Connecticut Immunization Registry and Tracking System (CIRTS)

Local Implementation Guide for HL7 2.5.1 Immunization Messaging

CIRTS 2.0

Connecticut Department of Public Health
Immunization Program

Version 1.0

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1. Introduction and History

The **C**onnecticut **I**mmunization **R**egistry and **T**racking **S**ystem (**CIRTS**) is the Connecticut statewide immunization registry established in July 1998 by legislative mandate and maintained by the Connecticut Department of Public Health Immunization Program. The purpose of CIRTS is to assure that children remain up-to-date with their immunizations and that their records are available when needed. The registry focuses on enrollment of children from birth up to first grade, but once a child is enrolled in the registry providers can continue to add immunization records indefinitely.

In April 2012, the original registry was replaced by a web-enabled system that has been further updated to be able to receive immunization data electronically. As of the initial publication of this document, CIRTS was in pre-production for pilot testing of an electronic immunization message interface with provider electronic health record systems (EHR-S).

Health Level 7 (HL7) and the CIRTS Local Implementation Guide

Founded in 1987, Health Level Seven International (HL7) is a not-for-profit, ANSI-accredited standards developing organization dedicated to providing a comprehensive framework and related standards for the exchange, integration, sharing, and retrieval of electronic health information that supports clinical practice and the management, delivery and evaluation of health services[1].

The goal was to create a standard message format that disparate systems could use to exchange health data. It was decided that HL7 would only define messages and not how these messages were sent. HL7 Standard version 2 has been in use for over 20 years.

Three controlling documents define how the CIRTS HL7 data exchange interface works. They are arranged in a hierarchy of documents, each refining and constraining the HL7 Standard as shown in Figure 1.

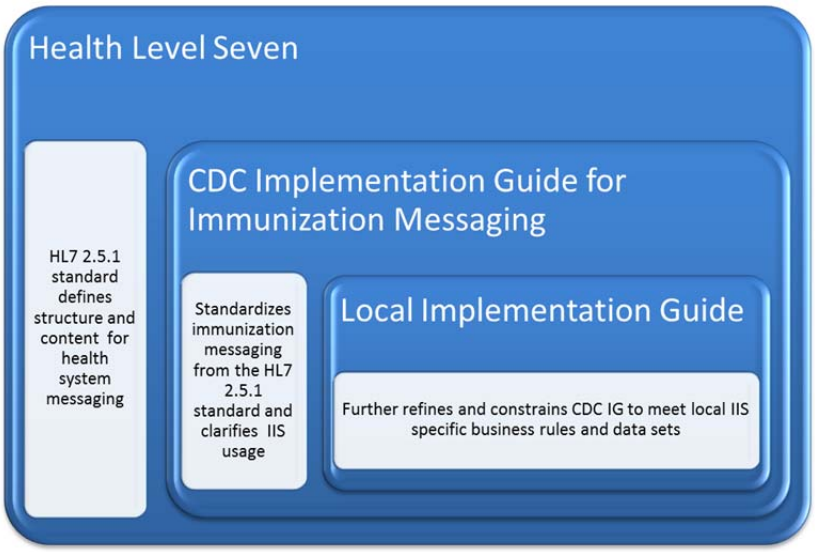

Figure 1: HL7 Controlling Document Hierarchy

[1] http://www.hl7.org/about/

The first document is the **HL7 2.5.1 standard** developed by Health Level Seven. This standard defines the structure and content of immunization messages, but leaves many specific implementation details undecided. Information about HL7 and a copy of the HL7 message standard can be obtained from the Health Level Seven website[2].

The second document is the Center for Disease Control and Prevention's **HL7 2.5.1 Implementation Guide for Immunization Messaging, Release 1.4** (**CDC IG**)[3]. This guide gives specific instructions regarding how to report to immunization information systems, but still leaves some implementation decisions to each state IIS.

The third document is this document, the **CIRTS Local Implementation Guide for HL7 2.5.1 Immunization Messaging** (**Local IG**). It is written in accordance with the standards set in the first two documents. In addition, this document finalizes all implementation decisions and defines exactly what **CIRTS** will and will not accept. The Immunization Program has taken great care to point out the differences from the CDC IG by adding additional columns to the tables to specify the CIRTS interface usage specification. Providing this information will allow the implementers of external systems to accurately compare the CDC IG with a local implementation guide and more easily compare differences between two different local implementation guides. This effort will prove highly useful in the larger interoperability effort for EHR-S, Indian Health Services, and any other electronic exchange that may span multiple IIS. **This guide is specifically for the 2.0 release of CIRTS (CIRTS 2.0).**

It should be noted that CIRTS will only accept HL7 Version 2.5.1 messages; earlier versions of HL7 or non-HL7 file formats will not be accepted.

Scope

This Local IG is intended to facilitate the exchange of immunization records between external Health Systems and CIRTS, including:

- Receiving immunization histories for individuals;
- Receiving demographic information about the individuals;
- Acknowledging receipt of immunization histories; and,
- Reporting errors in the messaging process.

This Local IG is not intended to:

- Be a guide to enroll or register providers for Meaningful Use. That information can be found on the Connecticut Department of Public Health (CT DPH) Meaningful Use web page at www.ct.gov/dph/.
- Define message transport options. That information will be provided on request when eligible providers or their EHRs vendors enroll with CT DPH.

Currently **CIRTS 2.0** supports the unsolicited Vaccination Update **(VXU)** message type. 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. In the future, CIRTS will be able to support Vaccination Query message types.

[2] http://www.hl7.org

[3] http://www.cdc.gov/vaccines/programs/iis/technical-guidance/downloads/hl7guide-1-4-2012-08.pdf

Organization and Flow

The goal of this Local IG is to provide an unambiguous specification for creating and interpreting immunization messages. The target audience for this Local IG is technical personnel supporting immunization information systems (IIS) and EHR-S that must implement these guidelines. The reader of this Local IG should have a solid HL7 foundation and be very familiar with the contents of the CDC IIS Functional Standards[4] as well as the CDC IG. The reader should refer to Chapters 2 and 3 of the CDC IG that provide HL7 foundational concepts and set the stage for this Local IG.

This Local IG is designed to mirror the organization and flow of the CDC IG but in a simpler format to assist implementation. It is important to note this guide adheres to the CDC IG on several key aspects including:

- Data type specifications from chapter 4 of the CDC IG have not been redefined and usage has not been changed.
- Standardized vocabulary is supported as specified in the CDC IG.
- To the extent possible, data sets and business rules will adhere to the CDC IG.

In cases where differences exist between this guide and the CDC IG the differences will be clearly defined in the appropriate sections of this guide.

This guide is organized into chapters and has appendices for the code tables and example messages.

1. Introduction and History. This chapter describes the scope of the Local IG and gives supporting background.

2. Message Transaction and CIRTS 2.0 Use Cases. Chapter 2 describes the immunization messaging use cases supported in CIRTS and illustrates the message transaction for the VXU message type.

3. HL7 Messaging Infrastructure. Chapter 3 defines the message structure and usage codes for both conforming sending and receiving applications that will be used in this Local IG for Immunization messaging.

4. Data-type Definitions. Data-type definitions will be used as defined in Chapter 4 of the CDC IG with no additional changes.

5. Message Segment Details. This chapter will contain specifications for each segment used. It will indicate which fields are supported or required and describe any constraints on these fields. Unlike the CDC IG, this Local IG is combining explanations about the segments (see Chapter 5 of the CDC IG), message element attribute (see Chapter 3 of the CDC IG), appropriate code tables for each table (see Appendix A of the CDC IG), and describes constraints specific for CIRTS 2.0.

6. Messages for Transmitting Immunization Information. Chapter 6 specifies how to use the building blocks of data types and segments to send unsolicited immunization records using a VXU.

7. Query and Response Profile (QBP/RSP). The Query and Response Profile is currently not supported by CIRTS or CT DPH. Please see Chapter 7 of the CDC IG for detailed specifics.

Appendix A. Code Tables. Please refer to the CDC IG for additional details regarding code tables.

Appendix B. Example Message.

[4] http://www.cdc.gov/vaccines/programs/iis/func-stds.pdf

2. Message Transaction and CIRTS 2.0 Use Cases

Chapter 2 of the CDC IG fully defines the actors (entities) that may be involved in sending or receiving immunization-related messages. It describes what actors are and how use cases (goals) can be associated to those actors. Finally, it associates specific HL7 messages with these use cases.

This Local IG is focuses on the VXU message type, the most common message exchange in the immunization information systems context. This chapter illustrates CIRTS 2.0 VXU message processing and lists the CIRTS 2.0 supported immunization use cases. This should help the reader understand where immunization messaging fits into the bigger picture of interoperable communication.

VXU message processing is illustrated in Figure 2. The responsibilities of the sending and receiving systems are outlined below. The CIRTS 2.0 supported use cases are shown in Table 2-1.

Responsibilities of the Sending System

When the sending system wishes to send a VXU to a receiving system, it must do several steps in preparation:

- Create message.
- Assemble data on the person of interest.
- Build the VXU message with this data.
- Send the message.
- Connect to the receiving system. The partners must agree on how this is done.
- The sending system now sends the message over the connection and the receiving system catches the message.

DPH Actions upon Receipt of Message

Once the message (either as a single message or part of a batch) has been received, DPH will accomplish the following steps:

- Process the received message.
- Determine that the message is in the appropriate format.
- Parse the message into a format that CIRTS uses.
- Evaluate the message components to determine that these are correctly formatted and validated for content specified.
- Integrate the received record into CIRTS.
- De-duplicate on client to be sure that each client only has one record.
- De-duplicate the events (immunizations, for instance).
- Insert or update data into CIRTS.
- Send an acknowledgement to the sender, indicating the message has been successfully processed.

Figure 2. VXU message processing.

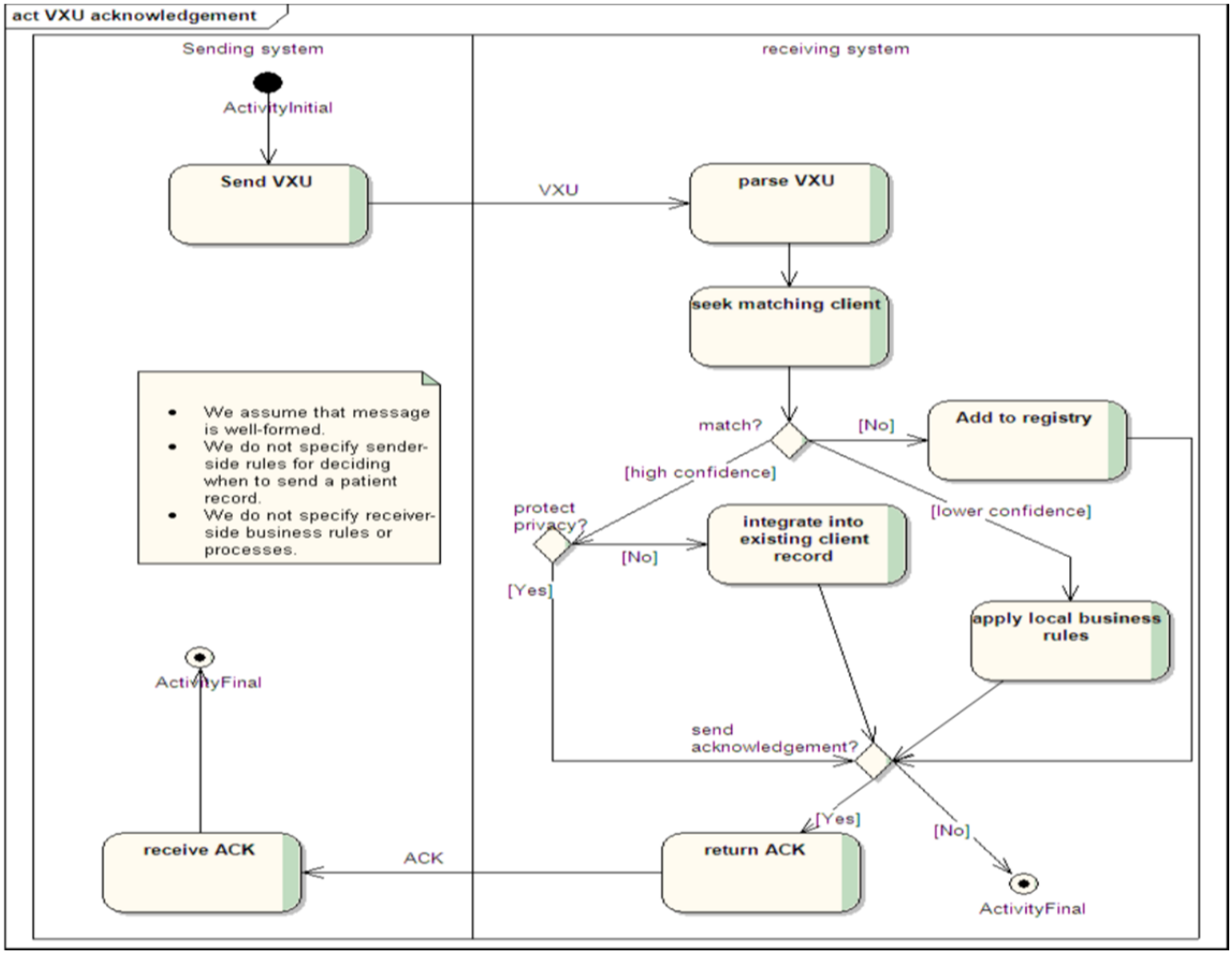

Table 2-1. CIRTS 2.0 supported use cases.

Use Case	Goal	Supported by CIRTS 2.0
Send Immunization History	To send an immunization history for an individual client from one system to another. In addition to EHR-S and IIS, other systems such as vital records systems or billing systems could use this message to send immunization histories.	No Uni-directional to CIRTS at this time. (CIRTS can perform this function but we have not found any system with this capability to test with)
Receive Immunization History	To receive an unsolicited immunization history. It may be an update or a new record.	**Yes**
Request Immunization History	To request an immunization history from another system.	No
Return Immunization History	To return an immunization history to another system.	No (CIRTS can perform this function but we have not found any system with this capability to test with)
Accept Requested History	To accept an immunization history in response to a query for an immunization history from another system.	No
Send Demographic Data	To send demographic data about a person. It may be an update or a new record.	No (CIRTS can perform this function but we have not found any system with this capability to test with)
Accept Demographic Data	To accept demographic data about a person. It may be an update or a new record.	**Yes**
Acknowledge Receipt	To acknowledge receipt of a message. This can be an immunization history, request for immunization history, demographic update, observation report or request for personal id. It may indicate success or failure. It may include error messages.	**Yes**
Report Error	To send error messages related to submitted messages. These errors could result of rejection of message or parts of message.	**Yes**

3. HL7 Messaging Infrastructure

This chapter is excerpted from Chapter 3 of the CDC IG that contains a basic description of the terms and definitions used to understand the HL7 standard as it applies to immunization information systems.

Table 3-1 outlines the Usage Codes as they apply to the both the conforming sending application (e.g., provider EHR-S) and the conforming receiving application (CIRTS) as well as usage of the message element (segment group, field, component, or subcomponent) in the HL7 message. Usage applies to the message attribute table, data type attribute table, and the segment attribute table.

The reader should refer to Chapter 3 of the CDC IG for more specific information.

Table 3-1. HL7 Usage Codes for Immunization Messaging.

Usage Code	Interpretation	Comment for Sending Application (e.g., provider EHR-S)	Comment for Receiving Application (e.g., CIRTS)
R	Required	A conforming sending application **SHALL** populate all "R" elements with a non-empty value.	Conforming receiving application **SHALL** process or ignore the information conveyed by required elements. A conforming receiving application **must NOT** raise an error due to the presence of a required element, but **MAY** raise an error due to the absence of a required element.
RE	Required but may be empty	The element may be missing from the message, but it **MUST** be sent by the sending application **IF** there is relevant data. A conforming sending application should be capable of providing all "RE" elements. If the conforming sending application knows the required values for the element, then it **MUST** send that element. If the conforming sending application does not know the required values, then that element will be omitted.	Receiving applications will be expected to process or ignore data contained in the element, but **MUST** be able to successfully process the message if the element is omitted (no error message should be generated because the element is missing).
C	Conditional	This usage has an associated condition predicate. This predicate is an attribute within the message.	
		If the predicate **IS** satisfied:	

Usage Code	Interpretation	Comment for Sending Application (e.g., provider EHR-S)	Comment for Receiving Application (e.g., CIRTS)
		A conformant sending application **MUST** always send the element.	A conformant receiving application **MUST** process or ignore data in the element. It may raise an error if the element is not present.
		If the predicate **IS NOT** satisfied:	
		A conformant sending application **must NOT** send the element.	A conformant receiving application **must NOT** raise an error if the condition predicate is false and the element is not present, though it may raise an error if the element **IS** present.
CE	Conditional but may be empty	This usage has an associated condition predicate. This predicate is an attribute within the message.	
		If the predicate **IS** satisfied:	
		IF the conforming sending application knows the required values for the element, **THEN** the application must send the element. **IF** the conforming sending application does not know the values required for this element, then the element shall be omitted. The conforming sending application should be capable of knowing the element (when the predicate is true) for all 'CE' elements.	**IF** the element is present, the conformant receiving application shall process or ignore the values of that element. **IF** the element is not present, the conformant receiving application shall not raise an error due to the presence or absence of the element.
		If the predicate **is NOT** satisfied:	
		The conformant sending application shall not populate the element.	The conformant receiving application may raise an application error if the element is present.
O	Optional	This element may be present if specified in local profile. Local partners may develop profiles that support use of this element. In the absence of a profile, conformant sending applications will not send the element.	Conformant receiving applications will ignore the element if it is sent, unless local profile specifies otherwise. Conformant receiving applications may not raise an error if it receives an unexpected optional element.

Usage Code	Interpretation	Comment for Sending Application (e.g., provider EHR-S)	Comment for Receiving Application (e.g., CIRTS)
X	Not Supported	The element is not supported. Sending applications should not send this element. Any profile based on this Guide should not specify use of an element that is not supported in this Guide.	Receiving applications should ignore this element if present. A receiving application may raise an error if it receives an unsupported element.

