



COLORADO
Department of Public
Health & Environment

Colorado Immunization Information System

**HL7 Version 2.5.1 Real-Time Immunization Data Exchange
Implementation Guide**

Version 1.0

Last Updated January 2016

Change History	7
Introduction	8
Definitions	9
HL7 Data Types	9
Field Usage Definitions.....	9
Use Case Descriptions.....	10
Use Case 1 – Send Immunization History	10
Use Case 2 – Request Complete Immunization History	10
Use Case 3 – Request Evaluated History and Forecast	10
Use Case 4 – Send Demographic Data	11
Use Case 5 – Acknowledge Receipt.....	11
Use Case 6 – Report Error	11
Messaging in the Context of the Business Process.....	11
Profile Z22 – Send Unsolicited Immunization Update Using a VXU.....	12
Introduction:	12
Interaction Definition:.....	12
Message Level Segment Definition Z22	13
Segment Level Segment Definition Z22.....	13
Profile Z23 – Return an Acknowledgement	13
Introduction:	13
Interaction Definition:.....	13
Message Level Segment Definition Z23	13
Segment Level Definition Z23:.....	14
MSH - Message Header Segment	14
MSA – Message Acknowledgement Segment.....	16
ERR – Error Segment	17
Profile Z34 – Request a Complete Immunization History Introduction:	18
Interaction Definition:.....	20
Message Level Segment Definition Z34 and Z44:	21
Segment Level Definition Z34 and Z44:.....	21
MSH – Message Header Specification.....	21
QPD – Input Parameter Segment Specification.....	24
RCP – Response Control Parameter Segment Specification	25

Profile Z44 – Request Evaluated Immunization History and Forecast	26
Introduction:	26
Interaction Definition:.....	26
Message Level Segment Definition:	26
Segment Level Definition:.....	26
Profile Z42 – Return Evaluated History and Forecast.....	27
Introduction:	27
Interaction Definition:.....	27
Message Level Segment Definition	27
Segment Level Definition.....	27
Profile Z32 – Return Complete Immunization History	28
Introduction:	28
Interaction Definition:.....	28
Message Level Segment Definition Z32:	28
Segment Level Definition Z32:.....	29
MSH – Message Header Segment Specification.....	29
MSA – Message Acknowledgement Segment Specification.....	29
ERR – Error Segment Specification	29
QAK – Query Acknowledgement Segment Specification.....	30
QPD – Input Parameter Segment Specification.....	30
Profile Z31 – Return a List of Candidates Profile.....	31
Introduction:	31
Interaction Definition:.....	31
Message Level Segment Definition Z31:	31
Segment Level Segment Definition Z31:.....	32
MSH – Message Header Segment Specification.....	32
MSA – Message Acknowledgement Segment Specification.....	32
ERR – Error Segment Specification	32
QAK – Query Acknowledgement Segment Specification.....	32
QPD – Input Parameter Segment Specification.....	32
Profile Z33 – Return an Acknowledgement with no person records.....	33
Introduction:	33
Interaction Definition:.....	33

Message Level Segment Definition Z33	33
Segment Level Segment Definition Z33.....	34
MSH – Message Header Segment Specification.....	34
MSA – Message Acknowledgement Segment Specification.....	34
ERR – Error Segment Specification	34
QAK – Query Acknowledgement Segment Specification.....	34
QPD – Input Parameter Segment Specification.....	34
Appendix A – HL7 Data Types	35
CE - Coded Element.....	35
CX – Extended Composite ID with Check Digit.....	36
DTM - Date/Time	37
EI – Entity Identifier	37
ERL – Error Location	38
HD - Hierarchic Designator.....	39
ID - Coded Value for HL7 Defined Tables.....	40
IS - Coded Value for User-Defined Tables.....	40
LA2 – Location with Address Variation 2	41
MSG – Message Type.....	42
NM – Numeric	43
PT – Processing Type	43
SAD - Street Address	43
SI – Sequence ID	44
ST - String Data.....	44
TS – Time Stamp	45
VID – Version ID.....	45
XAD - Extended Address.....	46
XCN – Extended Composite ID Number and Name.....	47
XPN - Extended Person Name	49
XTN - Extended Telecommunication Number.....	50
Appendix B – Code Sets	52
Patient Code Sets	52
HL70001 – Sex	52
HL70005 – Race.....	52

HL70063 – Relationship.....	53
HL70189/CDCREC - Ethnicity.....	53
HL70203 - Identifier Type.....	54
HL70215 – Publicity Code.....	55
HL70296 - Language	56
HL70441 – Immunization Registry Status	57
Vaccination Code Sets	58
HL70004 – Patient Class	58
HL70162 - Route of Administration	58
HL70163 - Administrative Body Site.....	59
HL70227 - Manufacturers of Vaccines (MVX)	60
HL70322 – Completion Status	63
HL70323 - Action Codes	63
HL70360 – Degrees.....	63
CVX/CPT Codes - Vaccines Administered.....	65
NIP001 - Immunization Information Source.....	82
NIP002 - Substance Refusal Reason.....	82
NIP003 - Observation Identifiers	82
Vaccine Observation Code Sets.....	84
HL70064 – Vaccine Program Eligibility	84
PHVS_ImmunizationFundingSource_IIS - Vaccine Funding Source	85
PHVS_VaccinationContraindication_IIS - Contraindications	85
PHVS_VaccinationReaction_IIS - Reactions.....	86
PHVS_ HistoryOfDiseaseAsEvidenceOfImmunity_IIS – History of Disease as Evidence of Immunity indicates that a person has been diagnosed with a particular disease.	87
PHVS_ SerologicalEvidenceOfImmunity_IIS – Serological evidence of immunity to a particular disease indicates that a person has immunity to that disease.....	89
PHVS_VISBarcodes_IIS - VIS Bar Codes (IIS).....	89
PHVS_VISVaccines_IIS - VIS Vaccines (IIS).....	90
Miscellaneous Code Sets	92
HL70008 – Acknowledgement code.....	92
HL70061 – Check digit scheme	92
HL70103 – Processing ID	93
HL70136 – Yes/No Indicator	93

HL70190 – Address type.....	93
HL70200 – Name Type	94
HL70201 – Telecommunications Use Code	94
HL70202 – Telecommunications Equipment Type	95
HL70208 – Query response status.....	95
HL70357 – Message error status codes.....	96
HL70396 - Coding system.....	96
HL70516 – Error Severity.....	98
HL70533 – Application Error Code.....	98
Appendix C – Examples.....	99
Send Acknowledgement ACK In Response To VXU.....	99
Send acknowledgement of success in ACK.....	99
Send Error in ACK.....	99
Acknowledging An Error That Causes Message Rejection (AR response):	99
Acknowledging An HL7 Processing Error That Causes Message Rejection (AE response)	
.....	100
Acknowledging An HL7 Processing Error That Causes Segment Group Rejection:	100
Acknowledging An HL7 Processing Error That Causes Segment Rejection:	101
Acknowledging An HL7 Processing Error That Caused a Warning :.....	101
Acknowledging an Application Error That Causes Message Rejection Due to Local	
Business Rule Violation	101

Change History

Published/Revised Date	Version #	Author	Section/Revision Description
5/7/2015	1.0	CIIS	Draft for initial implementation
8/12/2015	1.0	CIIS	Added Appendix C – Examples
1/8/2016	1.0	CIIS	Format edits and content finalized

Introduction

The Colorado Immunization Information System (CIIS) currently has the capability to receive and process electronic information in the following Health Level Seven (HL7) formats:

- Batch files and real-time messages formatted in HL7 Version 2.3.1
- Batch files and real-time messages formatted in HL7 Version 2.5.1

This implementation guide only addresses real-time, bi-directional messages in HL7 Version 2.5.1. The purpose of this document is to provide a concise guide to the HL7 2.5.1 QBP (Query by Parameter) messages through its real-time HL7 messaging portal. HL7 is a standard messaging protocol used to exchange data between health care data systems. Providers must follow these HL7 2.5.1 specifications to successfully meet Stage 3 immunization registry reporting requirements (beginning in 2017).

This HL7 implementation guide describes the content and message mapping specifications for the set of data elements utilized, to query information and obtain an immunization history that meets the requirements for immunization reporting to the Colorado Department of Public Health and Environment (CDPHE). This version adopts the Centers for Disease Control and Prevention's (CDC) HL7 Version 2.5.1: *Implementation Guide for Immunization Messaging Release 1.5 as well as the addendum released July 2015*. The intended audiences for this document are healthcare providers, Electronic Health Record (EHR) vendors and other public health-related organizations interested in using HL7 for querying Colorado's immunization registry.

Additional information and relevant resources are available at the following websites:

Centers for Disease Control and Prevention (CDC):

<http://www.cdc.gov/vaccines/programs/iis/technical-guidance/hl7.html>

Colorado Immunization Information System (CIIS):

<https://www.colorado.gov/cdphe/electronic-health-records>

Health Level 7 International (HL7):

<http://www.hl7.org/>

Definitions

Each HL7 segment consists of several fields that are separated by a pipe "|". A definition table is included in this document for each segment that might appear in a batch file of vaccination updates.

Field	The ordinal position of the field in the message segment
Element Name	Name of Field
Data Type	Specify the format and type of data used. See <i>Appendix A</i> for the definitions of HL7 data types (page 35)
Usage	Field Usage: Required (R), Required But May Be Empty (RE), Conditional (C), Optional (O), Do Not Use (X)
Description/Comment	Description of field and additional usage comments
Code Set	Included lookup reference, when applicable

Each segment must be terminated by a carriage return. This carriage return is needed so that the HL7 messages are readable and printable, although the messages may appear somewhat cryptic due to the scarcity of white space.

HL7 Data Types

Each field has an HL7 data type. *Appendix A* found on page 35 of this document lists and defines the HL7 data types used by CIIS. The elemental data types *Numeric (NM)* and *String (ST)* consist of one value. Some data types, such as *Extended Person Name (XPN)*, *Extended Address (XAD)* and *Extended Composite ID Number and Name (XCN)* are composites.

Field Usage Definitions

There are five different usage types used in these specifications for HL7 fields. **Please pay particular attention to the definitions below:**

Symbol	Definition	Operation Requirement
R	Required	Rows highlighted blue and marked required (R) must be submitted to CIIS with a non-empty value.
RE	Required if relevant data exist in source database	Rows highlighted yellow are required if information is available from the submitting database and the field is applicable (RE). <ul style="list-style-type: none"> CIIS strongly recommends the collection and submission of these data elements to ensure accurate patient and vaccination de-duplication and data quality in CIIS.
C	Conditional	Rows highlighted in violet are conditional (C), which means that a value is required if the field it is related to contains a specific value.
O	Optional	Non-highlighted rows are optional (O). Data may be sent if available from the submitting database, but CIIS may not process it.
X	Not supported in this guide	Rows highlighted in gray (X) are deprecated, and data should not be sent in this portion of the message.

Use Case Descriptions

Use Case 1 – Send Immunization History

Goal: To send an immunization history for an individual client from one system to another. In addition to EHRs and IIS, other systems such as vital records systems or billing systems could use this message to send immunization histories. This goal includes receiving the immunization history.

