

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 release 1.5 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 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, NDC 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.

MCIR HL7 Submission Information and References: <https://www.mcir.org/hl7-3/>

MCIR Vaccine Codes including U.S. Licensed CVX, and MVX documents:
https://www.mcir.org/wp-content/uploads/2014/09/All_Vaccine_codes.pdf

MCIR codes are a reflection of those maintained at the CDC National Immunization Program: <http://www.cdc.gov/vaccines/programs/iis/code-sets.html>
https://www2a.cdc.gov/vaccines/iis/iisstandards/ndc_crosswalk.asp
https://www2a.cdc.gov/vaccines/iis/iisstandards/ndc_tableaccess.asp

IMPORTANT NOTE:

- Save your bookmark to this new MCIR HL7 Spec Guide URL: https://www.mcir.org/wp-content/uploads/2014/09/MCIR_HL7_Spec_Guide.pdf

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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.

The MCIR Query by Parameter (QBP) Implementation Guide can be located at: <https://www.mcir.org/hl7-landing-page/hl7-qbp/>

How to Format Data

The MCIR interface is currently at HL7 version 2.5.1. Release 1.5.

Version Compatibility

HL7 is built to be backwards compatible with older versions. New fields that are introduced may 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 latest HL7 version should still be able to accept older HL7 versions, although it may not support improvements made in the latest HL7 version.

Meaningful Use

The Michigan Care Improvement Registry (MCIR) has the capacity to receive data for Meaningful Use Stages 1, 2 and 3 in accordance to the requirements for both 2014 and 2015 Certified Electronic Health Records Technology (CEHRT) editions. MCIR has been receiving immunization data via HL7 protocol since January 1, 2011. MCIR has been receiving and responding to query for immunization history and forecast since January 1, 2016. For more information please visit <https://www.mcir.org/mu/>.

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 or by Email: MDHHS-MU-MCIRHelp@michigan.gov for questions about information on how to establish an interface account.

Required MSH-11.1 Modifications for MCIR Pre-Production Onboarding

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>.

Note: If the submitting system doesn't have the capacity to send active patient data using a "T", it is permissible to use a "P" and those messages will be processed by MCIR for testing purposes during DQA.

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

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.

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. (see page? on ACKS) add link to ACKS

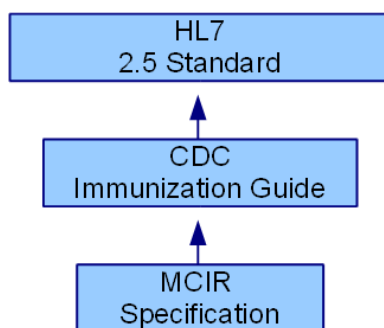
Warnings

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)

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.

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:

Symbol	Definition	Implementation	Operation Requirement
R	Required	The application SHALL implement "R" elements.	The application SHALL populate "R" elements with a non-empty value.
RE	Required but may be empty	The application SHALL implement "RE" elements and this data is Highly Recommended .	The application SHALL populate "RE" elements with a non-empty value if there is relevant data, and this data is Highly Recommended .
C(a/b)	Conditional	An element with a conditional usage code has an associated condition predicate that determines the operational requirements (usage code) of the element. If the condition predicate associated with the element is true, follow the rules for <i>a</i> which shall be one of "R", "RE", "O" or X": If the condition predicate associated with the element is false, follow the rules for <i>b</i> which shall be one of "R", "RE", "O" or X". <i>a</i> and <i>b</i> can be valued the same. Note: when C(O/X) or similar is used a condition predicate will not be provided.	
X	Not supported in this guide.	The application (or as configured) SHALL NOT implement "X" elements and will be Ignored .	The application SHALL NOT populate "X" elements and will be Ignored .
O	Optional	None. The usage indicator for this element has not yet been defined. For an implementation profile all optional elements must be profiled to R, RE, C(a/b), or X.	Not Applicable

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	RE-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.

