Utah Statewide Immunization Information System (USIIS)

Implementation Guide for HL7 2.3.1 Immunization Messaging

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1. Introduction

In order for different health information systems to exchange data, the structure and content of the data to be exchanged must be standardized. Three controlling documents define the standards USIIS applies to implementing HL7 data exchange. They are arranged in a hierarchy of documents, each refining and constraining the HL7 Standard.

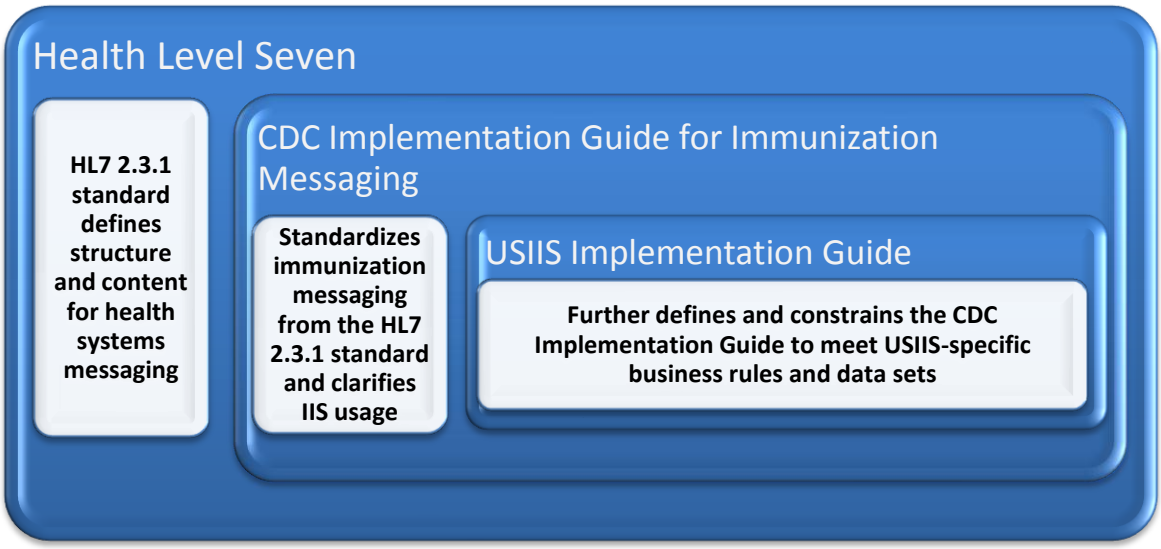

Figure 1: HL7 Guideline Document Hierarchy

The first document is the HL7 2.3.1 standard developed by Health Level Seven, a not-for-profit ANSI-accredited standards developing organization. This standard defines the structure and content of immunization messages, but leaves many specific implementation details undecided. Information on HL7 and a copy of the HL7 message standard can be obtained from the Health Level Seven website at http://www.hl7.org.

The second document is the CDC's **Implementation Guide for Immunization Data Transactions using Version 2.3.1 of the Health Level Seven (HL7) Standard Protocol, Version 2.2 June 2006**. This guide gives specific instructions regarding how to report to immunization information systems. It leaves some implementation decisions to each state immunization information system. This guide and other technical information can be obtained from the CDC IIS website at http://www.cdc.gov/vaccines/programs/iis/technical-guidance/hl7.html

The third document is this document. It describes State of Utah implementation decisions and defines what USIIS will and will not accept. It is written in accordance with the standards set in the first two documents. This Utah state implementation guide points out differences from the CDC Implementation Guide. In cases where this guide differs from the CDC Implementation Guide, this guide will provide both the CDC and Utah usage specification.

Intended Audience

This Utah Implementation Guide is intended for use by technical and implementation teams from Electronic Health Record (EHR) system vendors and other state IIS to implement an HL7 2.3.1 immunization interface with USIIS. The reader of this guide should have a HL7 foundation and be familiar with the contents of the CDC Implementation Guide.

Scope

This Utah Implementation Guide is intended to guide the implementation of an HL7 2.3.1 immunization interface between external Health Systems and USIIS. This includes:

- Sending immunization information for individuals to USIIS, to include demographic information
- Requesting immunization histories for individuals from USIIS
- USIIS responses to requests for immunization histories for individuals
- USIIS acknowledgments and error responses

Organization and Flow

This guide is designed to be consistent with the organization and flow of the CDC Implementation Guide. This chapter defines high-level use cases supported by USIIS. Subsequent chapters define how USIIS implements those use cases. Finally, this guide has an appendix example messages.

This guide is intended to be used in conjunction with the CDC Implementation Guide.

2. Messages Supported by USIIS

This section describes the messages supported by USIIS in terms of use cases.

Use Case	Message Type	Purpose
Send Immunization Information to USIIS	VXU	For an external system to send immunization information to USIIS. It may be information about a new record or an update to an existing record. It includes patient demographic information. In addition to EHR systems and other state IIS, external systems such as vital records could use this message to send immunization information to USIIS. USIIS will receive this information.
Request an Immunization History from USIIS	VXQ	For an external system to request an immunization history from USIIS.
USIIS Returns Immunization History	VXR	For USIIS to return an immunization history for a single matched individual in response to a request for an immunization history from an external system.
	VXX	For USIIS to return information about more than one possible matched individuals in response to a request for an immunization history from an external system.
USIIS Returns Acknowledgment of Receipt of a Message	ACK QCK NACK	For USIIS to acknowledge receipt of a message from an external system. This can be to acknowledge receipt of immunization information or a request for an immunization history. The acknowledgement may indicate an accurate receipt or an error.

ACK Example:

MSH|^~\&|USIIS|UT0000^^UT0000|||20120611082732||QCK|USIIS2012061100002|P|2.3.1|||NE|AL
|MSA|AA|20120605CDP00485|

QCK Example:

MSH|^~\&|USIIS|UT0000^^UT0000|||20120611082732||QCK|USIIS2012061100002|P|2.3.1|||NE|AL
|MSA|AA|20120605CDP00485|
ERR|^^^0&Message Excepted&HL70357|
QAK|20120605CDP00485|NF|

NACK Example:

MSH|^~\&||ReceivingFacID Dummy Value|USIIS|UT0000|||ACK|AMessageID Dummy Value|P|2.3.1|
MSA|AA|MessageID Dummy Value|

3. HL7 Messaging Structure

Chapter 3 of the CDC Implementation Guide contains basic descriptions of terms and definitions that are common to both the CDC and Utah guides. The majority of the terms and definitions will not be redefined in this guide.

A key attribute of HL7 fields, components, and sub-components is the Usage Code. The table below includes the acceptable Usage Codes used in this implementation guide.

Usage Code	Interpretation	Comment
R	Required	The sending application shall populate all "R" elements with a non-empty valid value. The receiving application shall process or ignore the information conveyed by required elements. The receiving application may raise an error due to the absence of a required element.

Usage Code	Interpretation	Comment
RE	Required but may be empty	The element may be missing from the message, but it should be sent by the sending application if there is relevant data. If the application knows the value for the element, then it should send it. If the application does not know the value, then that element may be omitted. The receiving application will 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 will be generated because the element is missing).
C	Conditional	This usage has an associated condition. **If the condition is satisfied:** The sending application should send the element. The receiving application will process or ignore data in the element. It may raise an error if the element is not present. **If the condition is not satisfied:** The sending application should not send the element. The receiving application may raise an error if the element is present.
CE	Conditional but may be empty	This usage has an associated condition. **If the condition is satisfied:** If the sending application knows the value for the element, then it should send it. If the sending application does not know the value for this element, then it shall be omitted. The receiving application will process or ignore the value of that element. The application shall not generate an error due to the presence or absence of the element. **If the condition is not satisfied:** The sending application will not populate the element. The receiving application may generate an application error if the element is present.
O	Optional	This element may be present if specified in the local/state implementation guide. In the absence of local guidance, the sending applications shall not send the element. The receiving application will ignore the element if it is sent, unless the local/state implementation guide specifies otherwise.

Usage Code	Interpretation	Comment
		The receiving application may not generate an error if it receives an unexpected optional element.
X	Not Supported	The element is not supported. The sending application should not send this element. The receiving application will ignore this element if present. A receiving application may raise an error if it receives an unsupported element.

4. HL7 Data Types

The CDC Implementation Guide 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 define unclear sections or further define Utah constraints.

USIIS adheres to the HL7 data types described in Chapter 4 of the CDC Implementation Guide.

5. Segments and Message Details

This chapter contains tables for each segment supported by USIIS.

USIIS usage that differs from CDC usage is described, to include further constraints on fields to accommodate USIIS business rules. Additional clarifications are provided as well.

