

Virginia

VIIS HL7 Guide, v.2.5.1, Release 1.5 Date Exchange Manual, Including Bi-Directional Data Exchange

Consistent with HL7 Version 2.5.1 Implementation Guide for Immunization Messaging, Release 1.5,
published 10/01/2014 by the Centers for Disease Control and the American Immunization Registry
Association

<https://www.cdc.gov/vaccines/programs/iis/technical-guidance/downloads/hl7guide-1-5-2014-11.pdf>

Revised 1-23-24

Table of Contents

Section I – Introduction to Data Exchange with VIIS, Connect Virginia, and the HL7 Data Standard

Section II – HL7 Messages and Message Segments

Section III – Message Segments Defined in Detail

Sample VXU and QPB Messages and Responses

Appendix A

Section I

Introduction to Data Exchange, Connect Virginia, and the HL7 Standard.

Introduction

Thank you for your interest in data exchange between your organization and the Virginia Immunization Information System (VIIS). Immunization Information Systems fill a vital role in regards to patient care and public health planning and evaluation.

The success of the Virginia Immunization Information System relies on providers to report immunization records in a prompt and timely fashion. Every health care provider's electronic medical record (EMR) will be the system of origin for immunization data. Users log into the EMR application and enter patient and immunization data into the proper fields of the EMR. Data is then sent from the EMR (in many cases almost immediately, depending upon the EMR vendor) through Virginia's local Health Information Exchange vendor, CRISP Shared Services (CSS), and on to VIIS. VIIS then sends a response back to the provider letting the provider know if the message was received and if there were errors. Additionally, providers have the ability to send a message to VIIS querying a patient's immunization history. VIIS responds to these messages as well with the results of the query. These results can be an exact match, a partial match, or no match. In the case of an exact match, a patient's immunization record from VIIS is sent to the EMR.

Connectivity: Next Steps

CRISP Shared Services, Virginia Health Information's transport vendor, ensures that all immunization data successfully reach VIIS. All information sent to VIIS and received from VIIS must go through CRISP Shared Services. CRISP Shared Services is the conduit through which information flows in both directions, provider to VIIS and VIIS to provider. Contact Virginia Health Information at phrsupport@vhi.org in order to begin the onboarding process and receive the updated implementation guide for more information. Their contact information is:

URL: www.vhi.org

Email: phrsupport@vhi.org

The Health Level Seven (HL7) Standard

All exchanges of immunization data between your organization and VIIS use the Health Level Seven (HL7) standard protocol. The reader of this document should familiarize him/herself with this standard. More information can be found here: <http://www.hl7.org> Information specific to Immunization Information Systems and HL7 can found here: <https://www.cdc.gov/vaccines/programs/iis/technical-guidance/hl7.html> The reader should familiarize him/herself with the information found on these web sites. This manual was produced in accordance with the HL7 Version 2.5.1 Implementation Guide for Immunization Messaging, Release 1.5, published on 10/1/14 by the Centers for Disease Control and the American Immunization Registry Association. This guide references the CDC/AIRA document frequently. The CDC/AIRA document can be found at: <https://www.cdc.gov/vaccines/programs/iis/technical-guidance/downloads/hl7guide-1-5-2014-11.pdf>

The ANSI HL7 standard is widely used for data exchange in the health care industry. The full standard is quite lengthy, covering a variety of situations in patient care and health care finance and no single application is likely to use all of its content. The CDC has worked with Immunization Information Systems (IIS's) to create a set of HL7 messages that permit exchange of immunization data. This document covers the subset of HL7 used for patient and immunization records exchanged between VIIS and outside systems.

Brief Introduction to HL7 – Note – This information is included in case the reader is not familiar with HL7. It is not an exhaustive HL7 guide.

- The basic unit transmitted in HL7 is the message. Each HL7 message contains multiple rows. Each row represents a segment.
- Each segment is one line of text and each segment begins with a three-letter code identifying the segment type.
- Segments are made up of fields separated by the pipe delimiter character. Additional characters and separators are:
 - <CR>=Segment terminator;
 - “|” = Field Separator;
 - ‘^’ =Component Separator;
 - ‘&’ = Sub-Component Separator;
 - ‘~’ Repetition Separator; and
 - ‘\’ = Escape Character

Here is a sample HL7 message containing four partial segments: MSH, PID, ORC, and RXA:

```
MSH|^~\&||P158|||20190404||VXU^V04^VXU_V04|1|P|2.5.1
PID|||79928^^^1^MR||SMITH^MARY^T^^^^^|JOHNSON^^^^^^^|19951212|F
ORC|RE||1
RXA|0|1|19970903|19970903|03^MMR^CVX|0.5
```

The details of how HL7 messages are put together, for VIIS purposes, will be explained later in this document. The example above shows the basic essentials of an HL7 message. The type of message above is called a VXU message, although some segments are not used in this example.

Section II

HL7 Messages and Message Segments.

HL7 Message Types Specific to VIIS

- **VXU Message** – Unsolicited Vaccination Record Update. This is the message an EMR will send to VIIS in order to report an administered or historical immunization.

The type of HL7 message used to send a patient’s demographic and immunization data to VIIS is called a VXU message. This stands for **Unsolicited Vaccination Record Update**.

- **ACK Message** - Acknowledgement

The type of message sent back from VIIS in response to a VXU message is called an ACK. This stands for **Acknowledgement**.

- **QBP Message** – Query By Parameter

The type of HL7 message used to send a query to VIIS requesting a patient’s immunization history is called a QBP message. This stands for **Query by Parameter**.

- **RSP message** - Response

The type of message sent back from VIIS in response to a query is called a RSP. This stands for **Response**.

Introduction to Message Segments

Here are the message types a second time, along with the segments used in each message. NOTE! Sometimes the same segment can be used in some or all of the message types indicated above. Square brackets mean a segment is optional. Curly brackets mean a segment can be repeated multiple times. We will dive into the format of each segment later in this document. For now, familiarize yourself with the different types of messages and the segments included in each.

Message Type VXU –Unsolicited Vaccination Record Update – Used to Send Patient & Immunization Information to VIIS

Segments:

MSH	Message Header
PID	Patient Identification
[PD1]	Patient Additional Demographic
[{NK1}]	Next of Kin / Associated Parties
{ORC}	Common Order Segment
RXA	Pharmacy / Treatment Administration
[RXR]	Pharmacy/Treatment Route (Only one RXR per RXA segment)
[{OBX}]]	Observation/Result

Every VXU message must have 1 MSH segment, 1 PID segment, and 1 ORC segment before each RXA segment. As an option, the VXU message can have 1 PD1 segment and/or 1 or more NK1 segments. There can be multiple repeats of the ORC, RXA, RXR, and OBX segments, in that order.

Message Type ACK –Acknowledgement – Sent by VIIS to the Provider in Response to a VXU Message

Segments:

MSH	Message Header
MSA	Message Acknowledgment
[{ERR}]	Error

ACK - Acknowledgment Messages (ACK) - These are generated for message rejections and for informational error messages. Four conditions that result in entire message rejection are:

1. Sequencing (i.e. a PID segment must follow an MSH segment).
2. Required segment missing or required field missing from the [1..1] must have exactly one occurrence segment (i.e. a blank MSH-9 field, MSH-9)
3. Message Type is a required field in required segment, without valid data, message cannot be processed).
4. Required field contains invalid data from the must have exactly one occurrence segment.

An ACK is also generated when an informational error message has occurred, but it has not resulted in message rejection (i.e. NK1 segment contains no last name). In this case, the segment is ignored but the remainder of the message is processed. An ACK message is generated with a message informing the sender of the problem. The error message in this case would NOT include "Message Rejected". The ACK contains the MSH, MSA and ERR segments. The MSH segment is generated according to normal HL7 processing guidelines. The MSA and ERR segments are detailed below:

Message Type QBP –Query By Parameter – Used to Send a Request for a Patient’s Immunization Record From VIIS.

Segments:

MSH	Message Header
QPD	Query Parameter Definition Segment
RCP	Response Control Parameter

Message Type RSP –Response – Sent by VIIS to the Provider – Sent by VIIS to the Provider in Response to a QBP Message

MSH	Message Header
MSA	Message Acknowledgment Segment
[ERR]	Error
QAK	Query Acknowledgment Segment
QPD	Query Parameter Definition Segment
PID	Patient Identification
PD1	Patient Additional Demographic
{NK1}	Next of Kin / Associated Parties
{ORC}	Common Order Segment
RXA	Pharmacy / Immunization administration
[RXR]	Pharmacy / Treatment Route
[{OBX}]]	Observation / Result

Section III

Message Segments Defined In Detail

List of Messages Segments Used in VIIS

Here are the segments that will be meticulously defined. AFTER the segment structures are defined we will demonstrate how to use them in the different message types.

MSH – Message Header Segment
PID – Patient Identifier Segment
PD1 – Additional Demographic Segment
NK1 – Next of Kin Segment
ORC – Order Control Segment
RXA – Pharmacy/Treatment Administration Segment
RXR – Pharmacy Route Segment
OBX – Observation Segment
QPD – Query Parameter Definition
QAK
RCP – Response Control Parameter Segment
ERR – Error Segment
MSA – Message Acknowledgment Segment

Segment Structure

Each segment consists of several fields that are separated by the pipe delimiter (|), which is the field separator character. Each segment described in this document will be preceded by a table with these columns that defines the segment:

1	SEQ	The ordinal position of the field in the segment. Since VIIS does not use all possible fields in the HL7 standard, these are not always consecutive. Also called the field number.
3.	DT	HL7 data type of the field. See below for definition of HL7 data types.
4.	R/RE/O/C/CE	R means required. RE means Required But May Be Empty; O means Optional. Blank means optional. C means Conditional. CE means conditional May Be Empty
5.	RP/#	Y means the field may be repeated any number of times, an integer gives the maximum number of repetitions, and a blank means no repetition is permitted.
6.	TBL#	Number of the table giving valid values for the field.
7.	Element Name	HL7 name for the field.

HL7 data types. Each field has an HL7 data type. Appendix A of this document lists and defines the HL7 data types needed for VIIS. The elemental data types Numeric (NM) and String (ST) consist of one value, while some data types, such as Extended Person Name (XPN) are composites.

Delimiter characters. Field values of composite data types consist of several components separated by the **component separator**, “^”. When components are further divided into sub-components, these are separated by the **sub-component separator**, “&”. Some fields are defined to permit repetition separated by the **repetition character**, “~”. When these special characters need to be included within text data, their special interpretations are prevented by preceding them with the **escape character**, “\”.

MSH| ^ ~\&|
XXX| field1| component 1^ component 2^ subcomponent 3.1&subcomponent 3.2^ component4|
YYY| repetition1~repetition2|
ZZZ| data includes escaped \ | ~ special characters|

In the example above, the Message Header segment uses the field separator, “|”, immediately after the “MSH” code that

identifies the segment. This establishes what character serves as the field separator throughout the message. The next field, the four characters “^~\&”, establishes, in order, the component separator character, the repetition character, the escape character, and the sub-component separator character that will apply throughout the message. The hypothetical “XXX” segment includes field1 with no internal structure, but the next field has several components separated by “^”, and the third of these is made up of two sub-components separated by “&”. The hypothetical “YYY” segment’s first field permits repetition, in this example the two values “repetition1” and “repetition2”. The hypothetical “ZZZ” segment’s field has a text value that includes the characters “|~”, and these are escaped to prevent their normal structural interpretation.

In VIIS, sub-components, repetition and text values requiring the escape character will be rare. Components within fields are common, since names and addresses are represented this way. Although HL7 permits the use of other delimiters VIIS will always use the recommended delimiters when sending files and requires their use for files received.

Rules for Sending Systems

The following rules are used by sending systems to construct HL7 messages.