Latest HL7 Version Example Message

MSH|^~\&|EXPRESSMED1.1|1234-56-78|MCIR|MDCH|20140225161706-0500||VXU^V04^VXU_V04|200399.6371|P|2.5.1|||||||Z22^CDCPHINVS

PID|1||S24C757^^^EHR^MR||Short^Aldo^Tovi^^^L|Juniata^Gala|20120821|M||1002-5^Native American^HL70005|96 Rodriguez
PI^^Hadley^MI^48440^USA^L|^PRN^PH^^^810^6383109|||||||2186-5^notHispanic^CDCREC

NK1|1|Short^Gala|GRD^Guardian^HL70063|123 96 Rodriguez PL^^Gadget^MI^48440^USA^L

ORC|RE||S24C757.1^OIS|||||^Burden^Donna|

RXA|0|1|20131021||48^Hib^CVX|2|mL^milliliters^UCUM||01^Historical-source unspecified^NIP001|||||||A|

ORC|RE||S24C757.1^OIS|||||^Burden^Donna|

RXA|0|1|20140221||115^Tdap^CVX^58160-0842-52^Boostrix (Tdap)^NDC|2|mL^milliliters^UCUM||00^Administered^NIP001|||||K7164H||SKB^GlaxoSmithKline^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.

HL7 Version Required Submission Field List

The 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.

Entity	Field	Status	HL7
MSH	Field Separator	Required	MSH-1
MSH	Encoding Characters	Required	MSH-2
MSH	Sending Application	Required but Empty	MSH-3
MSH	Sending Facility	Required	MSH-4
MSH	Receiving Application	Required	MSH-5
MSH	Receiving Facility	Required	MSH-6
MSH	Date and Time of Message	Required	MSH-7
MSH	Message Type	Required	MSH-9
MSH	Message Control ID	Required	MSH-10
MSH	Processing ID	Required	MSH-11
MSH	Version ID	Required	MSH-12
MSH	Accept Acknowledgment Type	Required	MSH-15
MSH	Application Acknowledgment Type	Required	MSH-16
MSH	Message Profile Identifier	Required	MSH-21
MSH	Sending Responsible Organization	Required but Empty	MSH-22
MSH	Receiving Responsible Organization	Required but Empty	MSH-23
Next-of-Kin	Family Name (Last)	Required for patients up to 18 years of age.	NK1-2.1
Next-of-Kin	Given Name (First)	Required for patients up to 18 years of age	NK1-2.2
Next-of-Kin	Relationship	Required for patients up to 18 years of age	NK1-3
Next-of-Kin	Phone	Required but Empty	NK1-5
Patient	Set Id	Required	PID-1
Patient	Patient Identifier List	Required	PID-3
Patient	Name First	Required	PID-5
Patient	Name Last	Required	PID-5
Patient	Name Middle	Required but Empty	PID-5
Patient	Name Suffix	Required but Empty	PID-5
Patient	Address State	Required	PID-11
Patient	Mother's Maiden Name	RE-Highly Recommended	PID-6
Patient	Date/Time of Birth	Required	PID-7
Patient	Administrative Sex	Required	PID-8

Patient	Patient Alias	Required but Empty	PID-9
Patient	Patient Race	Required but Empty	PID-10
Patient	Patient Address	Required	PID-11
Patient	Patient Phone	Required but Empty	PID-13
Patient	Patient Primary Language	Required but Empty	PID-15
Patient	Ethnic Group	Required but Empty	PID-22
Patient	Multiple Birth Indicator	Required but Empty	PID-24
Patient	Birth Order	Required but Empty	PID-25
Patient	Patient Death Date and Time	Required but Empty	PID-29
Patient	Patient Death Indicator	Required but Empty	PID-30
Vaccination	Patient Class	Required	PV1-2
Vaccination	Action Code	Required but Empty	RXA-21
Vaccination	Order Control	Required	ORC-1
Vaccination	Placer Oder Number	Required but Empty	ORC-2
Vaccination	Filler Order Number	Required	ORC-3
Vaccination	Entered By	Required but Empty	ORC-10
Vaccination	Ordering Provider	Conditional (Required but Empty)	ORC-12
Vaccination	Entering Organization	Required but Empty	ORC-17
Vaccination	Give Sub-IS Counter	Required	RXA-1
Vaccination	Administration Sub-ID Counter	Required	RXA-2
Vaccination	Date/time Start of Administration	Required	RXA-3
Vaccination	Administered Code CVX	Required	RXA-5
Vaccination	Administered Amount	Required, When RXA-9.1 = 00	RXA-6
Vaccination	Administered Units	Required when RXA-9.1 = 00	RXA-7
Vaccination	Administered Information Source	Required	RXA-9
Vaccination	Administering Provider	Conditional (RE/Optional)	RXA-10
Vaccination	Administered-at Location	Conditional (RE/Optional)	RXA-11
Vaccination	Substance Lot Number	Required for RXA-9.1 = 00	RXA-15
Vaccination	Substance Expiration Date	Required when RXA-9.1 is valued RE	RXA-16