Table 5-1 Message Segments

Segment (Name/Role)	Definition	Message Usage	CDC Usage	USIIS Usage
BHS	Batch Header Segment. BHS precedes a group of 1 or more messages, when sent in batches.	Any	Optional	Required at the beginning of any batch of messages.
BTS	Batch Trailer Segment. BTS follows and defines the end of a batch of messages that began with a BHS segment.	Any	Required if message starts with BHS.	Required for a batch of messages that began with a BHS segment.
ERR	Error segment. ERR reports information about errors in processing the message.	Any	Ability to create and process is required.	Used to return information about errors.
FHS	File Header Segment. FHS may be used to group one or more batches of messages. Its use is not anticipated for use in real-time transactions.	Any	Optional	Required to mark the beginning of a file of batches.
FTS	File Trailer Segment. FTS 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.	Required to mark the end of a file of batches.
IN1, IN2, IN3	Insurance Segments. IN1-IN3 contain insurance policy coverage information.	VXU	Optional	USIIS does not support the IN1, IN2 and IN3 segments. If sent, USIIS will ignore.

Segment (Name/Role)	Definition	Message Usage	CDC Usage	USIIS Usage
MSA	Message Acknowledgment Segment. MSA is included in the acknowledgement (ACK) messages. It contains information used to identify the receiver's acknowledgement response to an identified prior message.	ACK	Ability to create and process.	Used in ACK, QCK, NACK.
MSH	Message Segment Header. MSH defines the intent, source, destination, and some specifics of the syntax of a message.	All	Ability to create and process.	Required for all messages. Used in VXU, VXQ, VXR, VXX, ACK, QCK, NACK.
NK1	Next of Kin Segment. NK1 contains information about the patient's next of kin or other related parties.	VXU, ADT	Ability to create and process.	Used to carry information about the next of kin of a patient. Used in VXU, VXR, VXX.
NTE	Note Segment. NTE is used for sending notes and comments. It is used in relation to OBX in the VXU and VXR.	VXU, ADT	Ability to create and process.	Used to carry a note related to the parent RXA segment. Used in VXR, VXU.
OBX	Observation Result Segment. OBX has many uses. In the VXU it is associated with the RXA and carries observations about the immunization. The basic format is a question and an answer.	ADT, VXU	Ability to create and process.	Used to report six optional but highly recommended types of information associated with the RXA segment. Used in VXU, VXR.
ORC	Order Request Segment. ORC is used to transmit fields that are common to all orders.	VXU	Ability to create and process.	USIIS does not support the ORC segment. If sent, USIIS will ignore.
PD1	Patient Demographic Segment. PD1 contains demographic information that is likely to change about the patient.	VXU, ADT	Ability to create and process.	USIIS does not support the PD1 segment. If sent, USIIS will ignore.
PID	Patient Identifier Segment. PID contains patient	VXU, ADT	Ability to create	Used to carry information about the

Segment (Name/Role)	Definition	Message Usage	CDC Usage	USIIS Usage
	identifying and demographic information that, for the most part, is not likely to change.		and process.	patient. Used in VXU, VXR, VXX.
PV1	Patient Visit Segment. PV1 contains information related to a specific visit.	VXU, ADT	Ability to create and process.	Used to carry information about the financial class of the patient visit. Used in VXU, VXR.
QAK	Query Acknowledgment Segment. QAK contains information sent with responses to a query.	QCK	Ability to create and process.	Used to indicate no patient found in response to a query for an immunization history.
QRD	Query Definition Segment. QRD is used to define a query.	VXQ		Used to define a query. Used in VXQ.
QRF	Query Filter Segment. QRF is used with the QRD segment to further refine the content of a query.	VXQ		Used with the QRD segment to further refine the contents of a query. Used in VXQ, VXR, VXX.
RXA	Pharmacy/Treatment Administration Segment. RXA contains important immunization information.	VXU	Ability to create and process.	Used to carry information about patient immunizations. Used in VXU, VXR.
RXR	Pharmacy/Treatment Route Segment. RXR contains additional important immunization information.	VXU	Ability to create and process.	Used to carry additional information about patient immunizations. Used in VXU, VXR.

BHS—Batch Header Segment

The BHS segment defines the start of a batch.

Table 5-2 Batch Header Segment (BHS)

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	1	ST		Batch Field Separator	R	R	The BHS.1 field shall be **|**
2	3	ST		Batch Encoding Characters	R	R	The BHS.2 field shall be **^~\&**
3	15	ST		Batch Sending Application	O	X	USIIS does not support; if sent it will be ignored.
4	20	ST		Batch Sending Facility	O	X	USIIS does not support; if sent it will be ignored.
5	15	ST		Batch Receiving Application	O	X	USIIS does not support; if sent it will be ignored.
6	20	ST		Batch Receiving Facility	O	X	USIIS does not support; if sent it will be ignored.
7	26	TS		Batch Creation Date/Time	O	X	USIIS does not support; if sent it will be ignored.
8	40	ST		Batch Security	O	X	USIIS does not support; if sent it will be ignored.
9	20	ST		Batch Name/ID/Type	O	X	USIIS does not support; if sent it will be ignored.
10	80	ST		Batch Comment	O	X	USIIS does not support; if sent it will be ignored.
11	20	ST		Batch Control ID	O	X	USIIS does not support; if sent it will be ignored.
12	20	ST		Reference Batch Control ID	O	X	USIIS does not support; if sent it will be ignored.

BHS Field Definitions

BHS-1 Batch Field Separator (ST) 00081

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-2 Batch Encoding Characters (ST) 00082

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

The BTS segment defines the end of a batch.

Table 5-3 Batch Trailer Segment (BTS)

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	10	ST		Batch Message Count	O	R	Required to indicate the number of individual messages contained in the batch.
2	80	ST		Batch Comment	O	X	USIIS does not support; if sent it will be ignored.
3	100	NM		Batch Totals	O	X	USIIS does not support; if sent it will be ignored.

BTS Field Definitions

BTS-1 Batch Message Count (ST) 00093

This field contains the count of the individual messages contained within the batch.

FHS—File Header Segment

The FHS segment is used to head a file that contains multiple batches.

Table 5-4 File Header Segment (FHS)

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	1	ST		File Field Separator	R	R	The FHS.1 field shall be **|**
2	4	ST		File Encoding Characters	R	R	The FHS.2 field shall be **^~\&**
3	15	ST		File Sending Application	O	X	USIIS does not support; if sent it will be ignored.
4	20	ST		File Sending Facility	O	X	USIIS does not support; if sent it will be ignored.
5	15	ST		File Receiving Application	O	X	USIIS does not support; if sent it will be ignored.
6	20	ST		File Receiving Facility	O	X	USIIS does not support; if sent it will be ignored.
7	26	TS		File Creation Date/Time	O	X	USIIS does not support; if sent it will be ignored.
8	40	ST		File Security	O	X	USIIS does not support; if sent it will be ignored.
9	20	ST		File Name/ID	O	X	USIIS does not support; if sent it will be ignored.
10	80	ST		File Header Comment	O	X	USIIS does not support; if sent it will be ignored.
11	20	ST		File Control ID	O	X	USIIS does not support; if sent it will be ignored.
12	20	ST		Reference File Control ID	O	X	USIIS does not support; if sent it will be ignored.

FHS Field Definitions

FHS-1 File Field Separator (ST) 00067

Same definition as the corresponding field in the MSH segment.

FHS-2 File Encoding Characters (ST) 00068

Same definition as the corresponding field in the MSH segment.

FTS—File Trailer Segment

The FTS segment defines the end of a file.

Table 5-5 File Trailer Segment (FTS)

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	10	NM		File Batch Count	O	R	Required to indicate the number of batches contained in the file.
2	80	ST		File Trailer Comment	O	X	USIIS does not support; if sent it will be ignored.

FTS Field Definitions

FTS-1 File Batch Count (ST) 00079

The number of batches contained in the file.

MSA—Message Acknowledgement Segment

The MSA segment contains information sent while acknowledging another message.

Table 5-6 Message Acknowledgement Segment (MSA)

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	2	ID	0008	Acknowledgment Code	R	R	USIIS will value this field with an **AA** indicating that the message was received. **Note**: AA does not indicate that the message was successfully processed.
2	20	ST		Message Control ID	R	R	USIIS will echo the Message Control ID of the message sent by the sending system.
3	80	ST		Text Message	O	X	USIIS does not support this element; if sent it will be ignored.
4	15	NM		Expected Sequence Number	O	X	USIIS does not support this element; if sent it will be ignored.
5	1	ID		Delayed Acknowledgment Type	O	X	USIIS does not support this element; if sent it will be ignored.
6	100	CE		Error Condition	O	X	USIIS does not support this element; if sent it will be ignored.

MSA Field Definitions

MSA-1 Acknowledgment Code (ID) 00018

Acknowledgement code giving the receiver's response to a message.

AA (Application Accept) means the message was received.

MSA-2 Message Control ID (ST) 00010

The message control ID from MSH-10 in the message being acknowledged. This allows the sending system to associate this response with the message being responded to.

MSH—Message Header Segment

The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.