Supporting HL7 version 2.5.1 Message Type: VXU – Profile Z22

Precondition: A user or other actor requests that the sending system send an immunization history.

Post-condition: The receiving system has accepted the immunization history.

Use Case 2 – Request Complete Immunization History

Goal: The goal of this use case is to request and receive a complete immunization history from another system.

Supporting HL7 version 2.5.1 Message Type: QBP – Profile Z34 and RSP – Profile Z32

Precondition: A user or other actor requests that the sending system send a request for an immunization history using demographic information and/or other identifiers.

Post-condition: The receiving system receives an immunization history. Note that if no matches are found or there are fatal errors, no immunization history will be returned.

There are 5 possible results:

1. One client matches exactly the criteria sent.
2. One or more clients match the criteria sent (inexact match).
3. No clients match the criteria sent.
4. An exact match is found but they have requested that their data not be shared.
5. There were errors or other problems preventing processing of the request.

Use Case 3 – Request Evaluated History and Forecast

Goal: The goal of this use case is to request and receive an evaluated immunization history and forecast of next doses from another system.

Supporting HL7 version 2.5.1 Message Type: QBP – Profile Z44 and RSP – Profile Z42

Precondition: A user or other actor requests that the sending system send a request for an evaluated history using demographic information and/or other identifiers.

Post-condition: The receiving system receives an evaluated immunization history and forecast. Note that if no matches are found or there are errors, no immunization history will be returned. Typically, this is presented to the person who requested the evaluated history and forecast.

There are 5 possible results:

1. One client matches exactly the criteria sent.
2. One or more clients match the criteria sent (inexact match).
3. No clients match the criteria sent.
4. An exact match is found but they have requested that their data not be shared.
5. There were errors or other problems preventing processing of the request.

Use Case 4 – Send Demographic Data

Goal: The goal of this use case is to send demographic data about a person. It may be an update or a new record. This use case does not have responsibility for the processing of the message.

Precondition: A user or other actor requests that the sending system send demographic data.

Post-condition: The receiving system processes and accepts the demographic data.

Demographic data may be sent in VXU messages (for example, the Z22 profile defined in this Implementation Guide can be used to carry demographic only data) or ADT messages. Profiles for ADT are not included in this Implementation Guide.

Use Case 5 – Acknowledge Receipt

Goal: The goal of this use case is to acknowledge receipt of a message. This can be an immunization history, request for immunization history, demographic update, observation report or request for personal id. It may indicate success or failure. It may include error messages. One example occurs when a query is well-formed, but finds no candidates. In this case the acknowledgement reports this fact.

Supporting HL7 version 2.5.1 Message Type: ACK – Profile Z23 and RSP – Profile Z33

Use Case 6 – Report Error

Goal: The goal of this use case is to send error messages related to messages. These errors could result in rejection of the message or parts of the message.

Supporting HL7 version 2.5.1 Message Type: ACK – Profile Z23 and RSP – Profile Z33

Messaging in the Context of the Business Process

The following description illustrates the most common message exchange in the IIS context, the VXU (unsolicited immunization update record). When the sending system wishes to send a VXU to a receiving system, it must do several steps in preparation:

- Create message.
 - Assemble data on person of interest.
 - Build the VXU message with this data.
- Send the message.
 - Connect to the receiving system. The partners must agree on how this is done.

- The sending system now sends the message over the connection and the receiving system catches the message.

The receiver accomplishes the following steps:

- Process the received message.
 - Determine that the message is in the appropriate format.
 - Parse the message into a format that it uses.
 - Evaluate the message components to determine that these are correctly formatted and specified.
- Send an acknowledgement to the sender, indicating the message has been successfully processed.
- Integrate the received record into the existing database.
 - Deduplicate on client to be sure that each client only has one record.
 - Deduplicate the events (immunizations, for instance).
 - Insert or update data.
- The sending system accepts the acknowledgement and processes it.

The interaction may be more complex than this. The connection may be rejected or fail. The message may be poorly formed or may not contain required information. Part of the message may contain errors, but these errors are not sufficient to reject the entire message.

The business rules for both the sender and the receiver will be clearly specified in this document so that each side understands how the message will be handled.

Profile Z22 – Send Unsolicited Immunization Update Using a VXU

Introduction:

Profile Z22 – Send Unsolicited Immunization Update is a constrainable profile that supports messaging of immunization history of an individual. It has a partner profile for acknowledging processing of the message, Z23 – Return Acknowledgement.

The goal of this interaction is to transfer immunization information from one health information system to another. The Sending System may be an Electronic Health Record system (EHRs), an Immunization Information System (IIS) or another type of health information system.

See Use Case 1 – Send Immunization History on page 10 for Use Case details.

Interaction Definition:

The sender sends an immunization record in a VXU message. The trigger may be an update or new record in the sending system record or may be triggered by some other event. The receiver accepts the message and processes it. The receiver sends an acknowledgement message in an ACK message.

The message may pass through intermediaries, such as a Health Information Exchange (HIE). The message comes from the initiating sender and the acknowledgement will be returned to the initiating system.

Message Level Segment Definition Z22

For additional information refer to the CIIS 2.5.1 VXU Implementation Guide.

Segment Level Segment Definition Z22

For additional information refer to the CIIS 2.5.1 VXU Implementation Guide.

Profile Z23 – Return an Acknowledgement

Introduction:

Profile Z23 – Return Acknowledgement is a constrainable profile based on the ACK message.

The goal of this interaction is to acknowledge receipt and processing of a partner message (VXU or QBP). The sending system may be EHR, an IIS or another type of health information system.

See Use Case 1 – Send Immunization History on page 10 for Use Case details.

Interaction Definition:

The sender sends an immunization record in a VXU message. The trigger may be an update or new record in the sending system records or may be triggered by some other event. The receiver sends an acknowledgement message in an ACK message.

The message may pass through intermediaries, such as a HIE. The message comes from the initiating sender and the acknowledgement will be returned to the initiating system.

Message Level Segment Definition Z23

The ACK returns an acknowledgement to the sending system. This may indicate errors in processing. ACK^VO4^ACK

Z23 – Return an Acknowledgement				
Segment	Segment Name	Cardinality	Usage	Comments
MSH	Message Header	(1..1)	R	MSH-9 = ACK^VO4^ACK
[[SFT]]	Software	(0..1)	O	Not used in immunization messages
MSA	Message Acknowledgement	(1..1)	R	
[[ERR]]	Error	(0..*)	RE	Included if there are errors.
[DSC]	Continuation Pointer		X	Not supported.

Segment Level Definition Z23:

MSH - Message Header Segment

The MSH is used to define the intent, source, destination, and some specifics of the syntax of a message.

MSH Segment (Required Segment)					
Field	Element Name	Data Type	Usage	Description/Comment	Code Set
1	Field Separator	ST	R	The character to be used as the field separator for the rest of the message. The recommended value is (pipe).	
2	Encoding Characters	ST	R	Four characters in the following order: component separator, repetition separator, escape character, and subcomponent separator. The recommended values are ^~\&.	
3	Sending Application	HD	R	Always CIIS^2.16.840.1.114222.4.1.144.2.4^ISO.	
4	Sending Facility	HD	R	Always CDPHE^2.16.840.1.114222.4.1.144^ISO.	
5	Receiving Application	HD	RE	This value will echo the Sending Facility from the VXU or QBP message sent to the gateway.	
6	Receiving Facility	HD	R	This value will echo the Sending Facility from the VXU or QBP message sent to the gateway.	
7	Date/Time of Message	TS	R	Time stamp (TS) data type must be in the format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]][+/-ZZZ]^<degree of precision>.	
8	Security	ST	O	CIIS disregards.	
9	Message Type	MSG	R	Always "ACK^VO4^ACK".	
10	Message Control ID	ST	R	Unique ID for message – Site Code + Date/Time Stamp.	
11	Processing ID	PT	R	Values: D – Debugging P – Production T – Training	

MSH Segment (Required Segment)					
Field	Element Name	Data Type	Usage	Description/Comment	Code Set
				In most cases, use P.	
12	Version ID	VID	R	HL7 version number. Always 2.5.1.	
13	Sequence Number	NM	O	CIIS disregards.	
14	Continuation Pointer	ST	O	CIIS disregards.	
15	Accept Acknowledgement Type	ID	R	This field indicates whether enhanced acknowledgments are requested. Values: AL – Always or <Null>.	
21	Message Profile Identifier	EI	R	Always Z23^CDCPHINVS.	
22	Sending Responsible Party	XON	RE		
23	Receiving Responsible Party	XON	RE		

Example:

```
MSH|^~\&|Allscripts|CMC|CIIS^2.16.840.1.114222.4.1.144.2.4^ISO|CDPHE^2.16.840.1.114222.4.1.144^ISO
|200905211245||VXU^V04^VXU_V04|200905211245|T|2.5.1|||AL|||||Z23^CDCPHINVS|CMC|CIIS^2.16.840.1.114222.4.1.144.2.4^ISO<CR>
```

MSA – Message Acknowledgement Segment

Message Acknowledgement Segment (MSA)					
Field	Element Name	Data Type	Usage	Description/Comment	Code Set
1	Acknowledgement Code	ID	R	This field contains an acknowledgement code, see message processing rules. Refer to Code Set HL70008 – Acknowledgement code for valid values (page 92).	HL70008
2	Message Control ID	ST	R	This field contains the message control ID of the message sent by the sending system. This field echoes the message control id sent in MSH-10 by the initiating system.	
3	Text Message	ST	X		
4	Expected Sequence Number	NM	O		
5	Delayed Acknowledgement Type		O		
6	Error Condition	CE	X		

ERR – Error Segment

Error Segment (ERR)					
Field	Element Name	Data Type	Usage	Description/Comment	Code Set
1	Error Code and Location	ELD	X	Not supported for Version 2.5 and above.	
2	Error Location	ERL	RE	Identifies the location in a message related to the identified error, warning or message. Each error will have an ERR, so no repeats are allowed on this field. This field may be left empty if location is not meaningful.	
3	HL7 Error Code	CWE	R	Identifies the HL7 (communications) error code. Refer to Code Set HL70357 – Message Error Condition Codes for valid values (page 96).	HL70357
4	Severity	ID	R	Identifies the severity of an application error. Knowing if something is Error, Warning or Information is intrinsic to how an application handles the content. Refer to Code Set HL70516 – Error severity for valid values (page 98).	HL70516
5	Application Error Code	CWE	RE	Application specific code identifying the specific error that occurred. Refer to Code Set HL70533 – Application Error Code for appropriate values (page 98).	HL70533
6	Application Error Parameter	ST	O		
7	Diagnostic Information	TX	O		
8	User Message	TX	RE	The text message to be displayed to the application user.	
9	Inform Person Indicator	IS	O		
10	Override Type	CWE	O		
11	Override Reason Code	CWE	O		
12	Help Desk Contact Point	XTN	O		

Example with error in PID:

ERR||PID^1^3|101^Required field missing^HL70357^^|E||||Patient Id is required, Message rejected

Note: If an error involves the entire message (e.g., the message is not parse-able) then location has no meaning. In this case, ERR-2 is left empty.