- Encode each segment in the order specified in the message format.
- Begin the segment with the 3-letter segment ID (for example RXA).
- Precede each field with the data field separator (“|”).
- Use HL7 recommended encoding characters (“^~\&”).
- Encode the data fields in the order given in the table defining segment structure.
- Encode the data field according to its HL7 data type format.
- Do not include any characters for fields not present in the segment. Since later fields in the segment are encoded by ordinal position, fields that are not present do not reduce the number of field separators in the segment. For example, when the second and third fields are not present, the field separators maintain the ordinal position of the fourth field: |field1|||field4.
- Data fields that are present but explicitly null are represented by empty double quotes “” or leaving the field blank. Leaving the field blank is preferable.
- Trailing separators may optionally be omitted. For example, |field1|field2||| is equivalent to |field1|field2, when field3 and subsequent fields are not present.
- End each segment with the segment terminator (always the carriage return character, ASCII hex 0D).

The following rules are used by receiving systems to process HL7 messages.

- Treat data segments that are expected but not present as if all data fields in the segment were not present.
- Require use of HL7 recommended Field Separator |, and Encoding characters ^~\& for encoding messages.
- Ignore any data segment that is included but not expected, rather than treating it as an error. The HL7 message types used by VIIS may include many segments besides the ones in this document, and VIIS ignores them. VIIS will not send messages with segments not documented in this specification, but reserves the right to specify more segments at a later date. The rule to ignore unexpected segments facilitates this kind of change.
- Ignore data fields found but not expected within a segment.

Segment Structure:

The message segments below are needed to construct message types that are used by VIIS. Each segment is given a brief description excerpted from the HL7 standard. The tables define what fields make up each segment. **Since VIIS does not use all the fields that HL7 defines, there are sometimes gaps in the ordinal sequence of fields.** Following HL7 rules, the gaps do not diminish the number of field separators within the segment. For example, if the second and third fields in a segment are not present, their field separators remain in order to indicate that the next field present is the fourth: field1|||field4.

MSH - Message Header Segment

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

IMPORTANT NOTE!!!! - The MSH segment is unique. In the MSH segment, the pipe delimiter character immediately after the letters MSH is the first data field.

As an example, examine the following two segments, a MSH segment and a PID segment.

```
MSH|^~\&| |P584
PID|1| |2566633^^^1^MR
```

The MSH segment seen above has four fields. The first pipe delimiter itself directly after the letters MSH is the first field. The second field has the “^~\%” characters in it. The third field is blank. The fourth field contains “P584”.

However, the PID segment has only three fields. The pipe delimiter immediately following the character string “PID” IS NOT the first field. The first field is actually the space between the first two pipe delimiters which contains the value “1”. The second field is blank. The third field contains the character string “2566633^^^1^MR”.

Why is this important? If this manual refers to MSH-4, start counting fields with the first pipe delimiter. If the manual refers to PID-3, start counting fields with the first space between the first two pipe delimiters.

MSH Segment Fields

SEQ/Field Number	DT	R/RE/O/C/CE	RP/#	Tbl #	Element Name	Pertains to RSP Messages Only (Y/N)
1	ST	R			Field Separator	
2	ST	R			Encoding Characters	
3		RE			Sending Application (only used in response messages sent by VIIS after VIIS receives a QBP message. Not used in VXU messages)	Yes
4	HD	R			Sending Organization	Both – In a RSP message VIIS uses VIIS. In a VXU message please use the VIIS org code assigned to you in MSH-4.1
6	HD	RE			Receiving Facility	Both - For VXU messages use VIIS. When VIIS replies to a QBP message, VIIS will use the VIIS Org Code of the submitting facility.
7	TS	R			Date/Time Message	
9	MSG	R			Message Type	Pertains to Both
10	ST	R			Message Control ID	
11	PT	R			Processing ID	
12	VID	R			Version ID	

15		RE			Accept Acknowledgement Type	Y
16	ID	RE			Appl [^] ication Acknowledgement Type	
21	EI	RE			Message Profile Identifier	Y
22	HD	RE			Sending Organization	Y
23		RE			Receiving responsible organization	Y

NOTE: Information in any field not listed above is ignored by VIIS.

Example:

MSH^{^~\&}||N3154||VIIS|20190601||VXU[^]V04[^]VXU_V04|1|P|2.5.1||||AL||||

MSH-1 **Field Separator (Required)** - Determines the field separator in effect for the rest of this message. VIIS requires the HL7 recommended field separator of “|”.

MSH-2 **Encoding Character (Required)** - Determines the component separator, repetition separator, escape character, and sub-component separator in effect for the rest of this message. VIIS requires the HL7 recommended values of ^{^~\&}.

Example: |^{^~\&}|

MSH-3 **Sending Application** – VIIS returns the value “VIIS” in response messages to QBP messages sent to VIIS. This field is not used in VXU messages.

MSH-4 **Sending Organization (Required)** - Identifies for whom the message is being sent (the owner of the message information). In response to a QBP message, VIIS will use “VIIS”. NOTE: When sending a VXU message to VIIS use your Org Code Assigned by VIIS (e.g., T1234) in the MSH4.1 component. Example: |P153|

In RSP messages sent by VIIS back to the sender of the QBP message, VIIS returns the value “VIIS”

MSH-6 **Receiving Facility** – When an organization composes a VXU message, “VIIS” may be used in this field. When VIIS responds to a QBP message with a response, VIIS will use the VIIS Org Code that was received by VIIS In the MSH-4.1 segment of the message sent to VIIS.

MSH-7 **Date/Time of Message (Required)** - Date and time the message was created in this format: YYYYMMDDHHMMSS. VIIS ignores any time component. See the TS data type. Most sites will use a date like this: 20190404
Example: |20190419025344| OR |20190419|

MSH-9 **Message Type (Required)** - This is a required field. For VXU messages use VXU[^]V04[^]VXU_V04. For QBP messages use QBP[^]Q11[^]QBP_Q11

In a response message sent back from VIIS to the sender of a QBP message VIIS sends back:

Message type: RSP

Trigger event: K11

Message structure: RSP_K11

MSH-10 **Message Control ID (Required)** - This is a required field. Message rejection will result if nothing is received in this field. The message control ID is a string (which may be a number) uniquely identifying the message among all those ever sent by the sending system. Using the numeral “1” will suffice.

Example: |1|

MSH-11 **Processing ID (Required)** - The processing ID to be used by VIIS is **P** for production processing. Example: |P|

- MSH-12 **Version ID (Required)** - This is a required field. Use 2.5.1
Example: |2.5.1|
- MSH-15: **Accept Acknowledgement Type (Required According to CAIR specs, but not really)** – ER (for QBP messages only). Also, I noticed that my QBP messages had a value of ER in MSH-15 and it worked with no problem.
- MSH-16 **Application Acknowledgement Type** - Controls if VIIS creates an acknowledgment message. This field contains the conditions where VIIS returns application acknowledgment. If the field is empty, VIIS will assume the value of ER and only acknowledges the message if it contains errors. If field value is AL, VIIS will acknowledge all messages. A value of NE will result in no acknowledgment even if there were errors and a value of SU will result in acknowledgment only when there was successful completion
Example: |AL|
- MSH-21 **Message Profile Identifier** – This segment is not used in VXU messages. However, when VIIS sends a response to a QBP message, one of four response profiles will be returned: Z31^CDCPHINVS (Return a list of candidates); Z32^CDCPHINVS (Match Found – Return Immunization History; Z33^CDCPHINVS (No match found or too many matches found); or Z42^CDCPHINVS (Return Immunization History and Immunization Forecasting). In a properly formatted QBP message the user may put Z34^CDCPHINVS or Z44^CDCPHINVS, based on what type of search the user is requesting.
- MSH-22 **Sending Organization** – Do not use this field in VXU Message. This field will contain VIIS in a response to a QBP message.
- MSH-23 **Receiving Responsible Organization** – You will only see this field in a MSH segment that is part of a response to a query. VIIS will value this field with what was provided in the MSH-4.1 segment of the QBP message.

PID – Patient Identifier Segment

SEQ/Field Number	DT	R/RE/O/C/CE	RP/#	Tbl #	Element Name
3	CX	R	Y		Patient ID (Internal ID From EMR)
5	XPN	R	Y		Patient Name
6	XPN	RE	Y		Mother’s Maiden Name
7	TS	R			Date/Time of Birth
8	IS	RE		0001	Sex
10	CE		Y	0005	Race
11	XAD		Y		Patient Address
13	XTN	RE	Y		Phone Number - Home
15	CE	RE			Language
22	CE	RE	Y	0189	Ethnic Group
24	ID	RE		0136	Multiple Birth Indicators
25	NM	RE			Birth Order
29	TS	C/RE			Patient Death Date – REQUIRED if PID 30 = Y
30		RE		0163	Patient Death Indicator

NOTE: Information in any field not listed above is ignored by VIIS.

Example:

PID||PA123456^^MYEMR^MR||JONES^GEORGE^M^JR^^L|MILLER^MARTHA^G^^M|20140227|M||21 06-3^WHITE^CDCREC|1234 W FIRST ST^^AUGUSTA^ME^04330^^H
 ^^PRN^PH^^207^5555555||ENG^English^HL70296|||||2186-5^ not Hispanic or Latino^CDCREC||Y|2

PID-3 Patient ID (Required) - When a Provider Organization is sending to VIIS, use the sending system’s Patient or Medical Record ID or other identifier if available. When VIIS is sending to an outside system it will use the patient’s VIIS ID and Patient or Medical Record ID when it is available. PID3-5 can use the following identifier type codes MR, PI, PN, PRN, and PT

Example: |123^^1^MR|

Position	Field Name	Status	Table
PID-3.1	Patient ID	R	
PID-3.4	Assigning Authority	RE – Warning message if left blank.	
PID-3.5	Identifier Type Code	R	Table A

Table A

MR	Medical Record Number
PI	Patient Internal Identifier
PN	Person Number
PRN	Provider Number
PT	Patient External Identifier

Note: The PID segment returned in a response to a QBP message follows the same formatting as that found in the VXU message profile, with the exception of the PID-3 field. The PID-3 field will echo back the patient identifier submitted in the QPD segment of the QBP message, along with the VIIS patient ID number. If the patient identifier doesn’t exist in VIIS, or the patient identifier is associated to another provider site other than the site submitting the query, then only the VIIS patient ID will be returned in PID-3.1 of the response.

Examples:

Only VIIS ID Returned: |123456|^^^VIIS^SR

VIIS ID and Patient MRN Returned: |123456|^^^VIIS^SR~2178167^^^VIIS^MR

PID-5

Patient Name (Required) – This field can be repeated in order to include a patient alias which VIIS will incorporate in all future searches. The last, first, and middle names must be alpha only. The last name should not contain the suffix (e.g. “Jr.”). The first name should not include the patient’s middle or last name.

Example: |Bradley^Richard^L^Jr^^L~The Destroyer^John^M^Jr^^A|

Position	Field Name	Status	Table
PID-5.1	Last Name	R	
PID-5.2	First Name	R	
PID-5.3	Middle Name/Initial	RE	
PID-5.4	Suffix	RE	
PID-5.5	Prefix	Ignored	
PID-5.6	Degree	Ignored	
PID-5.7	Name Type Code	RE	Table 0200

Table 0200 – Name Type Code

A	Alias name	This is a nickname or other assumed name.
L	Legal name	This a person’s official name. It is the primary name recorded in the IIS.
D	Display name	This is the preferred name displayed on a user interface.
M	Maiden name	This is a woman’s name before marriage.
C	Adopted name	This is the name of a person after adoption.
B	Name at birth	This is name recorded at birth (prior to adoption).
P	Name of partner/spouse	This is the name of the partner or spouse.
U	Unspecified	This is a name of unspecified type.

PID-6

Mother’s Maiden Name– This field should contain the mother’s maiden name as well as the mother’s first name. This field is used for patient matching. If the field is valued, the requirements below must be followed.

Example: |Jefferson^Martha^^^^L|

Position	Field Name	Status	Table
PID-6.1	Mother’s Maiden Last Name	R	
PID-6.2	First Name	R	
PID-6.3	Middle Name/Initial	RE	
PID-6.4	Suffix	O	
PID-6.5	Prefix	Ignored	
PID-6.6	Degree	Ignored	
PID-6.7	Name Type Code	RE	0200 (above)

PID-7

Date/Time of Birth (Required) - Give the year, month, and day of birth (YYYYMMDD). VIIS ignores any time component.