Vaccination	Substance Manufacturer Name	Required for RXA-9.1 = 00	RXA-17
Vaccination	Substance Refusal Reason	Required when RXA 20 is valued RE	RXA-18
Vaccination	Completion Status	Required	RXA-20
Vaccination	Action Code	Conditional (Required/Optional)	RXA-21
Vaccination	Route	Required	RXR-1
Vaccination	Site	Required but Empty	RXR-2
Vaccination	Set ID	Required	OBX-1
Vaccination	Value Type	Required	OBX-2
Vaccination	Observation Identifier	Required	OBX-3
Vaccination	Observation Sub-ID	Required	OBX-4
Vaccination	Observation Value	Required	OBX-5
Vaccination	Observation Result Status	Required (should be F for Final)	OBX-11
Vaccination	Date/Time of the Observation	Required but Empty	OBX-14

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	RE-Highly Recommended
4	Sending facility	Required
5	Receiving application	Required
6	Receiving facility	Required
7	Date/time of message	Required
9	Message type	Required
10	Message control id	Required
11	Processing id	Required
12	Version id	Required
15	Accept acknowledgment type	Required
16	Application acknowledgment type	Required
21	Message Profile Identifier	Required
22	Sending Responsible Organization	RE-Highly Recommended

23	Receiving Responsible Organization	RE-Highly Recommended
----	------------------------------------	-----------------------

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	RE-Highly Recommended

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

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

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

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

Format: VXU^V04^VXU_V04

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

MSH-10: Message Control id

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-3), 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, active patient data messages are sent, just as in production, but with MSH-11 "Processing Id" to be set to the literal value of a "T". Messages are viewed for completeness and quality by MCIR staff.

Note: If the submitting system doesn't have the capacity to send active patient data using a "T", it is permissible to use a "P" and those messages will be processed by MCIR for testing purposes during DQA.

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

Table 0103 - Processing Id

Value	Description	Status
P	Production	Accepted
T	Training	Accepted

MSH-12: Version Id

The MCIR interface is currently at the latest HL7 version 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

MSH-15: Application acknowledgment type

This field identifies the conditions under which accept acknowledgments are required to be returned in response to this message. It is required for enhanced acknowledgment mode. This Implementation Guide does not support Enhanced acknowledgement mode. Refer to HL7 Table 0155.

Accept acknowledgement indicates if the message was safely received or not. It does not indicate successful processing. Application acknowledgement indicates the outcome of processing.

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

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).

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

MSH-21: Message Profile Identifier

Sites may use this field to assert adherence to, or reference, a message profile.

Value Format: Z22^CDCPHINVS

MSH-22: Responsible Sending Organization

Business organization that originated and is accountable for the content of the message.

Currently, MSH provides fields to transmit both sending/receiving applications and facilities (MSH-3, MSH-6). However, these levels of organization do not necessarily relate to or imply a legal entity such as a business organization. As such, multiple legal entities (organizations) may share a service bureau, with the same application and facility identifiers. Another level of detail is required to delineate the various organizations using the same service bureau. Therefore, the Sending Responsible Organization field provides a complete picture from the application level to the overall business level. The Business Organization represents the legal entity responsible for the contents of the message. **NOTE:** this field is currently ignored in MCIR

MSH-23: Responsible Receiving Organization

A Business organization that is the intended receiver of the message, and is accountable for acting on the data conveyed by the transaction.

This field has the same justification as the Sending Responsible Organization except in the role of the Receiving Responsible Organization. The receiving organization has the legal responsibility to act on the information in the message. **NOTE:** this field is currently ignored in MCIR

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	Required
2	Patient id	Optional
3	Patient identifier list	Required
5	Patient name	Required
6	Mother's maiden name	RE-Highly Recommended
7	Date/time of birth	Required
8	Sex	Required
9	Patient alias	RE-Highly Recommended
10	Race	RE-Highly Recommended
11	Patient address	Required
13	Phone number - home	RE-Highly Recommended
14	Phone number - business	Optional
15	Primary language	RE-Highly Recommended
22	Ethnic group	RE-Highly Recommended
23	Birth place	Optional
24	Multiple birth indicator	RE-Highly Recommended
25	Birth order	Required, if PID-24 valued Y
29	Patient death date and time	Required, if PID-30 valued Y
30	Patient death indicator	Required, if PID-29 is populated
33	Last Update Date/Time	Optional

PID-1: Set ID

This field contains the number that identifies this transaction. For the first occurrence of the segment, the sequence number shall have the literal value of 1, for the second occurrence, the sequence number shall be 2, etc.

