Branch	41	Kent	70	Ottawa
13	Calhoun	42	Keweenaw	71	Presque Isle
14	Cass	43	Lake	72	Roscommon
15	Charlevoix	44	Lapeer	73	Saginaw
16	Cheboygan	45	Leelanau	74	St. Clair
17	Chippewa	46	Lenawee	75	St. Joseph
18	Clare	47	Livingston	76	Sanilac
19	Clinton	48	Luce	77	Schoolcraft
20	Crawford	49	Mackinac	78	Shiawassee
21	Delta	50	Macomb	79	Tuscola
22	Dickinson	51	Manistee	80	Van Buren
23	Eaton	52	Marquette	81	Washtenaw
24	Emmet	53	Mason	82	Wayne (Outer, Non-City of Detroit)
25	Genesee	54	Mecosta	83	Wexford
26	Gladwin	55	Menominee	84	Wayne (City of Detroit)
27	Gogebic	56	Midland		
28	Gd. Traverse	57	Missaukee		
29	Gratiot	58	Monroe		

Source: Michigan Department of Community Health

MCIR
Michigan Care Improvement Registry