Example: |20190404025345| OR |20190404|

PID-8

Sex – The gender of the patient. Use appropriate code. Use F, M, or U. If blank is used, VIIS will default to U. Sending blank or U is highly discouraged

User-Defined Table 0001

Value	Description
F	Female
M	Male
U	Unknown

PID-10

Race – Patient’s race is sent in this field. If the field is valued, the requirements below must be followed:

Position	Field	Status
PID-10.1	Identifier	Required
PID-10.2	Text	Optional
PID-10.3	Name of Coding System	RE – Use HL70005

Note: Values for the identifier field are from User-Defined Table 0005 – Race. Repetitions allowed for multiple race.

Example: |2028-9^Asian^HL7005|

gr

User-Defined Table 0005

Value	Description
1002-5	American Indian/Alaskan Native
2028-9	Asian
2076-8	Native Hawaiiin or Other Pacific Islander
2054-5	Black or African American
2106-3	White
2131-1	Other

PID-11 **Patient Address** - See the XAD data type. This field supports repetition. See table 0190 for address type: (NEED TO TEST THIS)

Example: PID|||||||123 Main Street^Apt 401^Richmond^VA^23224^^L|

Position	Field Name	Status	Table
PID-11.1	Street Number/Name	R	
PID-11.2	Address2	O	
PID-11.3	City	R	
PID-11.4	State	R	
PID-11.5	Zip	R	
PID-11.6	Country	Ignored	
PID-11.7	Address Type	RE	0190

HL7-Defined Table 0190

Value	Description
C	Current or temporary
P	Permanent
M	Mailing
B	Firm/Business
O	Office
H	Home
N	Birth (nee)
F	Country of origin
L	Legal Address
BDL	Birth delivery location
BR	Residence at Birth
RH	Registry Home
BA	Bad Address

PID-13 **Home Phone Number** – See the XTN data type. VIIS supports repetition in this field.

Position	Field Name	Status	Table
PID-13.2	Use Code	R	0201
PID-13.4	Email	C (R) – If PID-13.2 = “NET”	
PID-13.6	Area Code	C (RE) If PID 13.2 use code =	

		“PRN”	
PID-13.7	Phone Number (7 Digit)	C (RE/X) if PID 13.2 use code = “PRN”	

Example: PID|||||||||^prn^^^904^8887777|

Example: PID|||||||||^NET^^rbradman@gotcha.com^^|

HL7-Defined Table 0201

Value	Description
PRN	Primary Residence Number
NET	Email Address

PID-15

Language – A complete set of language codes can be found at this URL:

<https://phinvads.cdc.gov/vads/ViewValueSet.action?id=43D34BBC-617F-DD11-B38D-00188B398520>

Example |eng^^HL70296|

Position	Field Name	Status	Table
PID-15.1	Identifier	R	See Table B
PID-15.3	Name of Coding System	RE	Use HL70296

Table B – Partial List of Languages

Value	Description
eng	English
spa	Spanish
tgl	Tagalog
fre	French
vie	Vietnamese
chi	Chinese

PID-22

Ethnic Group – “Hispanic” is considered an ethnic group rather than a race. The use of the code for Hispanic in PID-10 will result in a value of “unknown.” There are two ethnicities, as demonstrated in table 0189.

Example: |2135-2^^CDCREC|

Position	Field Name	Status	Table
PID-22.1	Identifier	R	Table 0189
PID-22.3	Name of Coding System	RE	Use CDCREC

User-Defined Table 0189

Value	Description
2135-2	Hispanic or Latino
2186-5	Non-Hispanic or Latino

PID-24

Multiple Birth Indicator – This field indicates whether a patient was part of a multiple birth. Use “Y” for yes, “No for no.

User-Defined Table 0136

Value	Description
Y	The patient was part of a multiple birth
N	The patient was not part of a multiple birth

PID-25

Birth Order (if PID-24 = Y) –If the patient is part of a multiple birth, a value (number) indicating the patient’s birth order is entered in this field. If PID-24 is populated with a ‘Y’, then this field shall be populated.

- PID-29 **Patient Death Date and Time** –The date and time of the patient’s death. If this field is valued then PID-30 must contain the value of “Y”.
- PID-30 **Patient Death Date Indicator** –This field indicates whether the patient is deceased. Must contain a “Y” if PID-29 is populated.

Patient Mapping in VIIS:

It is very important to provide as much of the demographic data on the patient as possible. The patient name, date of birth, and sex are required fields. Additional information about the parents or guardians—in particular the birth mother name—as well as accurate current address are all used to identify patients. The more information provided, the better the matching process and the less likely it is that a duplicate patient record will be created.

PD1 – Additional Demographic Segment

SEQ/Field Number	DT	R/RE/O/C/CE	RP/#	Tbl #	Element Name
11	CE	RE		0215	Publicity Code – Used for determination of inclusion of reminder/recall messages
12	ID	RE		0136	Protection Indicator – Used to determine if a record can be shared in the IIS
13	DT	RE			Protection Indicator – Effective Date
16	IS	RE		0441	Immunization Registry Status
17	DT	C (RE/X) If the PD1-16 field is valued.			Immunization Registry Status Effective Date

NOTE: Information in any field not listed above is ignored by VIIS.

Example:

PD1|||||||02^REMINDER/RECALL – ANY METHOD^HL70215|N|20140730|||A|20140730|

PD1-11 **Publicity Code** - Controls whether recall/reminder notices are sent. VIIS will recognize “01” to indicate no recall/reminder notices or “02” recall/reminder notices any method. VIIS strongly suggests the value of “02” as this can be very beneficial to the patient. No value in this field defaults to “02”. Other values follow in User-Defined Table 0215

Example: |02^Reminder Recall Any Method^HL70215| OR |02| OR |02^^|

Position	Field Name	Status	Table
PD1-11.1	Identifier	R	
PD1-11.3	Name of Coding System	RE	Use HL70215

User-Defined Table 0215

Value	Description
01	No Reminder Recall
02	Reminder Recall – Any Method
03	Reminder Recall – No Calls
04	Reminder only – Any method
05	Reminder only – No calls
06	Recall only – Any method
07	Recall only – No calls
08	Reminder/Recall – To provider
09	Reminder to provider
10	Only reminder to provider
11	Recall to provider
12	Only recall to provider, not reminder

PD1-12 **Protection Indicator** – This field identifies whether a person’s information may be shared with other VIIS users. Use the values that follow in User-Defined Table 0136 below. The protection state must be actively determined by the clinician. VIIS will translate an empty value sent in PD1-12 as “Agree to Share.”

Y = Protect access to data. DO NOT ALLOW SHARING

N – Do not protect access to the data. ALLOW SHARING.

NOTE! Notice the “Y” and the “N” are counter intuitive. In this case, Y locks records and defeats the entire purpose of the IIS. “Y” should almost NEVER be used.

User-Defined Table 0136

Value	Description
Y	Yes
N	No

PD1-13 **Protection Indicator Effective Date** – Self-Explanatory.

PD1-16 **Immunization Registry Status** – This field identifies the current status of the patient in relations to the sending provider organization. If PID-29 (date of death) is populated, then the value of PD1-16 must be “P” – Permanently Inactive. Refer to User Defined Table 0441 in the CDC implementation guide for all accepted values.

HL7-Defined Table 0441

Value	Description
A	Active
I	Inactive – Unspecified
L	Inactive – Lost to Follow-Up
M	Inactive – Moved or Gone Elsewhere
P	Inactive – Permanently Inactive
U	Unknown

PD1-17 **Immunization Registry Status Effective Date** – This field indicates the effective date for the registry status reported in PD1-16.

NK1 – Next of Kin Segment

SEQ/Field Number	DT	R/RE/O/C/CE	RP/#	Tbl #	Element Name
1	SI	R			Set ID
2	XPN	CE	Y		Name
3	CE	CD		0063	Relationship
4	XAD		Y		Address
5	XTN		Y		Phone Number

Example:

NK1|1|JONES^MARTHA^^^^L|MTH^MOTHER^HL70063|1234 W FIRST ST^^AUGUSTA
^ME^04330^^H|^PRN^PH^^^207^5555555|

NK1-1 **Set ID** – Use NK1

NK1-2 **Name** – Use the XPN data type. This field contains the name of the next of kin or associated party. VIIS does not support repetition of this field.

Example: |Smith^Wanda^^^^L|

Position	Field Name	Status	Table
NK1-2.1	Last Name	R	
NK1-2.2	First Name	R	
NK1-2.3	Middle Name/Initial	RE	
NK1-2.4	Suffix	RE	
NK1-2.5	Prefix	Ignored	
NK1-2.6	Degree	Ignored	
NK1-2.7	Name Type Code	RE	0200

Table 0200 – Name Type Code

A	Alias name	This is a nickname or other assumed name.
L	Legal name	This a person’s official name. It is the primary name recorded in the IIS.
D	Display name	This is the preferred name displayed on a user interface.
M	Maiden name	This is a woman’s name before marriage.
C	Adopted name	This is the name of a person after adoption.
B	Name at birth	This is name recorded at birth (prior to adoption).
P	Name of partner/spouse	This is the name of the partner or spouse.
U	Unspecified	This is a name of unspecified type.

NK1-3 **Relationship** – This field contains the actual personal relationship that the next of kin/associated party has to the patient if the field is valued, the requirements below must be followed.

Position	Field Name	Status	Table
NK1-3.1	Identifier	R	
NK1-3.2	Text	O	
NK1-3.3	Name of Coding System	RE	Use HL70063
NK1-3.4	Ignored		
NK1-3.5	Ignored		
NK1-3.6	Ignored		

Example: |GRD^Guardian^HL70063|

Table HL70063-Relationship (NK1-3)

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

NK1-4 **Address** - See the XAD data type. This field contains the address of the next of kin or associated party. Example: |123 Main Street^Apt 401^Richmond^VA^23224^^L|

Position	Field Name	Status	Table
NK1-4.1	Street Number/Name	R	
NK1-4.2	Address2	O	
NK1-4.3	City	R	
NK1-4.4	State	R	
NK1-4.5	Zip	R	
NK1-4.6	Country	Ignored	
NK1-4.7	Address Type	RE	0190

HL7-Defined Table 0190

Value	Description
C	Current or temporary
P	Permanent
M	Mailing
B	Firm/Business
O	Office
H	Home
N	Birth (nee)
F	Country of origin
L	Legal Address
BDL	Birth delivery location
BR	Residence at Birth
RH	Registry Home
BA	Bad Address

NK1-5 **Phone Number** – See the XTN data type.

Position	Field Name	Status	Table
NK1-5.2	Use Code	R	0201
NK1-5.4	Email	C (R) – If	

		PID-13.2 = "NET"	
NK1-5.6	Area Code	C (RE) If PID 13.2 use code = "PRN"	
NK1-5.7	Phone Number (7 Digit)	C (RE/X) if PID 13.2 use code = "PRN"	

Example: |^prn^^^^904^8887777|

Example: |^NET^^rbradman@gotcha.com^^^|

HL7-Defined Table 0201

Value	Description
PRN	Primary Residence Number
NET	Email Address

ORC – Order Control Segment

The Order Request (ORC) segment is required for 2.5.1 messages and indicates information about the pharmaceutical order. While many of the elements don't apply directly to immunizations (as the immunizations are usually ordered, delivered, and administered at the same location) some of the fields allow for better control of immunization data.
 ORC|RE||197023^CMC|||||^Clark^Dave||^Smith^Janet^^^^^^L^^^^^^^^^^MD ||||

SEQ/Field Number	DT	R/RE/O/C/CE	RP/#	Tbl #	Element Name
1	ID	R			Order Control
2	EI				Placer Order Number
3	EI	RE			Filler Order Number
10	th				Entered By
12	XCN	RE			Ordering Provider
17	CE	RE			Entering Organization

Example: ORC|RE||1

ORC|RE||197023^CMC|||||^Clark^Dave||^Smith^Janet^^^^^^L^^^^^^^^^^MD ||||

ORC-1 **Order Control** – The value for VXU and RSP shall be “RE”

ORC-2 **Placer Order Number** – The Placer Order Number is used to uniquely identify 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. The sending system may leave this field empty.