Profile Z34 – Request a Complete Immunization History Introduction:

Profile Z34 – Request Complete Immunization History is a constrainable profile that supports request of an immunization history of an individual. It has a set partner profiles which return the requested history, a list of candidate patients or an acknowledgement that no matches were found.

The goal of this query is to request a complete immunization history. This will support transferring a person's immunization record from one information system to another. The response will be very similar to a VXU message in content.

See Use Case 2 – Request Immunization History on page 10 for Use Case details.

A complete immunization history consists of

- Demographic information about the patient,
- A list of the immunizations received,
- A list of any patient conditions that impact immunizations (i.e., allergies, contraindications, history of vaccine preventable disease)

Request Complete Immunization History or Evaluated Immunization History and Forecast Query Profiles	
Query Statement ID (Query ID=Z34 or Z44)	Z34 and Z44
Type:	Query
Query Name:	Request Immunization History
Query Trigger (=MSH-9):	QBP^Q11^QBP_Q11
Query Mode:	Both
Response Trigger (=MSH-9):	RSP^K11^RSP_K11
Query Characteristics:	<p>The query parameters may include demographic and address data. No sorting is expected.</p> <p>This profile does not specify the logic used when searching for matching clients/patients. The query parameter contents may be used for simple query or as input for probabilistic search algorithms. The search methodology should be specified by local implementations.</p>
Purpose:	The purpose is to request a complete immunization history and forecast for one client. Note: CIIS returns both the forecast and complete history for both Profile Z34 and Profile Z44.
Response Characteristics:	<ul style="list-style-type: none"> • In the case where no candidates are found, the acknowledgement response will indicate that no candidates were found. • In the case where exactly one high-confidence candidate is found, an immunization history may be returned. For Profile Z44 the immunizations due will be returned. • In the case where one or more clients could match the criteria sent, a list of candidates may be returned to allow for refinement of the query. If the number of candidates exceeds the maximum number requested or allowed for return (n=5), the acknowledgement response will indicate too many matches and no records will be returned. • In the case where one high confidence candidate is found, but that candidate does not allow sharing of data, the acknowledgement response will indicate no candidates were found. • In the case where the receiving system can't process the query, the receiving system will indicate an error in an acknowledgement.
Based on Segment Pattern:	NA

Interaction Definition:

The sending system creates a query and sends it. The responding system sends a response.

Response to Different Outcomes	
Outcome of Query	Response Message
No match found.	Response indicates that message was successfully processed and that no clients matched the criteria that were sent in the query. See Acknowledgement Profile (Z33).
Exactly one high confidence match found.	For Profile Z34 and Z44: Response includes a complete immunization history and forecast, if Profile Z44 is requested, as specified below. See Profile Return Immunization History (Z32).
At least one lower confidence match is found, but \leq maximum number allowed (n=5).	The Response returns one PID with associated PD1 and NK1 segments for each potential match. No immunization history is returned. See Profile Return Candidate List (Z31).
More than the maximum number allowed (n=5) is found.	Response indicates that the message was successfully processed, but that too many potential matches were found. See Return Acknowledgement Profile (Z33). The maximum number allowed is the lower of the maximum number requested and the maximum number that the receiving system will return.
Message is not well formed and has fatal errors.	Response indicates that the message was not successfully processed and may indicate errors. See Return Acknowledgement Profile (Z33).
Message was rejected because one of the following occurred: <ul style="list-style-type: none"> • Unsupported message type. • Unsupported event code. • Unsupported processing ID. • Unable to process for reasons unrelated for format or content. 	Return ACK message with errors.

Message can't be identified as an HL7 message	No HL7 message is returned.
---	-----------------------------

Message Level Segment Definition Z34 and Z44:

The HL7 QBP message is used for requesting information (Immunization History). The following sections define each segment type that can appear in a QBP message, along with specific notes about the fields contained within each segment.

The following table lists the segments that are part of a QBP. A couple of examples are listed below.

Z34 or Z44 - Request Complete Immunization History or Request Evaluated Immunization History and Forecast				
Segment	Segment Name	Cardinality	Usage	Comments
MSH	Message Header Segment	(1..1)	R	MSH-9 = QBP^Q11^QBP_Q11
[[SFT]]	Software Segment	(0..1)	O	Not used.
QPD	Query Parameter Definition	(1..1)	R	
RCP	Response Control Parameter	(0..*)	R	
[DSC]	Continuation Pointer		X	Not supported.

Segment Level Definition Z34 and Z44:

MSH – Message Header Specification

For this profile, MSH-9 is always “QBP^Q11^QBP_Q11” and MSH-21 is always “Z34^CDCPHINVS” or “Z44^CDCPHINVS”.

MSH Segment (Required Segment)					
Field	Element Name	Data Type	Usage	Description/Comment	Code Set
1	Field Separator	ST	R	The character to be used as the field separator for the rest of the message. The recommended value is (pipe).	
2	Encoding Characters	ST	R	Four characters in the following order: component separator, repetition	

MSH Segment (Required Segment)					
Field	Element Name	Data Type	Usage	Description/Comment	Code Set
				1separator, escape character, and subcomponent separator. The recommended values are ^~\&.	
3	Sending Application	HD	RE	Instance name of the EHR product where the data originated.	HL70361
4	Sending Facility	HD	R	This field contains an indication of the sending facility. CIIS will assign the value that should be in this field.	CIIS Assigned Code
5	Receiving Application	HD	R	Always CIIS^2.16.840.1.114222.4.1.144.2.4^ISO.	
6	Receiving Facility	HD	R	Always CDPHE^2.16.840.1.114222.4.1.144^ISO.	
7	Date/Time of Message	TS	R	Time stamp (TS) data type must be in the format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]]][+/-ZZZZ]^<degree of precision>.	
8	Security	ST	O	CIIS disregards.	
9	Message Type	MSG	R	Always "QBP^Q11^QBP_Q11" for vaccination history requests.	
10	Message Control ID	ST	R	Unique ID for message – Site Code + Date/Time Stamp.	
11	Processing ID	PT	R	Values: D – Debugging P – Production T – Training In most cases, use P.	
12	Version ID	VID	R	HL7 version number. Always 2.5.1.	
13	Sequence Number	NM	O	CIIS disregards.	
14	Continuation Pointer	ST	O	CIIS disregards.	
15	Accept Acknowledgement Type	ID	R	This field indicates whether enhanced acknowledgments are requested. Values: AL – Always or <Null>.	

MSH Segment (Required Segment)					
Field	Element Name	Data Type	Usage	Description/Comment	Code Set
21	Message Profile Identifier	EI	R	Always Z22^CDCPHINVS.	
22	Sending Responsible Party	XON	RE		
23	Receiving Responsible Party	XON	RE		

Example:
MSH|^~\&|Allscripts|CMC|CIIS^2.16.840.1.114222.4.1.144.2.4^ISO|CDPHE^2.16.840.1.114222.4.1.144^ISO
|200905211245||VXU^V04^VXU_V04|200905211245|P|2.5.1|||AL|||||Z34^CDCPHINVS|CMC|CIIS^2.16.840.1.114222.4.1.144.2.4^ISO<CR>

QPD – Input Parameter Segment Specification

The QPD is used to define the patient being queried.

QPD Segment (Required Segment)					
Field	Element Name	Data Type	Usage	Description/Comment	Code Set
1	MessageQueryName	CE	R	Z34^Request Complete Immunization History^CDCPHINVS.	
2	Query Tag	ST	R	Unique Id assigned by sender.	
3	PatientList	CX	R	PID-3: Patient Identifier List.	
4	PatientName	XPN	R	PID-5: Patient Name.	
5	PatientMotherMaiden Name	XPN_M	RE	PID-6: Mother's maiden name.	
6	Patient Date of Birth	TS_NZ	R	PID-7: Patient date of birth.	
7	Patient Sex	IS	R	PID-8: Patient sex.	
8	Patient Address	XAD	RE	PID-11: Patient Address.	
9	Patient home phone	XTN	RE	PID-13: Patient home phone.	
10	Patient Multiple birth indicator	ID	RE	PID-24: Patient multiple birth indicator.	
11	Patient birth order	NM	RE	PID-25: Patient birth order.	
12	Client last updated date	TS	RE	PID-33: Patient last update date.	
13	Client last update facility	HD	RE	PID-34: Patient last update facility.	

RCP – Response Control Parameter Segment Specification

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

RCP Segment (Required Segment)					
Field	Element Name	Data Type	Usage	Description/Comment	Code Set
1	Query Priority	ID	RE	Empty or "I". Immediate priority is expected.	HL70091
2	Query Limited Request	CQ	RE	This field may contain a maximum number of records that may be returned. The first component contains the count and the second contains "RD" for records.	HL70126
3	Response Modality		O		
4	Execution and Delivery Time		O		
5	Modify Indicator		O		
6	Sort-by Field		O		
7	Segment group inclusion		O		

Profile Z44 – Request Evaluated Immunization History and Forecast

Introduction:

Profile Z44 – Request Evaluated History and Forecast is a constrainable profile that supports request of an immunization evaluated immunization history and forecast of an individual. It has a set partner profiles which return the requested history or an acknowledgement that no matches were found.

The goal of this query is to request an evaluated immunization history and forecast of next doses due.

See Use Case 3 – Request Evaluated History on page 10 for Use Case details.

An evaluated immunization history and forecast consists of:

- Limited demographic information about the individual.
- The history of immunizations administered with validation by a clinical decision support engine.
- Forecast of what eh person is due to receive next and the dates when due.

Note: For additional information review the Request Complete Immunization History or Evaluated Immunization History and Forecast Query Profiles table under the Introduction section of Profile Z34 – Request a Complete Immunization History (page 18).

Interaction Definition:

For additional information review the Response to Different Outcomes table under the Interaction Definition section of Profile Z34 – Request a Complete Immunization History (page 20).

Message Level Segment Definition:

For additional information review the table under the Message Level Segment Definition section of Profile Z34 – Request a Complete Immunization History (page 20).

Segment Level Definition:

For additional information review the tables under the Segment Level Definition section of Profile Z34 – Request a Complete Immunization History (page 21).

Profile Z42 – Return Evaluated History and Forecast

Introduction:

The goal of this response is to return an evaluated immunization history and forecast. It is not intended to support transfer of complete immunization history. It is a partner to Profile Z44, Request Evaluated History and Forecast (page 26).

Interaction Definition:

Refer to Interaction Definition in Profile Z44 – Request Evaluated History and Forecast (page 26).

Message Level Segment Definition

For additional information review the table under the Message Level Segment Definition section of Profile Z32 – Response Profile – Return Complete Immunization History (page 28).

Segment Level Definition

For additional information on PID, OBX, ORC, RXA, and RXR segments references these tables in the CIIS HL7 2.5.1 VXU Specifications document.

For additional information on the QAK segment refer to the table under the Segment Level Definition section of Profile Z32 – Response Profile – Return Complete Immunization History (page 29).