Table 5-7 Message Header Segment (MSH)

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	1	ST		Field Separator	R	R	This field shall be **|**
2	4	ST		Encoding Characters	R	R	This field shall be **^~\&**
3	180	HD	0361	Sending Application	O	R	For VXU and VXQ messages, the HL7 data exchange partner should value MSH-3.1 with the USIIS-assigned code of the sending application. For VXR, ACK, and QCK messages sent by USIIS, USIIS will value this field with **USIIS**.
4	180	HD	0362	Sending Facility	O	R	For VXU and VXQ messages, this must contain the USIIS-assigned Provider Location Code. USIIS will value this with UT0000 to indicate the USIIS.
5	180	HD	0361	Receiving Application	O	R	For VXU and VXQ, the sending application should value this with **USIIS**. For ACK, QCK, and VXR messages sent by USIIS, USIIS will value this field with what was provided in MSH-3.1 of the corresponding VXU or VXQ message.
6	180	HD	0362	Receiving Facility	O	O	For VXU and VXQ, the sending application should value this with **UT0000**. For ACK, QCK, and VXR messages sent by USIIS, USIIS will value this field with what was provided in MSH-4.1 of the corresponding VXU or VXQ message.
7	26	TS		Date/Time Of Message	O	O	Date/time the sending system created the message. This will be used for logging.
8	40	ST		Security	O	X	USIIS does not support this element; if sent it will be ignored.
9	7	CM		Message Type	R	R	USIIS supports HL7-defined Table 0076- Message Type codes for VXQ, VXU, VXX, VXR, ACK, and QCK.

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
10	20	ST		Message Control ID	R	R	The sender must value this field with a unique identifier. USIIS will echo this value back in the MSA segment used in the ACK, QCK, and VXR message. **Note**: USIIS requires a specific format.
11	3	PT		Processing ID	R	R	USIIS expects **P** and will ignore other values.
12	60	VID		Version ID	R	R	HL7 version. USIIS recommends the value **2.3.1**.
13	15	NM		Sequence Number	O	X	USIIS does not support this element; if sent it will be ignored.
14	180	ST		Continuation Pointer	O	X	USIIS does not support this element; if sent it will be ignored.
15	2	ID	0155	Accept Acknowledgement Type	O	R	USIIS expects **NE** in this field. All other values will be ignored and treated as if an **NE** value was provided.
16	2	ID	0155	Application Acknowledgment Type	O	R	USIIS expects **AL** in this field. All other values will be ignored and treated as if an **AL** value was provided.
17	2	ID	0399	Country Code	O	O	If is empty, USIIS assumes **USA**.
18	10	ID	0211	Character Set	O	O	If empty, USIIS assumes **ASCII printable**.
19	60	CE		Principal Language Of Message	O	X	USIIS does not support this element; if sent it will be ignored.
20	20	ID		Alternate Character Set Handling Scheme	O	X	USIIS does not support this element; if sent it will be ignored.

MSH Example

MSH|^~\&|EHR-SYS|PP123^ClinicABC|USIIS|UT0000|20120614110335||VXU^V04|20120614EHR1011|P|2.3.1|||NE|AL|

MSH Field Definitions

MSH-1 Field Separator (ST) 00001

Determines the field separator in effect for the rest of this message. USIIS requires the HL7 recommended field separator of "|" (ASCII 124).

MSH-2 Encoding Characters (ST) 00002

Determines the component separator, repetition separator, escape character, and sub-component separator in effect for the rest of this message. USIIS requires the HL7 recommended values of ^~\& (ASCII 94, 126, 92, and 38, respectively).

MSH-3 Sending Application (HD) 00003

USIIS-assigned code of the sending application. For ACK, QCK, and VXR messages sent by USIIS, USIIS, this element will contain **USIIS**.

MSH-4 Sending Facility (HD) 00004

Represents the "owner" of all data contained in the message, and must include the USIIS-assigned Provider/Facility ID. **Note**: USIIS should be contacted to obtain these values. USIIS requires the sending facility to be sent in MSH-4.1.

For VXR, VXX, ACK and QCK messages sent by USIIS, MSH-4 will contain the USIIS ID, the USIIS unique identifier of the patient record.

MSH-5 Receiving Application (HD) 00005

The sending application may send **USIIS**.
For ACK, QCK, and VXR messages sent by USIIS, USIIS will value this field with what was provided in MSH-3.1 of the corresponding VXU or VXQ message.

MSH-6 Receiving Facility (HD) 00006

Identifies the message receiver. The sending application may send **UT0000**.

For VXR, VXX, ACK and QCK messages sent by USIIS, this element will contain the USIIS-assigned Provider ID (USIIS facility code).

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

Date and time the message was created.

MSH-9 Message Type (MSG) 00009

For incoming data, USIIS supports the following HL7 Table 0076 codes: **VXQ, VXU**.

For outgoing data, USIIS supports the following HL7 Table 0076 codes: **VXQ, VXX, VXR, ACK, QCK**.

MSH-10 Message Control ID (ST) 00010

This is a required field. The message control ID is a string uniquely identifying the message among all those ever sent by the sending system. It is assigned by the sending system and echoed back in the ACK message sent in response.

Note: USIIS strongly recommends the following format for the content of this field: **YYYYMMDDTEXT9999**, where TEXT relates to the application or facility and 9999 is a sequentially generated number that is unique for the date.

MSH-11 Processing ID (PT) 00011

USIIS requires **P** for production processing. If this field is not sent, USIIS will assume **P**.

MSH-12 Version ID (VID) 00012

This is a required field. Use a value of **2.3.1** to indicate HL7 Version 2.3.1.

MSH-15 Accept Acknowledgment Type (ID) 00015

The sending application should send the **NE** in this data element; USIIS will ignore other values and will assume **NE** if not sent.

MSH-16 Application Acknowledgment Type (ID) 00016

The sending application should send the **AL** in this data element; USIIS will ignore other values and will assume **AL** if not sent.

MSH-17 Country Code (ID) 00017

If empty, USIIS will assume **USA**.

NK1—Next of Kin Segment

The NK1 segment contains information about the patient's next of kin.

Table 5-8-Next of Kin Segment (NK1)

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	4	SI		Set ID - NK1	R	R	NK1 sequence number. **1** for 1st occurrences, **2** for the 2nd occurrence, etc.
2	*	XPN		Name	O	R	Maximum lengths: Last name: 40 characters First name: 20 characters Middle name: 20 characters USIIS will process the first name if repeating names are sent; all others will be ignored. USIIS considers the first name sent to be the Legal name and ignores the Name Type code associated with the NK1-2 field. If a last name prefix, prefix, suffix, and/or degree is provided they will be ignored.
3	60	CE	0063	Relationship	O	R	USIIS will support Mother (**MTH**), Father (**FTH**), and/or Guardian (**GRD**) relationship types; all other relationship types will be ignored. If a name is provided but the relationship type is invalid or not provided at all, the value sent in Name (NK1-2) will be ignored.
4	106	XAD		Address	O	X	USIIS does not support this element; if sent it will be ignored.
5	40	XTN		Phone Number	O	X	USIIS does not support this element; if sent it will be ignored.
6	40	XTN		Business Phone Number	O	X	USIIS does not support this element; if sent it will be ignored.
7	60	CE		Contact Role	O	X	USIIS does not support this element; if sent it will be ignored.
8	8	DT		Start Date	O	X	USIIS does not support this element; if sent it will be ignored.
9	8	DT		End Date	O	X	USIIS does not support this element; if sent it will be ignored.
10	60	ST		Next of Kin Job Title	O	X	USIIS does not support this element; if sent it will be ignored.
11	20	JCC		Next of Kin Job Code	O	X	USIIS does not support this element; if sent it will be ignored.

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
12	20	CX		Next of Kin Employee Number	O	X	USIIS does not support this element; if sent it will be ignored.
13	90	XON		Organization Name	O	X	USIIS does not support this element; if sent it will be ignored.
14	80	CE		Marital Status	O	X	USIIS does not support this element; if sent it will be ignored.
15	1	IS		Administrative Sex	O	X	USIIS does not support this element; if sent it will be ignored.
16	26	TS		Date/Time of Birth	O	X	USIIS does not support this element; if sent it will be ignored.
17	2	IS		Living Dependency	O	X	USIIS does not support this element; if sent it will be ignored.
18	2	IS		Ambulatory Status	O	X	USIIS does not support this element; if sent it will be ignored.
19	80	CE		Citizenship	O	X	USIIS does not support this element; if sent it will be ignored.
20	60	CE		Primary Language	O	X	USIIS does not support this element; if sent it will be ignored.
21	2	IS		Living Arrangement	O	X	USIIS does not support this element; if sent it will be ignored.
22	80	CE		Publicity Code	O	X	USIIS does not support this element; if sent it will be ignored.
23	1	ID		Protection Indicator	O	X	USIIS does not support this element; if sent it will be ignored.
24	2	IS		Student Indicator	O	X	USIIS does not support this element; if sent it will be ignored.
25	80	CE		Religion	O	X	USIIS does not support this element; if sent it will be ignored.
26	48	XPN		Mother's Maiden Name	O	X	USIIS does not support this element; if sent it will be ignored.
27	80	CE		Nationality	O	X	USIIS does not support this element; if sent it will be ignored.
28	80	CE	0189	Ethnic Group	O	O	Ethnic group of the next of kin.
29	80	CE		Contact Reason	O	X	USIIS does not support this element; if sent it will be ignored.
30	48	XPN		Contact's Name	O	X	USIIS does not support this element; if sent it will be ignored.
31	40	XTN		Contact's Telephone	O	X	USIIS does not support this element; if sent it will be ignored.
32	106	XAD		Contact's Address	O	X	USIIS does not support this element; if sent it will be ignored.
33	32	CX		Next of Kin Identifiers	O	X	USIIS does not support this element; if sent it will be ignored.
34	2	IS		Job Status	O	X	USIIS does not support this element; if sent it will be ignored.