PID-3: Patient identifier list

Patient id list can send many different patient identifiers.

Position	Field Name	Status
1	id	Required
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

Table 0203 - Identifier type

Value	Description	Status
MA	Medicaid number	accepted
MR	medical record number	accepted
PI	patient internal identifier	accepted, if setup
PT	patient external identifier	accepted, if setup
SR	state registry id	accepted
WC	WIC identifier	accepted

MCIR requires that at least one id, the sending system's patient id, must always be sent. If more than one id 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, etc.	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.

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**.

1	family name	Optional
2	given name	Optional
3	middle initial or name	Optional
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).

1	family name	Optional
7	name type code	Required, if family name is sent.

PID-7: Patient 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 X.

PID-8: Patient Sex

Table 0001 - Sex

Value	Description	Status
F	Female	accepted
M	Male	accepted
U	Unknown	not accepted

PID-9 Patient Alias

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.

PID-10: Patient 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	RE-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
2131-1	Other Race	accepted

PID-11: Patient address

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

Warning: Messages that do not have an address 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
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
6	country	Optional
7	address type	Required (must be BDL)
9	county/parish code	Optional

PID-13: Patient 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^^^405^5551212~^ORN^CP^^^918^5551212

Position	Field	Status
1	phone number	X (ignore)
2	use code	Required, when phone number is present
3	equipment type	Optional
4	email	RE-Highly Recommended
5	Country Code	Optional - If the value is specified and is not a 1 (U.S.A. and Canada) the phone number will be ignored.
6	area	RE-Highly Recommended

7	phone	RE-Highly Recommended
8	extension	Optional

HL7 –defined Table 0202 – Telecommunication equipment type

Value	Description	Status
PH	Telephone	accepted
CP	Cellular Phone	accepted

PID-15: Patient 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	RE-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://phinavs.cdc.gov/vads/ViewValueSet.action?id=43D34BBC-617F-DD11-B38D-00188B398520#>

PID-22: Patient Ethnic group

The ethnicity of the patient. This field further defines the patient's ancestry.

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-24 Multiple Birth Indicator

This field indicates whether the patient was part of a multiple birth. Refer to HL7 Table 0136 - Yes/No Indicator for valid values.

If the status is undetermined, then field shall be empty.

Table 0136 - Yes/No Indicator

Value	Description	Status
Y	yes	accepted
N	no	accepted

PID-25 Birth Order

When a patient was part of a multiple birth, a value (number) indicating the patient's birth order is entered in this field. If PID-24 is populated, then this field shall be populated.

PID-29: Patient death date

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 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.

If the status is undetermined, then field shall be empty.

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 patients birth date is after this date, an error may be generated. Format: YYYYMMDD

PD1: Patient demographic segment

Position	Field Name	Status
11	Publicity code	Ignore
12	Protection Indicator	Ignore
16	Immunization Registry Status	RE-Highly Recommended

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.

Position	Field	Status
1	identifier	optional
2	text	optional
3	name of coding system	optional, should be HL70215

Table 0215 - Publicity code

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

PD1-12: Protection Indicator

Indicates whether the patient record should be protected. 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 empty.

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

Position	Field Name	Status
1	Set id	Required
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	RE-Highly Recommended
6	Business phone number	Optional

NK1-1: Set id

This field contains the number that identifies this transaction. For the first occurrence of the segment, the sequence number shall be 1, for the second occurrence, the sequence number shall be 2, etc.

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 Name	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".

Warning For patient's up to 18 years of age, at least one NK1 message shall have a recognized relationship.

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

Position	Field	Status
GRD	guardian	accepted
FTH	father	accepted
MTH	mother	accepted
PAR	parent	accepted
SEL	self	accepted, if adult

NK1-4: Address

An NK1 address is optional.

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

Format for phone number: ^PRN^PH^^^405^5551212~^ORN^CP^^^918^5551212

Position	Field	Status
1	phone number	Optional
2	use code	Required, when phone number is present
3	equipment type	Optional
6	area	RE-Highly Recommended
7	phone	RE-Highly Recommended
8	extension	Optional

PV1: Patient Visit Segment

This segment is ignored in MCIR.

PV1-2: Patient class

This field is required by HL7 but ignored by MCIR.