For additional information on the QPD segment refer to the table under the Segment Level Definition section of Profile Z34 – Request a Complete Immunization History (page 21).

Profile Z32 – Return Complete Immunization History

Introduction:

Profile Z32 – Return Complete Immunization History is a constrainable profile that supports return of an immunization history of an individual. CIIS also returns the patient recommended vaccinations for this profile. It is a response to the Z34-Request Immunization History query (page 18).

The goal of this response is to return a complete immunization history in response to a request for a person’s record. This will support transferring a person’s immunization records from one information system to another. The response will be very similar to a VXU message in content.

Interaction Definition:

For more information, refer to the Interaction Definition section in Profile Z34 – Request a Complete Immunization History (page 18).

Message Level Segment Definition Z32:

The HL7 RSP message is a response to a request for information (QBP). The following sections define each segment type that can appear in a RSP message, along with specific notes about the fields contained within each segment.

The following table lists the segments that are part of a RSP. A couple of examples are listed below.

Z32 - Return Complete Immunization History				
Segment	Segment Name	Cardinality	Usage	Comments
MSH	Message Header Segment	[1..1]	R	MSH-9 = RSP^K11^RSP_K11
{{SFT}}	Software Segment	[0..1]	O	Not used.
MSA	Query Parameter Definition	[1..1]	R	
[ERR]	Error	[1..1]	O	Note that ERR is not repeating. If more than one error, the most serious will be reported.
QAK	Query Acknowledgement	[0..*]	R	
QPD	Query Parameter Definition	[1..1]	R	

Z32 - Return Complete Immunization History				
Segment	Segment Name	Cardinality	Usage	Comments
PID	Patient Identifier	[1..1]	R	
[PD1]	Patient Demographic	[0..1]	O	
[{NK1}]	Next of Kin	[0..*]	RE	
[PV1]		[0..1]	O	
[IN1]		[0..1]	O	
Begin Order (Cardinality [0..*])				
ORC		[1..1]	R	
RXA		[1..1]	R	
[RXR]		[0..1]	RE	
Begin Observation (Cardinality [0..*])				
OBX		[1..1]	R	
[NTE]		[0..1]	RE	
End Observation				
End Order				

Segment Level Definition Z32:

MSH – Message Header Segment Specification

For MSH segment definition, refer to Segment Listing for Profile Z23 - Return an Acknowledgement. For this profile, MSH-9 is always “RSP^K11^RSP_K11” and MSH-21 is always “Z32^CDCPHINVS”.

MSA – Message Acknowledgement Segment Specification

For MSA segment definition, refer to Segment Listing for Profile Z23 - Return an Acknowledgement.

ERR – Error Segment Specification

For ERR segment definition, refer to Segment Listing for Profile Z23 - Return an Acknowledgement. Note that only one ERR segment is returned with the response.

QAK – Query Acknowledgement Segment Specification

The QAK is used to communicate the response statistics.

QAK Segment (Required Segment)					
Field	Element Name	Data Type	Usage	Description/Comment	Code Set
1	Query Tag	ST	R	This field contains the value sent in QPD-2 (query tag) by the initiating system, and will be used to match response messages to the originating query. The responding system is required to echo it back as the first field in the query acknowledgement segment (QAK).	
2	Query Response Status	ID	RE	This field allows the responding system to return a precise response status. It is especially useful in the case where no data is found that matches the query parameters, but where there is also no error. It is defined with HL70208 Code Set - Query Response Status (page 95).	HL70208
3	Message Query Name	R	RE	This field contains the name of the query. This shall mirror the QPD-1 (Message Query Name) found in the query message that is being responded to.	
4	Hit Count	NM	O		
5	This payload	NM	O		
6	Hits remaining	NM	O		

QPD – Input Parameter Segment Specification

For QPD segment definition, refer to the Segment Listing section for Profile Z34 - Request a Complete Immunization History (page 18). This segment will echo the QPD in the request.

For specification of the returned patient information in the RSP message, reference the CIIS HL7 2.5.1 VXU Specifications document.

Profile Z31 – Return a List of Candidates Profile

Introduction:

Profile Z31 – Return List of Candidates is a **constrainable** profile that supports return of a list of candidate patients of interest. It is a response to the Z34-Request Immunization History (page 18).

The **goal** of this response is to return a complete list of candidate patents in response to a request for a person’s record. This will support re-query by the initiator, based on selection of a member of the list.

See Use Case 1 – Send Immunization History (page 10).

Interaction Definition:

For additional information, refer to the Interaction Definition section in Profile Z32 – Response Profile – Return Complete Immunization History (page 28).

Message Level Segment Definition Z31:

The HL7 RSP message is a response to a request for information (QBP). The following sections define each segment type that can appear in a RSP message, along with specific notes about the fields contained within each segment.

The following table lists the segments that are part of a RSP. A couple of examples are listed below.

Z31 - Return Complete Immunization History				
Segment	Segment Name	Cardinality	Usage	Comments
MSH	Message Header Segment	[1..1]	R	MSH-9 = RSP^K11^RSP_K11
MSA	Query Parameter Definition	[1..1]	R	
[ERR]	Error	[1..1]	O	Note that ERR is not repeating. If more than one error, the most serious will be reported.
QAK	Query Acknowledgement	[0..*]	R	
QPD	Query Parameter Definition	[1..1]	R	
Begin Patient List (Cardinality [1..*])				

Z31 - Return Complete Immunization History				
Segment	Segment Name	Cardinality	Usage	Comments
PID	Patient Identifier	[1..1]	R	
[PD1]	Patient Demographic	[0..1]	O	
[[NK1]]	Next of Kin	[0..*]	RE	
End Patient List				

Segment Level Segment Definition Z31:

MSH – Message Header Segment Specification

For MSH segment definition, refer to Segment Listing for Profile Z23 - Return an Acknowledgement (page 13). For this profile, MSH-9 is always “RSP^K11^RSP_K11” and MSH-21 is always “Z31^CDCPHINVS”.

MSA – Message Acknowledgement Segment Specification

For MSA segment definition, refer to Segment Listing for Profile Z23 – Return an Acknowledgement (page 13).

ERR – Error Segment Specification

For ERR segment definition, refer to Segment Listing for Profile Z23 - Return an Acknowledgement (page 13). Note that only one ERR segment is returned with the response.

QAK – Query Acknowledgement Segment Specification

For QAK segment definition, refer to Segment Listing for Profile Z32 - Response Profile – Return Complete Immunization History (page 28).

QPD – Input Parameter Segment Specification

For QPD segment definition, refer to Segment Listing for Profile Z34 - Request a Complete Immunization History (page 18). This segment will echo the QPD in the request.

For specification of the returned patient information in the RSP message, reference the CIIS 2.5.1 Implementation Guide.

Profile Z33 – Return an Acknowledgement with no person records

Introduction:

Profile Z33 – Return Acknowledgment is a **constrainable** profile that supports return of an acknowledgement indicating no patients being returned in response to the Z34-Request Immunization History (page 18).

The **goal** of this profile is to return an acknowledgment message. It will indicate that either the message could be parsed, but there was an error processing the message or that no candidates were found. No demographic or immunization history will be returned.

Interaction Definition:

An acknowledgement is returned when one of the 3 cases occur.

1. An error has occurred when processing the query.
2. No high confidence matches are found. This includes when a match is found but is not allowed to be shared for privacy reasons or the receiving system does not support the profile Z31-Return list of candidates (page 31).
3. Too many matches are found and so none will be returned.

Message Level Segment Definition Z33

Z33 – Return an Acknowledgement with no person records				
Segment	Segment Name	Cardinality	Usage	Comments
MSH	Message Header Segment	[1..1]	R	MSH-9 = RSP^K11^RSP_K11
MSA	Query Parameter Definition	[1..1]	R	
[ERR]	Error	[1..1]	O	Note that ERR is not repeating. If more than one error, the most serious will be reported.
QAK	Query Acknowledgement	[0..*]	R	
QPD	Query Parameter Definition	[1..1]	R	

Segment Level Segment Definition Z33

MSH – Message Header Segment Specification

For MSH segment definition, refer to Segment Listing for Profile Z23 - Return an Acknowledgement (page 13). For this profile, MSH-9 is always “RSP^K11^RSP_K11” and MSH-21 is always “Z33^CDCPHINVS”.

MSA – Message Acknowledgement Segment Specification

For MSA segment definition, refer to Segment Listing for Profile Z23 - Return an Acknowledgement (page 13).

ERR – Error Segment Specification

For ERR segment definition, refer to Segment Listing for Profile Z23 - Return an Acknowledgement (page 13). Note that only one ERR segment is returned with the response.

QAK – Query Acknowledgement Segment Specification

For QAK segment definition, refer to Segment Listing for Profile Z32 - Response Profile – Return Complete Immunization History (page 28). Query Response Status code is NF.

QPD – Input Parameter Segment Specification

For QPD segment definition, refer to Segment Listing for Profile Z34 - Request a Complete Immunization History (page 18). This segment will echo the QPD in the request.

Appendix A – HL7 Data Types

CE - Coded Element

This data type transmits codes and the text associated with the code.

Coded Element (CE)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Identifier	ST	R			Identifying Code.
2	Text	ST	RE			Human readable text that may be used to review segment content.
3	Name of Coding System	ID	R		HL70396	Value set identifier.
4	Alternate Identifier	ST	O			Alternate Identifying Code.
5	Alternate Text	ST	C	If CE-4 (Alternate Identifier) is valued		Human readable text.
6	Name of Alternate Coding System	ID	C	If CE-4 (Alternate Identifier) is valued	HL70396	Value set identifier.
Example from PID-10 Race: [2106-3^White^HL70005]						

CX – Extended Composite ID with Check Digit

This data type is used for specifying an identifier with its associated administrative detail.

Extended Composite ID with Check Digit (CX)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	ID Number	ST	R			Value of Identifier
2	Check Digit	ST	O			
3	Check Digit Scheme	ID	C	If CX.2 (check digit) is valued.		
4	Assigning Authority	HD	RE			Authority who assigned the ID Number.
5	Identifier Type Code	ID	R		HL70203	Value set identifier.
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 from PID-3 Patient Identifier List:						
1234567^^^CHCO^MR						

DTM - Date/Time

The number of characters populated (excluding the time zone specification) specifies the precision.

Date/Time (DTM)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Date/Time					
Example: 20150115						

Format: YYYY[MM[DD[HH[MM[SS[.S[S[S[S]]]]]]]]][+/-ZZZZ]

Thus:

- Eight are used to specify a precision of "day."
- The first ten are used to specify a precision of "hour."
- The first twelve are used to specify a precision of "minute."
- The first fourteen are used to specify a precision of "second."
- The first sixteen are used to specify a precision of "one tenth of a second."
- The first nineteen are used to specify a precision of "one ten thousandths of a second."

When the time zone is not included, it is presumed to be the time zone of the sender.

EI – Entity Identifier

The entity identifier defines a given entity within a specified series of identifiers.