ORC-3 **Filler Order Number** – The field may be empty. The Filler Order Number is used to identify uniquely this order among all orders sent by a provider organization that filled the order

- This field shall hold a sending system’s unique immunization ID. This value is not retained by VIIS.
- In the case where a historic immunization is being recorded, 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.

ORC-10 **Entered By** – This identifies the individual that entered this particular order. It may be used in conjunction with an RXA to indicate who recorded a particular immunization.

Position	Field Name	Status	Table
ORC-10.1	ID Number	C(R/RE)	If XCN2.1 and XCN3 are not valued
ORC-10.2	Family Name	RE	
ORC-10.3	Given Name	RE	
ORC-10.4	Middle Name/Init	RE	
ORC-10.5	Suffix	O	
ORC-10.6	Prefix	O	
ORC-10.7	Degree	O	
ORC-10.8	Source Table		
ORC-10.9	Assigning Authority		

ORC-10.10	Name Type Code	RE	HL70200
ORC-10.11	Identifier Check Digit		
ORC-10.12	Check Digit Scheme	C(O/x)	If XCN-11 is valued
ORC-10.13	Identifier Type Code		
ORC-10.14	Assigning Facility		
ORC-10.15	Name Representation Code		
ORC-10.16	Name Context		
ORC-10.17	Name Validity Range		
ORC-10.18	Name Assembly Order		
ORC-10.19	Effective Date		
ORC-10.20	Expiration Date		
ORC-10.21	Professional Suffix		
ORC-10.22	Assigning Jurisdiction		
ORC-10.23	Assigning Agency or Department		

Table 0200 – Name Type Code

A	Alias name	This is a nickname or other assumed name.
L	Legal name	This a person's official name. It is the primary name recorded in the IIS.
D	Display name	This is the preferred name displayed on a user interface.
M	Maiden name	This is a woman's name before marriage.
C	Adopted name	This is the name of a person after adoption.
B	Name at birth	This is name recorded at birth (prior to adoption).
P	Name of partner/spouse	This is the name of the partner or spouse.
U	Unspecified	This is a name of unspecified type.

ORC-12 **Ordering Provider** – This field contains the identity of the person who is responsible for creating the request (i.e., the 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. It is formatted the same as ORC-10

ORC-17 **Entering Organization** – Coded Element Data Type – This is the provider organization that entered this record/order. **RARELY USED.**

RXA – Pharmacy/Treatment Administration Segment

The Pharmacy/Treatment Administration Segment is required for 2.5.1 VXU messages and indicates which vaccinations are given.

Note: Inventory Decrementing in VIIS Through Data Exchange

Provider organizations can have vaccine doses decrement from inventory in VIIS through data exchange. In order for the inventory to decrement in VIIS the following must be adhered to:

1. Inventory with matching lot number and a funding source that corresponds to patient level vaccine eligibility reported in the VXU message needs to exist in VIIS. For example, if a vaccine is publicly-supplied (funding source) in VIIS then the patient level vaccine eligibility (VFC eligibility; VFA eligibility) must also be of public origin. For example, a lot of MMR vaccine in VIIS is coded as publicly-supplied AND the patient level vaccine eligibility in the incoming VXU message must be V02 – Medicaid.
2. The following fields in the RXA and OBX segments must be populated accurately:

MSH 4.1	Org Code	The VIIS Org Code must be populated.
RXA 5.1	Vaccine Code	The vaccine code submitted must match the vaccine in the VIIS inventory.
RXA 9.1	Administered	Must be coded as an administered shot. It may not be historical.
RXA 15	Lot Number	Vaccine lot number sent must match lot number in VIIS inventory.
RXA 20	Completion Status	Must be CP, PA, or empty
RXA 21	Action Code	Must be A or U
OBX 5.1	Observation Value	VFC funding eligibility category sent in this field must match with the funding category of the vaccine lot in the VIIS inventory.

The RXA segment fields that must be included for inventory decrementing are indicated in the detailed field explanations following this table.

RXA Segment Structure

SEQ/Field Number	DT	R/RE/O/C/CE	RP/#	Tbl #	Element Name
1	NM	R – Constrain to “0”			Give sub-ID counter.
2	NM	R – Constrain to “1”			Administration sub-ID counter.
3	TS	R			Date/time of Administration
5	CE	R			Administered Code – VIIS accepts CVX,

					CPT, and NDC codes
6	NM	R			Administered Amount
7		R			Administered Units – Required if amount not ‘999’.
9	CE	R		NIP001	Administration Notes
10	XCN	RE			Administering Provider
11					
15	ST	RE			Substance Lot Number – Required if administered dose
16	TS	RE			Substance Expiration Date
17	CE	RE		0227	Substance Manufacturer Name – Required if administered dose
18	CE			NIP002	Substance Refusal Reason – ignored
20	ID	RE		0322	Completion Status – Empty field will default to CP
21	ID	RE		0323	Action Code – Empty field will default to A.

Example:

RXA|0|1|20140730||08^HEPB-PEDIATRIC/ADOLESCENT^CVX|.5|mL^mL^UCUM||00^NEW IMMUNIZATION RECORD^NIP001|1245319599^Smith^Janet^^^^^^^CMS^^^^NPI^^^^^^^MD |^^DE-000001|||0039F|20200531|MSD^MERCK^MVX||CP|A

RXA-1 **Give sub-ID Counter** – Use “0” (the Arabic numeral for zero) in this field.

RXA-2 **Administration sub-ID Counter** – Use “1” (the Arabic numeral for the number one) in this field.

RXA-3 **Date/Time of Administration** – The date/time start of administration is used to record the date of when the vaccination was given. Any time information is ignored and need not be sent. It is important that this date be the actual date the vaccination was given and not the date that it was recorded or billed. Format: YYYYMMDD

RXA-5 **Administered Code** – This field identifies the medical substance administered. VIIS accepts CVX, CPT, and NDC codes.

Position	Field Name	Status	Table
RXA 5.1	Identifier	R	
RXA 5.1	Text	O	
RXA 5.3	Name of Coding System	R	
RXA 5.4	Alternate Identifier		
RXA 5.5	Alternate Text		
RXA 5.6	Alternate Coding System		

Example: 03^MMR^CPT^^^

|000006-4827-01^Varicella^NDC^21^Varicella^CVX

|21^Varicella^CVX^000006-4827-01^Varicella^NDC

CPT codes can be found here: <https://www2a.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=cpt>

CVX codes can be found here: <https://www2a.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=cvx>

NDC codes can be found here: <https://www2a.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=ndc>

RXA-6 **Administered Amount** – The amount of vaccine that was given. This should be expressed in milliliters (mL). The amount should be placed here and the units in RXA-7. Format: Number.

RXA-7 **Administered Units** – The units associated with the number in RXA-6. A value of mL is expected.

RXA-9 **Administration Notes** – 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 NIP-defined table NIP001 – Immunization Information Source). Health plan submitters must use the NIP001 ‘01’ code (source unspecified) to ensure administered data is not overwritten during the record merge process. VIIS will recognize “00” to indicate New Immunization Administered/Owned by the Sending Organization or “01” to indicate Historical Record – Source Unspecified. If the source for a historical record is known, please use values ’02 through 08 in table NIP001. If this field is blank, the immunization will be recorded as historical in VIIS. For decrement of inventory, a value of “00” is required.

CDC-defined NIP001 – Immunization Information Source

00	New immunization record
01	Historical information – source unspecified
02	Historical information – from other provider
03	Historical information – from patient’s written record
04	Historical information – from parent’s recall
05	Historical information – from other IIS
06	Historical information – from birth certificate
07	Historical information – from school record
08	Historical information – from public agency

RXA-10

Administering Provider – This field is intended to contain the name and provider ID of the person physically administering the vaccine. This field is required but may be empty. If the field is valued, it must follow the specification below:

Position	Field Name	Status
1	ID number	required, but may be empty
2	family name	required
3	given name	required
4	middle initial or name	optional
5	suffix	optional
6	prefix	optional
7	degree	No longer used. Use professional suffix in sequence 21 (RXA-10.21)
8	source table	ignored
9	assigning authority	required if RXA-10.1 is populated
10	name type code	required, but may be empty
11	identifier check digit	ignored
12	code identifying the check digit scheme employed	ignored
13	identifier type code	required if RXA-10.1 is populated
14.. 20		Components 14 – 20 are ignored
21	Professional Suffix	optional

RXA-11

Administered At Location - VIIS does not use this field. *If you place a value in RXA-11.4 that is different than MSH-4.1 the message will fail.*

RXA-15

Substance Lot Number – This field contain the lot number of the vaccine administered. Format: String. NOTE: This field is required for decrement of inventory.

RXA-16 **Substance Expiration Date** – This field contains the expiration date of the vaccine administered. Note that vaccine expiration date does not always have a “day” component; therefore, use the last day of the month for the ‘day’ component of the expiration date.
Format: YYYYMMDD

RXA-17 **Substance Manufacturer Name** – This field contains the manufacturer of the vaccine administered. If the field is valued, the requirements below must be followed. Code system “MVX” should be used to code this field. The CDC's National Center for Immunization and Respiratory Diseases ([NCIRD](http://www2a.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=mvx)) developed and maintains HL7 Table 0227, Manufacturers of Vaccines (MVX). The table can be found here: <http://www2a.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=mvx>

Position	Field	Status
1	identifier	required
2	text	optional
3	name of coding system	required, but may be empty; use “MVX”
4	alternate identifier	ignored
5	alternate text	ignored
6	name of alternate coding system	ignored

RXA-18 **Substance Refusal Reason** –

Value	Description
00	<i>Parental decision</i>
01	<i>Religious exemption</i>
02	<i>Other (must add text component of the CE field with description)</i>
03	<i>Patient decision</i>

RXA-20: **Completion Status** - This field indicates if the dose was successfully given. Only complete records (CP) and Partial administrations (PA) are processed. Any other value sent in RXA-20 will cause the RXA segment to fail. NOTE: An empty field will be treated as ‘CP’.

Position	Field	Status
1	Id	required, but may be empty.

HL7 User-defined Table 0322 – Completion status

Value	Description	Status
CP	Complete	accepted
RE	Refused	not accepted
NA	Not Administered	not accepted
PA	Partially Administered	accepted as a ‘subpotent dose’

RXA-21: **Action Code** - This field indicates the action expected by the sending system. An empty field will be treated as ‘A’

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

RXR – Pharmacy Route Segment – The pharmacy route segment is a continuation of the RXA segment.

SEQ/Field Number	DT	R/RE/O/C/CE	RP/#	Tbl #	Element Name
1	CE	RE		0162	Route
2	CE	RE		0163	Site

Example:

RXR|C28161^INTRAMUSCULAR^NCIT|LA^LEFT ARM^HL70163

RXR-1 Route – The route is the place or method that was used to give the vaccination. This is normally dependent on the type of vaccination given. If the field is valued, the requirements below must be followed.

Position	Field	Status
1	identifier	required
2	text	optional
3	name of coding system	required, but may be empty

Note: Codes for the identifier can be found in HL7-defined Table 0162 – Route of Administration. FDA NCI Thesaurus codes are now accepted in RXR-1.1

Table 0162 – Route of Administration

|C28161^Intramuscular^NCIT|

FDA NCI Thesaurus (NCIT)	HL7-0162	Description	Definition
C38238	ID	Intradermal	within or introduced between the layers of the skin
C28161	IM	Intramuscular	within or into the substance of a muscle
C38284	NS	Intranasal	Given by nose
C38276	IV	Intravenous	administered into a vein
C38288	PO	Oral	administered by mouth
	OTH	Other/Miscellaneous	
C38676		Percutaneous	made, done, or effected through the skin.
C38299	SC	Subcutaneous	Under the skin or between skin and muscles.
C38305	TD	Transdermal	describes something, especially a drug, that is introduced into the body through the skin

RXR-2: Site - The site is the place on the body that the vaccination was given. This is normally decided at time of administration. If the field is valued, the requirements below must be followed.

Position	Field	Status
1	identifier	required
2	text	optional
3	name of coding system	required, but may be empty; use HL70163

NOTE: Codes for the identifier can be found in HL7-defined Table 0163 – Administrative site.