Table 0004 - Patient class

Value	Description	Status
R	recurring patient	expected, but ignored

ORC: Order Request Segment

The Order Request (ORC) segment is used to transmit fields that are common to all orders (all types of services that are requested). While not all immunizations recorded in an immunization message are able to be associated with an order, each RXA must be associated with one ORC, based on HL7 2.5.1 standard.

Position	Field Name	Status
1	Order Control	Required
2	Placer Order Number	RE-Highly Recommended
3	Filler Order Number	Required
10	Entered By	RE-Highly Recommended. <i>The person who entered the Immunization record into the system.</i>
12	Ordering Provider	Conditional (RE-Highly Recommended). <i>This is the provider who ordered the immunization.</i>
17	Entering Organization	RE-Highly Recommended. <i>This is the provider organization that entered this record/order.</i>

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 (not available in MCIR as of 10-1-2018)

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) 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.

ORC-10 Entered By

This identifies the individual that entered this particular order. It may be used in conjunction with an RXA to indicate who recorded a particular immunization.

ORC-12 Ordering Provider

This field contains the identity of the person who is responsible for creating the request (i.e., ordering physician). In the case where this segment is associated with a historic immunization record and the ordering provider is not known, then this field should not be populated.

ORC-17 Entering Organization

This field identifies the organization that the enterer belonged to at the time he/she enters/maintains the order, such as medical group or department. The person who entered the request is defined in ORC-10 (entered by).

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. MCIR prefers that all vaccinations for a patient are reported in one message.

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	Optional

5	Administered code	Required
6	Administered amount	Required, when RXA-9.1 = 00
7	Administered units	Required, when RXA-9.1 = 00
9	Administration notes	Required
10	Administering provider	Conditional (RE-Highly Recommended/Optional)
11	Administered-at location	Conditional (RE-Highly Recommended/Optional)
15	Substance lot number	Required, when RXA-9.1 = 00 for administered immunizations
16	Substance expiration date	Required, when RXA-9.1 =00 for administered immunizations
17	Substance manufacturer name	Required, when RXA-9.1 =00
18	Substance refusal reason	Required, when RXA 20 is valued RE
20	Completion status	Required
21	Action code	Conditional (Required/Optional)
22	System entry date/time	Optional

RXA-1 Give Sub-ID Counter

Definition: This field is used to match an RXA and RXG. Not a function under IIS.

Constrain to 0 (zero).

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 X, 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

In the context of immunization, this is equivalent to the Start date/time. Optional, but if populated it should be = RXA-3.

RXA-5: Administered code

MCIR accepts vaccinations reported using CVX codes and NDC Codes.

Position	Field	Status
1	identifier	Required
2	text	Optional
3	name of coding system	CVX Required
4	alternate identifier	Optional
5	alternate text	Optional
6	name of alternate coding system	Optional: NDC