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
35	80	CE	0005	Race	O	O	Race of the next of kin.
36	2	IS		Handicap	O	X	USIIS does not support this element; if sent it will be ignored.
37	16	ST		Social Security Number	O	O	Social Security Number of the next of kin.

NK1 Example

NK1||PEACOCK^KRISAN|MTH^MOTHER^HL70063||4355125154|

NK1 Field Definitions

NK1-1 Set ID – NK1 (SI) 00190

NK1 sequence number. **1** for 1st occurrence, **2** for the 2nd occurrence, and so forth.

NK1-2 Name (XPN) 00191

Name of family next of kin. USIIS does not support repetition of this field.

Position	Field Name	USIIS Constraint
1	Family name	Required. Maximum length: 40 characters.
2	Given name	Optional. Maximum length: 20 characters.
3	Middle initial or name	Optional. Maximum length: 20 characters.
4	Suffix	Optional.
5	Prefix	USIIS does not support this element; if sent it will be ignored.
6	Degree	USIIS does not support this element; if sent it will be ignored.
7	Name type code	USIIS does not support this element; if sent it will be ignored.
8	Name representation code	USIIS does not support this element; if sent it will be ignored.

NK1-3 Relationship (CE) 00192

Relationship of the family next of kin.

Position	Field Name	USIIS Constraint
1	Identifier	Required. USIIS accepts the following values: **MTH**, **FTH** or **GRD**.
2	Test	USIIS does not support this element; if sent it will be ignored.
3	Name of coding system	USIIS does not support this element; if sent it will be ignored.
4	Alternate identifier	USIIS does not support this element; if sent it will be ignored.
5	Alternate text	USIIS does not support this element; if sent it will be ignored.
6	Name of alternate coding system	USIIS does not support this element; if sent it will be ignored.

NK1-28 Ethnic Group (CE) 00125

USIIS accepts the following valid values from Table 0189.

Value	Description
H	Hispanic or Latino
N	Not Hispanic or Latino
U	Unknown

NK1-35 Race (CE) 00113

USIIS supports the full HL7 Race set, of which Table 0005 is a subset.

USIIS recommends the following valid values for Race Codes.

Value	Description
2106-3	White
2054-5	Black or African American
1002-5	American Indian or Alaska Native
2034-7	Chinese
2039-6	Japanese

2029-7	Asian Indian
2040-4	Korean
2047-9	Vietnamese
2036-2	Filipino
2028-9	Other Asian
2079-2	Native Hawaiian
2080-0	Samoan
2082-6	Tongan
2087-5	Guamanian
2076-8	Other Pacific Islander
2131-1	Other Race

NK1-37 Social Security Number (ST)

NTE—Note Segment

The NTE segment is used for sending notes and comments. It is used to associate a note to an RXA.

Table 5-9 Note Segment (NTE)

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	4	SI		Set ID - NTE	O	X	USIIS does not support this element; if sent it will be ignored.
2	8	ID	0105	Source of Comment	O	X	USIIS does not support this element; if sent it will be ignored.
3	64k	FT		Comment	O	O	
4	60	CE	0364	Comment Type	O	X	USIIS does not support this element; if sent it will be ignored.

NTE Field Definitions

NTE-3 Comment (FT) 00098

This field contains the note comment contained in the segment.

OBX—Observation Result Segment

The observation result segment has several uses. USIIS supports observations about the object of its parent segment, the RXA segment in the VXU and VXR messages. The basic format is a question (OBX-3) and an answer (OBX-5).

Table 5-10 Observation Segment (OBX)

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	4	SI		Set ID – OBX	O	R	OBX sequence number. **1** for 1st occurrences, **2** for the 2nd occurrence, etc.
2	3	ID		Value Type	C	X	USIIS does not support this element; if sent it will be ignored.
3	80	CE		Observation Identifier	R	R	This indicates the type of observation included in OBX-5. It poses the question that is answered by OBX-5. Refer to the ***Master Observation Table- Observation Identifiers and Values*** below.
4	20	ST		Observation Sub-ID	C	X	USIIS does not support this element; if sent it will be ignored.
5	65536[1]	**		Observation Value	C	R	This indicates the observation. It is the answer to the question that is posed by OBX-3. Refer to ***Master Observation Table- Observation Identifiers and Values*** below.
6	60	CE		Units	O	X	USIIS does not support this element; if sent it will be ignored.
7	60	ST		References Range	O	X	USIIS does not support this element; if sent it will be ignored.
8	5	ID		Abnormal Flags	O	X	USIIS does not support this element; if sent it will be ignored.
9	5	NM		Probability	O	X	USIIS does not support this element; if sent it will be ignored.
10	2	ID		Nature of Abnormal Test	O	X	USIIS does not support this element; if sent it will be ignored.
11	1	ID		Observation Result Status	C	X	USIIS does not support this element; if sent it will be ignored.
12	26	TS		Effective Date of Reference Range Values	O	X	USIIS does not support this element; if sent it will be ignored.

[1] The length of the observation value field is variable, depending upon its observation identifier, OBX-3.1.
** The data type for OBX-5 can vary and is determined by OBX-3.1.

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
13	20	ST		User Defined Access Checks	O	X	USIIS does not support this element; if sent it will be ignored.
14	26	TS		Date/Time of the Observation	O	X	USIIS does not support this element; if sent it will be ignored.
15	60	CE		Producer's Reference	O	X	USIIS does not support this element; if sent it will be ignored.
16	80	XCN		Responsible Observer	O	X	USIIS does not support this element; if sent it will be ignored.
17	60	CE		Observation Method	O	X	USIIS does not support this element; if sent it will be ignored.

OBX Field Definitions

OBX-1 Set ID – OBX (SI) 00569

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-3 Observation Identifier (CE) 00571

This indicates what kind of data is being sent in the OBX segment. Consider that OBX-3 poses the question and OBX-5 answers it. For example, OBX-3 may indicate **VIS Statement Published Date** and the value in OBX-5 is the answer (the date).

USIIS accepts and returns OBX for:

- Contraindication
- Adverse Event (Reaction)
- Vaccine Information Statement Published Date
- Vaccine Information Statement Presented Date
- Vaccine-Specific Financial Class

See the Master Observation Table below for valid values. If data is sent for other uses, USIIS will ignore.

OBX-5 Observation Value (varies) 00573

This is the answer to the question posed in OBX-3.

USIIS accepts and returns OBX for: Contraindications, Adverse Events (Reactions), Vaccine Information Published Date, Vaccine Information Statement Presented Date and Vaccine-Specific Financial Class**.** See the following Master Observation Table below for valid values.

Master Observation Table- Observation Identifiers and Values

USIIS supports the following OBX uses. If data is sent for other uses, USIIS will ignore.

Observation Identifier			***Observation Value***
OBX-3 "Question"	***Description***	***OBX-3.1***	***OBX-5 "Answer" OBX-5.1***
VIS published date	Vaccine Information Statement published date	29768-9	(DT) date
VIS presented date	Vaccine Information Statement presented date	29769-7	(DT) date
Contraindication	Contraindications, Precautions, Immunities	30945-0	(CE) HL7 codes, NIP table 004
Nonspecific Contraindication	Non-vaccine specific Contraindication (e.g., Pregnancy)	30945-0	(CE) HL7 codes, NIP table 004 Send CVX = 998 in RXA-5
Adverse Event	Adverse Event Outcome / Reaction	31044-1	(CE) HL7 codes, NIP table 005
Financial Class	Financial Class	64994-7	(CE) HL7 codes, table 0064

NIP table 004, Contraindications, Precautions, and Immunities

USIIS accepts the following valid values.

Code	***Description***	***Explanation***
01	Recipient condition – unspecified.	
02	Household condition – unspecified.	
03	Allergy to baker's yeast (Anaphylactic).	Contraindicates Hepatitis B.
04	Allergy to egg ingestion (Anaphylactic).	
05	Allergy to gelatin (Anaphylactic).	Extreme caution for MMR and varicella.
06	Allergy to Neomycin (Anaphylactic).	Contraindicates IPV, MMR and varicella.
07	Allergy to Streptomycin (Anaphylactic).	Contraindicates IPV.