HL7-defined Table 0163 – Administrative Site

HL7 0163	Description
LT	Left Thigh
LA	Left Arm
LD	Left Deltoid
LG	Left Gluteous Medius
LVL	Left Vastus Lateralis
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
LPC	Left Posterior Chest
RPC	Right Posterior Chest

OBX Observation/Result

Part 1 – OBX Segments Included in VXU Messages Sent to VIIS

This segment is used to transmit an observation and a result. In a VXU message sent to VIIS, VIIS accepts two OBX segments. The first is used to transmit VFC and VFA patient-level vaccine eligibility status for vaccines given. The second is used to send the vaccine funding source. Unrecognized observations will be ignored by VIIS.

SEQ/Field Number	DT	R/RE/O/C/CE	RP/#	Tbl #	Element Name
1	SI	R			Set ID-OBX
2	ID	R – Constrain to CE			Value Type
3	CE	R – If RXA-9 value is “00”			Observation Identifier
4	ST	RE			Observation sub-ID
5		R for decrementing inventory	Yes		Observation Value
11	ID	R			Observation Result Status – Should be F for final
14	TS	RE			Date/Time of Observation

A. OBX Segment Pertaining to Patient-Level Vaccine Eligibility (Used to Account for VFA and VFC Vaccine) – Note: This is the segment that determines whether a vaccine is deducted from inventory in VIIS.

Example: OBX|1|CE|64994-7^Vaccine funding program eligibility category^LN|1|V03^VFC eligibility –Not Insured^HL70064|||||F|||201107011

- OBX-1: **Set ID** – Indicates the current sequence number for this OBX as it sits under the RXA
- OBX-2: **Value Type** - This field contains the format of the observation value in OBX. Value type will be ‘CE’
- OBX-3: **Observation Identifier** - This indicates what kind of data is being sent in this OBX. One way to look at this is OBX-3 poses the question and OBX-5 answers it. For example, in this segment OBX-3 is used to tell VIIS that the information being sent in OBX-5 pertains to patient level VFC or VFA eligibility, which can be read as “Is this person eligible for VFC or VFA vaccine.” A possible answer in OBX-5 could be “VFC eligible-Medicaid”

Position	Field	Status
1	Identifier	required, shall be 64994-7
2	Text	Optional
3	name of coding system	required, use ‘LN’
4	alternate identifier	Ignored
5	alternate text	Ignored
6	name of alternate coding system	Ignored

OBX-4: **Observation Sub-ID** - Indicates if this observation is part of a grouping.

OBX-5: **Observation Value** - (Vaccine Funding Source) This is the answer to the question that was posed in OBX-3. This is where the patient-level VFC/VFC eligibility status is recorded. An empty value will be treated as “Unknown”. For proper inventory decrementing in VIIS, the Vaccine Eligibility Funding Status in OBX-5 is required and must match the funding status of the vaccine lot in VIIS.

Position	Field	Status
1	identifier	required, but may be empty
2	text	Optional
3	name of coding system	Use HL70064
4	alternate identifier	Ignored
5	alternate text	Ignored
6	name of alternate coding system	Ignored

VIIS Accepted Values for VFC Eligibility Funding Status in OBX-5.1

Value	Description
CH00	FAMIS
V00	Eligibility Not Det/Unknown
V01	Private Stock
V02	VFC Eligible – Medicaid – Under 19
V03	VFC Eligible – Not Insured
V04	VFC Eligible - American Indian or Alaskan Native
V05	VFC Eligible - Underinsured
V06	VFC Eligible – Medicaid HMO
V07	Uninsured Adult

OBX-11: **Observation Result Status** – F for “final”

OBX-14: **Date/Time of the Observation** - Records the date/time of the observation. Format: YYYYMMDD

B. OBX Segment Pertaining to Vaccine Funding Source

Example: OBX|1|CE|30963-3^Vaccine purchased with^LN|1|VXC51^Public VFC^CDCPHINVS|||||F|||20240122

OBX-1: **Set ID** – Indicates the current sequence number for this OBX as it sits under the RXA

OBX-2: **Value Type** - This field contains the format of the observation value in OBX. Value type will be ‘CE’

OBX-3: **Observation Identifier** - This indicates what kind of data is being sent in this OBX. One way to look at this is OBX-3 poses the question and OBX-5 answers it. For example, in this segment OBX-3 is used to tell VIIS that the information sent in OBX-5 pertains to vaccine funding status. which can be read as “What this vaccine publicly or privately supplied?” The answer in OBX-5 could be VXC50.

Position	Field	Status
1	Identifier	required, shall be 30963

2	Text	Optional
3	name of coding system	required, use 'LN'
4	alternate identifier	Ignored
5	alternate text	Ignored
6	name of alternate coding system	Ignored

OBX-4: **Observation Sub-ID** - Indicates if this observation is part of a grouping.

OBX-5: **Observation Value** - (VFC eligibility) This is the answer to the question that was posed in OBX-3. This is where the vaccine funding source is identified. An empty value will be treated as "Unknown".

Position	Field	Status
1	identifier	required, but may be empty
2	text	Optional
3	name of coding system	Use CDCPHINVS
4	alternate identifier	Ignored
5	alternate text	Ignored
6	name of alternate coding system	Ignored

VIIS Accepted Values for Vaccine Funding Source in OBX-5.3

Value	Description
PHC70	Private funds
VXC50	Public funds
VXC51	Public VFC
VXC52	Public-Non-VFC

OBX-11: **Observation Result Status** – F for "final"

OBX-14: **Date/Time of the Observation** - Records the date/time of the observation. Format: YYYYMMDD

Continued on Next Page

Vaccine Decrementing in VIIS

In order for vaccine entered into the VIIS User Interface to decrement, four criteria must be met:

1. The VFC / VFA patient-level vaccine eligibility in OBX-5.1 of the patient-level vaccine eligibility OBX segment must match the funding source of the vaccine **entered into the UI.**
2. The lot number of the vaccine in the VXU message must match the lot number of the vaccine **entered into the UI.**
3. The VIIS org code in MSH-4.1 of the VXU message must match the org code used when logging in to the VIIS interface.
4. RXA-9 must be an administered immunization with code “00”

Example VXU Message:

```
MSH|^~\&||1st||20240123||VXU^V04^VXU_V04|246550|P|2.5.1
PID|1||47303^^^MR||Noname^Mister^|^|20220925|M||2106-3^White^HL70005|||||||2186-5^Not Hispanic or
Latino^HL70189|||||||
ORC|RE|1
RXA|0|1|20240123|20240123|03^^CVX|||00^New immunization record^NIP001|||||1234AXY||MSD^Merck
Co.^MVX||CP|A
OBX|2|CE|64994-7^Vaccine funding program eligibility category^LN|2|V03^VFC Eligible -
Uninsured^HL70064|||||F||20240123||VXC40^Eligibility captured AT the immunization LEVEL^CDCPHINVS
OBX|1|CE|30963-3^Vaccine purchased with^LN|1|PHC70^Private Funds^CDCPHINVS|||||F||20240122
```

This message would deduct from inventory if, in the UI under Org Code 1st, lot number 1234AXY exists and is publicly-supplied. The second OBX statement for vaccine funding source does not impact deduction from inventory.

Part 2 – OBX Segments Included in Responses Sent From VIIS to Providers

OBX: OBSERVATION SEGMENT

In an RSP, the OBX segment carries observations associated with the RXA or the immunization record.

Position	Field Name	CAIR2-Usage
1	Set ID - OBX	R
2	Value Type	R
3	Observation Identifier	R
4	Observation Sub-ID	R
5	Observation Value	R
6	Units	X
7	Reference Ranges	X
8	Abnormal Flags	X
9	Probability	X
10	Nature of Abnormal Test	X
11	Observation Result Status	Constrained to “F” for Final

OBX FIELD USAGE NOTES

OBX-1: Set ID

This field contains the sequence number of the OBX segment. For each OBX segment under an RXA, the first OBX segment will be valued with a “1” in OBX-1. Each subsequent OBX segment will be valued with the next number in sequence. The OBX numbering schema will start again with “1” for the next set of OBX segments under the next RXA segment.

OBX-2: Value Type

This field contains the format of the observation value in OBX-5.

OBX-3: Observation Identifier

This field contains a unique identifier for the observation. One way to look at this is OBX-3 poses the question and OBX-5 answers it. The table below lists the possible values for OBX-3 in the RSP, the corresponding data types for OBX-2 and the corresponding observation example or value for OBX-5.

LOINC Code For OBX-3.1	Description	Corresponding data type in OBX-2	Corresponding observation Example or Value in OBX-5
30973-2	Dose number in series	NM	1, 2, 3, etc...If vaccine dose is invalid, then the number ‘777’ appears in OBX-5
30979-9	Vaccines due next	CE	CVX (e.g. 03^MMR^CVX)
30980-7	Date vaccine due	TS	YYYYMMDD
30981-5	Earliest date to give	TS	YYYYMMDD format
30982-3	Reason applied by forecast logic to project this vaccine	CE	ACIP Schedule
30956-7	Vaccine Type (Vaccine Group or Family)		
38890-0	Component vaccine type	CE	CVX (e.g. 03^MMR^CVX)
31044-1	Reaction	CE	e.g. - VXC11^Seizure^CDCPHINVS

Example observations related to immunization history (Z34 profile) returned by VIIS CAIR2.

Vaccine Component Administered: |38890-0^Component Vaccine Type^LN|

- OBX-5 sample answer: |17^Hib^CVX^90737^Hib^CPT|

Dose number in vaccine series: |30973-2^Dose number in series^LN|

- OBX-5 sample answer:
 - |2| - for second dose in the series
 - |777| - for invalid dose (not counted in series)

Example observations related to immunization recommendations and forecasting (Z44 profile) returned by VIIS CAIR2.

Vaccine due next: |30979-9^Vaccines Due Next^LN|

- OBX-5 sample answer: |85^HepA^CVX^90730^HepA^CPT|

Vaccine due next dose number: |30973-2^Vaccine due next dose number^LN|

- OBX-5 sample answer: |2|

Earliest date to give vaccine: |30981-5^Earliest date to give^LN|

- OBX-5 sample answer: |20170711|

Immunization Schedule Used: |30982-3^Reason applied by forecast logic to project this vaccine^LN|

- OBX-5 answer: |ACIP schedule|

OBX-4: Observation Sub-ID

This field is used to group related observations by setting the value to the same number.

Example of shared sub-ID showing OBX segment grouping:

```
OBX|41|CE|30979-9^Vaccines Due Next^LN|6|21^Varicella^CVX^90716^Varicella^CPT|||||F
OBX|42|TS|30980-7^Date Vaccine Due^LN|6|20110101|||||F
OBX|43|NM|30973-2^Vaccine due next dose number^LN|6|1|||||F
OBX|44|TS|30981-5^Earliest date to give^LN|6|20110101|||||F
```

OBX-5: Observation Value

This field contains the observation answer to the question that is posed in OBX-3. For a list of observations returned by VIIS, please see the field usage notes under OBX-3 above.

OBX-11: Observation Result Status

VIIS will value this field with “F” (Final)

QPD Query Parameter Definition Segment – The Query Parameter Definition Segment is used to define a query. The QPD segment defines the parameters of the query. This segment is intentionally very similar to the PID segment containing permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

SEQ/Field Number	DT	R/RE/O/C/CE	RP/#	Tbl #	Element Name
1	CE	R			Message Query Name
2	ST	R			Query Tag
3	CX	RE	Y		Patient List
4	XPN	R			Patient Name
5	XPN				Mother’s Maiden Name
6	TS	R			Patient Date of Birth
7	IS				Patient Sex
8	XAD				Patient Address
9	XTN				Patient Home Number
10	ID				Multiple Birth Indicator
11	NM				Patient Birth Order

Example:

```
QPD|Z34^Request Complete Immunization History^HL70471|1443 |123^^^^MR|
JONES^GEORGE^M^^^^L||20140227|M|1234 W FIRST ST^^AUGUSTA^ME^04330^^H | |
```

QPD-1: Message Query Name – This field contains the name of the query. Two types of queries are accepted in this field. They are:

Z34^Request Complete Immunization History^HL70471

Or

Z44^Request Evaluated History and Forecast^HL70471

QPD-2: Query Tag – This is a required field. It must be valued by the HL7 Data Partner’s system to identify the query and may be used to match the response message to the originating query. This query tag must be unique to each query message instance.