Messaging Infrastructure

Chapter 3 of the CDC IG outlines the HL7 definitions of messaging infrastructure that should be followed in constructing the HL7 2.5.1 immunization message. These include:

- **Segment:** A segment is a logical grouping of data fields. Segments within a defined message may be required or optional, may occur only once, or may be allowed to repeat. Each segment is named and is identified by a segment ID, a unique 3-character code. Segments and message details are given in **Chapter 5** of this Local IG.
- **Field:** A field is a string of characters and is of a specific data type. Each field is identified by the segment it is in and its position within the segment; e.g., PID-5 is the fifth field of the PID segment. A field is bounded by the | character.
- **Data type:** A data type restricts the contents and format of the data field and is given a 2- or 3-letter code. Some data types are coded or composite types with several components. The applicable data type is listed and defined in each field definition.
- **Code Sets/Systems:** Most data elements will have associated lists of acceptable values in tables supported by a standards organization such as HL7 or CDC. These code sets will include definitions to support common usage.
- **Component:** A component is one of a logical grouping of items that comprise the contents of a coded or composite field. Within a field having several components, not all components are required to be valued.
- **Delimiters:** Delimiter characters are used to separate segments, fields and components in an HL7 message. The delimiter values are given in MSH-2 and used throughout the message. Messages used in this Guide **SHALL** use the following delimiters:
    - <CR> = Segment Terminator;
    - | = Field Separator;
    - ^ = Component Separator;
    - & = Sub-Component Separator;
    - ~ = Repetition Separator;
    - \ = Escape Character.

4. Data-Type Definitions

The CDC IG contains clearly defined HL7 data types that are the building blocks of an HL7 message. Similar to the terms and definitions found in the HL7 Messaging Infrastructure section above, this guide will avoid potentially ambiguous situations and not attempt redefine an already clearly defined section. **This guide will adhere to Chapter 4 of the CDC IG.**

5. Message Segment Details

This chapter will contain specifications for each segment used. It will indicate which fields are supported or required and describe any constraints on these fields. Unlike the CDC IG, this Local IG is combining explanations about the segments (see Chapter 5 of the CDC IG), message element attribute (see Chapter 3 of the CDC IG), appropriate code tables for each table (see Appendix A of the CDC IG), and describes constraints specific for **CIRTS 2.0**. Chapter 6 will address how these building blocks are assembled into specific messages that meet the use cases listed in Chapter 2.

Message Element Attributes

Table 5-1 describes the message element attributes used as the column headers in the tables that specify messaging details for each message segment.

Table 5-1. Message Element Attributes

Abbreviation	Description
Sequence (**SEQ**)	Sequence of the elements (fields) as they are numbered in the HL7 message segment. The SEQ attribute applies to the data type attribute table and the segment attribute table.
Length (**LEN**) (V2.7.1)	For each component in the data type table and field in a segment there is a normative length column (LEN) and conformance length (C.LEN). This guide follows the length definitions and conventions from V2.7.1. LEN – If populated defines the minimum and maximum length that must be supported. The minimum or the maximum may be blank, e.g, "..20" or "2.." indicating there is no minimum or maximum.
Data Type	Data type used for HL7 element. Data type specifications can be found in Chapter 4 of the CDC IG.
CDC IG Cardinality	Indicator of the minimum and maximum number of times the element may appear. [0..0] Element never present. [0..1] Element may be omitted and can have at most, one occurrence. [1..1] Element must have exactly one occurrence. [0..n] Element may be omitted or may repeat up to n times. [1..n] Element must appear at least once, and may repeat up to *n* times.

	[0..*] Element may be omitted or repeat for an unlimited number of times. [1..*] Element must appear at least once, and may repeat unlimited number of times. [m..n] Element must appear at least *m* and, at most, *n* times. Cardinality applies only to message attribute tables and segment attribute tables.
CIRTS IG Cardinality	This column will indicate if the CIRTS Cardinality used differs from the CDC IG Cardinality.
Value Set	The set of coded values to be used with the field. The value set attribute applies only to the data type attribute tables and the segment attribute tables. The value set may equate with an entire code system part of a code system, or codes drawn from multiple code systems. Value sets are from Appendix A of the CDC IG, unless otherwise specified.
HL7 **ELEMENT NAME**	The HL7 descriptor of the element in the segment.
CDC IG Usage	Usage of the message element for this profile. Indicates whether the message element (segment, segment group, field, component, or subcomponent) is R, RE, O, X or C (a/b) in the corresponding message element. Usage applies to the message attribute table, data type attribute table and the segment attribute table.
***CIRTS 2.0* Usage**	Using the Usage Code definitions in Table 3-1, this column lists any usage that *differs* from the CDC IG. The CIRTS IG usage is to be followed if listed.
Constraint	This column lists any constraints for the CIRTS HL7 message.

Message Segments

The next sections of this Local IG will be organized in the following fashion:

- Message Segment definition and usage – each section will start with a table that defines the segment, its message usage, the usage in as defined in the CDC IG vs. the usage for CIRTS and additional notes. The CIRTS 2.0 usage will drive the usage requirement.
- The table of message element attributes for that segment as defined in Table 5-1.
- The field definitions for that segment including additional value sets and examples of HL7 message structure.
- User defined value sets or CIRTS specific business rules will be presented in tables with headers **with white text on blue**.
- CIRTS usage columns will be shaded in blue.
- Segments not supported in the current version of CIRTS will be marked **Not Supported in current CIRTS Release**
- Additional comments and notes of importance for CIRTS will be in **bold with yellow highlight.**

Boxed areas will be used to convey information of note from the CDC IG and items of note.

Note: information on segments, sequences, and value set tables that are not currently supported in CIRTS is provided for future reference. This guide will be updated appropriately as new immunization messaging requirements are implemented.

BHS—Batch Header Segment

Segment (Name/Role)	Definition	Message Usage	CDC IG Usage	*CIRTS 2.0* Usage	Note
BHS (Batch Header Segment)	The Batch Header Segment wraps a group of 1 or more messages. These may be a mixture of acceptable message types. This segment is not required for real-time messaging. That is, a stream of messages may be sent without a BHS. A system may choose to require BHS for all groups of messages, but should specify this requirement in a local implementation Guide.	Any	Optional		Used at the beginning of any batch of messages.

Table 5-2. BHS—Batch Header Segment -- Message Element Attributes

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
1	1	ST	[1..1]	[1..1]		Batch Field Separator	R	R	The BHS.1 field shall be |
2	3	ST	[1..1]	[1..1]		Batch Encoding Characters	R	R	The BHS.2 field shall be ^~\&
3		HD	[0..1]	[0..1]		Batch Sending Application	O	**R**	
4		HD	[0..1]	[0..1]		Batch Sending Facility	O	**R**	
5		HD	[0..1]	[0..1]		Batch Receiving Application	O	**R**	**“CIRTS”**
6		HD	[0..1]	[0..1]		Batch Receiving Facility	O	**R**	**“CTDPH”**

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
7		TS	[0..1]	[0..1]		Batch Creation Date/Time	O	**R**	
8	40	ST	[0..1]	[0..1]		Batch Security	O	O	
9	20	ST	[0..1]	[0..1]		Batch Name/ID /Type	O	**R**	
10	80	ST	[0..1]	[0..1]		Batch Comment	O	O	
11	20	ST	[0..1]	[0..1]		Batch Control ID	O	**R**	
12	20	ST	[0..1]	[0..1]		Reference Batch Control ID	O	O	

BHS Field Definitions

BHS-1 Batch Field Separator (ST) 00081

Definition: This field contains the separator between the segment ID and the first real field, BHS-2-batch encoding characters. As such it serves as the separator and defines the character to be used as a separator for the rest of the message. The required value is |, (ASCII 124). Note that this field is different from other fields and immediately follows the Segment name code.

BHS|

⇑

separator

BHS-2 Batch Encoding Characters (ST) 00082

Definition: This field contains the four characters in the following order: the component separator, repetition separator, escape characters, and subcomponent separator. The required values are ^~\& (ASCII 94, 126, 92, and 38, respectively).

BTS – Batch Trailer Segment

Segment (Name/Role)	Definition	Message Usage	CDC IG Usage	*CIRTS 2.0* Usage	Note
BTS (Batch Trailer Segment)	The BTS segment defines the end of a batch. It is required if the message has a matching BHS.	Any	Required if message starts with BHS.		Used to mark the end of any batch of messages. If the batch of messages starts with a BHS, then this segment is required.

Table 5-3. Batch Trailer Segment (BTS) – Message Element Attributes

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
1	10	ST	[0..1]	[1..1]		Batch Message Count	O	**R**	
2	80	ST	[0..1]	[0..1]		Batch Comment	O	O	
3	100	NM	[0..1]	[0..1]		Batch Totals	O	O	

ERR—Error Segment

Segment (Name/Role)	Definition	Message Usage	CDC IG Usage	*CIRTS 2.0* Usage	Note
ERR (Error Segment)	The error segment reports information about errors in processing the message. The segment may repeat. Each error will have its' own ERR segment.	ACK, RSP	Ability to create and process is required for conformant systems.	**Required**	Used to return information about errors.

Table 5-4. Error Segment (ERR) -- Message Element Attributes

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
1		ELD	[0..0]	[0..0]		Error Code and Location	X	X	**Not supported for Version 2.5 and above.**
2	18	ERL	[0..1]	[0..1]		Error Location	RE	RE	If an error involves the entire message (e.g., the message is not parse-able) then location has no meaning. In this case, the field is left empty. Repeat of this field is not supported. The IG assumes that each error will be contained in one ERR segment. If the same error occurs more than once, there will be one ERR for each.
3		CWE	[1..1]	[1..1]	0357	HL7 Error Code	R	R	

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
4	2	ID	[1..1]	[1..1]	0516	Severity	R	R	Always “E”
5		CWE	[0..1]		0533	Application Error Code	O	**X**	
6	80	ST	[0..1]			Application Error Parameter	O	**X**	
7	2048	TX	[0..1]			Diagnostic Information	O	**X**	
8	250	TX	[0..1]	[0..1]		User Message	O	**R**	This field may contain free text that may be displayed to a user. It is not intended for any further processing.
9	20	IS	[0..1]		0517	Inform Person Indicator	O	**X**	
10		CWE	[0..1]		0518	Override Type	O	**X**	
11		CWE	[0..1]		0519	Override Reason Code	O	**X**	
12		XTN	[0..1]			Help Desk Contact Point	O	**X**	

ERR field definitions:

Note: ERR-1 is not supported for use in messages starting with version 2.5.

ERR-2 Error Location (ERL) 01812

Definition: Identifies the location in a message related to the identified error, warning or message. Each error will have an ERR, so no repeats are allowed on this field. This field may be left empty if location is not meaningful. For example, if is unidentifiable, an ERR to that effect may be returned.

ERR-3 HL7 Error Code (CWE) 01813

Definition: Identifies the HL7 (communications) error code. Refer to *Table 5-5. HL7 Table 0357 – Message Error Condition Codes* for valid values. **These are the only accepted values in CIRTS 2.0.**

Table 5-5. HL7 Table 0357 – Message Error Condition Codes

HL7 Value	Description
100	Segment sequence error
101	Required field missing
102	Data type error
103	Table value not found
200	Unsupported message type
201	Unsupported event code
202	Unsupported processing id
203	Unsupported version id
204	Unknown key identifier
205	Duplicate key identifier
206	Application record locked
207	Application internal error

ERR-4 Severity (ID) 01814

Definition: Identifies the severity of an application error. Knowing if something is Error, Warning or Information is intrinsic to how an application handles the content. Refer to *HL7 Table 0516 - Error Severity* for valid values.

If ERR-3 has a value of "0", ERR-4 will have a value of "I".

ERR-5 Application Error Code (CWE) 01815

Definition: Application specific code identifying the specific error that occurred. Refer to *User-Defined Table 0533 – Application Error Code* for suggested values. This is currently not supported in CIRTS 2.0.

If the message associated with the code has parameters, it is recommended that the message be indicated in the format of the java .text.MessageFormat approach[5]. This style provides information on the parameter type to allow numbers, dates and times to be formatted appropriately for the language.

ERR-6 Application Error Parameter (ST) 01816

Definition: Additional information to be used, together with the Application Error Code, to understand a particular error condition/warning/etc. This field can repeat to allow for up to 10 parameters.

ERR-8 User Message (TX) 01818

Definition: The text message to be displayed to the application user. It is not intended to be processed further by the receiving system. **For CIRTS 2.0, this field will be populated with the errors in human friendly format from *Table 5-6 CIRTS 2.0 Business Rules* for ERR-8 messages.**

Example with error in PID:

ERR||PID^1^5|101^Required field missing^HL70357^^^|E||||Patient First name missing

[5] Details on Message Format can be found at *http://java.sun.com/products/jdk/1.2/docs/api/java/text/MessageFormat.html*.

Table 5-6. CIRTS 2.0 Business Rules for ERR-8 messages.

Business Rule ID	Description	Error Code	Error Message for ERR-8
BR101	Vaccination Encounter Date must not be before Patient Data of Birth	I101	Vaccination Encounter Date must not be before Patient Data of Birth. Record was not added into CIRTS. Please fix this issue and resend the record.
BR102	Vaccination Encounter Date should not be after the Patient Data of Death	I102	Vaccination Encounter Date should not be after the Patient Data of Death. Record was not added into CIRTS. Please fix this issue and resend the record.
BR103	Vaccination Encounter Date must be less than or equal to (before or the same as) the Report Submission Date	I103	Vaccination Encounter Date must be before or the same as the Report Submission Date. Record was not added into CIRTS. Please fix this issue and resend the record.
BR104	The minimum/ mandatory set of data items for the Vital Records includes: Patient Date of Birth, Patient Name -First, Patient Name - Last, Birth Certificate Number, Birth Facility (name, address, and country) - could be in home birth, Gender, Mother's Name, First, Last and Maiden.	I104	The required field (for Patient's Date of Birth, Patient's Name -First, Patient's Name - Last, Gender, Responsible Party's First or Last Name) is missing. No records were added into CIRTS. Please fix this issue and resend all records.
BR105	The minimum/ mandatory set of data items for the Provider Health Records must include: Provider Organization Name/ ID, Patient Date of Birth, Patient Name -First, Patient Name - last, Vaccine Encounter Date, Vaccine Type.	I104	The required field (for Patient's Date of Birth, Patient's Name -First, Patient's Name - Last, Vaccine, Administration date, Administration facility) is missing. No records were added into CIRTS. Please fix this issue and resend all records.
BR106	The minimum/ mandatory set of data items for the Electronic Medicaid/ Billing Records must include: Provider Organization Name/ ID, Patient Date of Birth, Patient Name -First, Patient Name - last, Vaccine Encounter Date, Vaccine Type.	I104	The required field (for sending facility or medical record number) is missing. No records were added into CIRTS. Please fix this issue and resend the records.

Business Rule ID	Description	Error Code	Error Message for ERR-8
BR110	VFC- eligible children should have the manufacturer and lot number reported with Vaccination event	I108	The required field for current immunization event (for lot number, lot expiration, and manufacturer) is missing. No records were added into CIRTS. Please fix this issue and resend the records.
BR114	Vaccination Encounter Date should not be on the Patient Date of Birth unless it is on the list of vaccines recommended on the date of birth, e.g., HepB.	I112	Vaccination Encounter Date should not be on the Patient Date of Birth unless it is dose 1 of HepB on the date of birth. This record was not added into CIRTS. Please fix this issue and resend the record.
BR116	Trade Name, Manufacturer, CVX Code, CPT Code and Vaccine Type should not contradict one another.	I114	There is a mismatch between required fields for current immunization event (for lot number, lot expiration, and manufacturer) is missing. The record was not added into CIRTS. Please fix this issue and resend the records.
BR117	The same patient should not receive the same antigen more than once in single day.	I115	There were multiple vaccinations for the same vaccine on the same day for current immunization event. The only the first record was added into CIRTS. Please fix this issue and resend the records.
BR118	Vaccination Encounter Date should not be after the lot number expiration date.	I116	The expired vaccine lot was used to administer this vaccination. Record was added but marked as invalid dose. The record was as invalid dose into CIRTS. Please verify and correct the expiration date if wrong in CIRTS.
BR119	Route and Site should be consistent with the vaccine type.	I117	There is a mismatch between vaccine route and body site for current immunization event. The record was not added into CIRTS. Please fix this issue and resend the records.
BR121	Administered vaccinations should have specific vaccine types, e.g., HIB PRP-OMP; unspecified vaccine types, e.g., HIB, NOS, are less desirable	I119	There is a mismatch between vaccine selected and currently available vaccine for current immunization event. The record was not added into CIRTS. Please fix this issue and resend the records.
BR133	The value presented does not match any value in the HL7 code set values.	I133	The HL7 value reported was "XXXXXX". There is a mismatch between HL7 value reported and currently acceptable code set values. The record was not added into CIRTS. Please fix this issue and resend the records.

EVN - Event Type Segment

Not Supported in current CIRTS 2.0 release.

Segment (Name/Role)	Definition	Message Usage	CDC IG Usage	*CIRTS 2.0* Usage	Note
EVN (Event Segment)	The EVN segment is used to communicate necessary trigger event information to receiving applications. Valid event types for all chapters are contained in HL7 Table 0003 - Event Type	ADT	Required for ADT message.	**Not Used**	Used to convey event trigger information.

Table 5-7. Event Segment (EVN) -- Message Element Attributes

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
1	3	ID	[0.. 1]		0003	Event Type Code	O		
2		TS	[1..1]			Recorded Date/Time	R		
3		TS	[0..1]			Date/Time Planned Event	O		
4	3	IS	[0..1]		0062	Event Reason Code	O		
5		XCN	[0..*]		0188	Operator ID	O		
6		TS	[0..1]			Event Occurred	O		
7		HD	[0..1]			Event Facility	O		

EVN field definitions

EVN-2 Recorded Date/Time (TS) 00100

Definition: Most systems will default to the system date/time when the transaction was entered, but they should also permit an override.

FHS—File Header Segment

Segment (Name/Role)	Definition	Message Usage	CDC IG Usage	*CIRTS 2.0* Usage	Note
FHS (File Header Segment)	The file header segment may be used to group one or more batches of messages. This is a purely optional segment, even if batches are sent. Its' use is not anticipated for use in real-time transactions. Any system that anticipates its use should specify this in a local implementation Guide.	Any	Optional	**Required** if the implementation will be on a single provider's EHR	Used to mark the beginning of a file of batches.

Table 5-8. File Header Segment (FHS) -- Message Element Attributes

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
1	1	ST	[1..1]	[1..1]		File Field Separator	R	R	The FHS.1 field shall be |
2	4	ST	[1..1]	[1..1]		File Encoding Characters	R	R	The FHS.2 field shall be ^~\&
3		HD	[0..1]	[1..1]		File Sending Application	O	**R**	Determined by sending application- hard code
4		HD	[0..1]	[1..1]		File Sending Facility	O	**R**	Determined by sending facility- hard code
5		HD	[0..1]	[1..1]		File Receiving Application	O	**R**	**"CIRTS"**

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
6		HD	[0..1]	[1..1]		File Receiving Facility	O	**R**	**"CTDPH"**
7		TS	[0..1]	[0..1]		File Creation Date/Time	O	**R**	
8	40	ST	[0..1]	[0..1]		File Security	O	O	
9	20	ST	[0..1]	[0..1]		File Name/ID	O	**RE**	
10	80	ST	[0..1]	[0..1]		File Header Comment	O	O	
11	20	ST	[0..1]	[0..1]		File Control ID	O	O	
12	20	ST	[0..1]	[0..1]		Reference File Control ID	O	O	

FHS Field Definitions

FHS-1 File Field Separator (ST) 00067

Definition: This field has the same definition as the corresponding field in the MSH segment. The value shall be |.