Entity Identifier (EI)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Entity Identifier	ST	R			
2	Namespace ID	IS	C	If EI.3 (Universal ID) is not valued.		
3	Universal ID	ST	C	If EI.2 (Namespace ID) is not valued.		If populated EI.3 (Universal Id), it shall be valued with an ISO-compliant OID.
4	Universal ID	ID	C	If EI.3 (Universal ID) is valued;		

Entity Identifier (EI)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
	Type			Always ISO.		
Example from MSH-21 profile identifier: Z34^CDCPHINVS						

ERL – Error Location

This data type identifies the segment and its constituent where an error has occurred.

Extended Composite ID with Check Digit (CX)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Segment ID	ST	R			The 3-character name for the segment (i.e. PID).
2	Segment Sequence	NM	R			
3	Field Position	NM	C	If ERL.4 is valued.		This should not be populated if the error refers to the whole segment.
4	Field Repetition	NM	C	If ERL.5 is valued.		
5	Component Number	NM	C	If ERL.6 is valued.		Should be populated ONLY when a particular component caused the error.
6	Sub-Component Number	NM	RE			Should be populated ONLY when a particular sub-component caused the error.

Extended Composite ID with Check Digit (CX)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
Example for error in first component of the first repetition of the PID-3 Patient Identifier List: PID^1^3^1^1						

HD - Hierarchic Designator

HD identifies an (administrative or system or application or other) entity that has responsibility for managing or assigning a defined set of instance identifiers (such as placer or filler number, patient identifiers, provider identifiers, etc.). This entity could be a particular health care application such as a registration system that assigns patient identifiers, a governmental entity such as a licensing authority that assigns professional identifiers or drivers' license numbers, or a facility where such identifiers are assigned.

Hierarchic Designator (HD)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Namespace ID	IS	C	If HD.2 (Universal ID) is not valued.		
2	Universal ID	ST	C	If HD.1 (Namespace ID) is not valued.		If populated EI.3 (Universal Id), it shall be valued with an ISO-compliant OID.
3	Universal ID Type	ID	C	If HD.2 (Universal ID) is valued; Always ISO.		
Example from MSH-5 Receiving facility: CIIS^2.16.840.1.114222.4.1.144.2.4^ISO						

****Note:** When HD is a sub-component of another data type, the Sub-component Separator (&) is used to separate the subcomponents rather than the component separator (^).

ID - Coded Value for HL7 Defined Tables

This data type is used for coded values from an HL7 table. The value of such a field follows the formatting rules for an ST field except that it is drawn from a table of legal values. There shall be an HL7 table number associated with ID data types. Examples of ID fields include religion and gender. This data type should be used only for HL7 tables. The reverse is not true, since in some circumstances, it is more appropriate to use the CE data type for HL7 tables.

Coded Value for HL7-Defined Tables (ID)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Coded Value from HL7-defined Tables					

IS - Coded Value for User-Defined Tables

This data type is used for codes from User-Defined Tables. The value of such a field follows the formatting rules for an 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. This data type should 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.

Coded Value for User-Defined Tables (IS)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Coded Value from User-defined Tables					

LA2 – Location with Address Variation 2

Specifies a location and its address.

Location with Address Variation 2 (LA2)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Point of Care	IS	O			This represents the location within a facility that the service was provided. This is not the clinic site where an event occurred.
2	Room	IS	O			
3	Bed	IS	O			
4	Facility	HD	R			This represents the location that the service was provided. For example the clinic. CIIS prefers submitters to use CIIS assigned clinic codes for this field. Contact CIIS for these value(s).
5	Building	IS	O			
6	Patient Location Type	IS	O			
7	Building	IS	O			
8	Floor	IS	O			
9	Street Address	ST	O			
10	Other Designation	ST	O			
11	City	ST	O			
12	State	ST	O			
13	Zip	ST	O			

Location with Address Variation 2 (LA2)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
14	Country	ID	O			
15	Address Type	ID	O			
16	Other Geographic Designation	ST	O			
Example from RXA-11 indicating the CIIS administering facility/clinic code of BRP : ^ ^BRP^123 Oak St						

MSG – Message Type

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

Note: The third component was not required in version 2.3.1. It is now required in version 2.5.1.

Message Type (MSG)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Message Code	ID	R		HL70076	Always VXU.
2	Trigger Event	ID	R		HL70003	Always V04.
3	Message Structure	ID	R		HL70354	Always VXU_V04.
Example from MSH-9 Message Type: 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.

Numeric (NM)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Numeric		R			
Example: 999						

PT – Processing Type

This data type indicates whether to process a message as defined in HL7 Application (level 7) Processing rules.

Processing Type (PT)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Processing ID	ID	R		HL70103	A value that defines whether the message is intended for a production, training, or debugging system.
2	Processing Mode	ID	O			

SAD - Street Address

This data type specifies an entity's street address and associated detail.

Street Address (SAD)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Street or Mailing Address	ST	R			

Street Address (SAD)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
2	Street Name	ST	O			
3	Dwelling Number	ST	O			

SI – Sequence ID

A non-negative integer in the form of a NM field.

Sequence ID (SI)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Sequence ID					

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 escape characters and defined delimiter characters.

Sting (ST)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	String Data					
Example: almost any data at all						

TS – Time Stamp

This is specific point in time and the same as the DTM field type except precision must be at least to the day.

Time Stamp (TS)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Time	DTM	R			
The DTM component of the Time Stamp has the following constraints:						
2	YYYY		R			
3	MM		R			
4	DD		R			
5	HH		O			
6	MM		O			
7	[SS[.S[S[S[S]]]]]		O			
8	+/-ZZZZ		O			
Example: 20150115						

VID – Version ID

This specifies the HL7 version. Only “2.5.1” will be accepted.

Version ID (VID)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Version ID	ID	R			Always 2.5.1.
2	Internationalization Code	CE	O			
3	International	CE	O			

Version ID (VID)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
	Version ID					

XAD - Extended Address

This data type specifies the address of a person, place or organization plus associated information.

Extended Address (XAD)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Street Address	SAD	RE			
2	Other Designation	ST	RE			
3	City	ST	RE			
4	State	ST	RE			Two character USPS codes, for example: AL, AK, CO.
5	Zip	ST	RE			
6	Country	ID	RE			Empty defaults to USA.
7	Address Type	ID	R		HL70190	
8	Other Geographic Designation	ST	O			
9	County/Parish Code	IS	O			
10	Census Tract	IS	O			
11	Address Representation Code	ID	O			
12	Address	DR	X			

Extended Address (XAD)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
	Validity Range					
13	Effective Date	TS	O			
14	Expiration Date	TS	O			
Example: 123 MAIN ST^APT 3B^Longmont^CO^80501^^M^						

XCN – Extended Composite ID Number and Name

This data type identifies a person using a unique ID and name. The ID is associated with an entity such as an organization, which assigns the ID. This data type is used where there is a need to specify the ID number and name of a person.

Extended Composite ID Number and Name for Persons (XCN)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	ID Number	ST	C	If XCN.2.1 (Family Name) and XCN.3 (Given name) are not valued.		Identifying Code.
2	Family Name	FN	RE			Last name.
3	Given Name	ST	RE			First name.
4	Second and Further Given Names or Initials Thereof	ST	RE			
5	Suffix (e.g., JR or III)	ST	O			
6	Prefix (e.g, DR)	ST	O			
7	Degree (e.g.,	IS	X			Use Professional Suffix in sequence

Extended Composite ID Number and Name for Persons (XCN)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
	MD)					21.
8	Source Table	IS	O			
9	Assigning Authority	HD	C	If the XCN.1 (ID Number) is valued.		Note that the subcomponent separator is & when HD is a component of another data type.
10	Name Type Code	ID	RE		HL70200	
11	Identifier Check Digit	ST	O			
12	Check Digit Scheme	ID	C	If XCN.11 (Check Digit Identifier) is valued.		
13	Identifier Type Code	ID	O			
14	Assigning Facility	HD	O			
15	Name Representation Code	ID	O			
16f	Name Context	CE	O			
17	Name Validity Range	DR	X			
18	Name Assembly Order	ID	X			
19	Effective Date	TS	O			
20	Expiration Date	TS	O			

Extended Composite ID Number and Name for Persons (XCN)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
21	Professional Suffix	ST	RE			
22	Assigning Jurisdiction	CWE	O			
23	Assigning Agency or Department	CWE	O			
Example: 1234567891^O'BRIAN^ROBERT^A^DR^~~~~~UPIN^~~~~~MD^						

XPN - Extended Person Name

This is used for representing a person's name.

Extended Person Name (XPN)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Family Name	FN	R			Last name.
2	Given Name	ST	R			First name.
3	Second and Further Given Names or Initials Thereof	ST	RE			
4	Suffix (e.g., JR or III)	ST	O			
5	Prefix (e.g, DR)	ST	O			
6	Degree (e.g., MD)	IS	X			Use Professional Suffix in sequence 14.
7	Name Type	ID	RE		HL70200	

Extended Person Name (XPN)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
	Code					
8	Name Representation Code	ID	O			
9	Name Context	CE	O			
10	Name Validity Range	DR	X			
11	Name Assembly Order	ID	X			
12	Effective Date	TS	O			
13	Expiration Date	TS	O			
14	Professional Suffix	ST	RE			
Example: Smith^John^J^III^DR^M^L^M^M^M^M^PHD						

XTN - Extended Telecommunication Number

This contains the extended telephone number.

Extended Composit ID with Check Digit (CX)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
1	Telephone Number	ST	X			
2	Telecommunication Use	ID	R		HL70201	

Extended Composit ID with Check Digit (CX)						
SEQ	Component	Data Type	Usage	Conditional Predicate	Value	Comments
	Code					
3	Telecommunication Equipment Type	ID	RE		HL70202	
4	Email Address	ST	C	If the XTN.2 (Telecommunications Use Code) is valued "NET".		
5	Country Code	NM	O			
6	Area/City Code	NM	C	If the XTN.2 (Telecommunications Use Code) is not valued "NET".		
7	Local Number	NM	C	If the XTN.2 (Telecommunications Use Code) is not valued "NET".		
8	Extension	NM	O			
9	Any Text	ST	O			
10	Extension Prefix	ST	O			
11	Speed Dial Code	ST	O			
12	Unformatted Telephone Number	ST	O			
Example: ^PRN^PH^^720^6777777						

Appendix B – Code Sets

[Listed by category (Patient, Vaccination, Vaccination Observation, and Miscellaneous) and then alphabetically]

Patient Code Sets

HL70001 – Sex

[Reflects self-reported sex] (Use in PID-8, NK1-15)

Code	Description
F	Female
M	Male
U	Unknown

HL70005 – Race

[These values are consistent with the OMB Notice of revised categories for collection of race and ethnicity data—the combined format.] (Use in PID-10, NK1-35)

Code	Description
1002-5	American Indian or Alaska Native
2028-9	Asian
2054-5	Black or African-American
2076-8	Native Hawaiian or Other Pacific Islander
2106-3	White
2131-1	Other Race
<empty field>	Unknown/undetermined

HL70063 – Relationship

[Reflects relationship to patient] (Use in NK1-3, IN1-17)

Code	Description
BRO	Brother
CGV	Caregiver
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

HL70189/CDCREC - Ethnicity

[These values are consistent with the OMB Notice of revised categories for collection of race and ethnicity data and with HL7's Version 2.4. CIIS prefers the use of the US Ethnicity Codes in the leftmost column. Examples for Hispanic or Latino include "2135-2^Hispanic or Latino^CDCREC" or "H^Hispanic or Latino^HL70189", ,] (Use in PID-22, NK1-28).