08	Allergy to Thimerosal (Anaphylactic).	
09	Allergy to previous dose of this vaccine or to any of its unlisted vaccine components (Anaphylactic).	
10	Anaphylactic (life threatening) reaction to previous dose of this vaccine or any of its components.	Contraindicates that vaccine.
11	Collapse or shock-like state within 48 hours of previous dose of DTP/DTAP.	Precaution for DTP/DTAP.
12	Convulsions (fits, seizures) within 72 hours of previous dose of DTP/DTAP.	Precaution for DTP/DTAP.
13	Persistent, inconsolable crying lasting ≥3 hours within 48 hours of previous dose of DTP/DTAP.	Precaution for DTP/DTAP.
14	Current diarrhea, moderate to severe.	Contraindicates vaccination temporarily (until illness resolves).
15	Encephalopathy within 7 days of previous dose of DTP or DTaP.	Contraindicates DTP/DTAP permanently.
16	Current fever with moderate to severe illness.	Contraindicates vaccination temporarily (until illness resolves).
17	Fever of >= 40.5 degrees C (105 degrees F) within 48 hours of previous dose of DTP/DTAP.	Precaution for DTP/DTAP.
18	Guillain-Barre Syndrome (GBS) within 6 weeks of previous dose of DTP/DTAP.	Precaution for DTP/DTAP.
21	Current acute illness, moderate to severe (with or without fever) (e.g., diarrhea, otitis media, vomiting)	Contraindicates vaccination (until illness resolves).
22	Chronic Illness (e.g., chronic gastrointestinal disease).	Decide to vaccinate on an individual basis.
23	Recent or simultaneous administration of an antibody-containing blood product (immune globulin).	Precaution for MMR and varicella.
24	Immunity: Diphtheria.	
25	Immunity: Haemophilus Influenzae type B (HIB).	
26	Immunity: Hepatitus B.	

27	Immunity: Measles.	
28	Immunity: Mumps.	
29	Immunity: Pertussis.	
30	Immunity: Poliovirus.	
31	Immunity: Rubella.	
32	Immunity: Tetanus.	
33	Immunity: Varicella (Chicken Pox).	
36	Immunodeficiency due to cause, including HIV (hematologic and solid tumors, congenital immunodeficiency, long-term immunosuppressive therapy, including steroids.	Contraindicates MMR and varicella.
37	Underlying unstable, evolving neurologic disorders (including seizure disorders, cerebral palsy, and developmental delay)	Precaution for DTP/DTaP.
38	Otitis Media (ear infection) moderate to severe (with or without fever)	Contraindicates vaccination temporarily (until illness resolves).
39	Pregnancy (in recipient)	Contraindicates MMR and varicella.
40	Thrombocytopenia	Precaution for MMR.
41	Thrombocytopenic purpura (history)	Precaution for MMR.
42	Other Contraindication/Precaution/Immunity not listed (must add text in notes)	
43	Unknown (valid only for historical immunizations)	

NIP table 005, Adverse Event /Reaction
USIIS accepts the following valid values.

Value	Description
L	Life threatening illness
D	Patient died
P	Prolongation of hospitalization

E	Required emergency room or doctor visit
H	Required emergency room or doctor visit
J	Resulted in permanent disability
O	Other reaction

Table 0064, Financial Class

USIIS accepts the following valid values.

Code	Financial Class	VFC Qualified
H01	Self Pay	N
H03	Insured (Private)	N
V01	Not VFC eligible	N
V02	VFC Medicaid	Y
V03	VFC Uninsured	Y
V04	VFC American Indian/Alaskan Native	Y
V05	VFC Under-insured	Y
V06	CHIP	Y
V07	VFC Local-specific eligibility	Y
UT01	Primary Care Network (PCN)	N
UT02	Medicare	N
UT03	Medicaid (>= 19 years old)	N
UT04	Special projects	N

OBX Examples

Send Information about presenting vaccine information statement (VIS) to a patient

OBX|1|TS|29769-7^DATE VACCINE INFOMATION STATEMENT PRESENTED^LN||20100518000000|

Send Information about VIS published date

OBX|1|TS|29768-9^DATE VACCINE INFOMATION STATEMENT PUBLISHED^LN||20070517000000|

Report vaccine contraindication
OBX|1|CE|30945-0^VACCINATION CONTRAINDICATION/PRECAUTION^LN||26^immunity: hepatitis B^NIP004|

Send Information about Vaccine-specific Financial Class
OBX|3|CE|64994-7^Funding Source for Immunization^LN||H03|

PID—Patient Identifier Segment

The PID is used by all applications as the primary means of communicating patient identification information. This segment contains patient identifying and demographic information.

Table 5-11-Patient Identifier Segment (PID)

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	4	SI		Set ID - PID	O	O	PID sequence number. **1** for 1st occurrences, **2** for the 2nd occurrence, etc.
2	20	CX		Patient ID	O	O	Patient ID, of the type(s) specified in PID-3. At minimum, the provider's unique patient ID/medical record number must be sent.
3	20	CX		Patient Identifier List	R	R	USIIS will process the following identifier types: **MR**: provider's unique patient ID/medical record number **MA**: Medicaid number **SS**: Social Security Number Other identifier types will be ignored. **At minimum, MR type is required and must be sent.** In VXU and VXR, USIIS will send **SR**, the State Registry identifier.
4	20	CX		Alternate Patient ID	O	X	USIIS does not support this element; if sent it will be ignored.
5	*	XPN		Patient Name	R	R	USIIS supports first name, last name, middle name and suffix. * Maximum lengths: Last name: 40 characters First name: 20 characters Middle name: 20 characters
6	48	XPN		Mother's Maiden Name	O	RE	Maiden name only. Maximum length: 48 characters.
7	26	TS		Date/Time of Birth	O	R	Time component is optional.
8	1	IS	0001	Sex	O	RE	
9	48	XPN		Patient Alias	O	O	USIIS does not support this element; if sent it will be ignored.
10	80	CE	0005	Race	O	RE	USIIS supports the full HL7 table, of which HL7 Table 0005 is a subset.

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
							Repeating values will be ignored by USIIS.
11	106	XAD		Patient Address	O	RE	USIIS supports one address; repeating instances will be ignored. Accepted elements: street, other designation, city, county, state, zip code.
12	4	IS	0289	County Code	B	B	USIIS does not support this element; if sent it will be ignored.
13	40	XTN		Phone Number - Home	O	RE	
14	40	XTN		Phone Number - Business	O	X	USIIS does not support this element; if sent it will be ignored.
15	60	CE	0296	Primary Language	O	X	USIIS does not support this element; if sent it will be ignored.
16	80	CE	0002	Marital Status	O	X	USIIS does not support this element; if sent it will be ignored.
17	80	CE	0006	Religion	O	X	USIIS does not support this element; if sent it will be ignored.
18	20	CX		Patient Account Number	O	X	USIIS does not support this element; if sent it will be ignored.
19	16	ST		SSN Number - Patient	O	O	Will accept value in this element. Also accept in PID-3. Format without hyphens.
20	25	DLN		Driver's License Number - Patient	O	X	USIIS does not support this element; if sent it will be ignored.
21	20	CX		Mother's Identifier	O	X	USIIS does not support this element; if sent it will be ignored.
22	80	CE	0189	Ethnic Group	O	RE	Accepts and returns values: H, N, U. USIIS does not support repeating values, and will ignore.
23	60	ST		Birth Place	O	O	Include the State where the birth took place.
24	1	ID	0136	Multiple Birth Indicator	O	O	USIIS does not support this field; if sent it will be ignored.
25	2	NM		Birth Order	O	O	USIIS does not support this field; if sent it will be ignored.
26	80	CE	0171	Citizenship	O	X	USIIS does not support this element; if sent it will be ignored.
27	60	CE	0172	Veterans Military Status	O	X	USIIS does not support this element; if sent it will be ignored.

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
28	80	CE	0212	Nationality	O	X	USIIS does not support this element; if sent it will be ignored.
29	26	TS		Patient Death Date/Time	O	O	If sent, will be used to set Death Indicator.
30	1	ID	0136	Patient Death Indicator	O	O	USIIS will accept and return values Y and N, all other values are ignored.

PID Example

PID|||548548390^^^^MR^PP123||MINNIE^SYLVA^MAY|MCDAY|20050924000000|F||2106-3|1740 BLISS AVE^^SALT LAKE CITY^UT^84108-2904|9||||||646846410|||NH|UT|

PID Field Definitions

PID-1 Set ID - PID (SI) 00104

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

PID-3 Patient Identifier List (CX) 00106

USIIS Supports this field for the purpose of submitting one or more (repeating) patient identifiers to uniquely identify the patient. See Table 0203 below for types USIIS accepts.

Important: The sending application must send a **MR** identifier type for the message to be processed by USIIS.

USIIS will not support repeating values of the same type. For example, only one MR should be sent, and should be the MR associated with the Provider/Facility ID in MSH-4. If more than one MR is sent, the first MR listed will be accepted and all others ignored.

It is important that the sending system's patient identifier (MR) be unique in the sending system. This number should not be reused for different patients.

The patient ID does not have to be unique outside of this sending system. For example, two different submitters can send patients with the same patient ID, as a random coincidence, and USIIS will manage the data appropriately.