Note that this field is different from other fields and follows the segment name code immediately.

FHS|

FHS-2 File Encoding Characters (ST) 00068

Definition: This field has the same definition as the corresponding field in the MSH segment. The value shall be ^~\&

FTS—File Trailer Segment

Segment (Name/Role)	Definition	Message Usage	CDC IG Usage	*CIRTS 2.0* Usage	Note
FTS (File Trailer Segment)	The FTS segment defines the end of a file of batches. It is only used when the FHS segment is used.	Any	Required to terminate a file of batches. (Matches FHS)	**Required** to terminate a file of batches. (Matches FHS)	Used to mark the end of a file of batches. If a file of batches has an FHS at the beginning, then this segment is required.

Table 5-9. File Trailer Segment (FTS) -- Message Element Attributes

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
1	10	NM	[0..1]	[1..1]		File Batch Count	O	**R**	
2	80	ST	[0..1]			File Trailer Comment	O	O	

IN1—Insurance Segment (IN2, IN3)

Not Supported in current CIRTS 2.0 release.

Segment (Name/Role)	Definition	Message Usage	CDC IG Usage	*CIRTS 2.0* Usage	Note
IN1-3 (Insurance Segment)	The IN1-IN3 segments contain insurance policy coverage information necessary to produce properly pro-rated and patient and insurance bills.	VXU	Optional	**Not Supported**	**Not Supported**

Note: The IN1, IN2, and IN3 segments were not defined in the CDC IG.

MSA—Message Acknowledgement Segment

Segment (Name/Role)	Definition	Message Usage	CDC IG Usage	*CIRTS 2.0* Usage	Note
MSA (Message Acknowledgement Segment)	This segment is included in the query response (RSP) and acknowledgment (ACK) messages. It contains information used to identify the receiver's acknowledgement response to an identified prior message.	RSP, ACK	Ability to create and process is required for conformant systems.	**Required** as the ACK only	

Table 5-10. Message Acknowledgement Segment (MSA) – Message Element Attributes

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
1	2	ID	[1..1]	[1..1]	0008	Acknowledgment Code	R	R	
2	20	ST	[1..1]	[1..1]		Message Control ID	R	R	
3	80	ST	[0..1]	[0..1]		Text Message	O	**RE**	
4	15	NM	[0..1]	[0..1]		Expected Sequence Number	O	**X**	
5			[0..1]	[0..1]		Delayed Acknowledgment Type	O	**X**	
6		CE	[0..0]	[0..1]	0357	Error Condition	X	X	

MSA Field Definitions

MSA-1 Acknowledgment Code (ID) 00018

Definition: This field contains an acknowledgment code. See message processing rules. Refer to *Table 5-11. HL7 Table 0008 - Acknowledgment Codes* for valid values.

Table 5-11. HL7 Table 0008 – Acknowledgment Codes.

Acknowledgment code	Original mode	Enhanced mode
AA	Application Accept	Application acknowledgment: Accept
AE	Application Error	Application acknowledgment: Error
AR	Application Reject	Application acknowledgment: Reject
CA		Accept acknowledgment: Commit Accept
CE		Accept acknowledgment: Commit Error
CR		Accept acknowledgment: Commit Reject

MSA-2 Message Control ID (ST) 00010

Definition: This field contains the message control ID of the message sent by the sending system. It allows the sending system to associate this response with the message for which it is intended. This field echoes the message control id sent in MSH-10 by the initiating system.

MSH—Message Header Segment

Segment (Name/Role)	Definition	Message Usage	CDC IG Usage	*CIRTS 2.0* Usage	Note
MSH (Message Segment Header)	The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.	All	Ability to create and process is required for conformant systems.	**Required**	This begins every message and includes information about the type of message, how to process it, and by whom it was created.

Table 5-12. Message Header Segment (MSH) – Message Element Attributes

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
1	1	ST	[1..1]	[1..1]		Field Separator	R	R	The MSH.1 field shall be |
2	4	ST	[1..1]	[1..1]		Encoding Characters	R	R	The MSH.2 field shall be ^~\&
3		HD	[0..1]	[0..1]	0361	Sending Application	RE	R	No constraint
4		HD	[0..1]	[0..1]	0362	Sending Facility	RE	RE	No constraint
5		HD	[0..1]	[0..1]	0361	Receiving Application	RE	RE	**CIRTS**
6		HD	[0..1]	[0..1]	0362	Receiving Facility	RE	RE	No constraint Assigning Authority is **CTA-DPH**
7		TS	[1..1]	[1..1]		Date/Time Of Message	R	R	The degree of precision must be at least to the minute, and the time zone must be included (format YYYYMMDDHHMM[SS[.S[S[S]]]]+/- ZZZZ).

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
8	40	ST	[0..1]	[0..1]		Security	O	**X**	
9	15	MSG	[1..1]	[1..1]		Message Type	R	R	
10	20	ST	[1..1]	[1..1]		Message Control ID	R	R	
11	3	PT	[1..1]	[1..1]		Processing ID	R	R	
12		VID	[1..1]	[1..1]		Version ID	R	R	2.5.1
13	15	NM	[0..1]	[0..1]		Sequence Number	O	O	
14	180	ST	[0..1]	[0..1]		Continuation Pointer	O	O	
15	2	ID	[0..1]	[0..1]	0155	Accept Acknowledgement Type	RE	RE	
16	2	ID	[0..1]	[0..1]	0155	Application Acknowledgment Type	RE	RE	AL-always NE-Never ER-Error/reject only SU-Successful completion only
17	3	ID	[0..1]		0399	Country Code	O	**X**	Use 3 character country code from ISO 3166. If is empty, assume USA
18	16	ID	[0..1]		0211	Character Set	O	**X**	blank defaults to ASCII printable
19		CE	[0..1]			Principal Language Of Message	O	**X**	blank
20	20	ID	[0..1]		0356	Alternate Character Set Handling Scheme	O	**X**	blank

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
21		EI	[0..*]			Message Profile Identifier	O	**X**	This field will be required for use whenever a Profile is being used.

MSH Field Definitions

See *Table 5-14* for the CIRTS 2.0 encoding values and descriptions for the supported MSH sequences.

MSH-1 Field Separator (ST) 00001

Definition: This field contains the separator between the segment ID and the first real field, MSH-2-encoding characters. As such it serves as the separator and defines the character to be used as a separator for the rest of the message. Required value is |, (ASCII 124). See 5-20 *Encoding Values and Descriptions for MSH-1 to MSH-10*.

Example:

MSH|

↑

MSH-2 Encoding Characters (ST) 00002

Definition: This field contains the four characters in the following order: the component separator, repetition separator, escape character, and subcomponent separator. Required values are ^~\& (ASCII 94, 126, 92, and 38, respectively).

MSH-3 Sending Application (HD) 00003

Definition for CIRTS 2.0

This field uniquely identifies the sending application. In the case of an IIS, it will be found in the list of IIS applications in Appendix A of the CDC IG*, User-defined Table 0300*. This is not the product, but rather the name of the specific instance.

This will be determined during the on-boarding process with each provider office based on their EHR system or their vendor.

MSH-4 Sending Facility (HD) 00004

Definition for CIRTS 2.0

This field identifies the organization responsible for the operations of the sending application. Locally defined codes may be added to accommodate local needs. The first component shall be the name space id found in *User-defined Table 0300*. The second and third components are reserved for use of OIDs or other universal identifiers.

This will be determined during the on-boarding process with each provider office based on their EHR system or their vendor.

MSH-5 Receiving Application (HD) 00005

Definition for CIRTS 2.0

This field uniquely identifies the receiving application. In the case of an IIS, it will be found in the list of IIS applications in Appendix A of the CDC IG, *User-defined Table 0300*. This is not the product, but rather the name of the specific instance.

For CT, the IIS is named CIRTS and the code would be “CIRTS”.

MSH-6 Receiving Facility (HD) 00006

Definition for CIRTS 2.0

This field identifies the organization responsible for the operations of the receiving application. Locally defined codes may be added to accommodate local needs. The first component shall be the name space id found in *User-defined Table 0300*. The second and third components are reserved for use of OIDs.

User-defined Table 0363 – Assigning Authority

Local implementations will need to add codes to this table to identify local assigning authorities. The values in this table are intended to be used by state and regional immunization programs.

For Connecticut, the value is "CTA-DPH".

MSH-7 Date/Time of Message (TS) 00007

Definition: This field contains the date/time that the sending system created the message. The degree of precision must be at least to the minute. The time zone must be specified and will be used throughout the message as the default time zone.

MSH-9 Message Type (MSG) 00009

Definition: This field contains the message type, trigger event, and the message structure ID for the message.

Message structure component is required.

MSH-9 first component will use the VXU value. Refer to *Table 5-13. HL7 Table 0076 – Message Types Supported by CIRTS 2.0* for valid values for the message type code (ACK, ADT, VXU, ORU, etc.). **CIRTS 2.0** currently supports the transaction of the unsolicited vaccination record update. MSH-9 second component will require use of a value from HL7 Table 0003 – Event type for valid values for the trigger event. See Chapter 6 of this Local IG for more details on the message.

Table 5-13. HL7 Table 0076 - Message Types Supported by CIRTS 2.0.

Value	Description	MSH-9 component
VXU	Unsolicited vaccination record update	First component

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. The receiver returns exactly what was sent in response messages.

Table 5-14. Encoding Values and Descriptions for MSH-1to MSH-10.

Field Names	Value	Description
MSH01	^~\&	These are Segment, Field, message separators
MSH02	Encoding Characters	^~\& (ASCII 94, 126, 92, and 38, respectively)
MSH03	Sending Application	Constant value agreed between both parties
MSH04	Sending Facility	Constant value agreed between both parties
MSH05	Receiving Application	CIRTS'
MSH07	VXU^V04	Type of Message
MSH09	P or T	Production or Test
MSH10	2.5.1	Version of the HL7 Msg

MSH-11 Processing ID (PT) 00011

Definition: This field is used to decide whether to process the message as defined in HL7 Application (level 7) Processing rules. Refer to *HL7 Table 0103* in Appendix A of the CDC IG. The choices are Production, Debugging, and Training. In most cases, P or Production should be used.

MSH-12 Version ID (VID) 00012

Definition: This field contains the identifier of the version of the HL7 messaging standard used in constructing, interpreting, and validating the message. Only the first component need be populated.

Only HL7 2.5.1 messages will be accepted in CIRTS 2.0.

MSH-15 Accept Acknowledgment Type (ID) 00015

Definition: This field identifies the conditions under which accept acknowledgments are required to be returned in response to this message. This is required for enhanced acknowledgment mode. Refer to *HL7 Table 0155 - Accept/application acknowledgment conditions* for valid values.

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

MSH-16 Application Acknowledgment Type (ID) 00016

Definition: This field contains the conditions under which application acknowledgments are required to be returned in response to this message.

This is **required** for enhanced acknowledgment mode.

Note: If MSH-15-accept acknowledgment type and MSH-16-application acknowledgment type are omitted (or are both empty), the original acknowledgment mode rules are used. This means that, unless otherwise specified, the receiving application will send acknowledgment when it has processed the message.

MSH-17 Country Code (ID) 00017

Definition: This field contains the country of origin for the message. The values to be used are those of ISO 3166[6]. The ISO 3166 table has three separate forms of the country code: HL7 specifies that the 3-character (alphabetic) form be used for the country code. If this field is not valued, then assume that the code is USA. Refer to *HL7 Table 0399 – Country code* for the 3-character codes as defined by ISO 3166-1.

MSH-21 Message Profile Identifier (EI) 01598

Not supported in current CIRTS 2.0 release.

Definition: Sites may use this field to assert adherence to, or reference, a message profile. Message profiles contain detailed explanations of grammar, syntax, and usage for a particular message or set of messages. Chapter 7 of the CDC IG describes the query profile for requesting an immunization history. It also includes child profiles that constrain the response to the query.

This field will be required whenever a profile is being used to constrain the message.

[6] Available from ISO 1 Rue de Varembe, Case Postale 56, CH 1211, Geneve, Switzerland.

NK1—Next of Kin Segment

Segment (Name/Role)	Definition	Message Usage	CDC IG Usage	*CIRTS 2.0* Usage
NK1 (Next of Kin Segment)	The NK1 segment contains information about the patient's next of kin or other related parties. Any associated parties may be identified.	VXU, ADT, RSP	Ability to create and process is **required** for conformant systems.	Required for VXU only

The NK1 segment contains information about the patient's other related parties. Any associated parties may be identified. Utilizing NK1-1 - set ID, multiple NK1 segments can be sent to patient accounts. That is, each subsequent NK1 increments the previous set ID by 1. Therefore, if 3 NK1 were sent in one message, the first would have a set id of 1, the second would have 2 and the third would have 3.

Table 5-15. Next of Kin Segment (NK1) – Message Element Attributes

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
1	4	SI	[1..1]	[1..1]		Set ID - NK1	R	R	
2		XPN	[1..*]	[1 1]		Name	R	R	**CIRTS 2.0** only accepts one name. This is identified as the current care giver.
3		CE	[1..1]	[1..1]		Relationship	R	R	
4		XAD	[0..*]	[1..1]		Address	RE	R	The first instance shall be the primary address.
5		XTN	[0..*]	[1..2]		Phone Number	RE	RE	The first instance shall be the "home" phone number. The second phone number will be entered as "cell home". The first instance is required. The second instance is optional.

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
6		XTN	[0..*]	[0..1]		Business Phone Number	O	O	The first and only instance shall be the business phone number.
7		CE	[0..1]	[0..0]	0131	Contact Role	O	**X**	
8	8	DT	[0..1]	[0..0]		Start Date	O	**X**	
9	8	DT	[0..1]	[0..0]		End Date	O	**X**	
10	60	ST	[0..1]	[0..0]		Next of Kin / Associated Parties Job Title	O	**X**	
11		JCC	[0..1]	[0..0]	0327/ 0328	Next of Kin / Associated Parties Job Code/Class	O	**X**	
12		CX	[0..1]	[0..0]		Next of Kin / Associated Parties Employee Number	O	**X**	
13		XON	[0..1]	[0..0]		Organization Name - NK1	O	**X**	
14		CE	[0..1]	[0..0]	0002	Marital Status	O	**X**	
15	1	IS	[0..1]	[0..0]	0001	Administrative Sex	O	**X**	
16		TS	[0..1]	[0..0]		Date/Time of Birth	O	**O**	
17	2	IS	[0..1]	[0..0]	0223	Living Dependency	O	**X**	
18	2	IS	[0..1]	[0..0]	0009	Ambulatory Status	O	**X**	

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
19		CE	[0..1]	[0..0]	0171	Citizenship	O	**X**	
20		CE	[0..1]	[1..1]	0296	Primary Language	O	**X**	
21	2	IS	[0..1]	[0..0]	0220	Living Arrangement	O	**X**	
22		CE	[0..1]	[0..0]	0215	Publicity Code	O	**X**	
23	1	ID	[0..1]	[0..0]	0136	Protection Indicator	O	**X**	
24	2	IS	[0..1]	[0..0]	0231	Student Indicator	O	**X**	
25		CE	[0..1]	[0..0]	0006	Religion	O	**X**	
26		XPN	[0..1]	[0..0]		Mother's Maiden Name	O	**X**	
27		CE	[0..1]	[0..0]	0212	Nationality	O	**X**	
28		CE	[0..1]	[0..0]	0189	Ethnic Group	O	**X**	
29		CE	[0..1]	[0..0]	0222	Contact Reason	O	**X**	
30		XPN	[0..1]	[0..0]		Contact Person's Name	O	**X**	
31		XTN	[0..1]	[0..0]		Contact Person's Telephone Number	O	**X**	
32		XAD	[0..1]	[0..0]		Contact Person's Address	O	**X**	
33		CX	[0..1]	[0..0]		Next of Kin/Associated Party's Identifiers	O	**X**	
34	2	IS	[0..1]	[0..0]	0311	Job Status	O	**X**	

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
35		CE	[0..1]	[0..0]	0005	Race	O	**X**	
36	2	IS	[0..1]	[0..0]	0295	Handicap	O	**X**	
37	16	ST	[0..1]	[0..0]		Contact Person Social Security Number	O	**X**	
38		ST	[0..1]	[0..0]		Next of Kin Birth Place	O	**X**	
39	2	IS	[0..1]	[0..0]	0099	VIP Indicator	O	**X**	

NK1 Field Definitions

NK1-1 Set ID - NK1 (SI) 00190

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

NK1-2 Name (XPN) 00191

Definition: This field contains the name of the next of kin or associated party. Multiple names for the same person are allowed, but the legal name must be sent in the first sequence. Refer to *HL7 Table 0200 - Name Type* for valid values.

NK1-3 Relationship (CE) 00192

Definition: This field contains the actual personal relationship that the next of kin/associated party has to the patient. Values to use in **CIRTS 2.0** are given in *Table 5-16 User-defined Table 0063 Relationship* below.

Table 5-16. User-defined Table 0063 – Relationship [as defined in HL7's Version 2.4] (use in NK1-3, IN1-17)

Value	Description	Value	Description
FTH	Father	BRO	Brother
MTH	Mother	GRP	Grandparent
GRD	Guardian	PAR	Parent
SEL	Self	SCH	Stepchild
CGV	Care giver	SIB	Sibling
FCH	Foster child	SIS	Sister
OTH	Other	SPO	Spouse

NK1-4 Address (XAD) 00193

Definition: This field contains the address of the next of kin/associated party. Multiple addresses are allowed for the same person. The mailing address must be sent in the first sequence. If the mailing address is not sent, then the repeat delimiter must be sent in the first sequence.

NK1-5 Phone Number (XTN) 00194

Definition: This field contains the telephone number of the next of kin/associated party. **CIRTS 2.0** can accommodate two phone numbers; the primary telephone number must be sent in the first sequence and is **required by CIRTS 2.0 to be the home number.** The second phone number is optional, but if sent, will be considered the "cell" number in CIRTS. If the primary telephone number is not sent, then the repeat delimiter must be sent in the first sequence. Refer to *HL7 Table 0201 - Telecommunication Use Code* and *HL7 Table 0202 - Telecommunication Equipment Type* for valid values.

NK1-6 Business Phone Number (XTN) 00195

Definition: This field contains the business telephone number of the next of kin/associated party. Multiple phone numbers are allowed for the same person. While this field is optional, if sent, **CIRTS 2.0** can accommodate only one **business** phone number.