QPD-3: Patient List – This field contains identifiers that are intended to allow unique identification of the patient. Multiple identifiers are accepted in this field. The format of this field follows the same format of the PID-3 field in a VXU message.

QPD-4: Patient Name – This follows the same format at PID-5. Last name and first name are required.

QPD-5: Patient Mother Maiden Name – This field follows the format of the PID-6 field in a VXU message. Only the last name is used in the first component when searching for matching patients. QPD-5.2 is mother’s first name

QPD-6: Patient Date of Birth – This field follows the format of the PID-7 field in a VXU message.

QPD-7: Patient Sex – This field follows the format of the PID-8 field in a VXU message.

QPD-8: Patient Address – The patient’s address is sent in this field. This field follows the same format as PID-11. Components 1, 3, 4, and 5 are required.

QPD-9: Patient Home Phone – This field follows the format of the PID-13 field in a VXU message. Only the first number is processed. All other numbers are ignored, so don’t bother with any repetition in this field.

QPD-10: Multiple Birth Indicator – This field indicates whether the patient was part of a multiple birth. If the status is undetermined, then the field should be empty. Use “Y” or “N”.

QPD-11 **Multiple Birth – Birth Order** –If the patient is part of a multiple birth, a value (number) indicating the patient’s birth order is entered into this field. If QPD-10 is populated with a with a “Y” then this field shall be populated.

RCP Response Control Parameter Segment – This segment is required and used to restrict the amount of data that should be returned in response to a query. It lists the segments to be returned.

SEQ/Field Number	DT	R/RE/O/C/CE	RP/#	Tbl #	Element Name
1	ID	RE			Query Priority
2	CQ	R			Quantity Limited Request
3		RE			Response Modality – Not used in VIIS

Example: RCP|I|5^RD|

RCP-1: **Query Priority** – This field contains the timeframe that the response is required. Use the letter I for immediate. If null VIIS defaults to I.

RCP-2: **Quantity Limited Response** – This field is the maximum total records VIIS should return. A numerical value is given in the first component and the units are specified in the 2nd component. The units in the segment component shall be RD. Empty component or another value submitted, other than number, will cause the QPB to fail.

Example: |5^RD|

RCP-3: **Response Modality** – You can put an R here but VIIS ignores it.

Example: ||R

QAK - Query Acknowledgment Segment – This segment contains information sent in an RSP message. It cannot be repeated.

SEQ/Field Number	DT	R/RE/O/C/CE	RP/#	Tbl #	Element Name
1	ST	R			Query Tag
2	ID	R		0208	Query Response Status
3	CE	O			Message Query Name

QAK-1 Query Tag – This field contains the value sent in QPD-2 (query tag) by the initiating system and will be used to match the response message to the originating query.

QAK-2 Query Response Status – This field allows the responding system to return a precise response status. The following table, User Defined Table 0208 contains the values that would be returned by VIIS in the QAK-2 field.

User-defined table 0208 – Query Response Status

Value	Description	Comment
OK	Data found, no errors (this is the default)	
NF	No data found, no errors	
AE	Application Error	Query had an error in content or format
AR	Application Reject	QBP message can be parsed as a query, but contains fatal errors
TM	Too many candidates found	To many possible matches, query must be narrowed down.
PD	Protected Data	Patient’s data marked as “not shared” in VIIS

QAK-3 Message Query Name – This field contains the name of the query. This shall mirror the QPD-1 (Message Query Name) found in the query message being responded to.

Example: Z33^CDCPHINVS Response profile (No client match found)

```
FHS|^~\&|VIIS1.0.0|VIIS|DETS|20191010||654018.response
BHS|^~\&|VIIS1.0.0|VIIS|DETS|20191010
MSH|^~\&|VIIS|VIIS|DETS|20191010||RSP^K11^RSP_K11|20171025125009867001|P|2.5.1|||||Z33^CDCPHINVS|VIIS|DETS
MSA|AA|20171025125009867001||0||0^Message Accepted^HL70357
QAK|XDOC-2440067|NF|Z34
QPD|Z34^Request Immunization History^HL70471|XDOC-2440067|8264675|Sprinkle^John||20110101|M|^H|^PH^PRN
BTS|1
FTS|1
```

ERR – Error Segment - The error segment reports information about errors or warnings in processing the message. The segment may repeat. Each error or warning will have its own error segment.

SEQ	DT	R/M	RP/#	TBL#	ELEMENT NAME
1					Not supported for Version 2.5 and
2	ERL	R			Error Location
3	CWE	R		0357	HL7 Error Code
4		R			Severity. If error occurs will use E. if warning occurs will use W.
5		RE		0533	Application Error Code
8		RE			User Message

ERR-2 Error Location - Identifies the location in a message related to the identified error, warning, or message.

ERR-3 HL7 Error Code - Identifies the HL7 error code. Refer to HL7 Table 0357 – Message Error Condition Codes for valid values.

User-defined table 0357 – Message Error Status Codes

Status Code	Status Text	Description/Comment
Success		
0	Message Accepted	Success. Optional, as the AA conveys this. Used for systems that must always return a status code.
Error Status Codes:		
100	Segment sequence error	The message segments were not in the proper order or required segments are missing.
101	Required field missing	A required field is missing from the segment.
102	Data type error	The field contained data of the wrong date type, e.g., an NM field contained letters of the alphabet.
103	Table value not found.	A field of data type ID or IS was compared against the corresponding table, and no match was found.
Rejection Status Codes:		
200	Unsupported messages types	The message type is not supported.
201	Unsupported event code	The event code is not supported.
202	Unsupported processing I.D.	
203	Unsupported version I.D.	
204	Unknown key identifier	The ID of the patient, order, et. was not found. Used for transactions other than additions, e.g, transfer of a non-existent patient.
205	Duplicate key identifier	The ID of the patient, order, etc. already exists. Used in response to addition transactions (Admit, New Order, etc.)

206	Application record locked	The transaction could not be performed at the application storage level, e.g., database locked.
207	Application internal error	Catchall for internal errors not explicitly covered by other codes.

ERR-4 **Severity** - If error occurs will use E. if warning occurs will use W.

ERR-5 **Application Error Code** – See table 0533

User-defined table 0533 – Application Error Code

Status Code	Status Text	Description/Coment
1	Illogical date error	Date conflicts with another date in the message
2	Invalid date	Date is not valid or lacks precision.
3	Illogical value error	The value conflicts with other data in the message.
4	Invalid value	The value is not valid. This applies for fields that are not associated with a table of values.
5	Table value not found	The value is not found in the associated table.
6	Required observation missing	A required observation, such as VFC eligibility status, is missing.

ERR-8 **User Message**

MSA – Message Acknowledgement Segment

SEQ	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	ID	R		0008	Acknowledgment Code
2	ST	R			Message Control I.D.

MSA-1 Acknowledgement Code – See table 0008

Table 0008 – Acknowledgement Code

Value	Description	Comment
AA	Application Accept	QBP message was accepted without error.
AE	Application Error	QBP message was parsed as a query and contains non-fatal errors.
AR	Application Reject	Message was rejected because one of the following occurred: Unsupported message type, Unsupported event code, Unsupported processing I.D. Unable to process for reasons unrelated for format or content.

MSA-2 Message Control ID - 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 the message control I.D. sent in MSH-10 by the initiating system.

Sample VXU Message

MSH|^~\&|RTO||20190925||VXU^V04^VXU_V04|1|P|2.5.1|1||ER|AL|||||
PID|1||PA123456^^^MYEMR^MR||JONES^GEORGE^M^JR^^^L|MILLER^MARTHA^G^^^M|20140227|M||2106-3^WHITE^CDCREC|1234 W FIRST ST^^AUGUSTA^ME^04330^^H|^PRN^PH^^^207^5555555||ENG^English^HL70296|||||2186-5^ not Hispanic or Latino^CDCREC|Y|2
PD1|||||||02^REMINDER/RECALL – ANY METHOD^HL70215|N|20140730||A|20140730|
NK1|1|JONES^MARTHA^^^L|MTH^MOTHER^HL70063|1234 W FIRST ST^^AUGUSTA^ME^04330^^H|^PRN^PH^^^207^5555555|
ORC|RE||197023^CMC|||||^Clark^Dave||^Smith^Janet^^^^^^L^^^^^^^^^^MD |||||
RXA|0|1|20140730||03^MMR^CVX|.5|||00^NEW IMMUNIZATIONRECORD^NIP001|1245319599^Smith^Janet^^^^^^CMS^^^NPI^^^^^^MD |||||889977|20200531|MSD^MERCK^MVX|||CP|A
RXR|C28161^INTRAMUSCULAR^NCIT|LA^LEFT ARM^HL70163
OBX|1|CE|64994-7^Vaccine funding program eligibility category^LN|1|V03^VFC eligibility –Not Insured^HL70064|||||F|||20110701140500

Sample Response:

FHS|^~\&|VIIS1.0.0|VIIS||RTO|20190926||653212.response
BHS|^~\&|VIIS1.0.0|VIIS||RTO|20190926
MSH|^~\&|VIIS1.0.0|VIIS||RTO|20190926||ACK^V04^ACK|1|P|2.5.1|||||||VIIS|RTO
MSA|AA|1
BTS|1
FTS|1

Sample QBP Messages and Responses

Z34 QBP message submitted

MSH|^~\&|TESTAPP|DE-000001|IMMUM|VIIS|20161215||QBP^Q11^QBP_Q11|200|P|2.5.1|||||ER|AL|||||Z34^CDCPHINVS|DE-000001||
QPD|Z34^Request Immunization History^CDCPHINVS|40005||WALL^MIKE^^^L|WINDOWS^DOLLY|20170101|M|2222 ANYWHERE Way^^Fresno^CA^93726^^|^PRN^PH^^^555^5555382||
RCP|I|5^RD&records&HL70126

RSP with two immunization histories returned

- MSA-1 (Acknowledgement Code) = “AA” (QBP contained no errors)
- QAK-2 (Query Response Status) = “OK” (Match found and immunization history returned)

MSH|^~\&|CAIR IIS|CAIR IIS||DE-000001|20170509||RSP^K11^RSP_K11|200|P|2.5.1|||||||Z32^CDCPHINVS|CAIR IIS|DE000001
MSA|AA|200|0|0^Message Accepted^HL70357
QAK|40005|OK|Z34
QPD|Z34^Request Immunization History^CDCPHINVS|40005||WALL^MIKE^^^L|WINDOWS^DOLLY|20170101|M|2222 ANYWHERE Way^^Fresno^CA^93726^^|^PRN^PH^^^555^7575382
PID|1||291235^^^ORA^SR||WALL^MIKE|WINDOW^DOLLY|20170101|M||2222 ANYWHERE
WAY^^FRESNO^CA^93726^^H|^PRN^H^^^555^5555382|||||||N|0
PD1|||||||02|N|||A
ORC|RE||11171795
RXA|0|1|20170101|20170101|08^HepB-Peds^CVX|1.0|||00|^VICTORiatest|||||HBV12345||SKB||CP
RXR|IM|RT
OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|45^HepB^CVX^90731^HepB^CPT|||||F
OBX|2|NM|30973-2^Dose number in series^LN|1|1|||||F
ORC|RE||11173468
RXA|0|1|20170301|20170301|20^DTaP^CVX|1.0|||01|||||||CP
RXR|IM|RT
OBX|3|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|107^DTP/aP^CVX^90700^DTP/aP^CPT|||||F OBX|4|NM|30973-2^Dose number in series^LN|1|1|||||F

Z44 QBP message submitted

MSH|^~\&|TESTAPP|DE-000001|IMMUM|VIIS|20161215||QBP^Q11^QBP_Q11|200|P|2.5.1||||ER|AL||||Z44^CDCPHINVS|DE-000001|| QPD|Z44^Request Immunization History and Forecast^CDCPHINVS|40005||WALL^MIKE^^^^L|WINDOWS^DOLLY|20170101|M|2222 ANYWHERE Way^Fresno^CA^93726^|PRN^PH^^^555^5555382|| RCP|I|5^RD&records&HL70126