Table 0203 – Identifier type

Value	Description	Status
MA	Medicaid number	Accepted
MC	Medicare number	Ignored
MR	Medical record number	Accepted. **Required**.
NE	National employer identifier	Ignored
NH	National health plan identifier	Ignored
NI	National unique individual identifier	Ignored
NPI	National provider identifier	Ignored
PI	Patient internal identifier	Ignored
PN	Person number	Ignored
PRN	Provider number	Ignored
PT	Patient external identifier	Ignored
RRI	Regional registry id	Ignored
SL	State License	Ignored
SI	School identifier	Ignored
SR	State registry ID	Ignored
SS	Social security number	Accepted
UPIN	Medicare/CMS's universal id numbers	Ignored
VN	Visit number	Ignored
WC	WIC identifier	Ignored

PID-5 Patient Name (XPN) 00108

This field contains the name of the patient, sent in components.

USIIS assumes that the name is legal and does not accept repeating instances.

Table 0200 – Name type

Position	Field Name	Status

1	Family name	Required
2	Given name	Required
3	Middle initial or name	Required, if known
4	Suffix	Required, if known
5	Prefix	Ignored
6	Degree	Ignored
7	Name type code	Ignored
8	Name representation code	Ignored

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

The patient's mother's maiden name. USIIS supports only the mother's maiden family name. Mother's first and middle names should be sent in a NK1 segment identified as the mother.

Position	Field	Status
1	Family name	Required if collected by EHR system.
2	Given name	Ignored
3	Middle initial or name	Ignored
4	Suffix	Ignored
5	Prefix	Ignored
6	Degree	Ignored
7	Name type code	Ignored
8	Name representation code	Ignored

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

This field contains the patient's date and time of birth.

PID-8 Administrative Sex (IS) 00111

This field contains the patient's sex. USIIS accepts and returns all HL7 Table 0001 values.

Table 0001 - Sex

Value	Description
F	Female
M	Male
O	Other
U	Unknown

PID-10 Race (CE) 00113

This field refers to the patient's race. USIIS accepts **all** HL7 Race values of which Table 0005 is a subset.

USIIS currently does not support repeating values and will ignore anything beyond the first race.

PID-11 Patient Address (XAD) 00114

This field contains the mailing address of the patient. USIIS does not support repeating values and will ignore anything beyond the first address instance.

Address components

Position	Field	Status
1	Street address	Required
2	Other designation	Required, if known
3	City	Required
4	State or province	Required
5	Zip or postal code	Required
6	Country	Optional
7	Address type	Optional
8	Other geographic designation	Ignored
9	County/parish code	Recommended. See list of Utah counties below.
10	Census tract	Ignored

11	Address representation code	Ignored

Utah counties

HL7 Code	*Utah County*
UT001	Beaver
UT003	Box Elder
UT005	Cache
UT007	Carbon
UT009	Daggett
UT011	Davis
UT013	Duchesne
UT015	Emery
UT017	Garfield
UT019	Grand
UT021	Iron
UT023	Juab
UT025	Kane
UT027	Millard
UT029	Morgan
UT031	Piute
UT033	Rich
UT035	Salt Lake
UT037	San Juan
UT039	Sanpete
UT041	Sevier
UT043	Summit

UT045	Tooele
UT047	Uintah
UT049	Utah
UT051	Wasatch
UT053	Washington
UT055	Wayne
UT057	Weber
0	Unknown
99	Out of state

State table

USIIS accepts standard state codes, with the following additional codes to indicate other countries.

State Code	Country
MX	Mexico
CD	Canada
PR	Puerto Rico
OT	Other

PID-13 Phone Number - Home (XTN) 00116

This field is used to send the home phone number.

USIIS does not support repeating values and will ignore more than one instance.

Position	Field	Status
1	Phone number	Optional
2	Use code	Ignored
3	Equipment type	Optional
4	Email	Ignored

5	Country	Ignored
6	Area	Recommended
7	Phone	Recommended
8	Extension	Optional
9	Any text	Ignored

PID-22 Ethnic Group (CE) 00125

This field indicates the ethnicity of the patient. USIIS will accept and return all Table 0189 values. USIIS does not support repeating values are not supported and will be ignored.

Table 0189- Ethnic group

USIIS accepts the following valid values.

Value	Description
H	Hispanic or Latino
N	Not Hispanic or Latino
U	Unknown

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

USIIS will use this information to set death indicator, but will not store the date.

PID-30 Patient Death Indicator (ID) 00741

This field indicates whether the patient is deceased. This field may be valued as **N** (no) if patient is not deceased or is not known to be deceased. This field should be valued **Y** (yes) if the patient is known to be deceased.

USIIS will return values Y and N.

Table 0136 – Yes/No indicator

Value	Description	Status
Y	Yes	Accepted
N	No	Accepted

“”	<null>	Ignored
U	Unknown	Ignored

PV1—Patient Visit Segment

The PV1 segment is used to convey visit specific information. The primary use in immunization messages is to carry information about the financial class (VFC eligibility) for the visit.

Data submitted in the PV1 segment, other than PV1-20 are ignored.

Table 5-12-Patient Visit (PV1)

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	4	SI		Set ID - PV1	O	O	If populated, this should be 1.
2	1	IS		Patient Class	R	X	USIIS does not support this element, if sent it will be ignored.
3	80	PL		Assigned Patient Location	O	X	USIIS does not support this element, if sent it will be ignored.
4	2	IS		Admission Type	O	X	USIIS does not support this element, if sent it will be ignored.
5	20	CX		Pre-admit Number	O	X	USIIS does not support this element, if sent it will be ignored.
6	80	PL		Prior Patient Location	O	X	USIIS does not support this element, if sent it will be ignored.
7	60	XCN		Attending Doctor	O	X	USIIS does not support this element, if sent it will be ignored.
8	60	XCN		Referring Doctor	O	X	USIIS does not support this element, if sent it will be ignored.
9	60	XCN		Consulting Doctor	O	X	USIIS does not support this element, if sent it will be ignored.
10	3	IS		Hospital Service	O	X	USIIS does not support this element, if sent it will be ignored.
11	80	PL		Temporary Location	O	X	USIIS does not support this element, if sent it will be ignored.
12	2	IS		Preadmit Test Indicator	O	X	USIIS does not support this element, if sent it will be ignored.
13	2	IS		Re-admission Indicator	O	X	USIIS does not support this element, if sent it will be ignored.
14	3	IS		Admit Source	O	X	USIIS does not support this element, if sent it will be ignored.
15	2	IS		Ambulatory Status	O	X	USIIS does not support this element, if sent it will be ignored.
16	2	IS		VIP Indicator	O	X	USIIS does not support this element, if sent it will be ignored.
17	60	XCN		Admitting Doctor	O	X	USIIS does not support this element, if sent it will be ignored.
18	2	IS		Patient Type	O	X	USIIS does not support this element, if sent it will be ignored.
19	20	CX		Visit Number	O	X	USIIS does not support this element, if sent it will be ignored.

20	50	FC	0064	Financial Class	O	RE	Accepts HL7 Table 0064 values V01-V07 and state-specific values. See table below. Repeating PV1-20 is not supported at this time and, if sent, are ignored. To send USIIS Vaccine-specific financial class, use the OBX segment.
21 - 52					O	X	USIIS does not support this element, if sent it will be ignored.

PV1 Example

PV1||||||||||||||||||||V03^20050341

PV1 Field Definitions

PV1-20 Financial Class (FC)

This field contains the financial class assigned to the patient. USIIS does not support repeated PV1-20 values.

Notes:

For immunization-specific financial class values, USIIS recommends sending them in the OBX segment.

For an external system that is not able to collect financial class for each immunization or does not support the OBX segment, USIIS will apply the financial class sent in PV1-20 to all immunizations sent with a VXU message.

This will be determined between the USIIS and EHR vendor teams during interface development.

Table 0064 – Financial Class

USIIS accepts the following valid financial class values.

Code	Financial Class	VFC Qualified
H01	Self Pay	N
H03	Insured (Private)	N
V01	Not VFC eligible	N

V02	VFC Medicaid	Y
V03	VFC Uninsured	Y
V04	VFC American Indian/Alaskan Native	Y
V05	VFC Under-insured	Y
V06	State CHIP	Y
V07	VFC Local Special Projects	Y
UT01	Primary Care Network (PCN)	Y
UT02	Medicare	Y
UT03	Medicaid (>= 19 years old)	Y
UT04	Special projects	Y

QAK—Query Acknowledgement Segment

The QAK segment is used by USIIS in response to a VXQ query to indicate that a patient match was not found in USIIS.

Table 5-13 Query Acknowledgement Segment

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	32	ST		Query Tag	C	C	
2	2	ID	0208	Query Response Status	O	R	USIIS returns **NF** if the record queried in a VXQ was not found.

QAK Field Definitions

QAK-1 Query Tag (ST) 00696

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

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.