If the primary telephone number is not sent, then the repeat delimiter must be sent in the first sequence. Refer to *HL7 Table 0201 - Telecommunication Use Code* and *HL7 Table 0202 - Telecommunication Equipment Type* for valid values.

NK1-15 Administrative Sex (IS) 00111

Definition: This is the sex of the next of kin.

NK1-16 Date/Time of Birth (TS) 00110

Definition: This is the data of birth of the next of kin.

NTE—Note Segment **Not Supported in current CIRTS 2.0 release.**

Segment (Name/Role)	Definition	Message Usage	CDC IG Usage	*CIRTS 2.0* Usage	Note
NTE (Note Segment)	The NTE segment is used for sending notes and comments. It is used in relation to OBX in the VXU and RSP.	VXU, ADT, RSP	Ability to create and process is required for conformant systems.		Used to carry a note related to the parent segment.

Table 5-17. Note Segment (NTE) – Message Element Attributes

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
1	4	SI	[0..1]	[0..1]		Set ID - NTE	O	**R**	Required
2	8	ID	[0..1]	[0..1]	0105	Source of Comment	O	**R**	Required
3		FT	[1..1]	[1..1]		Comment	R	R	
4		CE	[0..1]	[0..1]	0364	Comment Type	O	O	

NTE Field Definitions

NTE-2 Source of Comment (ID) 00098

Definition: This field contains the source of comment contained in the segment. Refer to *Table 5-18. HL7 Table 0105 – Source of Comment* below. For a current list of HL7 values please reference the HL7 version 2.5.1 documents.

Table 5-18. HL7 Table 0105 - Source of Comment

Code	Description	Code	Description	Code	Description
L	Ancillary (filler) department is source of comment	O	Other system is source of comment	P	Orderer (placer) is source of comment

NTE-3 Comment (FT) 00098

Definition: This field contains the comment contained in the segment.

OBX—Observation Result Segment

Segment (Name/Role)	Definition	Message Usage	CDC IG Usage	*CIRTS 2.0* Usage	Note
OBX (Observation Result Segment)	The observation result segment has many uses. It carries observations about the object of its parent segment. In the VXU/RSP it is associated with the RXA or immunization record. The basic format is a question (OBX-3) and an answer (OBX-5).	ADT, VXU, RSP	Ability to create and process is required for conformant systems.	**Required for VXU only**	Used to report one atomic part of an observation.

Table 5-19. Observation Segment (OBX) – Message Element Attributes

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Sets	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
1	4	SI	[1..1]	[1..1]		Set ID – OBX	R	R	
2	2	ID	[1..1]	[1..1]	**NIP003**	Value Type	R	R	CE, NM, ST, DT, or TS
3		CE	[1..1]	[1..1]		Observation Identifier	R	R	This indicates what this observation refers to. It poses the question that is answered by OBX-5. These values can be determined from either *Table 5-20 CDC Defined NIP0003* or *Table 5-21 CDC Defined NIP0004* below.
4	20	ST	[1..1]	[1..1]		Observation Sub-ID	RE	RE	

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Sets	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
5		varies[7]	[1..1]	[1..1]		Observation Value	R	R	This is the observation value and answers the question posed by OBX-3. Reference to particular answer table listed in tables below.
6		CE	[0..1]			Units	CE	**X**	If the observation in OBX-5 requires an indication of the units, they are placed here.
7	60	ST	[0..1]			References Range	O	**X**	
8	5	IS	[0..1]		0078	Abnormal Flags	O	**X**	
9	5	NM	[0..1]			Probability	O	**X**	
10	2	ID	[0..1]		0080	Nature of Abnormal Test	O	**X**	
11	1	ID	[1..1]		0085	Observation Result Status	R	R	**Constrain to F for Final**
12		TS	[0..1]			Effective Date of Reference Range Values	O	**X**	
13	20	ST	[0..1]			User Defined Access Checks	O	**X**	
14		TS	[1..1]	[1..1]		Date/Time of the Observation	R	R	
15		CE	[0..1]			Producer's Reference	O	**X**	

[7] The length of the observation field is variable, depending upon value type. See *OBX-2 value type*.

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Sets	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
16		XCN	[0..1]			Responsible Observer	O	**X**	
17		CE	[0..1]			Observation Method	O	**X**	
18		EI	[0..1]			Equipment Instance Identifier	O	**X**	
19		TS	[0..1]			Date/Time of the Analysis	O	**X**	
20			[0..1]			Reserved for harmonization with V2.6	O	**X**	
21			[0..1]			Reserved for harmonization with V2.6	O	**X**	
22			[0..1]			Reserved for harmonization with V2.6	O	**X**	
23		XON	[0..1]			Performing Organization Name	O	**X**	
24		XAD	[0..1]			Performing Organization Address	O	**X**	
25		XCN	[0..1]			Performing Organization Medical Director	O	**X**	

OBX Field Definitions

OBX-1 Set ID - OBX (SI) 00569

Definition: 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.

OBX-2 Value Type (ID) 00570

Definition: This field contains the format of the observation value in OBX. If the value is CE then the result must be a coded entry.

CT is using CDC-DEFINED NIP003 - OBSERVATION IDENTIFIERS.

OBX-3 Observation Identifier (CE) 00571

Definition: This field contains a unique identifier for the observation. The format is that of the Coded Element (CE). Example: |30963-3^Vaccine purchased with^LN|.

In most systems the identifier will **point** to a master observation table that will provide other attributes of the observation that may be used by the receiving system to process the observations it receives. This may be thought of as a question that the observation answers. In the example above, the question is “how was this immunization paid for” The answer in OBX-5 could be “Public Funding”.

CT is using CDC-DEFINED NIP003 - OBSERVATION IDENTIFIERS, see *Table 5-20* below.

OBX-4 Observation Sub-ID (ST) 00572

Definition: This field is used to group related observations by setting the value to the same number. For example, recording VIS date and VIS receipt date for a combination vaccination requires 6 OBX segments. One OBX would indicate the vaccine group. It would have a pair of OBX indicating the VIS publication date and the VIS receipt date. These would have the same OBX-4 value to allow them to be linked. The second set of three would have another OBX-4 value common to each of them.

This field may be used to link related components of an observation. Each component of the observation would share an Observation sub-id. For example:

OBX|1|LN|^observation 1 part 1^^^^^|1|…

OBX|2|LN|^ observation 1 part 2^^^^^|1|…

OBX|3|DT|^a different observation^^^^^|2|…

OBX|2|TS|29768-9^DATE VACCINE INFORMATION STATEMENT PUBLISHED^LN|1|20010711|||||F|<CR>

OBX|3|TS|29769-7^DATE VACCINE INFORMATION STATEMENT PRESENTED^LN|1|19901207|||||F|<CR>

OBX|4|CE|38890-0^COMPONENT VACCINE TYPE^LN|2|17^HIB,NOS^CVX|||||F|<CR>

OBX|5|TS|29768-9^DATE VACCINE INFORMATION STATEMENT PUBLISHED^LN|2|19981216|||||F|<CR>

OBX|6|TS|29769-7^DATE VACCINE INFORMATION STATEMENT PRESENTED^LN|2|19901207|||||F|<CR>

OBX-5 Observation Value (varies) 00573

Definition: This field contains the value observed by the observation producer. ***OBX-2-value type*** contains the data type for this field according to which observation value is formatted.

This field contains the value of ***OBX-3-observation identifier*** of the same segment. Depending upon the observation, the data type may be a number (e.g., dose number), a coded answer (e.g., a vaccine), or a date/time (the date/time that the VIS was given to the client/parent). An observation value is always represented as the data type specified in ***OBX-2-value type*** of the same segment. Whether numeric or short text, the answer shall be recorded in ASCII text.

Coded values

When an OBX segment contains values of CE data types, the observations are stored as a combination of codes and/or text.

OBX-6 Units (CE) 00574

Definition: This shall be the units for the value in OBX-5. The value shall be from the ISO+ list of units.

OBX-14 Date/Time of the Observation (TS) 00582

Definition: Records the time of the observation. It is the physiologically relevant date-time or the closest approximation to that date-time of the observation.

Table 5-20. CDC-defined NIP003 - Observation identifiers

LOINC Code	OBX-3 Description	OBX-5 Answer Data Type	Corresponding observation value or code table to use for OBX-5	CIRTS 2.0 Supported
Vaccine Funding Program Eligibility Category				
64994-7	Vaccine funding program eligibility category	CE	HL70064 **See Table 5-22 for values**.	Supported
Vaccine Funding Source				
30963-3	Vaccine Funding Source	CE		Not Supported
Vaccine Type Identifier				
30956-7	Vaccine Type (Vaccine group or family)	CE	HL70292	Not Supported
38890-0	Component Vaccine Type	CE	HL70292	Not Supported
30946-8	Vaccination contraindication/precaution effective date	DT	19970522	Supported as Date
30944-3	Vaccination temporary contraindication/precaution expiration date	DT	1990523	Supported as Date
30945-0	Vaccination contraindication/precaution	CE		Not Supported
31044-1	Reaction	CE		Not Supported
59784-9	Disease with presumed immunity	CE		Not Supported [a] (see footnote)
59785-6	Indications to immunize	CE		Not Supported
Vaccination Information Statement (VIS) Dates				
69764-9	Document Date	CE		Not Supported
29768-9	Date Vaccine Information Statement Published	TS	19900605	Supported as Date

LOINC Code	OBX-3 Description	OBX-5 Answer Data Type	Corresponding observation value or code table to use for OBX-5	CIRTS 2.0 Supported
29769-7	Date Vaccine Information Statement Presented	TS	199307311615	Supported as Date
Forecasting and Evaluating Immunizations				
30973-2	Dose number in series	NM		Not Supported
30979-9	Vaccines due next	CE	HL70292 (CVX)	Not Supported
30980-7	Date Vaccine Due	TS	19980526	Not Supported
30981-5	Earliest Date to Give	TS	19980522	Not Supported
30982-3	Reason applied by forecast logic to project this vaccine	CE or ST	Locally defined	Not Supported
59779-9	Immunization Schedule Used	CE		Not Supported
59780-7	Immunization Series Name	CE	Locally defined	Not Supported
59782-3	Number of doses in primary series	NM		Not Supported
59781-5	Dose validity	ID	Y, N or empty	Not Supported
59783-1	Status in immunization series	CE	Locally defined	Not Supported
Smallpox Take Read				
46249-9	VACCINATION TAKE-RESPONSE TYPE	CE	Major Take, Equivocal, Not Available	Not Supported
46250-7	VACCINATION TAKE-RESPONSE DATE	TS	20091221	Not Supported
Forecasting and Evaluating Immunizations				
30973-2	Dose number in series	NM		Not Supported
30979-9	Vaccines due next	CE	HL70292 (CVX)	Not Supported
30980-7	Date Vaccine Due	TS	19980526	Not Supported

LOINC Code	OBX-3 Description	OBX-5 Answer Data Type	Corresponding observation value or code table to use for OBX-5	CIRTS 2.0 Supported
30981-5	Earliest Date to Give	TS	19980522	Not Supported
30982-3	Reason applied by forecast logic to project this vaccine	CE or ST	Locally defined	Not Supported
59779-9	Immunization Schedule Used	CE		Not Supported
59780-7	Immunization Series Name	CE	Locally defined	Not Supported
59782-3	Number of doses in primary series	NM		Not Supported
59781-5	Dose validity	ID	Y, N or empty	Not Supported
59783-1	Status in immunization series	CE	Locally defined	Not Supported
Smallpox Take Read				
46249-9	VACCINATION TAKE-RESPONSE TYPE	CE	Major Take, Equivocal, Not Available	Not Supported
46250-7	VACCINATION TAKE-RESPONSE DATE	TS	20091221	Not Supported
[a] Very few are supported as history; most must be serological confirmations for immunity.				

Table 5-21. CDC-defined NIP004 -- Observation identifiers

Concept Code	Concept Name	OBX-5 Description - Evidence of immunity	OBX-5 Answer Data Type	Corresponding observation value or code table to use for OBX-5 - V 2.3.1 Value NIP004	CIRTS 2.0 Supported
Clinical Comments in CIRTS					
409498004	Anthrax (disorder)	History of anthrax infection.	SCT		**Yes**
397428000	Diphtheria (disorder)	History of diphtheria infection.	SCT	24	**Yes**
76902006	Tetanus (disorder)	History of tetanus infection.	SCT	32	No
27836007	Pertussis (disorder)	History of pertussis infection.	SCT	29	No
40468003	Viral hepatitis, type A (disorder)	History of Hepatitis A infection.	SCT		No
66071002	Type B viral hepatitis (disorder)	History of Hepatitis B infection.	SCT	26	No
91428005	Haemophilus influenzae infection (disorder)	History of HIB infection.	SCT	25	No
240532009	Human papilloma virus infection (disorder)	History of HPV infection.	SCT		No
Clinical Comments in CIRTS					
6142004	Influenza (disorder)	History of influenza infection.	SCT		No
52947006	Japanese encephalitis virus disease (disorder)	History of Japanese encephalitis infection.	SCT		No

Concept Code	Concept Name	OBX-5 Description - Evidence of immunity	OBX-5 Answer Data Type	Corresponding observation value or code table to use for OBX-5 - V 2.3.1 Value NIP004	CIRTS 2.0 Supported
14189004	Measles (disorder)	History of measles infection.	SCT	27	No
36989005	Mumps (disorder)	History of mumps infection.	SCT	28	No
36653000	Rubella (disorder)	History of rubella infection.	SCT	31	No
23511006	Meningococcal infectious disease (disorder)	History of meningococcal infection.	SCT		No
16814004	Pneumococcal infectious disease (disorder)	History of pneumococcal infection.	SCT		No
398102009	Acute poliomyelitis (disorder)	History of polio infection.	SCT	30	No
14168008	Rabies (disorder)	History of rabies infection.	SCT		No
18624000	Disease due to Rotavirus (disorder)	History of rotavirus infection.	SCT		No
4834000	Typhoid fever (disorder)	History of typhoid infection.	SCT		No
111852003	Vaccinia (disorder)	History of vaccinia infection.	SCT		No
38907003	Varicella (disorder)	History of Varicella infection.	SCT		**Yes**
16541001	Yellow fever (disorder)	History of yellow fever infection.	SCT		No
271511000	Hepatitis B immune (finding)	Immunity to hepatitis B	SCT		No

CIRTS 2.0

VXU_VO4

CIRTS 2.0 does not have any local implementation codes.

Table 5-22. User-defined Table 0064 - Financial class [NIP suggested values] (use in OBX-5 for vaccine eligibility)

Financial class references a client's eligibility status at the time of vaccine administration. It is the eligibility of the client for the vaccine administered. The values in this table relate to eligibility for the Vaccine for Children (VFC) program.

Vaccine Funding Program Eligibility Category		
Code	**Label**	**Definition**
V01	Not VFC eligible	Client does not qualify for VFC because they do not have one of the statuses below. This category does not include the underinsured (see V08).
V02	VFC eligible-Medicaid/Medicaid Managed Care	Client is currently on Medicaid or Medicaid managed care.
V03	VFC eligible- Uninsured	Client does not have insurance coverage for vaccinations.
V04	VFC eligible- American Indian/Alaskan Native	Client is a member of a federally recognized tribe. Phase I
V05	VFC eligible-Federally Qualified Health Center Patient (under-insured)	Client has insurance that partially covers vaccines received on visit and so is eligible for VFC coverage at a Federally Qualified Health Center. The client must be receiving the immunizations at the FQHC.

Vaccine Eligibility Codes – HL7 OBX: Observation Segment – The Vaccine Eligibility Code is a required field for all vaccines except historical immunization data (see $^{+}$RXA-9). This is required for all vaccines, regardless of if the provider maintains an active inventory in CIRTS.

ORC—Order Request Segment

Not Supported in current CIRTS 2.0 release.

The Common Order segment (ORC) 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.

Table 5-23. Common Order Segment (ORC) -- Message Element Attributes.

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
1	2	ID	[1..1]		0119	Order Control	R		use RE
2		EI	[0..1]			Placer Order Number	RE		See Guidance below.
3		EI	[1..1]			Filler Order Number	R		See Guidance below.
4		EI	[0..1]			Placer Group Number	O		
5	2	ID	[0..1]		0038	Order Status	O		
6	1	ID	[0..1]		0121	Response Flag	O		
7		TQ	[0..0]			Quantity/Timing	X		
8		EIP	[0..1]			Parent	O		
9		TS	[0..1]			Date/Time of Transaction	O		
10		XCN	[0..1]			Entered By	RE		This is the person that entered this immunization record into the system.
11		XCN	[0..1]			Verified By	O		
12		XCN	[0..1]			Ordering Provider	RE		This shall be the provider ordering the immunization. It is expected to be empty if the immunization record is

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
									transcribed from a historical record.
13		PL	[0..1]			Enterer's Location	O		
14		XTN	[0..1]			Call Back Phone Number	O		
15		TS	[0..1]			Order Effective Date/Time	O		
16		CE	[0..1]			Order Control Code Reason	O		
17		CE	[0..1]			Entering Organization	O		This is the provider organization that entered this record/order.
18		CE	[0..1]			Entering Device	O		
19		XCN	[0..1]			Action By	O		
20		CE	[0..1]		39	Advanced Beneficiary Code	O		
21		XON	[0..1]			Ordering Facility Name	O		
22		XAD	[0..1]			Ordering Facility Address	O		
23		XTN	[0..1]			Ordering Facility Phone Number	O		
24		XAD	[0..1]			Ordering Provider Address	O		
25		CWE	[0..1]			Order Status Modifier	O		
26		CWE	[0..1]		0552	Advanced Beneficiary Notice Override	O		

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
						Reason			
27		TS	[0..1]			Filler's Expected Availability Date/Time	O		
28		CWE	[0..1]		0177	Confidentiality Code	O		
29		CWE	[0..1]		0482	Order Type	O		
30		CNE	[0..1]		0483	Enterer Authorization Mode	O		
31		CWE	[0..1]			Parent Universal Service Identifier	O		

ORC Field Definitions

ORC-1 Order Control (ID) 00215

Definition: Determines the function of the order segment.

The value for VXU and RSP shall be RE.

Placer Order Number (ORC-2) and Filler Order Number (ORC-3) are unique identifiers from the system where an order was placed and where the order was filled. They were originally designed for managing lab orders. These fields have a usage status of Conditional in Version 2.5.1. The condition for each is that they must be present in either the OBR or ORC of a message. There has been confusion about usage for these fields. The Orders and Observations workgroup has addressed this confusion. In the context that ORC will be used in Immunization messaging either ORC-2 or ORC-3 must be populated. They may both be populated.