US Ethnicity Codes CDCREC	HL7 version 2.4 Ethnicity Codes	Description
2135-2	H	Hispanic or Latino
2186-5	N	Not Hispanic or Latino
	U	Unknown

HL70203 - Identifier Type

(Use in all CX, XCN type codes; including PID-3, PID-18 and RXA-10)

Code	Description
OEI	Order Employee Number
REI	Recorder Employee Number
VEI	Vaccinator Employee Number
AM	American Express
AN	Account Number
ANON	Anonymous Identifier
BRO	Birth Registry Number
DL	Driver's License Number
DN	Doctor's Number
EI	Employee Number
EN	Employer Number
FI	Facility Identifier
GI	Guarantee Internal Identifier
GN	Guarantee External Identifier
LN	License Number
LR	Local Registry ID
MA	Medicaid Number
MC	Medicare Number
MR	Medical Record Number
NET	National Employer Identifier
NH	National Health Plan Identifier
NI	National Unique Individual Identifier
NPI	National Provider Identifier
PI	Patient Internal Identifier
PN	Person Number
PRN	Provider Number
PT	Patient External Identifier

Code	Description
RRI	Railroad Retirement Number
RRI	Regional Registry ID
SL	State License
SR	State Registry ID
SS	Social Security Number
U	Unspecified
UPIN	Medicare/CMS's Universal Physician ID Numbers
VN	Visit Number
VS	VISA
WC	WIC Identifier
XX	Organization Identifier

HL70215 – Publicity Code

Values suggested by CDC. (Use in PID-11) (Note: CIIS only has the capability to track codes 01 and 06. Other codes will be mapped to one of those two values.)

Code	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, no recall
11	Recall to provider
12	Only recall to provider, no reminder

HL70296 - Language

ISO 639 shall be used for language] (Use in PID-15). It is available from PHIN-VADS at:

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

Example codes are found in the table below, but use is not restricted to this list.

Code	Description
SGN	American Sign Language
AMH	Amharic
ARA	Arabic
ARM	Armenian
BEN	Bengali
BUR	Burmese
KM	Cambodian (KMER)
CHA	Chamorro
CHI	Chinese
HRV	Croatian
CZE	Czech
DUT	Dutch
ENG	English
FA	Farsi
FRE	French
GER	German
GRE	Greek
HIN	Hindi
HMN	Hmong
HUN	Hungarian
IND	Indonesian
ITA	Italian
JPN	Japanese
KAR	Karen
KOR	Korean
LAO	Laotian
NEP	Nepalese

NAI	North American Indian
OTH	Other
POL	Polish
POR	Portuguese
RUM	Romanian
RUS	Russian
SMO	Samoan
SRP	Serbian
SLO	Slovak
SOM	Somali
SPA	Spanish
SWA	Swahili
TGL	Tagalog
THA	THAI
TIR	Tigrinya
TON	Tongan
UKR	Ukrainian
UND	Undetermined
URD	Urdu
UNK	Unknown
VIE	Vietnamese
YID	Yiddish

HL70441 – Immunization Registry Status

(Similar to previous NIP-defined NIP006 – Patient registry status) (Use in PD1-16).

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

Code	Description
U	Unknown

Vaccination Code Sets

HL70004 – Patient Class

[Values suggested by HL7] (Use in PV1-2).

Code	Description
E	Emergency
I	Inpatient
O	Outpatient
P	Pre-admit
R	Recurring Patient
B	Obstetrics

HL70162 - Route of Administration

[Only selected values listed] (Use in RXR-1).

FDA NCI Thesaurus (NCIT)	Code	Description
C38238	ID	Intradermal
C28161	IM	Intramuscular
C38284	NS	Nasal
C38276	IV	Intravenous
	OTH	Other/Miscellaneous
C38288	PO	Oral
C38299	SC	Subcutaneous

HL70163 - Administrative Body Site

[Only selected values listed] (Use in RXR-2).

Code	Description
LA	Left Arm
LD	Left Deltoid
LG	Left Gluteus Medius
LT	Left Thigh
LLT	Left Lateral Thigh
LVL	Left Vastus Lateralis
LLFA	Left Lower Forearm
NS	Intranasal
PO	Oral
RA	Right Arm
RD	Right Deltoid
RG	Right Gluteus Medius
RT	Right Thigh
RLT	Right Lateral Thigh
RVL	Right Vastus Lateralis
RLFA	Right Lower Forearm

HL70227 - Manufacturers of Vaccines (MVX)

(Use in RXA-17) The table below includes both active and inactive manufacturers of vaccine in the U.S. Inactive MVX codes allow transmission of historical immunization records. Active MVX codes denote that the manufacturer is currently making vaccine for distribution in the U.S. This table is frequently updated and can also be found on the CDC website:

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

MVX Code	Manufacturer Name	Notes	Manufacturer Status
AB	Abbott Laboratories	Includes Ross Products Division, Solvay	Active
ACA	Acambis, Inc.	Acquired by Sanofi in Sept 2008	Inactive
AD	Adams Laboratories, Inc.		Active
AKR	Akorn, Inc.		Active
ALP	Alpha Therapeutic Corporation		Active
AR	Armour	Part of CSL	Inactive
AVB	Aventis Behring L.L.C.	Part of CSL	Inactive
AVI	Aviron	Acquired by MedImmune	Inactive
BA	Baxter Healthcare Corporation		Inactive
BAH	Baxter Healthcare Corporation	Includes Hyland Immuno, Immuno International AG, and North American Vaccine, Inc./acquired some assets from Alpha Therapeutics	Active
BAY	Bayer Corporation	Bayer Biologicals now owned by Talecris	Inactive
BP	Berna Products		Inactive
BPC	Berna Products Corporation	Includes Swiss Serum and Vaccine Institute Berne	Active
BRR	Barr Laboratories	Subsidiary of Teva Pharmaceuticals	Active
BTP	Biotest Pharmaceuticals Corporation	New owner of NABI HB as of Dec 2007, does NOT replace NABI Biopharmaceuticals in this code list.	Active
CEN	Centeon L.L.C.		Inactive
CHI	Chiron Corporation	Part of Novartis	Inactive
CMP	Celltech Medeva Pharmaceuticals	Part of Novartis	Inactive
CNJ	Cangene Corporation		Inactive
CON	Connaught	Acquired by Merieux	Inactive
CRU	Crucell	Acquired Berna, now a J&J company	Inactive
CSL	bioCSL	CSL Biotherapies renamed to bioCSL	Active
DVC	DynPort Vaccine Company, L.L.C.		Active
EVN	Evans Medical Limited	Part of Novartis	Inactive

MVX Code	Manufacturer Name	Notes	Manufacturer Status
GEO	GeoVax Labs, Inc.		Active
GRE	Greer Laboratories, Inc.		Active
GRF	Grifols		Active
IAG	Immuno International AG	Part of Baxter	Inactive
IDB	ID Biomedical		Active
IM	Merieux	Part of Sanofi	Inactive
INT	Intercell Biomedical		Active
IUS	Immuno-U.S., Inc.		Active
JNJ	Johnson and Johnson	Acquired CRUCCELL which acquired Berna	Active
JPN	The Research Foundation for Microbial Diseases of Osaka University (BIKEN)		Active
KED	Kedrion Biopharma	Acquired Rho(D) from Ortho	Active
KGC	Korea Green Cross Corporation		Active
LED	Lederle	Became a part of WAL, now owned by Pfizer	Inactive
MA	Massachusetts Public Health Biologic Laboratories		Inactive
MBL	Massachusetts Biologic Laboratories	Formerly Massachusetts Public Health Biologic Laboratories	Active
MED	MedImmune, Inc.	Acquisitions of U.S. Bioscience in 1999 and Aviron in 2002, as well as the integration with Cambridge Antibody Technology and the strategic alignment with new parent company, AstraZeneca, in 2007.	Active
MIL	Miles		Inactive
MIP	Emergent BioDefense Operations Lansing	A unit of Emergent BioSolutions, Bioport renamed. Formerly Michigan Biologic Products Institute.	Active
MSD	Merck & Co., Inc.		Active
NAB	NABI	Formerly North American Biologicals, Inc.	Active
NAV	North American Vaccine, Inc.	Part of Baxter	Inactive
NOV	Novartis Pharmaceutical Corporation	Includes Chiron, PowderJect Pharmaceuticals, Celltech Medeva Vaccines and Evans Limited, Ciba-Geigy Limited and Sandoz Limited	Active
NVX	Novavax, Inc.		Active
NYB	New York Blood Center		Active
ORT	Ortho-Clinical Diagnostics	A J&J company (formerly Ortho Diagnostic Systems, Inc.)	Active
OTC	Organon Teknika Corporation		Active

MVX Code	Manufacturer Name	Notes	Manufacturer Status
OTH	Other manufacturer		Active
PAX	PaxVax		Active
PD	Parkedale Pharmaceuticals	Formerly Parke-Davis	Inactive
PFR	Pfizer, Inc.	Includes Wyeth-Lederle Vaccines and Pediatrics, Wyeth Laboratories, Lederle Laboratories, and Praxis Biologics	Active
PMC	Sanofi Pasteur	Formerly Aventis Pasteur, Pasteur Merieux Connaught ; includes Connaught Laboratories and Pasteur Merieux. Acquired Acambis.	Active
PRX	Praxis Biologics	Became a part of WAL, now owned by Pfizer	Inactive
PSC	Protein Sciences		Active
PWJ	Powderject Pharmaceutical	Part of Novartis	Inactive
SCL	Sclavo, Inc.		Active
SI	Swiss Serum and Vaccine Inst.	Part of Berna	Inactive
SKB	GlaxoSmithKline	Includes SmithKline Beecham and Glaxo Wellcome	Active
SOL	Solvay Pharmaceuticals	Part of Abbott	Inactive
TAL	Talecris Biotherapeutics	Includes Bayer Biologicals	Active
UNK	Unknown manufacturer		Active
USA	United States Army Medical Research and Material Command		Active
VXG	VaxGen	Acquired by Emergent BioDefense Operations Lansing, Inc.	Inactive
WA	Wyeth-Ayerst	Became WAL, now owned by Pfizer	Inactive
WAL	Wyeth	Acquired by Pfizer Oct. 2009	Inactive
ZLB	ZLB Behring	Acquired by CSL	Inactive

HL70322 – Completion Status

(Use in RXA-20).

Code	Description
CP	Complete
RE	Refused
NA	Not Administered
PA	Partially Administered (CIIS treats same as NA)

HL70323 - Action Codes

(Use in RXA-21).