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
```

This field identifies the medical substance administered. If the substance administered is a vaccine, CVX codes are required and NDC codes are optional.

NDC/CVX Crosswalk table supported by

CDC: <https://www2a.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=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 appropriately report vaccinations. Steps should be taken to ensure that someone is receiving these emails and keeping the code sets up-to-date.

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. When the administered amount is unknown, this field should record the value "999" 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. Required when RXA-9.1 = 00. Should be mL

RXA-9: Administration notes

This field is required.

Position	Field	Status
1	identifier	Required
3	name of coding system	Optional, use NIP001

NIP002 - Immunization information source

A value 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. CVX codes may be used when reporting historical vaccine administrations.

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 RE-Highly Recommended if this vaccination was administered.

Position	Field	Status
1	id number	RE-Highly Recommended, if using VIM and administered
2	family name	Optional

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 RE-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)	RE-Highly Recommended
9	street address	RE-Highly Recommended
10	other designation	RE-Highly Recommended
11	city	RE-Highly Recommended
12	state or province	RE-Highly Recommended
13	ZIP or postal code	RE-Highly Recommended
14	country	RE-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-16 Substance Expiration Date

This field contains the expiration date of the medical substance administered. It may remain empty if the dose is from a historical record.

Note: Vaccine expiration date does not always have a "day" component; therefore, such a date may be transmitted as YYYYMM.

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 was in the past; it shall have a value of 1.

This field contains the reason the patient refused the vaccination. Any entry in the field indicates that the patient refused the vaccination. If this field is populated RXA-20, completion status shall be populated with RE.

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	Optional, 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. Normally a vaccination is CP for Complete. But if the vaccination was refused by the patient, or was wasted, or was partially administered, this can be indicated here.

Position	Field	Status
1	identifier	Required

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).

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.

Table 0323: Action Code

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

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

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 Required but Empty (RE) for administered vaccinations.

Position	Field	Status
1	route	Required
2	site	RE-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
1	identifier	Required
2	text	Optional
3	name of coding system	Optional, should be HL70162

Table 0162 – Route of administration

Value	Description	Status	Version
ID	intradermal	accepted	2.3
IM	intramuscular	accepted	2.3
NS	intranasal	accepted	2.3
IV	intravenous	accepted	2.3
PO	oral	accepted	2.3
OTH	other/miscellaneous	do not use	
SC	subcutaneous	accepted	2.3
TD	transdermal	do not use	
C38238	intradermal	accepted	2.5
C28161	intramuscular	accepted	2.5
C38284	nasal	accepted	2.5
C38276	intravenous	accepted	2.5
C38288	oral	accepted	2.5
C38676	percutaneous	accepted	2.5
C38299	subcutaneous	accepted	2.5
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	RE-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
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	Required
2	Value Type	Required
3	Observation Identifier	Required
4	Observation Sub-ID	Required
5	Observation Value	Required
11	Observation Result Status	Required, should be F for Final
14	Date/Time of the Observation	RE-Highly Recommended

OBX-1: Set ID

This field contains the sequence number. The first instance shall be set to 1 and each subsequent instance shall be the next number in sequence. Numbering is not restarted within a message. That is, if a message had 3 order groups and each had 3 OBX, the last OBX in the message would have value of 9 for this field.

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
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.

The 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 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	Required, should be HL70064

OBX-6: Units

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

OBX-11: Observation Result Status

Should be F for Final.

OBX-14: Date/Time of the Observation

The date/time when the observation was made. Format: YYYYMMDDHHMMSS

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
```

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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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.

Michigan County Codes

County Code	County Name
01	Alcona
02	Alger
03	Allegan
04	Alpena
05	Antrim
06	Arenac
07	Baraga
08	Barry
09	Bay
10	Benzie
11	Berrien
12	Branch
13	Calhoun
14	Cass
15	Charlevoix
16	Cheboygan
17	Chippewa
18	Clare
19	Clinton
20	Crawford
21	Delta
22	Dickinson
23	Eaton
24	Emmet
25	Genesee
26	Gladwin
27	Gogebic
28	Gd. Traverse
29	Gratiot

County Code	County Name
30	Hillsdale
31	Houghton
32	Huron
33	Ingham
34	Ionia
35	Iosco
36	Iron
37	Isabella
38	Jackson
39	Kalamazoo
40	Kalkaska
41	Kent
42	Keweenaw
43	Lake
44	Lapeer
45	Leelanau
46	Lenawee
47	Livingston
48	Luce
49	Mackinac
50	Macomb
51	Manistee
52	Marquette
53	Mason
54	Mecosta
55	Menominee
56	Midland
57	Missaukee
58	Monroe

County Code	County Name
59	Montcalm
60	Montmorency
61	Muskegon
62	Newaygo
63	Oakland
64	Oceana
65	Ogemaw
66	Ontonagon
67	Osceola
68	Oscoda
69	Otsego
70	Ottawa
71	Presque Isle
72	Roscommon
73	Saginaw
74	St. Clair
75	St. Joseph
76	Sanilac
77	Schoolcraft
78	Shiawassee
79	Tuscola
80	Van Buren
81	Washtenaw
82	Wayne (Outer, Non-City of Detroit)
83	Wexford
84	Wayne (City of Detroit)

Source: MDHHS

Acknowledgement Message (ACK)

Provider sites will receive ACK messages from MCIR. The ACK message may contain error information and the message may be rejected due to those errors. MCIR will respond with an ACK error message. The MSA-1 field will be set to "AE" to indicate 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 2.5.1 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.

MSA-1 (Acknowledgement Code)

AA	Application Accept	Message was accepted.
AE	Application Error	Message was processed and errors are being reported. AE is sent whenever an error is detected. This may range from data that are ignored because they are not wanted to rejection of the entire message.
AR	Application Reject	Message was rejected because one of the following occurred: <ul style="list-style-type: none"> • Unsupported Message Type (HIE would respond with an ACK) • Unsupported Event Code • Unsupported Processing ID (HIE would respond with an ACK) • Unable to process for reasons unrelated to format or content. (MCIR)

Any ACK message returned with "AR" will require resubmission of the corrected message by the provider site, except for "unable to process for reasons unrelated to format or content" should be resubmitted with its original format and content.