RSP showing two immunization histories and immunization forecasting

- MSA-1 (Acknowledgement Code) = “AA” (QBP contained no errors)
- QAK-2 (Query Response Status) = “OK” (Match found and immunization history and forecasting returned)

MSH|^~\&|CAIR IIS|CAIR IIS||DE-000001|20170509||RSP^K11^RSP_K11|200|P|2.5.1||||Z42^CDCPHINVS|CAIR IIS|DE-000001
 MSA|AA|200|0|0^Message Accepted^HL70357
 QAK|40005|OK|Z44
 QPD|Z44^Request Immunization History and Forecast^CDCPHINVS|40005||WALL^MIKE^^^^L|WINDOWS^DOLLY|20170101|M|2222 ANYWHERE
 Way^Fresno^CA^93726^|PRN^PH^^^555^5555382 PID|1||291235^^^ORA^SR||WALL^MIKE|WINDOW^DOLLY|20170101|M||2222 ANYWHERE
 WAY^FRESNO^CA^93726^H||^PRN^H^^^555^7575382||||||N|0
 PD1||||||02|N|||A
 ORC|RE||11171795
 RXA|0|1|20170101|20170101|08^HepB-Peds^CVX|1.0||00||^VICTORIATEST|||HBV12345||SKB||CP
 RXR|IMRT
 OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|45^HepB^CVX^90731^HepB^CPT||||F
 OBX|2|NM|30973-2^Dose number in series^LN|1|1||||F
 ORC|RE||11173468
 RXA|0|1|20170301|20170301|20^DTaP^CVX|1.0||01||||CP
 RXR|IMRT
 OBX|3|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|107^DTP/aP^CVX^90700^DTP/aP^CPT||||F OBX|4|NM|30973-2^Dose number in series^LN|1|1||||F
 ORC|RE||0
 RXA|0|1|20170509|20170509|998^No Vaccine Administered^CVX|999
 OBX|5|CE|30979-9^Vaccines Due Next^LN|0|107^DTP/aP^CVX^90700^DTP/aP^CPT||||F OBX|6|TS|30980-7^Date Vaccine Due^LN|0|20170501||||F
 OBX|7|NM|30973-2^Vaccine due next dose number^LN|0|2||||F OBX|8|TS|30981-5^Earliest date to give^LN|0|20170329||||F
 OBX|9|CE|30982-3^Reason applied by forecast logic to project this vaccine^LN|0|ACIP schedule||||F OBX|10|CE|30979-9^Vaccines Due Next^LN|1|85^HepA^CVX^90730^HepA^CPT||||F
 OBX|11|TS|30980-7^Date Vaccine Due^LN|1|20180101||||F OBX|12|NM|30973-2^Vaccine due next dose number^LN|1|1||||F
 OBX|13|TS|30981-5^Earliest date to give^LN|1|20180101||||F
 OBX|14|CE|30982-3^Reason applied by forecast logic to project this vaccine^LN|1|ACIP schedule||||F
 OBX|15|CE|30979-9^Vaccines Due Next^LN|2|45^HepB^CVX^90731^HepB^CPT||||F OBX|16|TS|30980-7^Date Vaccine Due^LN|2|20170301||||F
 OBX|17|NM|30973-2^Vaccine due next dose number^LN|2|2||||F
 OBX|18|TS|30981-5^Earliest date to give^LN|2|20170129||||F
 OBX|19|CE|30982-3^Reason applied by forecast logic to project this vaccine^LN|2|ACIP schedule||||F
 OBX|20|CE|30979-9^Vaccines Due Next^LN|3|17^Hib^CVX^90737^Hib^CPT||||F OBX|21|TS|30980-7^Date Vaccine Due^LN|3|20170301||||F
 OBX|22|NM|30973-2^Vaccine due next dose number^LN|3|1||||F OBX|23|TS|30981-5^Earliest date to give^LN|3|20170212||||F
 OBX|24|CE|30982-3^Reason applied by forecast logic to project this vaccine^LN|3|ACIP schedule||||F
 OBX|25|CE|30979-9^Vaccines Due Next^LN|4|88^Influenza-seasnI^CVX^90724^Influenza-seasnI^CPT||||F OBX|26|TS|30980-7^Date Vaccine Due^LN|4|20170701||||F
 OBX|27|NM|30973-2^Vaccine due next dose number^LN|4|1||||F
 OBX|28|TS|30981-5^Earliest date to give^LN|4|20170701||||F
 OBX|29|CE|30982-3^Reason applied by forecast logic to project this vaccine^LN|4|ACIP schedule||||F
 OBX|30|CE|30979-9^Vaccines Due Next^LN|5|03^MMR^CVX^90707^MMR^CPT||||F
 OBX|31|TS|30980-7^Date Vaccine Due^LN|5|20180101||||F OBX|32|NM|30973-2^Vaccine due next dose number^LN|5|0||||F
 OBX|33|TS|30981-5^Earliest date to give^LN|5|20180101||||F

OBX|34|CE|30982-3^Reason applied by forecast logic to project this vaccine^LN|5|ACIP schedule|||||F
 OBX|35|CE|30979-9^Vaccines Due Next^LN|6|133^PneumoConjugate^CVX^90670^PneumoConjugate^CPT|||||F OBX|36|TS|30980-7^Date
 Vaccine Due^LN|6|20170301|||||F
 OBX|37|NM|30973-2^Vaccine due next dose number^LN|6|1|||||F
 OBX|38|TS|30981-5^Earliest date to give^LN|6|20170212|||||F
 OBX|39|CE|30982-3^Reason applied by forecast logic to project this vaccine^LN|6|ACIP schedule|||||F OBX|40|CE|30979-9^Vaccines Due
 Next^LN|7|89^Polio^CVX|||||F
 OBX|41|TS|30980-7^Date Vaccine Due^LN|7|20170301|||||F
 OBX|42|NM|30973-2^Vaccine due next dose number^LN|7|1|||||F
 OBX|43|TS|30981-5^Earliest date to give^LN|7|20170212|||||F
 OBX|44|CE|30982-3^Reason applied by forecast logic to project this vaccine^LN|7|ACIP schedule|||||F OBX|45|CE|30979-9^Vaccines Due
 Next^LN|8|21^Varicella^CVX^90716^Varicella^CPT|||||F OBX|46|TS|30980-7^Date Vaccine Due^LN|8|20180101|||||F
 OBX|47|NM|30973-2^Vaccine due next dose number^LN|8|1|||||F
 OBX|48|TS|30981-5^Earliest date to give^LN|8|20180101|||||F
 OBX|49|CE|30982-3^Reason applied by forecast logic to project this vaccine^LN|8|ACIP schedule|||||F

RSP showing a message processing error*

- MSA-1 (Acknowledgement Code) = “AE”
- ERR-4 (Error Severity) valued with “E”
- QAK-2 (Query Response Status) = “AE” (error, no immunization data returned)

MSH|^~\&|CAIR IIS|CAIR IIS||DE-
 007957|20170119||RSP^K11^RSP_K11|300200|P|2.5.1|||||Z33^CDCPHINVS|CAIR IIS|DE-007957
 MSA|AE|300200|0||^Error^HL70357
 ERR||MSH^1^0|101^Required field missing^HL70357|E|6^Required observation missing^HL70533||Date of birth is a required field
 QAK|40004|AE|Z34
 QPD|Z34^Request Immunization History^CDCPHINVS|40004|20130426^^^HLN^MR|Edmunds^Lucas^^^^L||M

RSP showing no patient found in the VIIS registry

- MSA-1 (Acknowledgement Code) = “AA” (QBP contained no errors)
- QAK-2 (Query Response Status) = “NF” (patient not found)

MSH|^~\&|CAIR IIS|CAIR IIS||DE-
 000001|20170209||RSP^K11^RSP_K11|800105|P|2.5.1|||||Z34^CDCPHINVS|CAIR IIS|DE-000001
 MSA|AA|800105|0||0^Message Accepted^HL70357
 QAK|40005|NF|Z44
 QPD|Z44^Request Immunization
 History^CDCPHINVS|40005|20130430^^^TESTCASES^MR|DAVIES^BOB^^^^L|LILLIAN|20020501|M|9208 EMERALD
 FOREST^^CHASSAHOWITZKA^CA^94443-8225^USA|^PRN^PH^^^555^7575382

RSP showing too many patient matches found in the VIIS registry*

- MSA-1 (Acknowledgement Code) = “AA” (QBP contained no errors)
- QAK-2 (Query Response Status) = “TM” (too many patient matches found)

MSH|^~\&|CAIR IIS|CAIR IIS||DE-
 007957|20170222||RSP^K11^RSP_K11|TEST9051|P|2.5.1|||||Z33^CDCPHINVS|CAIR IIS|DE-007957
 MSA|AA| TEST9051
 QAK|50000|TM|Z34
 QPD|Z34^Request Immunization History^CDCPHINVS|50000|5001^^^HLN^MR|Jackson^Phil|Bell|20030219|M

RSP showing multiple patient matches returned

- MSA-1 (Acknowledgement Code) = “AA” (QBP contained no errors)
- QAK-2 (Query Response Status) = “OK”

MSH|^~\&|CAIR IIS|CAIR IIS||DE-000001|20171016||RSP^K11^RSP_K11|900|P|2.5.1|||||Z31^CDCPHINVS|CAIR IIS|DE-000001
 MSA|AA|900|0|0^Message Accepted^HL70357
 QAK|900|OK|Z34
 QPD|Z34^Request Evaluated History and Forecast^CDCPHINVS|900||Daniels^David^R|Stephens^Susanne|20050505|M|9208 Emerald Forest^Chassahowitzk^CA^94443^USA^P
 PID|1|^ORA^SR||DANIELS^DAVID^RANDEL|STEPHENS^SUSANNE|20050505|M||2028-9|9208 EMERALD FOREST^^CHASSAHOWITZKA^CA^94443^H|^PRN^PH^^978^322222||ENG|||||2186-5||N|0 PD1|||||02|N|||A
 NK1|1|STEPHENS^SUSANNE|MTH|9208 EMERALD FOREST^^CHASSAHOWITZKA^CA^94443^L|^PH^^415^4522222
 PID|1|^ORA^SR||DANIELS^DAVID^ROBERT|STEPHENS^SUSANNE|20050505|M||9208 EMERALD FOREST^^CHASSAHOWITZKA^CA^94443^H||ENG|||||Y|1 PD1|||||02|N|||A
 NK1|1|DANIELS^ROBERT|FTH

RSP showing the return of a protected immunization record**

- MSA-1 (Acknowledgement Code) = “AA” (QBP contained no errors)
- QAK-2 (Query Response Status) = “PD” (“protected data”)

MSH|^~\&|CAIR IIS|CAIR IIS||IRPH|20170302||RSP^K11^RSP_K11|140|P|2.5.1|||||Z33^CDCPHINVS|CAIR IIS|IRPH MSA|AA|140|
 QAK|37374859|PD|Z34
 QPD|Z34^Request Immunization History^HL70471|37374859||Test^Jojo^^^^L||20140505

***See Addendum** Use of “PD” in QAK-2 is a future enhancement in discussion by HL7 for v2.8. VIIS is in the process of implementing this feature now to prepare for the future release of the document. See Addendum for current RSP returned.**

Appendix A

HL7 Data Types Specific To VIIS

Introduction

Data types are the building blocks that are the foundation of successful interoperability. Each field, component or subcomponent has a data type. Conforming systems agree to adhere to the data type assigned to each component, assuring smooth communication. For example, dates may be formatted in many ways, but to assure interoperability, these need to be constrained and defined. HL7 specifies several formats, but these are compatible with each other. They allow dates to be as granular as needed. The format allows for just a year (YYYY) or for month, day, year, hour, minute, second, etc.

Data Types Specific to VIIS

Data type	Data Type Name
CE	Coded element
CM	Composite
CX	Extended Composite Id with Check digit
DT	Date (Date)
EI	Entity Identifier
HD	Hierarchic Designator
ID	Coded Values for HL7 Tables
IS	Coded value for User-Defined Tables
MSG	Message Type
NM	Numeric
PT	Processing Type
SI	Sequence ID
ST	String
TS	Time Stamp (Date and Time of Message)
VID	Version Identifier
XAD	Extended Address
XCN	Extended Composite ID Number and Name for Persons
XPN	Extended Person Name
XTN	Extended telephone number

CE - Coded Element - This data type transmits codes and the text associated with that code.