In the immunization context, it is not common to have one system placing and one filling an immunization order. In some cases neither is known. The use case that these have supported is to allow a system that sent an immunization record to another system to identify an immunization that needs to be changed using the Filler Order Number it had sent.

This Guide specifies that Placer Order Number is RE (required, but may be empty). The Filler Order Number SHALL is the unique immunization id of the sending system.

ORC-2 Placer Order Number (EI) 00216

Definition: The placer order number is used to identify uniquely this order among all orders sent by a provider organization.

ORC-2 is a system identifier assigned by the placer software application. The Placer Order Number and the Filler Order Number are essentially foreign keys exchanged between applications for uniquely identifying orders and the associated results across applications.

In the case where the ordering provider organization is not known, the sending system may leave this field empty.

ORC-3 Filler Order Number (EI) 00217

Definition: The filler order number is used to identify uniquely this order among all orders sent by a provider organization that filled the order.

This shall be the unique identifier of the sending system in a given transaction. In the case where system A sends the record to system B and system B then forwards to system C, system B will send its' own unique identifier.

Use of this foreign key will allow the initiating system to identify accurately the previously sent immunization record, facilitating update or deletion of that record.

In the case where a historic immunization is being recorded (i.e. from an immunization card), the sending system SHALL assign an identifier as if it were an immunization administered by a provider associated with the provider organization owning the sending system.

In the case where an RXA is conveying information about an immunization that was not given (e.g. refusal) the filler order number shall be 9999.

Note that the receiving system will need to store this value in addition to its own internal id in order for this to be used.

ORC-10 Entered By (XCN) 00224

Definition: 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 (XCN) 00226

Definition: 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 (CE) 00231

Definition: 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.

ORC-21 Ordering Facility Name (XON) 01311

Definition: This field contains the name of the facility placing the order. It is the organization sub-unit that ordered the immunization. (i.e., the clinic)

ORC-22 Ordering Facility Address (XAD) 01312

Definition: This field contains the address of the facility requesting the order.

ORC-23 Ordering Facility Phone Number (XTN) 01312

Definition: This field contains the phone number of the facility requesting the order.

ORC-24 Ordering Provider Address (XAD) 01314

Definition: This field contains the address of the care provider requesting the order.

ORC –28 Confidentiality Code (CWE) 00615

Definition: This field allows a system to indicate if special privacy rules apply to the RXA that is associated with this ORC. For instance, if a state had special rules about who may see records for HPV vaccinations, then this field could convey that. The recommended value to use in this case is R for restricted.

PID—Patient Identifier Segment

The PID is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

Table 5-24. Patient Identifier Segment (PID) – Message Element Attributes.

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
1	4	SI	[0..1]	[1..1]		Set ID - PID	RE	RE	
2		CX	[0..0]			Patient ID	X	X	
3		CX	[1..*]	[1..*]		Patient Identifier List	R	R	
4		CX	[0..0]			Alternate Patient ID - 00106	X	X	
5		XPN	[1..*]	[1..1]		Patient Name	R	R	**The first repetition shall contain the legal name with a name type code of L.** Multiple given names or initials are separated by spaces.
6		XPN	[0..1]	[1..1]		Mother's Maiden Name	RE	RE	
7		TS	[1..1]	[1..1]		Date/Time of Birth	R	R	**Required, must have month, day and year.**
8	1	IS	[0..1]	[1..1]	0001	Administrative Sex	RE	RE	**User-defined Table 0001 Administrative Sex** **M= male** **F = female** **U = not determined or unspecified or unknown.**
9		XPN	[0..0]			Patient Alias	X	X	This field should not be used. It was supported in earlier implementations.

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
10		CE	[0..*]	[1..1]	0005	Race	RE	RE	The first triplet is to be used for the alpha code. The second triplet of the CE data type for race (alternate identifier, alternate text, and name of alternate coding system) should be used for governmentally assigned numeric codes (####-#).
11		XAD	[0..*]	[0..*]		Patient Address	RE	RE	The first repetition should be the primary address.
12	4	IS	[0..0]		0289	County Code	X	X	County belongs in address field.
13		XTN	[0..*]	[1..1]		Phone Number - Home	RE	RE	The first instance shall be the primary phone number. Only one item is allowed per repetition.
14		XTN	[0..*]	[1..1]		Phone Number - Business	O	O	
15		CE	[0..1]	[1..1]	ISO639	Primary Language	O	**RE**	**Use ISO 639**.
16		CE	[0..1]		0002	Marital Status	O	X	
17		CE	[0..1]		0006	Religion	O	X	
18		CX	[0..1]			Patient Account Number	O	X	
19	16	ST	[0..0]			SSN Number - Patient	X	X	
20		DLN	[0..0]			Driver's License Number - Patient	X	X	
21		CX	[0..0]			Mother's Identifier	X	X	

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
22		CE	[0..1]	[1..1]	0189	Ethnic Group	RE	RE	**First triplet shall contain H,N,U if populated.**
23	60	ST	[0..1]	[1..1]		Birth Place	O	O	Use may be specified locally.
24	1	ID	[0..1]	[1..1]	0136	Multiple Birth Indicator	RE	RE	The acceptable values are Y and N. If the status is undetermined, then field shall be empty.
25	2	NM	[0..1]	[1..1]		Birth Order	CE	CE	If Multiple Birth Indicator is populated with Y, then this field should contain the number indicating the person's birth order, with 1 for the first child born and 2 for the second.
26		CE	[0..1]		0171	Citizenship	O	X	
27		CE	[0..1]		0172	Veterans Military Status	O	X	
28		CE	[0..1]		0212	Nationality	O	X	
29		TS	[0..1]	[1..1]		Patient Death Date and Time	RE	RE	
30	1	ID	[0..1]	[1..1]	0136	Patient Death Indicator	CE	CE	If patient death date is populated, then this field should be populated.
31	1	ID	[0..1]	[1..1]	0136	Identity Unknown Indicator	O	O	
32	20	IS	[0..1]		0445	Identity Reliability Code	O	X	
33		TS	[0..1]	[1..1]		Last Update Date/Time	O	O	May be locally specified.

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
34		HD	[0..1]			Last Update Facility	O	**X**	Use is locally specified.
35		CE	[0..1]		0446	Species Code	O	**X**	
36		CE	[0..1]		0447	Breed Code	O	**X**	
37	80	ST	[0..1]			Strain	O	**X**	
38		CE	[0..1]		0429	Production Class Code	O	**X**	
39		CWE	[0..1]		0171	Tribal Citizenship	O	**X**	

PID Field Definitions

PID-1 Set ID – PID (SI) 00104

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

PID-3 Patient Identifier List (CX) 00106

Definition: This field contains the list of identifiers (one or more) used by the healthcare facility to uniquely identify a patient (e.g., medical record number, billing number, birth registry, national unique individual identifier, etc.).

PID-5 Patient Name (XPN) 00108

Definition: This field contains the names of the patient. The primary or legal name of the patient is reported first. Therefore, the name type code in this field should be “L - Legal”. Refer to *HL7 Table 0200 - Name Type* for valid values.

PID-6 Mother's Maiden Name (XPN) 00109

Definition: This field contains the family name under which the mother was born (i.e., before marriage). It is used to distinguish between patients with the same last name.

PID-7 Date/Time of Birth (TS) 00110

Definition: This field contains the patient’s date and time of birth.

PID-8 Administrative Sex (IS) 00111

Definition: This field contains the patient's sex. Refer to *User-defined Table 0001 - Administrative Sex* for suggested values.

PID-9 Patient Alias (XPN) 00112

Definition: Not anticipated for use in immunization messages.

This field was used in the 2.3.1 Implementation Guide. Alias names should be placed in the patient name field.

PID-10 Race (CE) 00113

Definition: This field refers to the patient's race. Refer to *Table 5-25. User-defined Table 0005 - Race* for suggested values. The second triplet of the CE data type for race (alternate identifier, alternate text, and name of alternate coding system) is reserved for governmentally assigned codes. These values are consistent with the OMB Notice of revised categories for collection of race and ethnicity data and with HL7's Version 2.4.

Table 5- 25. User-defined Table 0005 – Race (use in PID-10, NK 1-35).

US Race Codes	Description	NIP Original Race Codes
1002-5	American Indian or Alaska Native	I
2028-9	Asian	A
2076-8	Native Hawaiian or Other Pacific Islander	A
2054-5	Black or African-American	B
2131-1	Other Race	O
2106-3	White	W
<empty field>	Unknown/undetermined	U

PID-11 Patient Address (XAD) 00114

Definition: This field contains the mailing address of the patient. Address type codes are defined by *HL7 Table 0190 - Address Type*. Multiple addresses for the same person may be sent in the following sequence: The primary mailing address must be sent first in the sequence (for backward compatibility); if the mailing address is not sent, then a repeat delimiter must be sent in the first sequence.

This field is used for any type of address that is meaningfully associated with the client/patient. For instance Birth State is the state of the address of the birthing location, address type = BDL. A person's address may be sent in this field or in the NK1 segment with a relationship code indicating Self. Local implementations should clarify how these addresses will be handled.

PID-12 County Code (IS) 00115

Definition: Not anticipated for use in immunization messages. County code belongs in the Address field (PID-11).

PID-13 Phone Number - Home (XTN) 00116

Definition: This field contains the patient's personal phone numbers. All personal phone numbers for the patient are sent in the following sequence. The first sequence is considered the primary number (for backward compatibility). If the primary number is not sent, then a repeat delimiter is sent in the first sequence. Each type of telecommunication shall be in its' own repetition. For example, if a person has a phone number and an email address, they shall each have a repetition. Refer to *HL7 Table 0201 - Telecommunication Use Code* and *HL7 Table 0202 - Telecommunication Equipment Type* for valid values.

PID-14 Phone Number - Business (XTN) 00117

Definition: This field contains the patient's business telephone numbers. All business numbers for the patient are sent in the following sequence. The first sequence is considered the patient's primary business phone number (for backward compatibility). If the primary business phone number is not sent, then a repeat delimiter must be sent in the first sequence. Refer to *HL7 Table 0201 - Telecommunication Use Code* and *HL7 Table 0202 - Telecommunication Equipment Type* for valid values.

PID-15 Primary Language (CE) 00118

Definition: This field contains the patient's primary language. HL7 recommends using ISO table 639 as the suggested values in *Table 5-26. User-defined Table 0296 - Primary Language*.

Table 5-26. User Defined Table 0296- CIRTS 2.0 currently supported the languages listed below for Reminder/Recall Notices

ISO 639-1 Code	ISO 639-2 Code	English Description of Language
eng	en	English
spa	es	Spanish

Note: All notices will be printed in English except where the primary language is Spanish.

PID-22 Ethnic Group (CE) 00125

Definition: This field further defines the patient's ancestry. Refer to *Table 5-27. User-defined Table 0189 - Ethnic Group*. The second triplet of the CE data type for ethnic group (alternate identifier, alternate text, and name of alternate coding system) is reserved for governmentally assigned codes. These values are consistent with the OMB Notice of revised categories for collection of race and ethnicity data and with HL7's Version 2.4.

Table 5-27. User-defined Table 0189 - Ethnic Group (use in PID-22, NK1-28)

HL7 Version 2.4 Ethnicity Codes	Description
H	Hispanic or Latino
N	Not-Hispanic or Latino
U	Unknown

PID-24 Multiple Birth Indicator (ID) 00127

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

Y the patient was part of a multiple birth

N the patient was a single birth

Empty multiple birth status is undetermined.

PID-25 Birth Order (NM) 00128

Definition: 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 should be populated.

PID-29 Patient Death Date and Time (TS) 00740

Definition: This field contains the date and time at which the patient death occurred.

PID-30 Patient Death Indicator (ID) 00741

Definition: This field indicates whether the patient is deceased. Refer to *HL7 Table 0136 - Yes/no Indicator* for valid values.

Y the patient is deceased

N the patient is not deceased

Empty status is undetermined

PID-33 Last Update Date/Time (TS) 01537

Definition: This field contains the last update date and time for the patient's/person's identifying and demographic data, as defined in the PID segment.

PID-34 Last Update Facility (HD) 01538

Definition: This field identifies the facility of the last update to a patient's/person's identifying and demographic data, as defined in the PID segment.

PD1—Patient Demographic Segment

The Patient Demographic Segment contains patient demographic information that may change from time to time. There are three primary uses for in Immunization Messages. These include indicating whether the person wants his/her data protected, whether the person wants to receive recall/reminder notices and the person's current status in the registry.

Table 5-28. Patient Demographic Segment (PD1) – Message Element Attributes.

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
1	2	IS	[0..1]	[1..1]	0223	Living Dependency	O	O	
2	2	IS	[0..1]		0220	Living Arrangement	O	**X**	
3	250	XON	[0..1]	[1..1]		Patient Primary Facility	O	O	
4	250	XCN	[0..1]	[1..1]		Patient Primary Care Provider Name & ID No.	O	O	
5	2	IS	[0..1]		0231	Student Indicator	O	**X**	
6	2	IS	[0..1]		0295	Handicap	O	**X**	
7	2	IS	[0..1]		0315	Living Will Code	O	**X**	
8	2	IS	[0..1]		0316	Organ Donor Code	O	**X**	
9	1	ID	[0..1]		0136	Separate Bill	O	**X**	
10	250	CX	[0..1]			Duplicate Patient	O	**X**	
11	250	CE	[0..1]		0215	Publicity Code	RE	RE	
12	1	ID	[0..1]		0136	Protection Indicator	RE	RE	
13	8	DT	[0..1]			Protection Indicator Effective Date	CE	CE	If protection indicator is valued, then this field should be valued.
14	250	XON	[0..1]			Place of Worship	O	**X**	
15	250	CE	[0..1]		0435	Advance Directive Code	O	**X**	

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
16	1	IS	[0..1]	[1..1]	0441	Immunization Registry Status	RE	RE	
17	8	DT	[0..1]	[1..1]		Immunization Registry Status Effective Date	CE	CE	If the registry status field is filled, then this should be valued.
18	8	DT	[0..1]			Publicity Code Effective Date	CE	CE	If the publicity code field is filled then this field should be valued.
19	5	IS	[0..1]		0140	Military Branch	O	**X**	
20	2	IS	[0..1]		0141	Military Rank/Grade	O	**X**	
21	3	IS	[0..1]		0142	Military Status	O	**X**	

PD1 Field Definitions

PD1-3 Patient Primary Facility (XON) 00756

Definition: This field contains the name and identifier that specifies the “primary care” healthcare facility selected by the patient. Use may be specified locally.

PD1-4 Patient Primary Care Provider Name & ID No. (XCN) 00757

Definition: Identifier for primary care provider. Use may be specified locally.

PD1-11 Publicity Code (CE) 00743

Definition: This field contains a user-defined code indicating what level of publicity is allowed (e.g., No Publicity, Family Only) for the patient. In the context of immunization messages, this refers to how a person wishes to be contacted in a reminder or recall situation. Refer to *User-defined Table 0215 - Publicity Code* for suggested values.

PD1-12 Protection Indicator (ID) 00744

Definition: This field identifies whether a person's information may be shared with others[8]. Specific protection policies are a local consideration (opt in or opt out, for instance). This field conveys the current state in the sending system.

The protection state must be actively determined by the clinician. If it is not actively determined, then the protection indicator shall be empty.

There are 3 states:

Protection State	Code
Yes, protect the data. Client (or guardian) has indicated that the information shall be protected. (Do not share data)	Y
No, it is not necessary to protect data from other clinicians. Client (or guardian) has indicated that the information does not need to be protected. (Sharing is OK)	N
No determination has been made regarding client's (or guardian's) wishes regarding information sharing	PD1-12 is empty.

Notes on use of Y for Protection Indicator in 2.5.1 Guide vs. earlier Guides.

Note that the previous Implementation Guide stated that Y meant that a person's information could be shared. This was an incorrect interpretation of the use of this field. The meaning now aligns with the definition of HL7. That is, Y means data must be protected. Existing systems that use the old meaning will need to determine how they will send the correct value in a 2.5.1 message.

Note on Null and Empty in HL7

See notes on null and empty files in Chapter 3 of the CDC IG.

[8] Local policies determine how data are protected. In general, it indicates who may view the client's data. It may be as narrow as just the provider that entered the information.

PD1-13 Protection Indicator Effective Date (DT) 01566

Definition: This field indicates the effective date for PD1-12 - Protection Indicator.

PD1-16 Immunization Registry Status (IS) 01569

Definition: This field identifies the current status of the patient in relation to the sending provider organization. Refer to *Table 5-29. User-defined Table 0441 - Immunization Registry Status* for suggested values.

This field captures whether the sending provider organization considers this an active patient. There are several classes of responsibility. The status may be different between the sending and receiving systems. For instance, a person may no longer be active with a provider organization, but may still be active in the public health jurisdiction, which has the Immunization Information System (IIS). In this case the provider organization would indicate that the person was inactive in their system using this field in a message from them. The IIS would indicate that person was active in a message from the IIS.

Table 5-29. User Defined Table 0441 Immunization Registry Status.

Value	Description
A	Active
P	Inactive-Permanently inactive (do not re-activate or add new entries to this record)
M	Inactive-Moved or gone elsewhere (transferred)
I	Inactive--Unspecified
U	Unknown
L	Inactive-Lost to follow-up (cannot contact)

PD1-17 Immunization Registry Status Effective Date (DT) 01570

Definition: This field indicates the effective date for the registry status reported in PD1-16 - Immunization Registry Status.

PD1-18 Publicity Code Effective Date (DT) 01571

Definition: This is the effective date for PD1-11 - Publicity Code.

The PV1, QAK, QPD, and RCP segments are currently not supported in CIRTS 2.0. However, they may be considered in future updates, so are included here for completeness.

PV1—Patient Visit Segment –

Not Supported in current CIRTS 2.0 release.

The PV1 segment is used to convey visit specific information. The primary use in immunization messages in previous releases was to carry information about the client's eligibility status. This is now recorded at the immunization event (dose administered) level. Use of this segment for the purpose of reporting patient eligibility for a funding program at the visit level will decline.

QAK—Query Acknowledgement Segment –

Not Supported in current CIRTS release.

Table 5-30. Query Acknowledgement Segment – Message Element Attributes.

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
1	32	ST	[1..1]			Query Tag	R		
2	2	ID	[0..1]		0208	Query Response Status	O		
3		CE	[0..1]		0471	Message Query Name	O		
4	10	NM	[0..1]			Hit Count	O		
5	10	NM	[0..1]			This payload	O		
6	10	NM	[0..1]			Hits remaining	O		

QAK Field Definitions

QAK-1 Query Tag (ST) 00696

Definition: This field contains the value sent in QPD-2 (query tag) by the initiating system, and will be used to match response messages to the originating query. The responding system is required to echo it back as the first field in the query acknowledgement segment (QAK).