Code	Description
A	Add
D	Delete
U	Update

HL70360 – Degrees

[Selected values suggested by HL7] (Use in all XPN data types, including PID-5, 6, 9).

Code	Description
CNA	Certified Nurse's Assistant
CMA	Certified Medical Assistant
CNM	Certified Nurse Midwife
CNP	Certified Nurse Practitioner
CPNP	Certified Pediatric Nurse Practitioner
DO	Doctor of Osteopathy
FNP	Family Practice Nurse Practitioner
LPN	Licensed Practical Nurse
MD	Doctor of Medicine
MA	Medical Assistant
NP	Nurse Practitioner
PA	Physician Assistant
PharmD	Doctor of Pharmacy

Code	Description
RMA	Registered Medical Assistant
RN	Registered Nurse
RPH	Registered Pharmacist

CVX/CPT Codes - Vaccines Administered

Meaningful Use (MU) requires the usage of CVX code in RXA-5. CIIS does not use CPT codes. However, including CPT codes will not cause a message to fail. The table below includes codes for both active and inactive vaccines. CVX codes for inactive vaccines allow transmission of historical immunization records. Active CVX codes denote vaccines that are currently available in the U.S. For National Drug Codes (NDC), please visit: <http://www2a.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=ndc>

Note: Valid CPT codes have been included in the table as appropriate.

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
143		Adenovirus types 4 and 7	Adenovirus, type 4 and type 7, live, oral	Active	This vaccine is administered as 2 tablets.
54	90476	Adenovirus, type 4	Adenovirus vaccine, type 4, live, oral	Inactive	
55	90477	Adenovirus, type 7	Adenovirus vaccine, type 7, live, oral	Inactive	
82		Adenovirus, unspecified formulation	Adenovirus vaccine, unspecified	Inactive	Use for reporting historical doses where the formulation is unknown.
24	90581	Anthrax	Anthrax vaccine	Active	
801		AS03 Adjuvant	AS03 Adjuvant	Active	This is the adjuvant that is packaged with H5N1 vaccine, adjuvanted.
19	90585	BCG for tuberculosis, live, for percutaneous use	Bacillus Calmette-Guerin vaccine	Active	
	90728	BCG Vaccine			
27	90287	Botulinum antitoxin	Botulinum antitoxin	Active	
26	90725	Cholera	Cholera vaccine	Inactive	

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
29	90291	CMVIG	Cytomegalovirus immune globulin, intravenous	Active	
12	90296	Diphtheria antitoxin	Diphtheria antitoxin	Active	
28	90702	DT (pediatric)	Diphtheria and tetanus toxoids, adsorbed for pediatric use	Active	
20	90700	DTaP	Diphtheria, tetanus toxoids and acellular pertussis vaccine	Active	
106	90700	DTaP, 5 pertussis antigens	Diphtheria, tetanus toxoids and acellular pertussis vaccine, 5 pertussis antigens	Active	
107		DTaP, unspecified formulation	Diphtheria, tetanus toxoids and acellular pertussis vaccine, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.
146		DTaP-IPV-Hib-HepB	Diphtheria and tetanus toxoids and acellular pertussis adsorbed, inactivated poliovirus, Haemophilus b conjugate (meningococcal outer membrane protein complex), and hepatitis B (recombinant) vaccine	Pending	Note that this vaccine is different than CVX 132.
110	90723	DTaP-HepB-IPV	DTaP-hepatitis B and poliovirus vaccine	Active	
50	90721	DTaP-Hib	DTaP- <i>Haemophilus influenzae</i> type b conjugate vaccine	Active	

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
120	90698	DTaP-Hib-IPV	Diphtheria, tetanus toxoids and acellular pertussis vaccine, <i>Haemophilus influenzae</i> type b conjugate, and poliovirus vaccine, inactivated (DTaP-Hib-IPV)	Active	
130	90696	DTaP-IPV	Diphtheria, tetanus toxoids and acellular pertussis vaccine, and poliovirus vaccine, inactivated	Active	
132		DTaP-IPV-Hib-HepB, historical	Historical record of vaccine containing *diphtheria, tetanus toxoids and acellular pertussis, *poliovirus, inactivated, *Haemophilus influenzae type b conjugate, *Hepatitis B (DTaP-Hib-IPV)	Inactive	This is not the same as CVX 146, hexavalent vaccine.
01	90701	DTP	Diphtheria, tetanus toxoids and pertussis vaccine	Inactive	
22	90720	DTP-Hib	DTP- <i>Haemophilus influenzae</i> type b conjugate vaccine	Inactive	
102		DTP-Hib-HepB	DTP- <i>Haemophilus influenzae</i> type b conjugate and hepatitis b vaccine	Inactive	This non-US vaccine contained DTP prior to 2007 and now contains DTaP.
57		Hantavirus	Hantavirus vaccine	Never Active	
30	90371	HBIG	Hepatitis B immune globulin	Active	
52	90632	HepA, adult	Hepatitis A vaccine, adult dosage	Active	

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
154		HepA, IG	Hepatitis A immune globulin	Active	
83	90633	HepA, ped/adol, 2 dose	Hepatitis A vaccine, pediatric/adolescent dosage, 2 dose schedule	Active	
84	90634	HepA, ped/adol, 3 dose	Hepatitis A vaccine, pediatric/adolescent dosage, 3 dose schedule	Inactive	This vaccine formulation is inactive and should not be used except to record historical vaccinations with this formulation.
31		HepA, pediatric, unspecified formulation	Hepatitis A vaccine, pediatric dosage, unspecified formulation	Inactive	Do NOT use this code. If formulation is unknown, use CVX 85. There is only one formulation of HepA, peds.
85	90730	HepA, unspecified formulation	Hepatitis A vaccine, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.
104	90636	HepA-HepB	Hepatitis A and hepatitis B vaccine	Active	
08	90744	HepB, adolescent or pediatric	Hepatitis B vaccine, pediatric or pediatric/adolescent dosage	Active	This code applies to any standard pediatric formulation of Hepatitis B vaccine. It should not be used for the 2-dose HepB schedule for adolescents (11-15 year olds). It requires Merck's Recombivax HB® adult formulation. Use code 43 for that vaccine.
42	90745	HepB, adolescent/high risk infant	Hepatitis B, adolescent/high risk infant dosage	Inactive	As of August 27, 1998, Merck ceased distribution of their adolescent/high risk infant HepB vaccine. This code should only be used for reporting historical

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
					doses. For current administration of HepB vaccine, pediatric/adolescent dosage, use code 08.
43	90743	HepB, adolescent (2 dose)	Hepatitis B vaccine, adult dosage	Active	As of September 1999, a 2-dose HepB schedule for adolescents (11-15 year olds) was FDA-approved for Merck's Recombivax HB® adult formulation. Use code 43 for the 2-dose. This code should be used for any use of standard adult formulation of HepB vaccine.
	90746	HepB, adult dosage			
44	90740	HepB, dialysis (3 dose schedule)	Hepatitis B vaccine, dialysis patient dosage	Active	
	90747	HepB, dialysis (4 dose schedule)			
45	90731	HepB, unspecified formulation	Hepatitis B vaccine, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.
58		Hep C	Hepatitis C vaccine	Never Active	
59		Hep E	Hepatitis E vaccine	Never Active	
60		Herpes simplex 2	Herpes simplex virus, type 2 vaccine	Never Active	
47	90645	Hib (HbOC)	<i>Haemophilus influenzae</i> type b	Inactive	

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
			vaccine, HbOC conjugate		
46	90646	Hib (PRP-D)	<i>Haemophilus influenzae</i> type b vaccine, PRP-D conjugate	Inactive	
49	90647	Hib (PRP-OMP)	<i>Haemophilus influenzae</i> type b vaccine, PRP-OMP conjugate	Active	
48	90648	Hib (PRP-T)	<i>Haemophilus influenzae</i> type b vaccine, PRP-T conjugate	Active	
17	90737	Hib, unspecified formulation	<i>Haemophilus influenzae</i> type b vaccine, conjugate, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.
51	90748	Hib-HepB	<i>Haemophilus influenzae</i> type b conjugate and Hepatitis B vaccine	Active	
61		HIV	Human immunodeficiency virus vaccine	Never Active	
165	90651	Human Papillomavirus vaccine types 6, 11, 16, 18, 31, 33, 45, 52, 58, nonvalent (HPV)	Human Papillomavirus 9-valent vaccine	Active	
118	90650	HPV, bivalent	Human Papillomavirus vaccine, bivalent	Active	
62	90649	HPV, quadrivalent	Human Papillomavirus vaccine, quadrivalent	Active	
137		HPV, unspecified formulation	HPV, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
86	90281	IG	Immune globulin, intramuscular	Active	
14	90741	IG, unspecified formulation	Immune globulin, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.
87	90283	IGIV	Immune globulin, intravenous	Active	
160		Influenza A monovalent (H5N1), ADJUVANTED-2013	Influenza A monovalent (H5N1), adjuvanted, National stockpile 2013	Active	Approved by FDA 2013, adjuvant is mixed at point of administration.
151		Influenza nasal, unspecified formulation	Influenza nasal, unspecified formulation	Inactive	This CVX should only be used for historical records where the formulation of nasal flu vaccine is not known.
123		Influenza, H5N1-1203	Influenza virus vaccine, H5N1, A/Vietnam/1203/2004 (national stockpile)	Inactive	
135	90662	Influenza, high dose seasonal	Influenza, high dose seasonal, preservative-free	Active	
153	90661	Influenza, injectable, MDCK, preservative free	Influenza, injectable, Madin Darby Canine Kidney, preservative free	Active	
158	90687	Influenza, injectable, quadrivalent (6-35 months)	Influenza, injectable, quadrivalent, contains preservative	Active	New in 2013, IIV4.
	90688	Influenza, injectable, quadrivalent (3 years and above)			

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
150	90686	Influenza, injectable, quadrivalent, preservative free	Influenza, injectable, quadrivalent, preservative free	Active	New in 2012, IIV4.
161	90685	Influenza, injectable, quadrivalent, preservative free, pediatric (6-35 months)	Influenza, injectable, quadrivalent, preservative free, pediatric	Active	IIV4.
166	90630	Influenza, intradermal, quadrivalent, preservative free	Influenza, intradermal, quadrivalent, preservative free, injectable	Active	
111	90660	Influenza, live, intranasal	Influenza virus vaccine, live, attenuated, for intranasal use	Inactive	Seasonal influenza.
149	90672	Influenza, live, intranasal, quadrivalent	Influenza, live, intranasal, quadrivalent	Active	New in 2012, LAIV.
155	90673	Influenza, recombinant, injectable, preservative free	Seasonal, trivalent, recombinant, injectable influenza vaccine, preservative free	Active	
141	90657	Influenza, seasonal, injectable (6-35 months)	Influenza, seasonal, injectable	Active	This is one of two codes replacing CVX 15, which is retired.
	90658	Influenza, seasonal, injectable (3 years and above)			
140	90655	Influenza, seasonal, injectable, preservative-free (6-35 months)	Influenza, seasonal, injectable, preservative-free	Active	This vaccine code is one of two which replace CVX 15, influenza, split virus.
	90656	Influenza, seasonal, injectable, preservative-free (3 years and			