Table 0208 – Query Response Status

Value	Description	USIIS Usage
OK	Data found, no errors (this is the default)	USIIS does not use.
NF	No data found, no errors	USIIS returns **NF** if the record queried in a VXQ was not found.
AE	Application error	USIIS does not use.
AR	Application reject	USIIS does not use.

QRD – Query Definition Segment

Table 5-15 Query Definition Segment

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	26	TS		Query Date/Time	R	R	Date the query was generated.
2	1	ID	0106	Query Format Code	R	R	Value should be **R.**
3	1	ID	0091	Query Priority	R	R	Duration in which sending system expects a response. Value should be **I**
4	10	ST		Query ID	R	R	Unique identifier for the query.
5	1	ID		Deferred Response Type	O	X	USIIS does not support; if sent it will be ignored.
6	26	TS		Deferred Response Date/Time	O	X	USIIS does not support; if sent it will be ignored.
7	10	CQ	0126	Quantity Limited Request	R	R	Maximum length of the response that can be accepted by USIIS. Value should be **RD** to indicate Records.
8	60	XCN		Who Subject Filter	R	R	Element may repeat. USIIS will process the following elements: • Last (Family) Name • First (Given) Name • Middle Initial or Name • Identifier Type: MR (sending system's unique identifier
9	60	CE		What Subject Filter	R	X	USIIS does not support; if sent it will be ignored.
10	60	CE		What Department Code	R	X	USIIS does not support; if sent it will be ignored.
11	20	CM		What Data Code Value Qualifier	O	X	USIIS does not support; if sent it will be ignored.
12	1	ID		Query Results Level	O	X	USIIS does not support; if sent it will be ignored.

QRF – Query Filter Segment

Table 5-5-Query Filter Segment

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	20	ST		Where Subject Filter	R	R	Value should be **USIIS**.
2	26	TS		When Data Start Date/Time	O	X	USIIS does not support; if sent it will be ignored.
3	26	TS		When Data End Date/Time	O	X	USIIS does not support; if sent it will be ignored.
4	60	ST		What User Qualifier	O	X	USIIS does not support; if sent it will be ignored.
5	60	ST		Other Query Subject Filter	O	R	Element may repeat. USIIS will process the following elements: • 5.1: Patient Social Security Number • 5.2: Patient Birth Date
6	12	ID	0156	Which Date/Time Qualifier	O	X	USIIS does not support; if sent it will be ignored.
7	12	ID	0157	Which Date/Time Status Qualifier	O	X	USIIS does not support; if sent it will be ignored.
8	12	ID	0158	Date/Time Selection Qualifier	O	X	USIIS does not support; if sent it will be ignored.
9	60	TQ		When Quantity/Timing Qualifier	O	X	USIIS does not support; if sent it will be ignored.

RXA-- Pharmacy/Treatment Administration Segment

The RXA segment carries immunization data. It is a repeating segment and can record unlimited numbers of vaccinations. This segment is required if there are vaccinations to report. All vaccinations for a patient may be reported in one message, or in separate messages.

Table 5-14 Pharmacy/Treatment Administration (RXA)

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
1	4	NM		Give Sub-ID Counter	R	R	Constrained to 0 (zero)
2	4	NM		Administration Sub-ID Counter	R	R	1,2,3, etc. or 999. In VXR messages USIIS will return the 999.
3	26	TS		Date/Time Start of Administration	R	R	Vaccination date
4	26	TS		Date/Time End of Administration	R	X	Incoming data will be ignored. USIIS will send the RXA-3 value (start date/time).
5	100	CE	0292	Administered Code	R	R	CVX codes and CPT codes (Current Procedural Terminology) are accepted. CVX codes are preferred. If **998**, the associated OBX segment is a non-vaccine specific contraindication (e.g., Pregnancy). USIIS will return CVX codes only.
6	20	NM		Administered Amount	R	RE	EHR systems that do not collect the administered amount should record the value of 999 in this field. For administered amount, USIIS accepts a maximum value of 9.99. USIIS expects units in ML or CC. **Note:** ML and CC are equivalent units for vaccines.
7	60	CE		Administered Units	C	C	Accepts dose unit, **ML** or **CC**. If null, will assume **ML**. USIIS will send **ML** value only.
8	60	CE		Administered Dosage Form	O	X	USIIS does not support this element; if sent it will be ignored.
9	200	CE	NIP 0001	Administration Notes	O	RE	Used to indicate if the immunization was administered by the provider, or if entered as a non-administered (“historical” i.e., administered by another provider) immunization.
10	200	XCN		Administering Provider	O	RE	Name of the person who administered the immunization.

SEQ	LEN	Data Type	Table	Element Name	CDC Usage	USIIS Usage	USIIS Constraint
							Components other than last and first names will be ignored. USIIS will send name and USIIS-assigned Provider Location ID (RXA-10.14)
11	200	CM		Administered-at Location	C	X	USIIS does not support this element, if sent it will be ignored. **Note**: The location in MSH-4 will be considered the administering location.
12	20	ST		Administered Per (Time Unit)	C	X	USIIS does not support this element, if sent it will be ignored.
13	20	NM		Administered Strength	O	X	USIIS does not support this element, if sent it will be ignored.
14	60	CE		Administered Strength Units	O	X	USIIS does not support this element, if sent it will be ignored.
15	20	ST		Substance Lot Number	O	RE	USIIS accepts and will return up to 20 characters.
16	26	TS		Substance Expiration Date	O	X	USIIS does not support this field; if sent the value will be ignored. USIIS will send null.
17	60	CE	0227	Substance Manufacturer Name	O	RE	**Note:** Codes from valid Table, maintained by the CDC, change from time to time.
18	200	CE		Substance/Treatment Refusal Reason	O	X	USIIS does not support this element. If sent immunization will be inserted as if it was administered. **WARNING:** Please **do not** send immunization if it was refused.
19	200	CE		Indication	O	X	USIIS does not support this element, if sent it will be ignored.
20	2	ID		Completion Status	O	X	USIIS does not support this element, if sent it will be ignored.
21	2	ID	0323	Action Code - RXA	O	R	USIIS accepts **A**, **D.** USIIS does not support **U**, if sent it will be treated as **A.** USIIS will return **A** only.
22	26	TS		System Entry Date/Time	O	O	USIIS does not support this element, if sent it will be ignored.

RXA Example

RXA|0|999|20051129000000|20051129000000|110^DTaP-HEP B-IPV^CVX^90723^Diphtheria, tetanus toxoids, acellular pertussis vaccine, Hepatitis B, and poliovirus vaccine, inactivated (DTaP-HepB-IPV), for intramuscular use^CPT|0.5|ML|||IHC653^ALSERD^ STACEY||||AC21A012BA||SKB^GLAXOSMITHKLINE (FORMERLY SMITHKLINE BEECHAM)|||||20051129000000|

RXA Field Definitions

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

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

USIIS expects 1,2,3…etc. or 999 in this field.

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

The date the vaccination was administered. It is important that this date be the actual date the vaccination was given and not the date that it was recorded or billed. Time element is optional.

USIIS will return date and time.

RXA-5 Administered Code (CE) 00347

This field identifies the medical substance administered. If the substance administered is a vaccine, CVX codes (see HL7 Table 0292 - Codes for vaccines administered) or CPT codes (Current Procedural Terminology) should be used. CVX code is the strongly preferred code system.

USIIS will return CVX codes in VXR messages.

Send CVX = 998 if RXA is associated with a non-vaccine specific contraindication (e.g., Pregnancy). See OBX section

> ***Note*:** Utah uses one valid custom vaccine code, CVX 943: HepB, 2 Dose (11-15 yrs, Merck only). This code may be returned in VXR messages.

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

CVX codes can be found at the CDC website: http://www.cdc.gov/vaccines/programs/iis/stds/cvx.htm

CPT codes can be found at the CDC website: http://www.cdc.gov/vaccines/programs/iis/stds/cpt.htm

RXA-6 Administered Amount (NM) 00348

This field records the amount of pharmaceutical administered.
EHR systems that do not collect the administered amount should record the value of 999 in this field.
998 is used to signify that a non-vaccine specific OBX segment is being reported, and the RXA will not load as an immunization.
For administered amount, USIIS accepts a maximum value of 9.99, with the assumption that the unit is ML or CC.

RXA-7 Administered units (CE) 00349

This field is conditional because it is recommended if the administered amount is supplied
USIIS accepts ML, CC or blank.

USIIS will return the value ML.

Position	Field	Status
1	Identifier	Optional, should be ML or CC
2	Text	Ignored
3	Name of coding system	Ignored
4	Alternate identifier	Ignored
5	Alternate text	Ignored
6	Name of alternate coding system	Ignored

RXA-9 Administration Notes (CE) 00351

This field is used to indicate whether the immunization was given by the reporting provider or if entered as “historical” given by another provider.

NIP 0001 – Immunization information source

USIIS accepts the following valid values.

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

This field is intended to contain the name of the person who physically administered the vaccine. USIIS accepts the following valid values.