SEQ	Component Name	Data Type	Usage	LEN	Conditional Predicate	Value Set	Comments
1	Identifier	ST	R	1..50			Identifying Code.
2	Text	ST	RE	1..999			Human readable text that is not further used.
3	Name of Coding System	ID	R	1..20		HL70396	
4	Alternate Identifier	ST	RE	1..50			Alternate Identifying coded.
5	Alternate Text	ST	C(RE/X)	1..999	If CE-4 (Alternate Identifier) is valued		Human readable text that is not further used.
6	Name of Alternate Coding system	ID	C(R/X)	1..20	If CE-4 (Alternate Identifier) is valued	HL70396	

Note: The alternate identifier (from the alternate coding system) should be the closest match for the identifier found in CE-1. The order of the contents is not specified.

Identifier (ST) - Definition: Sequence of characters (the code) that uniquely identifies the item being referenced. Different coding schemes will have different elements here.

Text (ST) - Definition: The descriptive or textual name of the identifier, e.g., DTaP. This is not used by the sending or receiving system, but rather facilitates human interpretation of the code.

Name of Coding System (ID) – Definition: Identifies the coding scheme being used in the identifier component. The combination of the **identifier** and **name of coding system** components will be a unique code for a data item. Each system has a unique identifier.

Alternate Identifier (ST) - Definition: An alternate sequence of characters (the code) that uniquely identifies the item being referenced. See usage note in section introduction.

Alternate Text (ST) - Definition: The descriptive or textual name of the alternate identifier, e.g., DTaP. This is not used by the sending or receiving system, but rather facilitates human interpretation of the code.

Name of Alternate Coding System (ID) - Definition: Identifies the coding scheme being used in the alternate identifier component.

Examples of Use:

|2028-9^Asian^HL7005|

OR

|2028-9|

OR

|2028-9^^|

CM – Composite – Used for RXA11.4 Only

Examples of Use:

|^^P518)

OR

|^^Bradley Pediatrics|

CX - Extended Composite Id with Check Digit – This data type is used for specifying an identifier with its associated administrative detail.

VIIS uses this date type only for client identification in Patient Identifications Segment (PID). See the field notes for values used for VIIS.

SEQ	COMPONENT NAME	Data Type	Usage	LEN	Conditional Predicate	Value set	Comments
1	ID Number	ST	R	15			
2	Check Digit	ST	O				
3	Check Digit Scheme	ID	C(O/X)		If CX. 2 (check digit) is valued	HL70061	
4	Assigning Authority	HD	R			HL70363	
5	Identifier Type Code	ID	R	2..5		HL70203	
6	Assigning Facility	HD	O				
7	Effective Date	DT	O				
8	Expiration Date	DT	O				
9	Assigning Jurisdiction	CWE	O				
10	Assigning Agency or Department	CWE	O				

Example of Use:

|7876^^1^MR|

DT -- Date - Specifies the century and year in VIIS in YYYYMMDD format

Example of Use:

|20190404|

EI -- Entity Identifier - The entity identifier defines a given entity within a specified series of identifiers. In the case of VIIS

SEQ	COMPONENT NAME	Data Type	Usage	LEN	Conditional Predicate	Value set	Comments
1	Entity Identifier	ST	R	1..19 9			

SEQ	COMPONENT NAME	Data Type	Usage	LEN	Conditional Predicate	Value set	Comments
2	Namespace ID	ST	C(R/O)	20	If EI.3 (Universal ID) is not valued	HL70363	
3	Universal ID	ST	C(R/O)	199	If EI.2 (Namespace ID) is not valued		
4	Universal ID Type	ID	C(R/X)	6	If EI.3 (Universal Id) is valued	HL70301 (constrained)	

Example:

From MSH 21 profile identifier:

|Z34^CDCPHINVS|

Conformance Statement:

IZ-3 Conformance Statement: If populated EI.3 (Universal Id), it shall be valued with an ISO-compliant OID.

IZ-4 Conformance Statement: If populated EI.4 is populated (Universal ID Type), it shall contain the value “ISO”.

Entity Identifier (ST)

The first component, <entity identifier>, is defined to be unique within the series of identifiers created by the <assigning authority>, defined by a hierarchic designator, represented by component 2.

Namespace ID (IS)

The assigning authority is a unique identifier of the system (or organization or agency or department) that creates the data. Refer to User-defined Table 0363 – Assigning authority for suggested values.

Universal ID (ST)

This is a universal id associated with this entity. It must be linked to the Universal Id Type below. If populated, it shall be an OID.

Universal ID Type (ID)

This universal id type is drawn from HL7 Table 0301. If populated, it shall be ISO.

HD

The Hierarchic Designator (HD) determines the organization or system responsible for managing or assigning a defined identifier set. VIIS uses this data type only to identify sender and receiver in Message Header (MSH) segments. See the field notes for values used for VIIS.

The three HL components establish the entity responsible for defined identifiers

<namespace ID (IS)>^<universal ID (ST)>^<universal ID type (ID)>

For example, |VIIS7.3.1|

IS – Coded Values for User-Defined Tables

The value of such a field follows the formatting rules for a ST field except that it is drawn from a site-defined (or user-defined) table of legal values. There shall be an HL7 table number associated with IS data types. An example of an IS

field is the Event reason code defined in Section 3.3.1.4 [of the full HL7 standard], “Event reason code.” This data type be used only for user-defined tables. The reverse is not true, since in some circumstances, it is more appropriate to use the CE data type for user-defined tables.

MSG – Message Type

This field contains the message type, trigger event, and the message structure ID for the message in MSH-9 Message Type. The three MSH components define the message type
<message code (ID)>^<trigger event (ID)>^<message structure (ID)> For example, |VXU^V04^VXU_V04|

NM - Numeric

A number represented as a series of ASCII numeric characters consisting of an optional leading sign (+ or -), the digits and an optional decimal point. In the absence of a sign, the number is assumed to be positive. If there is no decimal point the number is assumed to be an integer. Examples:

|999|
|-123.792|

Leading zeros, or trailing zeros after a decimal point, are not significant. For example, the following two values with different representations, “01.20” and “1.2”, are identical. Except for the optional leading sign (+ or -) and the optional decimal point (.), no non-numeric ASCII characters are allowed. Thus, the value <12 should be encoded as a structured numeric (SN) (preferred) or as a string (ST) (allowed, but not preferred) data type.

PT – Processing Type. This data type indicates whether to process a message as defined in HL7 Application (level 7) processing rules. Use the Processing ID “P” for “production. VIIS does not use “D” for “debugging” or “T” for “training.”

SI – Sequence ID – A non-negative integer in the form of a NM field. See the field notes in segments using this data type for specifications of SI fields.

ST – String Data

String data is left justified with trailing blanks optional. Any displayable (printable) ACSII characters (hexadecimal values between 20 and 7E, inclusive, or ASCII decimal values between 32 and 126), except the defined delimiter characters. Example:

|almost any data at all|

To include any HL7 delimiter character (except the segment terminator) within a string data field, use the appropriate HL7 escape sequence.

Usage note: the ST data type is intended for short strings (e.g., less than 200 characters). For longer strings the TX or FT data types should be used.

TS – Timestamp – Specifies a point in time in YYYYMMDDHHSS format. VIIS ignores any time component.

Example: |201904040531|

OR

|20190404|

VID – Version ID – This specifies the version ID. Always use 2.5.1

XAD – Extended Address

SEQ	COMPONENT NAME	Data Type	Usage	LEN	Conditional Predicate	Value set	Comments
1	Street Address	SAD	RE				
2	Other Designation	ST	RE	1...120			
3	City	ST	RE	1...50			
4	State	ST	RE	1..50		U.S. Postal Service State Codes	Two characters
5	Zip	ST	RE	1...12			
6	Country	ID	RE	3..3		HL70399	Empty – Defaults to USA
7	Address Type	ID	R	1...3		HL70190	
8	Other Geographic Designation	ST	O				
9	County/Parish Code	IS	O				
10	Census Tract	ID	O				
11	Address Representation Code	ID	O				
12	Address Validity Range	DR	X				Deprecated as of 2.5
13	Effective Date	TS	O				
14	Expiration Date	TS	O				

Example of Use:

|101 N 14th St.^15th Floor^Richmond^VA^23219^^L|

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>**Street Address**

The street or mailing address of a person or institution.

Other designation (ST)

Second line of address. In general, it qualifies address. Examples: Suite 555 or Fourth Floor.

City (ST)

City address of a person or institution.

State or Province (ST)

State or province should be represented by the official postal service codes for that country.

Zip or Postal Code (ST)

Zip or postal codes should be represented by the official codes for that country. In the US, the zip code takes the form 99999[-9999], while the Canadian postal code takes the form A9A-9A9.

Country (ID)

Defines the country of the address. See Table 0212.

Address Type (ID)

Address type is optional.

County/Parish Code (IS)

A code that represents the county in which the specified address resides. Refer to user-defined table 0289 - County/parish. When this component is used to represent the county (or parish), component 8 “other geographic designation” should not duplicate it (i.e., the use of “other geographic designation” to represent the county is allowed only for the purpose of backward compatibility, and should be discouraged in this and future versions of HL7).

XCN – Extended Composite ID Number and Name for Persons – VIIS uses this date type only to identify provider organizations that administer immunizations.

XPN – Extended Person Name

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <name type code (ID) > ^ <name representation code (ID)>

Example:

|Smith^John^J^III^DR^PHD^L|

Family Name (FN)

Usually the last name.

Note: The Given Name (first name), Family Name (last name), and Second and Further Given Names or Initials thereof cannot contain special characters. VIIS accepts letters; spaces; period (.), hyphen (-), and apostrophe (‘) characters.

Given Name (ST)

Usually the first name.

Second and Further Given Names or Initials Thereof (ST)

Usually the middle name or initial, if available. Multiple Second and Further Given Names or Initials thereof may be included by separating them with spaces.

Suffix (ST)

Used to specify a name suffix (e.g., Jr. or III).

Prefix (ST)

Used to specify a name prefix (e.g., Dr.).

Degree (ST)

Used to specify an educational degree (e.g., MD).

Name Type Code (ID)

A code that represents the type of name. Refer to HL7 table 0200 - Name type for valid values. Table 0200 - Name type. This is not viewable in the User Interface.

Table 0200 – Name Type Code

A	Alias name	This is a nickname or other assumed name.
L	Legal name	This a person’s official name. It is the primary name recorded in the IIS.
D	Display name	This is the preferred name displayed on a user interface.
M	Maiden name	This is a woman’s name before marriage.
C	Adopted name	This is the name of a person after adoption.
B	Name at birth	This is name recorded at birth (prior to adoption).
P	Name of partner/spouse	This is the name of the partner or spouse.
U	Unspecified	This is a name of unspecified type.

XTN – Extended Telecommunication Number

SEQ	COMPONENT NAME	Data Type	Usage	LEN	Conditional Predicate	Value set	Comments
1	Telephone Number	ST	X				
2	Telecommunication Use Code	ID	R			HL70201	
3	Telecommunication Equipment Type	ID	RE	1...50		HL70202	
4	Email Address	ST	C(R/X)	1...199	If the XTN-2 is valued “NET”		
5	Country Codes	NM	O	1...12			
6	Area code	NM	(C(RE/X)	5	If the XTN-2 is valued not “NET”		

SEQ	COMPONENT NAME	Data Type	Usage	LEN	Conditional Predicate	Value set	Comments
7	Local Number	NM	C(RE/x)	9	If the XTN-2 is valued not "NET		
8	Extension	NM	O				
9	Any Text	ST	O				
10	Extension Prefix	ST	O				
11	Speed Dial Code	ST	O				
12	Unformatted Phone Number	ST	O				

Example of Use:

Example: PID|||||||||^prn^^^904^8887777|

Example: PID|||||||||^NET^^rbradman@gotcha.com^^|