QAK-2 Query Response Status (ID) 00708

Definition: This field allows the responding system to return a precise response status. It is especially useful in the case where no data is found that matches the query parameters, but where there is also no error. It is defined with *HL7 Table 0208 - Query Response Status*.

QAK-3 Message Query Name (CE) 01375

Definition: This field contains the name of the query. This shall mirror the QPD-1 (Message Query Name) found in the query message that is being responded to.

QPD – Query Parameter Definition

Not Supported in current CIRTS 2.0 release.

The QPD segment defines the parameters of the query.

Table 5-31. Query Parameter Definition (QPD) – Message Element Attributes.

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
1		CE	[1..1]		0471	Message Query Name	R		
2	32	ST				Query Tag	R		Generated by the initiating system.
3-n		varies				User Parameters (in successive fields)	R		The specification of this sequence is found in the profile specific to the use case.

QPD Field Definitions

QPD-1 Message Query Name (CE) 01375

Definition: This field contains the name of the query. These names are assigned by the function-specific chapters of this specification. It is one to one with the conformance statement for this query name, and it is in fact an identifier for that conformance statement.

QPD-2 Query Tag (ST) 00696

Definition: This field must be valued by the initiating system to identify the query, and may be used to match response messages to the originating query.

The responding system is required to echo it back as the first field in the query acknowledgement segment (QAK).

This field differs from *MSA-2-Message control ID* in that its value remains constant for each message (i.e. all continuation messages) associated with the query, whereas *MSA-2-Message control ID* may vary with each continuation message, since it is associated with each individual message, not the query as a whole.

QPD-3 User Parameters (Varies) 01435

Definition: These successive parameter fields hold the values that the Client passes to the Server.

The client data is presented as a sequence of HL7 fields. Beginning at *QPD-3-User parameters*, the remaining fields of the QPD segment carry user parameter data. Each QPD user parameter field corresponds to one parameter defined in the Conformance Statement, where each name, type, optionality, and repetition of each parameter has been specified. While these parameters are understood to be usually “and-ed” together, the user must inspect the required Conformance Statement to understand properly each. Except in the QSC variant, the parameter names do not need to be stated in the query; they are understood to be positional based on the Conformance Statement.

Each parameter field may be specified in the Conformance Statement to be of any single data type, including the complex QIP and QSC types. Parameter fields in the QPD segment appear in the same order as in the Conformance Statement.

RCP – Response Control Parameter Segment

Not Supported in current CIRTS 2.0 release.

The RCP segment is used to restrict the amount of data that should be returned in response to query. It lists the segments to be returned.

Table 5-32. Response Control Parameter – Message Element Attributes.

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comments
1	1	ID	[0..1]		0091	Query Priority	O		Constrain to empty or I. Immediate priority is expected.
2		CQ	[0..1]		0126	Quantity Limited Request	O		This field may contain a maximum number of records that may be returned. The first component contains the count and the second contains RD for records.
3		CE	[0..1]		0394	Response Modality	O		
4		TS	[0..1]			Execution and Delivery Time	O		
5	1	ID	[0..1]		0395	Modify Indicator	O		
6		SRT	[0..1]			Sort-by Field	O		
7		ID	[0..*]			Segment group inclusion	O		

RCP Field Definitions

RCP-1 Query Priority (ID) 00027

Definition: This field contains the time frame that the response is expected. Refer to *HL7 Table 0091 - Query Priority* for valid values. Table values and subsequent fields specify time frames for response. Only I (capitol I) for immediate shall be used for this field.

RCP-2 Quantity Limited Request (CQ) 00031

Definition: This field contains the maximum length of the response that can be accepted by the requesting system. Valid entries are numerical values (in the first component) given in the units specified in the second component. Default is LI (lines). The expected type is records, so the second component is constrained to RD.

Note that this field is the maximum total records to return. The Version 2.5.1 standard indicates the maximum number to return in each batch. No batching of responses is permitted in this Guide.

RCP-3 Response Modality (CE) 01440

Definition: This field specifies the timing and grouping of the response message(s). Refer to *HL7 Table 0394 – Response Modality* for valid values.

RCP-7 Segment Group Inclusion (ID) 01594

Definition: Specifies those optional segment groups which are to be included in the response. Refer to *HL7 Table 0391—Segment Group* for values for Segment Group. This is a repeating field, to accommodate inclusion of multiple segment groups. The default for this field, not present, means that all relevant groups are included.

Note: Although the codes for segment groups are taken from HL7 Table 0391, the exact segment-level definition of a segment group (e.g. PIDG) is given only in the conformance statement of the query in which this segment group appears.

RXA-- Pharmacy/Treatment Administration Segment

The RXA segment carries pharmacy administration data. It is a child of an ORC segment, which a repeating segment in the RSP and VXU messages. Because ORC are allowed to repeat an unlimited numbers of vaccinations may be included in a message. Each RXA must be preceded by an ORC.[9]

There is a change requiring an ORC conflicts with the previous implementation Guide. In that, ORC is optional and in fact, rarely included in a VXU.

Table 5-33. Pharmacy/Treatment Administration (RXA) – Message Element Attributes.

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
1	4	NM	[1..1]	[1..1]		Give Sub-ID Counter	R	R	Constrain to 0 (zero)
2	4	NM	[1..1]	[1..1]		Administration Sub-ID Counter	R	R	Constrain to 1
3		TS	[1..1]	[1..1]		Date/Time Start of Administration	R	R	
4		TS	[0..1]	[0..1]		Date/Time End of Administration	RE	RE	If populated, this should be the same as Start time (RXA-3)
5		CE	[1..1]	[1..1]	0292	Administered Code	R	R	CVX code is strongly preferred.
6	20	NM	[1..1]	[1..1]		Administered Amount	R	R	If administered amount is not recorded, use 999.
7		CE	[0..1]	[0..1]		Administered Units	CE	CE	If previous field is populated by any value except 999, it is required.
8		CE	[0..1]	[0..1]		Administered Dosage Form	O	**RE**	

[9] The HL7 Version 2.5.1 document clearly indicates that any RXA must be associated with an ORC. In the case of immunization, each immunization will have its own ORC.

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
9		CE	[0..*]	[0..1]	NIP0001	Administration Notes	RE	**R**	The primary uses of this field it to convey if this immunization record is based on a historical record or was given by the provider recording the immunization. All systems should be able to support this use. Other sections of this field are permitted, but need to be specified locally.
10		XCN	[0..1]	[0..1]		Administering Provider	RE	RE	This is the person who gave the administration or the vaccinator. It is not the ordering clinician.
11		LA2	[0..1]	[0..1]		Administered-at Location	RE	RE	
12	20	ST	[0..1]	[0..1]		Administered Per (Time Unit)	O	**X**	
13	20	NM	[0..1]	[0..1]		Administered Strength	O	**X**	
14		CE	[0..1]	[0..1]		Administered Strength Units	O	**X**	
15	20	ST	[0..*]	[0..1]		Substance Lot Number	RE	RE	
16		TS	[0..1]	[0..1]		Substance Expiration Date	CE	CE	If the lot number is populated, this field should be valued.
17		CE	[0..*]	[0..1]	0227	Substance Manufacturer Name	RE	RE	
18		CE	[0..]	[0..1]		Substance/Treatment Refusal Reason	C	**RE**	If the Completion status is RE, then this shall be populated

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Comment
19		CE	[0..1]	[0..1]		Indication	O	**X**	
20	2	ID	[0..1]	[0..1]	0322	Completion Status	RE	RE	If this field is not populated, it is assumed to be CP or complete. If the Refusal reason is populated, this field shall be set to RE.
21	2	ID	[0..1]	[0..1]	0323	Action Code - RXA	RE	**R**	Value – Description: A - add U - update D - delete
22		TS	[0..1]			System Entry Date/Time	O	**X**	
23	5	NM	[0..1]			Administered Drug Strength Volume	O	**X**	
24		CWE	[0..1]			Administered Drug Strength Volume Units	O	**X**	
25		CWE	[0..1]			Administered Barcode Identifier	O	**X**	
26	1	ID	[0..1]		080	Pharmacy Order Type	O	**X**	

RXA Field Definition

RXA-1 Give Sub-ID Counter (NM) 00342

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 (NM) 00344

Definition: This field is used to track multiple RXA under an ORC. Since each ORC has only one RXA in immunization messages, constrain to 1. This **should not be used** for indicating dose number, which belongs in an OBX.

Note that the previous Implementation Guide suggested that this be used for indicating dose number. This use is no longer supported.

RXA-3 Date/Time Start of Administration (TS) 00345

Definition: The date this vaccination occurred. In the case of refusal or deferral, this is the date that the refusal or deferral was recorded.

RXA-4 Date/Time End of Administration (If Applies) (TS) 00346

Definition: In the context of immunization, this is equivalent to the Start date/time. If populated it should be = RXA-3. If empty, the date/time of *RXA-3-Date/Time Start of Administration* is assumed.

RXA-5 Administered Code (CE) 00347

Definition: This field identifies the medical substance administered. If the substance administered is a vaccine, **CVX codes must be used in the first triplet to code this field** (see *Table 5-34. HL7 Table 0292 - Codes for Vaccines Administered* excerpted below). The second set of three components could be used to represent the same vaccine using a different coding system, such as Current Procedural Terminology (CPT).

HL7 ver. 2.5.1 Meaningful Use certified EHR system and CIRTS 2.0 requires the CVX code as code system. The first triplet must be part of the field but can include the second triplet as the alternate coding system.

RXA-5 Components:

<Identifier (ST)> ^ <Text (ST)> ^ <Name of Coding System (ID)> ^<Alternate Identifier (ST)> ^ <Alternate Text (ST)> ^ <Name of Alternate Coding System (ID)>

Example:

|08^***Hep B, adolescent or pediatric***^CVX^***90744^Hepatitis B vaccine, pediatric/adolescent dosage (3 dose schedule), for intramuscular use^CPT***|

Table 5-34. HL7-defined Table 0292 - Codes for Vaccines Administered (code=CVX) (use in RXA-5)

Note that this table has been sorted by CVX code.

Website: http://www2a.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=cvx

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
01	DTP	diphtheria, tetanus toxoids and pertussis vaccine		Inactive
02	OPV	poliovirus vaccine, live, oral		Inactive
03	MMR	measles, mumps and rubella virus vaccine		Active
04	M/R	measles and rubella virus vaccine		Inactive
05	measles	measles virus vaccine		Inactive
06	rubella	rubella virus vaccine		Active
07	Mumps	mumps virus vaccine		Active
08	Hep B, adolescent or pediatric	hepatitis B vaccine, pediatric or pediatric/adolescent dosage	This code applies to any standard pediatric formulation of Hepatitis B vaccine. It should not be used for the 2-dose hepatitis B schedule for adolescents (11-15 year olds). It requires Merck's Recombivax HB® adult formulation. Use code 43 for that vaccine.	Active
09	Td (adult), adsorbed	tetanus and diphtheria toxoids, adsorbed, for adult use	Note that this vaccine name has changed. See also Td (adult). It is not adsorbed.	Active
10	IPV	poliovirus vaccine, inactivated		Active
11	pertussis	pertussis vaccine		Inactive

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
12	diphtheria antitoxin	diphtheria antitoxin		Active
13	TIG	tetanus immune globulin		Active
14	IG, unspecified formulation	immune globulin, unspecified formulation		Inactive
15	influenza, split (incl. purified surface antigen)	influenza virus vaccine, split virus (incl. purified surface antigen)-retired CODE	This code is being retired. It will still be found in older immunization records. It included both preservative free and non-preservative free.	Inactive
16	influenza, whole	influenza virus vaccine, whole virus		Inactive
17	Hib, unspecified formulation	Haemophilus influenzae type b vaccine, conjugate unspecified formulation		Inactive
18	rabies, intramuscular injection	rabies vaccine, for intramuscular injection		Active
19	BCG	Bacillus Calmette-Guerin vaccine		Active
20	DTaP	diphtheria, tetanus toxoids and acellular pertussis vaccine		Active
21	varicella	varicella virus vaccine		Active
22	DTP-Hib	DTP-Haemophilus influenzae type b conjugate vaccine		Inactive
23	plague	plague vaccine		Active
24	anthrax	anthrax vaccine		Active
25	typhoid, oral	typhoid vaccine, live, oral		Active
26	cholera	cholera vaccine		Inactive

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
27	botulinum antitoxin	botulinum antitoxin		Active
28	DT (pediatric)	diphtheria and tetanus toxoids, adsorbed for pediatric use		Active
29	CMVIG	cytomegalovirus immune globulin, intravenous		Active
30	HBIG	hepatitis B immune globulin		Active
31	Hep A, pediatric, unspecified formulation	hepatitis A vaccine, pediatric dosage, unspecified formulation	Do NOT use this code. If formulation is unknown, use CVX 85. There is only one formulation of Hep A, peds.	Inactive
32	meningococcal MPSV4	meningococcal polysaccharide vaccine (MPSV4)		Active
33	pneumococcal polysaccharide PPV23	pneumococcal polysaccharide vaccine, 23 valent		Active
34	RIG	rabies immune globulin		Active
35	tetanus toxoid, adsorbed	tetanus toxoid, adsorbed		Active
36	VZIG	varicella zoster immune globulin		Active
37	yellow fever	yellow fever vaccine		Active
38	rubella/mumps	rubella and mumps virus vaccine		Inactive
39	Japanese encephalitis SC	Japanese Encephalitis Vaccine SC		Active
40	rabies, intradermal injection	rabies vaccine, for intradermal injection		Active
41	typhoid, parenteral	typhoid vaccine, parenteral, other than acetone-killed, dried		Active

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
42	Hep B, adolescent/high risk infant	hepatitis B vaccine, adolescent/high risk infant dosage	As of August 27, 1998, Merck ceased distribution of their adolescent/high risk infant hepatitis B vaccine dosage. Code 42 should only be used to record historical records. For current administration of hepatitis B vaccine, pediatric/adolescent dosage, use code 08.	Inactive
43	Hep B, adult	hepatitis B vaccine, adult dosage	As of September 1999, a 2-dose hepatitis B schedule for adolescents (11-15 year olds) was FDA approved for Merck's Recombivax HB® adult formulation. Use code 43 for the 2-dose. This code should be used for any use of standard adult formulation of hepatitis B vaccine.	Active
44	Hep B, dialysis	hepatitis B vaccine, dialysis patient dosage		Active
45	Hep B, unspecified formulation	hepatitis B vaccine, unspecified formulation	This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a HepB vaccination when noted on a vaccination card)	Inactive
46	Hib (PRP-D)	Haemophilus influenzae type b vaccine, PRP-D conjugate		Inactive

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
47	Hib (HbOC)	Haemophilus influenzae type b vaccine, HbOC conjugate		Inactive
48	Hib (PRP-T)	Haemophilus influenzae type b vaccine, PRP-T conjugate		Active
49	Hib (PRP-OMP)	Haemophilus influenzae type b vaccine, PRP-OMP conjugate		Active
50	DTaP-Hib	DTaP-Haemophilus influenzae type b conjugate vaccine		Active
51	Hib-Hep B	Haemophilus influenzae type b conjugate and Hepatitis B vaccine		Active
52	Hep A, adult	hepatitis A vaccine, adult dosage		Active
53	typhoid, parenteral, AKD (U.S. military)	typhoid vaccine, parenteral, acetone-killed, dried (U.S. military)		Active
54	adenovirus, type 4	adenovirus vaccine, type 4, live, oral		Inactive
55	adenovirus, type 7	adenovirus vaccine, type 7, live, oral		Inactive
56	dengue fever	dengue fever vaccine		Never Active
57	hantavirus	hantavirus vaccine		Never Active
58	Hep C	hepatitis C vaccine		Never Active
59	Hep E	hepatitis E vaccine		Never Active
60	herpes simplex 2	herpes simplex virus, type 2 vaccine		Never Active
61	HIV	human immunodeficiency virus vaccine		Never Active

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
62	HPV, quadrivalent	human papilloma virus vaccine, quadrivalent		Active
63	Junin virus	Junin virus vaccine		Never Active
64	leishmaniasis	leishmaniasis vaccine		Never Active
65	leprosy	leprosy vaccine		Never Active
66	Lyme disease	Lyme disease vaccine		Inactive
67	malaria	malaria vaccine		Never Active
68	melanoma	melanoma vaccine		Never Active
69	parainfluenza-3	parainfluenza-3 virus vaccine		Inactive
70	Q fever	Q fever vaccine		Never Active
71	RSV-IGIV	respiratory syncytial virus immune globulin, intravenous		Active
72	rheumatic fever	rheumatic fever vaccine		Never Active
73	Rift Valley fever	Rift Valley fever vaccine		Never Active
74	rotavirus, tetravalent	rotavirus, live, tetravalent vaccine		Inactive
75	vaccinia (smallpox)	vaccinia (smallpox) vaccine		Active
76	Staphylococcus bacterio lysate	Staphylococcus bacteriophage lysate		Inactive
77	tick-borne encephalitis	tick-borne encephalitis vaccine		Inactive
78	tularemia vaccine	tularemia vaccine		Inactive
79	vaccinia immune globulin	vaccinia immune globulin		Active
80	VEE, live	Venezuelan equine encephalitis, live, attenuated		Inactive

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
81	VEE, inactivated	Venezuelan equine encephalitis, inactivated		Inactive
82	adenovirus, unspecified formulation	adenovirus vaccine, unspecified formulation	This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a adenovirus vaccination when noted on a vaccination card)	Inactive
83	Hep A, ped/adol, 2 dose	hepatitis A vaccine, pediatric/adolescent dosage, 2 dose schedule		Active
84	Hep A, ped/adol, 3 dose	hepatitis A vaccine, pediatric/adolescent dosage, 3 dose schedule	This vaccine formulation is inactive and should not be used, except to record historic vaccinations with this formulation.	Inactive
85	Hep A, unspecified formulation	hepatitis A vaccine, unspecified formulation	This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a HepA vaccination when noted on a vaccination card)	Inactive
86	IG	immune globulin, intramuscular		Active
87	IGIV	immune globulin, intravenous		Active
88	influenza, unspecified formulation	influenza virus vaccine, unspecified formulation	This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a Influenza vaccination when noted on a vaccination card)	Inactive

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
89	polio, unspecified formulation	poliovirus vaccine, unspecified formulation	This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a polio vaccination when noted on a vaccination card)	Inactive
90	rabies, unspecified formulation	rabies vaccine, unspecified formulation	This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a rabies vaccination when noted on a vaccination card)	Inactive
91	typhoid, unspecified formulation	typhoid vaccine, unspecified formulation	This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a typhoid vaccination when noted on a vaccination card)	Inactive
92	VEE, unspecified formulation	Venezuelan equine encephalitis vaccine, unspecified formulation	This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a VEE vaccination when noted on a vaccination card)	Inactive
93	RSV-MAb	respiratory syncytial virus monoclonal antibody (palivizumab), intramuscular		Active
94	MMRV	measles, mumps, rubella, and varicella virus vaccine		Active
95	TST-OT tine test	tuberculin skin test; old tuberculin, multipuncture device	TB Skin test is not vaccine.	Inactive