ERR-4 (Severity)

I	Information	Transaction successful but includes returned information.
W	Warning	Transaction successful, but there may be issues. These may include non-fatal errors with potential for loss of data.
E	Error	Transaction was not successful. MCIR rejected data that it views as important. This could include required fields or the entire message. The sender will be alerted to review and correct the message.

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' response message in order to facilitate the HL7 data exchange partner's integration testing of their system to promote data quality.

IIS Accepted Message.	MSH ^~\& EXPRESSMED1.1 1234-56-78 MCIR MDCH 20150924161633-0500 ACK^V04^ACK 1234567 P 2.5.1 NE NE Z23^CDCPHINVS MSA AA 9299381
IIS Accepted Message with additional Information (I)	MSH ^~\& EXPRESSMED1.1 1234-56-78 MCIR MDCH 20150924161633-0500 ACK^V04^ACK 5315315 P 2.5.1 NE NE Z23^CDCPHINVS MSA AA 4513185 ERR 0^Message Accepted^HL70357 I 3 of 3 immunizations have been added to IIS
IIS wants to warn (W) a Sender of an issue. No Error (E) level problems with Message.	MSH ^~\& EXPRESSMED1.1 1234-56-78 MCIR MDCH 20150924162038-0500 ACK^V04^ACK 465798 P 2.5.1 NE NE Z23^CDCPHINVS MSA AE 313217 ERR PID^1^11^5 999^Application error^HL70357 W 1^illogical date error^HL70533 12345 is not a valid zip code in MCIR
IIS has Error (E) level problem with the message.	MSH ^~\& EXPRESSMED1.1 1234-56-78 MCIR MDCH 20150924162038-0500 ACK^V04^ACK 987648 P 2.5.1 NE NE Z23^CDCPHINVS MSA AE 1531573 ERR PID^1^7 101^required field missing^HL70357 E Birth Date is required.
IIS has Warnings (W) and Information (I).	MSH ^~\& EXPRESSMED1.1 1234-56-78 MCIR MDCH 20150924162038-0500 ACK^V04^ACK 6516848 P 2.5.1 NE NE Z23^CDCPHINVS MSA AE 165138 ERR 0^Message Accepted^HL70357 I 3 of 3 immunizations have been added to MCIR ERR PID^1^11^5 999^Application error^HL70357 W 1^illogical date error^HL70533 12345 is not a valid zip code in MCIR
IIS has Warnings (W) and Errors (E)	MSH ^~\& EXPRESSMED1.1 1234-56-78 MCIR MDCH 20150924162338-0500 ACK^V04^ACK 6157 P 2.5.1 NE NE Z23^CDCPHINVS MSA AE 783843 ERR PID^1^11^5 999^Application error^HL70357 W 1^ ^HL70533 12345 is not a valid postal address. ERR PID^1^7 101^required field missing^HL70357 E Birth Date is required.
IIS unable to process message due to 1 of 4 specific HL7 defined problems	MSH ^~\& EXPRESSMED1.1 1234-56-78 MCIR MDCH 20150924162338-0500 ACK^V04^ACK 13549 P 2.5.1 NE NE Z23^CDCPHINVS MSA AR 9299381 ERR MSH^1^12 203^unsupported version id^HL70357 E Unsupported HL7 Version ID

Appendix A:

Crosswalk table of changes between MCIR HL7 2.5.1 version 1.4 and 1.5

Entity	Field	Version 1.5	Version 1.4	HL7
MSH	Field Separator	Required		MSH-1
MSH	Encoding Characters	Required		MSH-2
MSH	Sending Application	Required but Empty	Optional	MSH-3
MSH	Sending Facility	Required		MSH-4
MSH	Receiving Application	Required		MSH-5
MSH	Receiving Facility	Required		MSH-6
MSH	Date and Time of Message	Required		MSH-7
MSH	Message Type	Required		MSH-9
MSH	Message Control ID	Required		MSH-10
MSH	Processing ID	Required		MSH-11
MSH	Version ID	Required		MSH-12
MSH	Accept Acknowledgment Type	Required	Ignored	MSH-15
MSH	Application Acknowledgment Type	Required	Ignored	MSH-16
MSH	Message Profile Identifier	Required	N/A	MSH-21
MSH	Sending Responsible Organization	Required but Empty	N/A	MSH-22
MSH	Receiving Responsible Organization	Required but Empty	N/A	MSH-23
Next-of-Kin	Name First	Required for patients up to 18 years of age.		NK1-2
Next-of-Kin	Name Last	Required for patients up to 18 years of age		NK1-2
Next-of-Kin	Relationship	Required for patients up to 18 years of age		NK1-3
Next-of-Kin	Phone	Required but Empty	Optional	NK1-5
Patient	Set Id	Required	Ignored	PID-1
Patient	Patient Identifier List	Required		PID-3
Patient	Name First	Required		PID-5
Patient	Name Last	Required		PID-5
Patient	Name Middle	Required but Empty		PID-5
Patient	Name Suffix	Required but Empty		PID-5

Patient	Address State	Required		PID-11
Patient	Mother's Maiden Name	RE-Highly Recommended		PID-6
Patient	Date/Time of Birth	Required		PID-7
Patient	Administrative Sex	Required		PID-8
Patient	Patient Alias	Required but Empty		PID-9
Patient	Patient Race	Required but Empty		PID-10
Patient	Patient Address	Required		PID-11
Patient	Patient Phone	Required but Empty		PID-13
Patient	Patient Primary Language	Required but Empty		PID-15
Patient	Ethnic Group	Required but Empty		PID-22
Patient	Multiple Birth Indicator	Required but Empty		PID-24
Patient	Birth Order	Required but Empty		PID-25
Patient	Patient Death Date and Time	Required but Empty	N/A	PID-29
Patient	Patient Death Indicator	Required but Empty	N/A	PID-30
Vaccination	Patient Class	Required		PV1-2
Vaccination	Order Control	Required		ORC-1
Vaccination	Placer Oder Number	Required but Empty		ORC-2
Vaccination	Filler Order Number	Required	RE	ORC-3
Vaccination	Entered By	Required but Empty	N/A	ORC-10
Vaccination	Ordering Provider	Conditional (Required but Empty)	N/A	ORC-12
Vaccination	Entering Organization	Required but Empty	N/A	ORC-17
Vaccination	Give Sub-IS Counter	Required		RXA-1
Vaccination	Administration Sub-ID Counter	Required		RXA-2
Vaccination	Date/time Start of Administration	Required		RXA-3
Vaccination	Administered Code CVX	Required		RXA-5
Vaccination	Administered Amount	Required, When RXA 9.1 = 00	RE	RXA-6
Vaccination	Administered Units	Required when RXA-9.1 =00	RE	RXA-7
Vaccination	Administered Information Source	Required		RXA-9
Vaccination	Administering Provider	Conditional (RE/Optional)	Optional	RXA-10
Vaccination	Administered-at Location	Conditional (RE/Optional)	RE	RXA-11

Vaccination	Substance Lot Number	Required for RXA-9.1 = 00		RXA-15
Vaccination	Substance Expiration Date	Required when RXA-9.1 is valued RE	N/A	RXA-16
Vaccination	Substance Manufacturer Name	Required for RXA-9.1 = 00		RXA-17
Vaccination	Substance Refusal Reason	Required when RXA 20 is valued RE	RE	RXA-18
Vaccination	Completion Status	Required		RXA-20
Vaccination	Action Code	Required but Empty	RE	RXA-21
Vaccination	Route	Required	RE	RXR-1
Vaccination	Site	Required but Empty		RXR-2
Vaccination	Set ID	Required		OBX-1
Vaccination	Value Type	Required		OBX-2
Vaccination	Observation Identifier	Required		OBX-3
Vaccination	Observation Sub-ID	Required	Optional	OBX-4
Vaccination	Observation Value	Required		OBX-5
Vaccination	Observation Result Status	Required (should be F for Final)		OBX-11
Vaccination	Date/Time of the Observation	Required but Empty	Required	OBX-14

"N/A" indicates these segments were not included in the MCIR version 1.4 guide.

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.
CDC HL7 2.5.1 Release 1.5 Updates	
12-31-2016	Reference Appendix A: Crosswalk table of changes between MCIR HL7 2.5.1 version 1.4 and 1.5
10-01-2018	New MCIR HL7 guide for release of MCIR 2.5.1 v1.5
12-21-2018	Updated MI-VRP to MI-AVP (Michigan Adult Vaccine Program) on Table 0064-Financial Class