Position	Field	Status
1	Id number	Ignored
2	Family name	Accepted
3	Given name	Accepted
4	Middle initial or name	Ignored
5	Suffix	Ignored
6	Prefix	Ignored
7	Degree	Ignored
8	Source table	Ignored
9	Assigning authority	Ignored
10	Name type code	Ignored
11	Identifier check digit	Ignored
12	Code identifying the check digit scheme employed	Ignored
13	Identifier type code	Ignored
14	Assigning facility ID	Ignored. **Note**: The value in MSH-4.1 is considered the facility administered the immunization.

15	Name representation code	Ignored

USIIS will return name and USIIS-assigned Provider Location ID (RXA-10.14).

RXA-15 Substance Lot Number (ST) 01129

This field contains the lot number of the medical substance administered. It will be empty if the dose is from a historical record.

USIIS accepts this value and will send up to 20 characters.

> **Note** The lot number is the number printed on the label attached to the container containing 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.

RXA-17 Substance Manufacturer Name (CE) 01131

This field contains the manufacturer of the medical substance administered. If immunization is administered this field is required. If historical record this field not expected.

USIIS accepts and returns values from HL7 Table 0227.

Position	Field
1	Manufacturer code
2	MVX

Note: these codes change from time to time.

The manufacturer codes can be found at the CDC's website: http://www.cdc.gov/vaccines/programs/iis/stds/mvx.htm

RXA-21 Action Code – RXA (ID) 01224

This field indicates the action expected by the sending system. USIIS accepts "A" (add) and "D" (delete).

USIIS does not support updating an immunization. To effectively update an immunization a delete request followed by an add request must be sent.

USIIS returns "A" (add).

RXR-- Pharmacy/Treatment Route Segment

The Pharmacy/Treatment Route segment contains the route and site of the administered immunization.

Table 5-15 Pharmacy/Treatment Route (RXR)

SEQ	LEN	Data Type	Table	ELEMENT NAME	CDC Usage	USIIS Usage	USIIS Constraint
1	60	CE	0162	Route	R	RE	
2	60	CE	0163	Administration Site	O	RE	
3	60	CE		Administration Device	O	X	USIIS does not support this segment. Ignored.
4	60	CE		Administration Method	O	X	USIIS does not support this segment. Ignored.
5	60	CE		Routing Instruction	O	X	USIIS does not support this segment. Ignored.

RXR Example

RXR|IM^INTRAMUSCULAR^HL70162|LT^LEFT THIGH^HL70163|||

RXR Field Definitions

RXR-1 Route (CE) 00309

This field is the **route** of administration from table 0162.

Table 0162 – Route of administration

USIIS accepts the following valid values.

Value	Description
ID	Intradermal
IM	Intramuscular
IN	Intranasal

IV	Intravenous
PO	Oral
OTH	Other/miscellaneous
SC	Subcutaneous
TD	Transdermal
NS	Nasal

RXR-2 Administration Site (CWE) 00310

This field contains the site of the administration route from table 0163.

Table 0163 – Administrative site

USIIS accepts the following valid values.

Value	Description
LT	Left thigh
LA	Left arm
LD	Left deltoid
LG	Left gluteous medius
LVL	Left vastus laterailis
LLFA	Left lower forearm
RA	Right 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 to USIIS

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.

Table 6-1- USIIS Supported Messages

Message	Use Case	Related Messages
VXU (V04)	Send Immunization Information to USIIS	ACK
ACK	USIIS Sends Message Acknowledgement to external system	VXU
VXQ	Query for Immunization History	QCK, VXR (V03), VXX (V02)
BHS	Send to indicate the beginning of a batch of immunization messages sent to USIIS.	BTS
FHS	Send to indicate the beginning of a file of batches of immunization messages sent to USIIS.	FTS

Send Immunization Information to USIIS – VXU

Systems may send unsolicited immunization information to USIIS using a VXU message type. This may be information that is new to USIIS or may be an update to an existing record in USIIS. The following table lists the segments that are part of a VXU message. If other segments are sent, they will be ignored.

Table 6-2--VXU Segment Usage

Segment	CDC Usage	USIIS Usage	Comment
MSH	R	R	Every message begins with an MSH.
PID	R	R	Every VXU has one or more PID segments.
NK1	RE	RE	The PID segment may have zero or more NK1 segments.
PV1	RE	RE	The PID segment may have zero or one PV1 segments. If multiple PV1 segments are sent, USIIS will ignore.
RXA	R	RE	Each VXU may have zero, one or more RXA segments.
RXR	RE	RE	The RXA segment may have zero or one RXR segments.
OBX	RE	RE	The RXA segment may have zero or more OBX segments.
NTE	RE	RE	Each RXA segment may have zero or one NTE segment.

USIIS Business Rules – VXU Segment

A RXA segment is usually expected, although USIIS will accept patient demographic information without immunization related segments.

USIIS Immunization Information Message Acknowledgment – ACK

USIIS returns an acknowledgement to the sending external system when a VXU message is received. The acknowledgment does not imply that the message did not contain errors.

Table 6-3 ACK Message Acknowledgement Segment

Segment	CDC IG Usage	USIIS Usage	Comment
MSH	R	R	
MSA	R	R	

USIIS Business Rules – ACK

USIIS returns an ACK message in response to each VXU and VXQ to indicate that a message was received. The acknowledgment does not indicate that the message was processed.

Query for an Immunization History – VXQ

Systems may send requests for immunization histories to USIIS using a VXQ message type. USIIS supports queries for real-time, synchronous interfaces only—not for batches of messages.

The following table lists the segments that are part of a VXQ message.

Table 6-4--VXQ Segment Usage

Segment	CDC Usage	USIIS Usage	Comment
MSH	R	R	Every message begins with an MSH.
QRD	R	R	Every message has one QRD segment. Patient's name should be sent in QRD-8. External system's unique Patient ID (medical record number) should be sent in QRD-8.
QRF	O	O	Each message may have zero or one QRF segments. QRF-5 should include additional patient identifiers, such as SSN, and mother's and father's names.

USIIS Business Rules – VXQ

1. For the first query to USIIS requesting an immunization history for a patient not previously submitted to USIIS by the Provider/Facility, the VXQ should include MSH and QRD segments, and the following information included in the QRD segment:

   - First name
   - Last name
   - Birth Date

2. Subsequent queries to USIIS for patients previously submitted to USIIS by the Provider/Facility, the VXQ can include in the QRD segment:

• USIIS-assigned Provider/Facility ID • Patient ID	or	• First name • Last name • Birth date

The Patient ID is the external system's unique patient identifier. Using the USIIS-assigned Provider/Facility ID and Patient ID should return a VXR from USIIS.

Using First name, Last name and Birth Date might return a VXX from USIIS, requiring additional processing.

3. A VXQ created in response to a VXX should include the USIIS ID (Utah state IIS unique identifier) in VXQ, QRD-8.

   - USIIS ID

   The USIIS ID value will be returned by USIIS in the VXX, PID-3.1 with PID-3.5 valued with MR.

USIIS Responses to Requests for an Immunization History – VXR, VXX, QCK

The information provided USIIS in a VXQ query for an immunization history can result in one of three different responses from USIIS:

1. The record was not found. USIIS returns a QCK message, indicating the record was not found.
2. A single record was found. USIIS returns the record's immunization history in a VXR message.
3. More than one possible record was found. USIIS returns select information about the multiple records in a VXX message.

USIIS Business Rules – No record found

USIIS returns a QCK in response to a VXQ only if the record queried is not found in USIIS.

Table 6-5 QCK Segment Usage

Segment	CDC Usage	USIIS Usage	Comment
MSH	R	R	
MSA	R	R	
QAK	R	R	USIIS returns **NF** if the record queried for in the VXQ is not found.

USIIS Business Rules – Single record found

USIIS returns the immunization history for the record in a VXR message.

Table 6-6--VXR Segment Usage

Segment	CDC Usage	USIIS Usage	Comment
MSH	R	R	
MSA	R	R	
QRD	O	O	

Segment	CDC Usage	USIIS Usage	Comment
QRF			
PID	R	R	
NK1	O	O	
RXA	O	O	
RXR	O	O	
OBX	O	O	
NTE	O	O	

USIIS Business Rules – More than one possible record found

USIIS returns select information about the multiple possible record matches in a VXX message. The sending system should display these records for the user to select if one of the records in USIIS is the one for which the immunization history is requested.

If the user selects one of the records returned from USIIS, the sending facility sends USIIS a follow-up VXQ, including the USIIS ID (Utah state IIS unique identifier) in QRD-8.

USIIS will then return a VXR that contains the immunization history for the specified USIIS record.

Table 6-7--VXX Segment Usage

Segment	CDC Usage	USIIS Usage	Comment
MSH	R	R	
MSA	R	R	
QRD	O	O	USIIS returns a copy of data sent in the VXQ QRD.
QRF	O	O	
PID	R	R	Every message includes more than one PID, one for each possible matching record.
NK1	O	O	

Appendix A: Code Tables

Code Tables, where different than the CDC Implementation Guide, are included in the Segments and Message Details chapter of this guide.