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
96	TST-PPD intradermal	tuberculin skin test; purified protein derivative solution, intradermal	TB Skin test is not vaccine.	Inactive
97	TST-PPD tine test	tuberculin skin test; purified protein derivative, multipuncture device	TB Skin test is not vaccine.	Inactive
98	TST, unspecified formulation	tuberculin skin test; unspecified formulation	TB Skin test is not vaccine.	Inactive
99	RESERVED - do not use	RESERVED - do not use	Code 99 will not be used in this table to avoid confusion with code 999.	Inactive
100	pneumococcal conjugate PCV 7	pneumococcal conjugate vaccine, 7 valent		Active
101	typhoid, ViCPs	typhoid Vi capsular polysaccharide vaccine		Active
102	DTP-Hib-Hep B	DTP- Haemophilus influenzae type b conjugate and hepatitis b vaccine		Inactive
103	meningococcal C conjugate	meningococcal C conjugate vaccine		Inactive
104	Hep A-Hep B	hepatitis A and hepatitis B vaccine		Active
105	vaccinia (smallpox) diluted	vaccinia (smallpox) vaccine, diluted		Inactive
106	DTaP, 5 pertussis antigens	diphtheria, tetanus toxoids and acellular pertussis vaccine, 5 pertussis antigens		Active

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
107	DTaP, unspecified formulation	diphtheria, tetanus toxoids and acellular pertussis vaccine, unspecified formulation	This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a DTaP vaccination when noted on a vaccination card)	Inactive
108	meningococcal, unspecified formulation	meningococcal vaccine, unspecified formulation	This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a meningococcal vaccination when noted on a vaccination card)	Inactive
109	pneumococcal, unspecified formulation	pneumococcal vaccine, unspecified formulation	This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a pneumococcal vaccination when noted on a vaccination card)	Inactive
110	DTaP-Hep B-IPV	DTaP-hepatitis B and poliovirus vaccine		Active
111	influenza, live, intranasal	influenza virus vaccine, live, attenuated, for intranasal use	Seasonal Influenza	Active
112	tetanus toxoid, unspecified formulation	tetanus toxoid, unspecified formulation		Inactive
113	Td (adult) preservative free	tetanus and diphtheria toxoids, adsorbed, preservative free, for adult use		Active

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
114	meningococcal MCV4P	meningococcal polysaccharide (groups A, C, Y and W-135) diphtheria toxoid conjugate vaccine (MCV4P)		Active
115	Tdap	tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine, adsorbed		Active
116	rotavirus, pentavalent	rotavirus, live, pentavalent vaccine		Active
117	VZIG (IND)	varicella zoster immune globulin (Investigational New Drug)		Inactive
118	HPV, bivalent	human papilloma virus vaccine, bivalent		Active
119	rotavirus, monovalent	rotavirus, live, monovalent vaccine		Active
120	DTaP-Hib-IPV	diphtheria, tetanus toxoids and acellular pertussis vaccine, Haemophilus influenzae type b conjugate, and poliovirus vaccine, inactivated (DTaP-Hib-IPV)		Active
121	zoster	zoster vaccine, live		Active
122	rotavirus, unspecified formulation	rotavirus vaccine, unspecified formulation		Inactive
123	influenza, H5N1-1203	influenza virus vaccine, H5N1, A/Vietnam/1203/2004 (national stockpile)		Inactive
125	Novel Influenza-H1N1-09, nasal	Novel Influenza-H1N1-09, live virus for nasal administration		Inactive

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
126	Novel influenza-H1N1-09, preservative-free	Novel influenza-H1N1-09, preservative-free, injectable		Inactive
127	Novel influenza-H1N1-09	Novel influenza-H1N1-09, injectable		Inactive
128	Novel Influenza-H1N1-09, all formulations	Novel influenza-H1N1-09, all formulations	This code is used whenever the actual formulation is not determined or when aggregating all Novel H1N1 Influenza-09 immunizations for reporting to CRA. It should not be used for seasonal influenza vaccine that is not otherwise specified. (NOS)	Inactive
129	Japanese Encephalitis, unspecified formulation	Japanese Encephalitis vaccine, unspecified formulation	This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a JE vaccination when noted on a vaccination card)	Inactive
130	DTaP-IPV	Diphtheria, tetanus toxoids and acellular pertussis vaccine, and poliovirus vaccine, inactivated		Active
131	typhus, historical	Historical record of a typhus vaccination		Inactive

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
132	DTaP-IPV-HIB-HEP B, historical	Historical record of vaccine containing * diphtheria, tetanus toxoids and acellular pertussis, * poliovirus, inactivated, * Haemophilus influenzae type b conjugate, * Hepatitis B (DTaP-Hib-IPV)	This is not the same as CVX 146, Hexavalent vaccine.	Inactive
133	Pneumococcal conjugate PCV 13	pneumococcal conjugate vaccine, 13 valent		Active
134	Japanese Encephalitis IM	Japanese Encephalitis vaccine for intramuscular administration		Active
135	Influenza, high dose seasonal	influenza, high dose seasonal, preservative-free		Active
136	Meningococcal MCV4O	meningococcal oligosaccharide (groups A, C, Y and W-135) diphtheria toxoid conjugate vaccine (MCV4O)		Active
137	HPV, unspecified formulation	HPV, unspecified formulation	This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a HPV vaccination when noted on a vaccination card)	Inactive
138	Td (adult)	tetanus and diphtheria toxoids, not adsorbed, for adult use	Note that this Td is not adsorbed.	Active

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
139	Td(adult) unspecified formulation	Td(adult) unspecified formulation	This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a Td vaccination when noted on a vaccination card)	Inactive
140	Influenza, seasonal, injectable, preservative free	Influenza, seasonal, injectable, preservative free	This vaccine code is one of two which replace CVX 15, influenza, split virus.	Active
141	Influenza, seasonal, injectable	Influenza, seasonal, injectable	This is one of two codes replacing CVX 15, which is being retired.	Active
142	tetanus toxoid, not adsorbed	tetanus toxoid, not adsorbed		Active
143	Adenovirus types 4 and 7	Adenovirus, type 4 and type 7, live, oral	This vaccine is administered as 2 tablets.	Active
144	influenza, seasonal, intradermal, preservative free	seasonal influenza, intradermal, preservative free		Active
145	RSV-MAb (new)	respiratory syncytial virus monoclonal antibody (motavizumab), intramuscular		Pending
146	DTaP,IPV,Hib,HepB	Diphtheria and Tetanus Toxoids and Acellular Pertussis Adsorbed, Inactivated Poliovirus, Haemophilus b Conjugate (Meningococcal Outer Membrane Protein Complex), and Hepatitis B (Recombinant) Vaccine.	Note that this vaccine is different from CVX 132.	Pending

CVX Code	Short Description	Full Vaccine Name	Note	Vaccine Status
147	meningococcal MCV4, unspecified formulation	Meningococcal, MCV4, unspecified formulation(groups A, C, Y and W-135)	This CVX should only be used for historical doses of meningococcal conjugate vaccine where the formulation is unknown (oligosaccharide vs polysaccharide). It is not the same as CVX 108, Meningococcal, unspecified formulation.	Inactive
998	no vaccine administered	no vaccine administered	Code 998 was added for use in VXU HL7 messages where the OBX segment is nested with the RXA segment, but the message does not contain information about a vaccine administration. An example of this use is to report the vaccines due next for a patient when no vaccine administration is being reported.	Inactive
999	unknown	unknown vaccine or immune globulin	This CVX code has little utility and should rarely be used.	Inactive

RXA-6 Administered Amount (NM) 00348

Definition: This field records the amount of pharmaceutical administered. The units are expressed in the next field, RXA-7. Registries that do not collect the administered amount should record the value “999” in this field.

RXA-7 Administered units (CE) 00349

Definition: This field is conditional because it is required if the administered amount code does not imply units. This field must be in simple units that reflect the actual quantity of the substance administered. It does not include compound units. This field is not required if the previous field is populated with 999.

RXA-9 Administration Notes (CE) 00351

Definition: This field is used to indicate whether this immunization record is based on a historical record or was given by the reporting provider. It should contain the information source (see *Table 5-35. CDC-Defined Table NIP0001 - Immunization Information Source* below*)*. The first component shall contain the code, the second the free text and the third shall contain the name of the code system (NIP001). Sending systems should be able to send this information. Receiving systems should be able to accept this information.

If this immunization record is based on a historical record from another practice, populate this administration notes as “Historical record given by another facility in the past”.

If this immunization record is based on a historical record from sending practice, populate this administration notes as “Historical record given by this facility in the past”.

If this immunization record is a current immunization record since EHR implementation, populate this administration notes as “Current record given by this facility”.

Current immunizations must complete all required fields (RE, none can be empty).

Historical immunizations must complete vaccine (RXA-5 CVX code), administration date (RXA-3) and administered at location (RXA-11) in order for the record to be accepted by CIRTS 2.0 as the minimum.

Table 5-35. CDC-Defined Table NIP0001 - Immunization Information Source, use inRXA-9.

Value	Description
00	New Immunization record
01	Historical information – source unspecified
02	Historical information – from other provider
03	Historical information – from parent's written record
04	Historical information – from parent's recall
05	Historical information – from other registry
06	Historical information – from birth certificate
07	Historical information – from school record
08	Historical information – from public agency

RXA-10 Administering Provider (XCN) 00352

Definition: This field is intended to contain the name and provider ID of the person physically administering the pharmaceutical.

RXA-11 Administered-at Location (LA2) 00353

Definition: The name and address of the facility that administered the immunization. Note that the components used are:

Component 4: The facility name/identifier.

Subcomponent 1: identifier[10]

Subcomponent 2: Universal ID. This shall be an OID, if populated. Note that this should not be a local code, but rather a universal id code.

Subcomponent 3: Universal ID type (specify which universal id type)

Note that if subcomponent 1 is populated, 2 and 3 should be empty. If subcomponent 2 is populated with an OID, subcomponent 3 must be populated with ISO.

[10] This value should uniquely identify a specific facility. Systems may choose to publish a table with local values.

Component 9-15: Facility address.

Components not specifically mentioned here are not expected in immunization messages.

RXA-15 Substance Lot Number (ST) 01129

Definition: This field contains the lot number of the medical substance administered. It may remain empty if the dose is from a historical record.

> ***Note:*** The lot number is the number printed on the label attached to the container holding the substance and on the packaging, which houses the container. If two lot numbers are associated with a product that is a combination of different components, they may be included in this field. The first repetition should be the vaccine.

If RXA-9 is for a historical record, this field can be empty otherwise this field must be populated with value from value set.

RXA-16 Substance Expiration Date (TS) 01130

Definition: 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.

If RXA-9 is for a historical record, this field can be empty otherwise this field must be populated with value from value set.

RXA-17 Substance Manufacturer Name (CE) 01131

Definition: This field contains the manufacturer of the medical substance administered. See *Table 5-36. HL7-defined Table 0227 Manufacturers of Vaccines* below.

> ***Note:*** For vaccines, code system MVX should be used to code this field. Valid CVX-MVX code combinations are given in *Table 5-37*.

If RXA-9 is for a historical record, this field can be empty otherwise this field must be populated with value from value set.

Table 5-36. HL7-defined Table 0227 - Manufacturers of vaccines (code = MVX) (use in RXA-17)

Website: http://www2a.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=mvx

MVX_CODE	manufacturer_name	Notes	Status
AB	Abbott Laboratories	includes Ross Products Division, Solvay	Active
ACA	Acambis, Inc	acquired by sanofi in sept 2008	Inactive
AD	Adams Laboratories, Inc.		Active
ALP	Alpha Therapeutic Corporation		Active
AR	Armour	part of CSL	Inactive
AVB	Aventis Behring L.L.C.	part of CSL	Inactive
AVI	Aviron	acquired by Medimmune	Inactive
BA	Baxter Healthcare Corporation-inactive		Inactive
BAH	Baxter Healthcare Corporation	includes Hyland Immuno, Immuno International AG,and North American Vaccine, Inc./acquired some assets from alpha therapeutics	Active
BAY	Bayer Corporation	Bayer Biologicals now owned by Talecris	Inactive
BP	Berna Products		Inactive
BPC	Berna Products Corporation	includes Swiss Serum and Vaccine Institute Berne	Active
BTP	Biotest Pharmaceuticals Corporation	New owner of NABI HB as of December 2007, Does NOT replace NABI Biopharmaceuticals in this code list.	Active
MIP	Emergent BioDefense Operations Lansing	Bioport renamed. Formerly Michigan Biologic Products Institute	Active
CSL	CSL Behring, Inc	CSL Biotherapies renamed to CSL Behring	Active

MVX_CODE	manufacturer_name	Notes	Status
CNJ	Cangene Corporation		Active
CMP	Celltech Medeva Pharmaceuticals	Part of Novartis	Inactive
CEN	Centeon L.L.C.		Inactive
CHI	Chiron Corporation	Part of Novartis	Inactive
CON	Connaught	acquired by Merieux	Inactive
DVC	DynPort Vaccine Company, LLC		Active
EVN	Evans Medical Limited	Part of Novartis	Inactive
GEO	GeoVax Labs, Inc.		Active
SKB	GlaxoSmithKline	includes SmithKline Beecham and Glaxo Wellcome	Active
GRE	Greer Laboratories, Inc.		Active
IAG	Immuno International AG	Part of Baxter	Inactive
IUS	Immuno-U.S., Inc.		Active
INT	Intercell Biomedical		Active
KGC	Korea Green Cross Corporation		Active
LED	Lederle	became a part of WAL, now owned by Pfizer	Inactive
MBL	Massachusetts Biologic Laboratories	formerly Massachusetts Public Health Biologic Laboratories	Active
MA	Massachusetts Public Health Biologic Laboratories		Inactive
MED	MedImmune, Inc.	acquisitions of U.S. Bioscience in 1999 and Aviron in 2002, as well as the integration with Cambridge Antibody Technology and the strategic alignment with	Active

MVX_CODE	manufacturer_name	Notes	Status
		our new parent company, AstraZeneca, in 2007.	
MSD	Merck & Co., Inc.		Active
IM	Merieux	Part of sanofi	Inactive
MIL	Miles		Inactive
NAB	NABI	formerly North American Biologicals, Inc.	Active
NYB	New York Blood Center		Active
NAV	North American Vaccine, Inc.	part of Baxter	Inactive
NOV	Novartis Pharmaceutical Corporation	includes Chiron, PowderJect Pharmaceuticals, Celltech Medeva Vaccines and Evans Limited, Ciba-Geigy Limited and Sandoz Limited	Active
NVX	Novavax, Inc.		Active
OTC	Organon Teknika Corporation		Active
ORT	Ortho-clinical Diagnostics	a J & J company (formerly Ortho Diagnostic Systems, Inc.)	Active
PD	Parkedale Pharmaceuticals	no website and no news articles (formerly Parke-Davis)	Inactive
PWJ	PowderJect Pharmaceuticals	See Novartis	Inactive
PRX	Praxis Biologics	became a part of WAL, now owned by Pfizer	Inactive
JPN	The Research Foundation for Microbial Diseases of Osaka University (BIKEN)		Active
PMC	sanofi pasteur	formerly Aventis Pasteur, Pasteur Merieux Connaught; includes Connaught Laboratories and Pasteur Merieux. Acquired ACAMBIS.	Active

MVX_CODE	manufacturer_name	Notes	Status
SCL	Sclavo, Inc.		Active
SOL	Solvay Pharmaceuticals	Part of Abbott	Inactive
SI	Swiss Serum and Vaccine Inst.	Part of Berna	Inactive
TAL	Talecris Biotherapeutics	includes Bayer Biologicals	Active
USA	United States Army Medical Research and Material Command		Active
VXG	VaxGen	acquired by Emergent Biodefense Operations Lansing, Inc	Inactive
WA	Wyeth-Ayerst	became WAL, now owned by Pfizer	Inactive
WAL	Wyeth	acquired by Pfizer 10/15/2009	Active
ZLB	ZLB Behring	acquired by CSL	Inactive
OTH	Other manufacturer		Active
UNK	Unknown manufacturer		Active
AKR	Akorn, Inc		Active
PFR	Pfizer, Inc	includes Wyeth-Lederle Vaccines and Pediatrics, Wyeth Laboratories, Lederle Laboratories, and Praxis Biologics,	Active
BRR	Barr Laboratories	Subsidiary of Teva Pharmaceuticals	Active

Table 5-37. Valid CVX-MVX code combinations.

CDC Website: http://www2a.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=ndc

CVX Code	MVX_CODE	manufacturer_name	Short Description	productName
03	MSD	Merck & Co., Inc.	MMR	M-M-R II
08	SKB	GlaxoSmithKline	Hep B, adolescent or pediatric	ENGERIX B-PEDS
08	MSD	Merck & Co., Inc.	Hep B, adolescent or pediatric	RECOMBIVAX-PEDS
09	MBL	Massachusetts Biologic Laboratories	Td (adult), adsorbed	TD(GENERIC)
09	AKR	Akorn, Inc	Td (adult), adsorbed	TD(GENERIC)
10	PMC	sanofi pasteur	IPV	IPOL
20	SKB	GlaxoSmithKline	DTaP	INFANRIX
20	PMC	sanofi pasteur	DTaP	TRIPEDIA
20	PMC	sanofi pasteur	DTaP	TRIPEDIA
21	MSD	Merck & Co., Inc.	varicella	VARIVAX
21	MSD	Merck & Co., Inc.	varicella	VARIVAX
24	MIP	Emergent BioDefense Operations Lansing	anthrax	BIOTHRAX
28	PMC	sanofi pasteur	DT (pediatric)	DT(GENERIC)
33	MSD	Merck & Co., Inc.	pneumococcal polysaccharide PPV23	PNEUMOVAX 23
33	MSD	Merck & Co., Inc.	pneumococcal polysaccharide PPV23	PNEUMOVAX 23

CVX Code	MVX_CODE	manufacturer_name	Short Description	productName
37	PMC	sanofi pasteur	yellow fever	YF-VAX
43	SKB	GlaxoSmithKline	Hep B, adult	ENGERIX-B-ADULT
43	MSD	Merck & Co., Inc.	Hep B, adult	RECOMBIVAX-ADULT
44	MSD	Merck & Co., Inc.	Hep B, dialysis	RECOMBIVAX-DIALYSIS
48	PMC	sanofi pasteur	Hib (PRP-T)	ACTHIB
48	SKB	GlaxoSmithKline	Hib (PRP-T)	HIBERIX
49	MSD	Merck & Co., Inc.	Hib (PRP-OMP)	PEDVAXHIB
50	PMC	sanofi pasteur	DTaP-Hib	TRIHIBIT
51	MSD	Merck & Co., Inc.	Hib-Hep B	COMVAX
52	SKB	GlaxoSmithKline	Hep A, adult	HAVRIX-ADULT
52	MSD	Merck & Co., Inc.	Hep A, adult	VAQTA-ADULT
62	MSD	Merck & Co., Inc.	HPV, quadrivalent	GARDASIL
62	MSD	Merck & Co., Inc.	HPV, quadrivalent	GARDASIL
83	SKB	GlaxoSmithKline	Hep A, ped/adol, 2 dose	HAVRIX-PEDS
83	MSD	Merck & Co., Inc.	Hep A, ped/adol, 2 dose	VAQTA-PEDS
94	MSD	Merck & Co., Inc.	MMRV	PROQUAD
100	WAL	Wyeth	pneumococcal conjugate PCV 7	PREVNAR 7
104	SKB	GlaxoSmithKline	Hep A-Hep B	TWINRIX
106	PMC	sanofi pasteur	DTaP, 5 pertussis antigens	DAPTACEL
110	SKB	GlaxoSmithKline	DTaP-Hep B-IPV	PEDIARIX

CVX Code	MVX_CODE	manufacturer_name	Short Description	productName
111	MED	MedImmune, Inc.	influenza, live, intranasal	FLUMIST
111	MED	MedImmune, Inc.	influenza, live, intranasal	FLUMIST
111	MED	MedImmune, Inc.	influenza, live, intranasal	FLUMIST
113	PMC	sanofi pasteur	Td (adult) preservative free	DECAVAC
114	PMC	sanofi pasteur	meningococcal MCV4P	MENACTRA
115	PMC	sanofi pasteur	Tdap	ADACEL
115	SKB	GlaxoSmithKline	Tdap	BOOSTRIX
116	MSD	Merck & Co., Inc.	rotavirus, pentavalent	ROTATEQ
118	SKB	GlaxoSmithKline	HPV, bivalent	CERVARIX
119	SKB	GlaxoSmithKline	rotavirus, monovalent	ROTARIX
119	SKB	GlaxoSmithKline	rotavirus, monovalent	ROTARIX
120	PMC	sanofi pasteur	DTaP-Hib-IPV	PENTACEL
121	MSD	Merck & Co., Inc.	zoster	ZOSTAVAX
130	SKB	GlaxoSmithKline	DTaP-IPV	KINRIX
133	WAL	Wyeth	Pneumococcal conjugate PCV 13	PREVNAR 13
136	NOV	Novartis Pharmaceutical Corporation	Meningococcal MCV4O	MENVEO
140	CSL	CSL Behring, Inc	Influenza, seasonal, injectable, preservative free	Afluria, preservative free
140	NOV	Novartis Pharmaceutical Corporation	Influenza, seasonal, injectable, preservative free	AGRIFLU

CVX Code	MVX_CODE	manufacturer_name	Short Description	productName
140	SKB	GlaxoSmithKline	Influenza, seasonal, injectable, preservative free	FLUARIX
140	SKB	GlaxoSmithKline	Influenza, seasonal, injectable, preservative free	FLUARIX
140	SKB	GlaxoSmithKline	Influenza, seasonal, injectable, preservative free	FLUARIX
140	SKB	GlaxoSmithKline	Influenza, seasonal, injectable, preservative free	FLUARIX
140	NOV	Novartis Pharmaceutical Corporation	Influenza, seasonal, injectable, preservative free	FLUVIRIN-PRESERVATIVE FREE
140	PMC	sanofi pasteur	Influenza, seasonal, injectable, preservative free	FLUZONE-PRESERVATIVE FREE
140	PMC	sanofi pasteur	Influenza, seasonal, injectable, preservative free	FLUZONE-PRESERVATIVE FREE
141	CSL	CSL Behring, Inc	Influenza, seasonal, injectable	AFLURIA
141	CSL	CSL Behring, Inc	Influenza, seasonal, injectable	AFLURIA
141	CSL	CSL Behring, Inc	Influenza, seasonal, injectable	AFLURIA
141	CSL	CSL Behring, Inc	Influenza, seasonal, injectable	AFLURIA
141	CSL	CSL Behring, Inc	Influenza, seasonal, injectable	AFLURIA
141	CSL	CSL Behring, Inc	Influenza, seasonal, injectable	AFLURIA
141	SKB	GlaxoSmithKline	Influenza, seasonal, injectable	FLULAVAL
141	SKB	GlaxoSmithKline	Influenza, seasonal, injectable	FLULAVAL
141	SKB	GlaxoSmithKline	Influenza, seasonal, injectable	FLULAVAL

CVX Code	MVX_CODE	manufacturer_name	Short Description	productName
141	NOV	Novartis Pharmaceutical Corporation	Influenza, seasonal, injectable	FLUVIRIN
141	NOV	Novartis Pharmaceutical Corporation	Influenza, seasonal, injectable	FLUVIRIN
141	NOV	Novartis Pharmaceutical Corporation	Influenza, seasonal, injectable	FLUVIRIN
141	PMC	sanofi pasteur	Influenza, seasonal, injectable	FLUZONE
141	PMC	sanofi pasteur	Influenza, seasonal, injectable	FLUZONE
141	PMC	sanofi pasteur	Influenza, seasonal, injectable	FLUZONE
141	PMC	sanofi pasteur	Influenza, seasonal, injectable	FLUZONE

RXA-18 Substance/Treatment Refusal Reason (CE) 01136

Definition: This field contains the reason the patient refused the medical substance/treatment. Any entry in the field indicates that the patient did not take the substance. If this field is populated RXA-20, Completion Status shall be populated with RE.

RXA-20 Completion Status (ID) 01223

Definition: This field indicates if the dose was successfully given. It must be populated with RE if RXA-18 is populated with NA. If a dose was not completely administered or if the dose were not potent this field may be used to label the immunization.

If this RXA has a CVX of 998 (no vaccine administered) then this shall be populated with NA.

If RXA-9 is for a historical record, this field can be empty otherwise this field must be populated with value from value set.

Table 5-38. HL7-defined Table 0322 - Completion status (use in RXA-20)

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

RXA-21 Action Code – RXA (ID) 01224

Definition: This field indicates the action expected by the sending system. It can facilitate update or deletion of immunization records. This field has a usage of RE. If it is left empty then receiving systems should assume that the action code is A.

ORC-3, Placer order number, may be used to link to a specific immunization if the system receiving the request has recorded this from the initial order. Local implementers should specify its' use in a local implementation guide.

The action code U (Update system) is used to indicate to a subordinate receiver that a previously sent immunization should be changed. Most IIS have specific criteria for determining whether to add or update an immunization that does not rely directly on this field. For this reason it is common practice to indicate action as Add even if this vaccination has been previously reported. It is important not assume that Updates will be or need to be specifically indicated.

RXA-22 System Entry Date/Time (TS) 01225

Definition: This field records the date/time that this record was created in the originating system. Local implementations should specify its use.

RXR -- Pharmacy/Treatment Route Segment

Table 5-39. Pharmacy/Treatment Route (RXR) – Message Element Attributes.

SEQ	LEN	Data Type	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	Value Set	ELEMENT NAME	CDC IG Usage	*CIRTS 2.0* Usage	Constraint
1		CE	[1..1]	[1..1]	0162	Route	R	**RE**	
2		CWE	[0..1]	[1..1]	0163	Administration Site	RE	RE	
3		CE	[0..1]		0164	Administration Device	O	**X**	
4		CE	[0..1]		0165	Administration Method	O	**X**	
5		CE	[0..1]			Routing Instruction	O	**X**	
6		CWE	[0..1]		0495	Administration Site Modifier	O	**X**	

RXR Field Definitions

RXR-1 Route (CE) 00309

Definition: This field is the route of administration.

Refer to *Table 5-40 User-Defined Table 0162 - Route of Administration* for valid values.

This will change, based on HITSP. They specify use of the FDA list. Systems should be prepared to accept either FDA or HL7 codes.

If this immunization record is based on a historical record from another practice, populate this route as empty.

If this immunization record is based on a historical record from sending practice, populate this route as empty if there is no value otherwise send the value from the value set.

If this immunization record is a current immunization record since EHR implementation, populate this route send the value from the value set.

Business Rule HL7
Route and Site should be consistent with the vaccine type.

Table 5-40. HL7-defined Table 0162 - Route of administration [only selected values listed] (use in RXR-1)

Value	Description	Definition
ID	Intradermal	within or introduced between the layers of the skin
IM	Intramuscular	within or into the substance of a muscle
IV	Intravenous	administered into a vein
NS	Nasal	Given by nose
PO	Oral	administered by mouth
OTH	Other/Miscellaneous	
SC	Subcutaneous	Under the skin or between skin and muscles.
TD	Transdermal	describes something, especially a drug, that is introduced into the body through the skin
	Percutaneous	made, done, or effected through the skin.
~~IN~~	~~Intranasal~~	**{Do not use this older code}**

RXR-2 Administration Site (CWE) 00310

Definition: This field contains the site of the administration route.

If this immunization record is based on a historical record from another practice, populate this administration site as empty.

If this immunization record is based on a historical record from sending practice, populate this administration site as empty if there is no value otherwise send the value from the value set.

If this immunization record is a current immunization record since EHR implementation, populate this administration site send the value from the value set.

Table 5-41. User-Defined Table 0163- Administrative Site [only selected values listed] (use in RXR-2)

Value	Description
LT	Left Thigh
LA	Left Upper Arm
LD	Left Deltoid
LG	Left Gluteous Medius
LVL	Left Vastus Lateralis
LLFA	Left Lower Forearm
RA	Right Upper Arm
RT	Right Thigh
RVL	Right Vastus Lateralis
RG	Right Gluteous Medius
RD	Right Deltoid
RLFA	Right Lower Forearm

6. Messages for Transmitting Immunization Information

This chapter describes each of the messages used to accomplish the use cases described in Chapter 2. These messages are built from the segments described in Chapter 5, Segments and Message Details. The segments are built using the data types specified in Chapter 4. Readers are referred to these chapters for specifics on these components. Issues related to segments and fields that are message specific will be addressed in this chapter.

Systems may send unsolicited immunization records using a VXU. This may be a record that is new to CIRTS 2.0 or may be an update to an existing record. The following table lists the segments that are part of a VXU. See **Appendix B** for an example message that illustrates the processing of this message.

Table 6-1. VXU Segment Usage

Segment	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	CDC IG Usage	*CIRTS 2.0* Usage	Comment
MSH	[1..1]	[1..1]	R	R	Every message begins with an MSH.
[{SFT }]	[0..*]	[0..0]	O	**X**	**CIRTS 2.0 currently does not support this segment.**
PID	[1..1]	[1..1]	R	R	Every VXU has one PID segment.
PD1	[0..1]	[1..1]	RE	RE	Every VXU has one PD1 segment.
NK1	[0..*]	[0..*]	RE	RE	The PID segment in a VXU may have zero or more NK1 segments.
PV1	[0..1]	[0..1]	RE	RE	The PID segment in a VXU may have zero or one PV1 segment. Subsequent messages regarding the same patient/client may have a different PV1 segment.
PV2	[0..1]	[0..0]	O	**X**	**CIRTS 2.0 currently does not support this segment.**
GT1	[0..*]	[0..0]	O	**X**	**CIRTS 2.0 currently does not support this segment.**
Begin Insurance group	[0..*]	[0..0]	O	**X**	**CIRTS 2.0 currently does not support this grouping.**
IN1	[0..1]	[0..0]	O	**X**	**CIRTS 2.0 currently does not support this segment.**
IN2	[0..1]	[0..0]	O	**X**	**CIRTS 2.0 currently does not support this segment.**
IN3	[0..1]	[0..0]	O	**X**	**CIRTS 2.0 currently does not support this segment.**
End Insurance group					

Segment	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	CDC IG Usage	*CIRTS 2.0* Usage	Comment
Begin Order group					Each VXU may have zero or more Order groups
ORC	[1..*]	[1..1]	RE	RE	The PID segment in a VXU may have zero or more ORC segments.
TQ1	[0..1]	[0..0]	O	**X**	**CIRTS 2.0 currently does not support this segment.**
TQ2	[0..1]	[0..0]	O	**X**	**CIRTS 2.0 currently does not support this segment.**
RXA	[1..1]	[1..1]	R	R	Each ORC segment in a VXU must have one RXA segment. Every RXA requires an ORC segment.
RXR	[0..1]	[0..1]	RE	RE	Every RXA segment in a VXU may have zero or one RXR segments.
OBX	[0..*]	[0..*]	RE	RE	Every RXA segment in a VXU may have zero or more OBX segments.
NTE	[0..1]	[0..1]	RE	RE	Every OBX segment in a VXU may have zero or one NTE segment.
End Order Group					

The current release of CIRTS 2.0 applies the following local business rules to VXU messages:

1) **Any vaccines with a vaccination date prior to the patient's birth date will be rejected.**
2) **Any vaccines with a vaccination date into the future will be rejected as invalid and will not be processed.**

The changes made by CIRTS 2.0 are defined below:

1) SFT segment
    a. CIRTS 2.0 currently does not support the SFT segment and therefore changed the Cardinality to "[0..0]" and the Usage to "X". If a sending system sends an SFT segment, CIRTS should simply ignore it and continue processing.
2) PD1 segment
    a. CIRTS 2.0 changed the PD1 segment to be **Required** and as a result, changed the cardinality to "[1..1]"
3) PV2, GT1, IN1, IN2, IN3, TQ1, and TQ2 segments
    a. CIRTS 2.0 changed the PV2, GT1, IN1, IN2, IN3, TQ1, and TQ2 segments from "O" (Optional) to "**X**" (Not Supported. This also changed the cardinality to "[0..0]". If a sending system sends any of these segments, CIRTS should simply ignore them and continue processing.
    b. IN1,IN2, IN3 are **Not Supported by the current CIRTS 2.0 release**.

4) Local Business rules
    a. CIRTS has some local business rules which are technically outside of HL7 but add value for the sending system to better understand how to exchange data.

Table 6-2 lists the currently supported messages in CIRTS 2.0.

Table 6-2. Supported Messages in CIRTS 2.0.

Message	Purpose	Related Messages	Associated Profiles	*CIRTS 2.0* Supported
VXU	Send Immunization History	ACK		**Yes**
QBP	Request Immunization History and Request Person Id	RSP	Z34^CDC	No ***not in current CIRTS***
RSP	Respond to Request for Immunization Record and Respond to Request for Person Id	QBP	Z31^CDC Z32^CDC	No ***not in current CIRTS***
ACK	Send Message Acknowledgement	VXU, ADT, QBP		**Yes for VXU only**
ADT	Send Person Demographic Data	ACK		No

Acknowledging a Message--ACK

The ACK returns an acknowledgement to the sending system. This may indicate errors in processing.

Table 6-3. Message Acknowledgement Segment (ACK)

Segment	CDC IG Cardinality	*CIRTS* 2.0 Cardinality	CDC IG Usage	*CIRTS* Usage	Comment
MSH	(1..1)	(1..1)	R	R	
[{SFT}]	(0..1)		O	**X**	Not anticipated for use in immunization messages.
MSA	(1..1)	(1..1)	R	R	
[{ERR}]	(0..*)	(0..*)	RE	RE	Include if there are errors.

Note: For the general acknowledgment (ACK) message, the value of MSH-9-2-Trigger event is equal to the value of MSH-9-2-Trigger event in the message being acknowledged. The value of MSH-9-3-Message structure for the general acknowledgment message is always ACK.

7. Query and Response Profile (QBP/RSP)

Not Supported in current CIRTS release.

Note: The query and response profile defined in the CDC IG is very detailed and in most cases can be followed as is. Based on the QBP/RSP changes made in Chapter 6 above, this profile may have to change slightly, and should obviously be noted, but it may be possible, to simply reference Chapter 7 of the CDC IG for detailed specifics. If the intention is to support the Query and Response Profile as is in the CDC IG, it only adds confusion to copy/paste and duplicate here. It is important to specify the release of the CDC IG when referring to it. Connecticut DPH will implement QBP in later releases.

Appendix A: Code Tables

Code Tables are fully listed in Appendix A of the CDC IG. This Local IG has excerpted tables as needed for the reader throughout this document.

Appendix B: Example Message

The following is an example VXU # 1-Basic message.

Storyboard: Johnny New Patient (male), born 4/14/09 has had 1 dose of Hep B on 4/15/09, according the record brought in by Mom (Sally Patient). They live at 123 Any Street, Somewhere, Wisconsin 54000. Nurse Sticker at Dalittle Clinic (DCS_DC), administers the following shots on 5/31/09:

- DTAP-Hep B-IPV (Pediarix) lot # xy3939 IM
- HIB (ActHIB) lot # 33k2a IM

They were all ordered by Dr. Mary Pediatric who belongs to Dabig Clinical System (DCS). Mom acknowledged that his data may be shared with other providers. Johnny is eligible for Medicaid. His medical record number in Dabig Clinical System is 432155. Myron Clerk entered the information into the EHRs (MYEHR).

The information was sent from Dabig Clinical System to the State IIS

> Note that we will indicate the end of each segment with a <CR>. Segments may wrap around in this document. We will insert a blank line between each segment for increased readability.

```
MSH|^~\&|MYEHR|DCS|||20090531145259||VXU^V04^VXU_V04|3533469|P|2.5.1||
||AL <CR>

PID|1||432155^^^DCS^MR||Patient^Johnny^New^^^^L||20090414150308|M|||12
3 Any St^^Somewhere^WI^54000^^L<CR>

PD1||||||||||||N|20090531<CR>

NK1|1|Patient^Sally|MTH^mother^HL70063|123 Any
St^^Somewhere^WI^54000^^L|^PRN^PH^^^608^5551212|||||||||||||eng<CR>

PV1|1|R|||||||||||||||||V02^20090531<CR>

RXA|0|1|20090415132511|20090415132511|31^Hep B Peds
NOS^CVX|999|||01^historical record^NIP0001|||||||| <CR>

RXA|0|1|20090531132511|20090531132511|48^HIB PRP-T^CVX|999|||00^new
immunization
record^NIP0001|^Sticker^Nurse|^^^DCS_DC||||33k2a||PMC^sanofi^MVX<CR>

RXR|C28161^IM^NCIT^IM^IM^HL70162|<CR>

RXA|0|1|20090531132511|20090531132511|110^DTAP-Hep B-
IPV^CVX|999|||00^new immunization
record^NIP0001|^Sticker^Nurse|^^^DCS_DC||||xy3939||SKB^GSK^MVX<CR>

RXR|IM^IM^HL70162^C28161^IM^NCIT|<CR>
```