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
		above)			
144	90654	Influenza, seasonal, intradermal, preservative-free	Seasonal influenza, intradermal, preservative-free	Active	
15		Influenza, split (incl. purified surface antigen)	Influenza virus vaccine, split virus (incl. purified surface antigen) – retired code	Inactive	This code is retired. It may still be found in older immunization records. It included both preservative-free and non preservative-free.
88	90724	Influenza, unspecified formulation	Influenza virus vaccine, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.
16	90659	Influenza, whole	Influenza virus vaccine, whole virus	Inactive	
10	90713	IPV	Poliovirus vaccine, inactivated	Active	
134	90738	Japanese Encephalitis IM	Japanese Encephalitis vaccine for intramuscular administration	Active	
39	90735	Japanese Encephalitis SC	Japanese Encephalitis Vaccine SC	Active	
129		Japanese Encephalitis, unspecified formulation	Japanese Encephalitis Vaccine, unspecified	Inactive	Use for reporting historical doses where the formulation is unknown.
63		Junin virus	Junin virus vaccine	Never Active	
64		Leishmaniasis	Leishmaniasis vaccine	Never Active	
65		Leprosy	Leprosy vaccine	Never Active	

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
66	90665	Lyme disease	Lyme disease vaccine	Inactive	
04	90708	M/R	Measles and rubella virus vaccine	Inactive	
67		Malaria	Malaria vaccine	Never Active	
05	90705	Measles	Measles virus vaccine	Inactive	
68		Melanoma	Melanoma vaccine	Never Active	
163	90620	Meningococcal B, OMV	Meningococcal B vaccine, recombinant, OMV, adjuvanted	Active	
162	90621	Meningococcal B, recombinant	Meningococcal B vaccine, fully recombinant	Active	
164		Meningococcal B, unspecified	Meningococcal B, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.
103		Meningococcal C conjugate	Meningococcal C conjugate vaccine	Inactive	
148	90644	Meningococcal C/Y – Hib PRP (MenCY-Hib)	Meningococcal groups C and Y and Haemophilus b Tetanus Toxoid conjugate vaccine	Active	
147		Meningococcal MCV4, unspecified formulation	Meningococcal, MCV4, unspecified formulation (groups A, C, Y and W-135)	Inactive	This CVX should only be used for historical doses of meningococcal conjugate vaccine where the formulation is unknown (oligosaccharide vs. polysaccharide). It is not the same as CVX 108, meningococcal, unspecified formulation.

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
136	90734	Meningococcal MCV4O	Meningococcal oligosaccharide (groups A, C, Y and W-135) diphtheria toxoid conjugate vaccine (MCV4O)	Active	
114	90734	Meningococcal MCV4P	Meningococcal polysaccharide (groups A, C, Y and W-135) diphtheria toxoid conjugate vaccine (MCV4P)	Active	
32	90733	Meningococcal MPSV4	Meningococcal polysaccharide vaccine (MPSV4)	Active	
108		Meningococcal, unspecified formulation	Meningococcal vaccine, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.
03	90707	MMR	Measles, mumps and rubella virus vaccine	Active	
94	90710	MMRV	Measles, mumps, rubella, and varicella virus vaccine	Active	
07	90704	Mumps	Mumps virus vaccine	Active	
127	90668	Novel Influenza-H1N1-09	Novel influenza-H1N1-09, injectable	Inactive	
128	90470	Novel influenza-H1N1-09 (intramuscular, intranasal)	Novel influenza-H1N1-09, all formulations	Inactive	This code is used whenever the actual formulation is not determined or when aggregating all Novel H1N1 Influenza-09 immunizations for reporting to CRA. It should not be used for seasonal

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
	90663	Influenza virus vaccine, pandemic formulation H1N1			influenza vaccine that is not otherwise specified (NOS).
125	90664	Novel influenza-H1N1-09, nasal	Novel influenza-H1N1-09, live virus for nasal administration	Inactive	
126	90666	Novel influenza-H1N1-09, preservative-free	Novel influenza-H1N1-09, preservative-free, injectable	Inactive	
02	90712	OPV	Poliovirus vaccine, live, oral	Inactive	
69		Parainfluenza-3	Parainfluenza-3 virus vaccine	Inactive	
11		Pertussis	Pertussis vaccine	Inactive	
23	90727	Plague	Plague vaccine	Active	
133	90670	Pneumococcal conjugate PCV13	Pneumococcal conjugate vaccine, 13-valent	Active	
100	90669	Pneumococcal conjugate PCV7	Pneumococcal conjugate vaccine, 7-valent	Inactive	
152		Pneumococcal conjugate, unspecified formulation	Pneumococcal conjugate, unspecified formulation	Inactive	This CVX should only be used for historical records where the formulation of pneumococcal conjugate vaccine is not known.
33	90732	Pneumococcal polysaccharide PPV23	Pneumococcal polysaccharide vaccine, 23-valent	Active	

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
109		Pneumococcal, unspecified formulation	Pneumococcal vaccine, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.
89		Polio, unspecified formulation	Poliovirus vaccine, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.
70		Q fever	Q fever vaccine	Never Active	
40	90676	Rabies, intradermal injection	Rabies vaccine, for intradermal injection	Active	
18	90675	Rabies, intramuscular injection	Rabies vaccine, for intramuscular injection	Active	
90	90726	Rabies, unspecified formulation	Rabies vaccine, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.
72		Rheumatic fever	Rheumatic fever vaccine	Never Active	
73		Rift Valley fever	Rift Valley fever vaccine	Never Active	
34	90375	RIG, human	Rabies immune globulin	Active	
	90376	RIG, heat-treated (RIG-HT)			
119	90681	Rotavirus, monovalent	Rotavirus, live, monovalent vaccine	Active	
116	90680	Rotavirus, pentavalent	Rotavirus, live, pentavalent vaccine	Active	
74		Rotavirus, tetravalent	Rotavirus, live, tetravalent vaccine	Inactive	
122		Rotavirus, unspecified formulation	Rotavirus vaccine, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
71	90379	RSV-IGIV	Respiratory syncytial virus immune globulin, intravenous	Active	
93	90378	RSV-MAb	Respiratory syncytial virus monoclonal antibody (palivizumab), intramuscular	Active	
145		RSV-MAb (new)	Respiratory syncytial virus monoclonal antibody (motavizumab), intramuscular	Pending	
06	90706	Rubella	Rubella virus vaccine	Active	
38		Rubella/mumps	Rubella and mumps virus vaccine	Inactive	
76		Staphylococcus bacterio lysate	Staphylococcus bacteriophage lysate	Inactive	
138		Td (adult)	Tetanus and diphtheria toxoids, not adsorbed, for adult use	Active	Note that this Td is not adsorbed.
113	90714	Td (adult) preservative-free	Tetanus and diphtheria toxoids, adsorbed, preservative-free, for adult use	Active	
09	90718	Td (adult), adsorbed	Tetanus and diphtheria toxoids, adsorbed, for adult use	Active	Note that this vaccine name has changed. See also Td (adult). It is not adsorbed.
139		Td (adult), unspecified formulation	Td (adult) unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.
115	90715	Tdap	Tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis	Active	

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
			vaccine, adsorbed		
35	90703	Tetanus toxoid, adsorbed	Tetanus toxoid, adsorbed	Active	
142		Tetanus toxoid, not adsorbed	Tetanus toxoid, not adsorbed	Active	
112		Tetanus toxoid, unspecified formulation	Tetanus toxoid, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.
77		Tick-borne encephalitis	Tick-borne encephalitis vaccine	Inactive	
13	90389	TIG	Tetanus immune globulin	Active	
98		TST, unspecified formulation	Tuberculin skin test, unspecified formulation	Active	TB skin test is not a vaccine. CIIS accepts these codes.
95		TST-OT tine test	Tuberculin skin test, old tuberculin, multipuncture device	Active	TB skin test is not a vaccine. CIIS accepts these codes.
96	86580	TST-PPD intradermal	Tuberculin skin test, purified protein derivative solution, intradermal	Active	TB skin test is not a vaccine. CIIS accepts these codes.
97	86858	TST-PPD tine test	Tuberculin skin test, purified protein derivative, multipuncture device	Active	TB skin test is not a vaccine. CIIS accepts these codes.
78		Tularemia vaccine	Tularemia vaccine	Inactive	
25	90690	Typhoid, oral	Typhoid vaccine, live, oral	Active	
41	90692	Typhoid, parenteral	Typhoid vaccine, parenteral, other than acetone-killed, dried	Active	
53	90693	Typhoid, parenteral, AKD (U.S. military)	Typhoid vaccine, parenteral, acetone-killed, dried (U.S. military)	Active	
91		Typhoid, unspecified formulation	Typhoid vaccine, unspecified	Inactive	Use for reporting historical doses where

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
			formulation		the formulation is unknown.
101	90691	Typhoid, ViCPs	Typhoid Vi capsular polysaccharide vaccine	Active	
131		Typhus, historical	Historical record of a typhus vaccination	Inactive	
75		Vaccinia (smallpox)	Vaccinia (smallpox) vaccine	Active	
105		Vaccinia (smallpox) diluted	Vaccinia (smallpox) vaccine, diluted	Inactive	
79	90393	Vaccinia immune globulin	Vaccinia immune globulin	Active	
21	90716	Varicella	Varicella virus vaccine	Active	
81		VEE, inactivated	Venezuelan equine encephalitis, inactivated	Inactive	
80		VEE, live	Venezuelan equine encephalitis, live, attenuated	Inactive	
92		VEE, unspecified formulation	Venezuelan equine encephalitis vaccine, unspecified formulation	Inactive	Use for reporting historical doses where the formulation is unknown.
36	90396	VZIG	Varicella zoster immune globulin	Active	
117		VZIG (IND)	Varicella zoster immune globulin (Investigational New Drug)	Inactive	
37	90717	Yellow fever	Yellow fever vaccine	Active	
121	90736	Zoster	Zoster vaccine, live	Active	
998		No vaccine administered	No vaccine administered	Inactive	Code 998 was added for use in VXU HL7 messages where the OBX segment is nested with the RXA segment, but the

CVX Code	CPT Code	Short Description	Full Vaccine Name	Vaccine Status	Notes
					message does not contain information about a vaccine administration.
99		RESERVED – Do not use	RESERVED – Do not use	Inactive	Code 99 will not be used in this table to avoid confusion with code 999.
999		Unknown	Unknown vaccine or immune globulin	Inactive	This CVX code has little utility and should not be used.

NIP001 - Immunization Information Source
(Use in RXA-9).

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

NIP002 - Substance Refusal Reason

Code	Description
01	Religious exemption
02	Other (Describe in text component of the CE field)
03	Personal Exemption/Patient decision
04	Medical exemption

NIP003 - Observation Identifiers
(use in OBX-3).

Code	Description	OBX-2 Data Type	OBX-5 notes
Vaccine Funding Program Eligibility Category			
64994.7	Vaccine funding program eligibility category	CE	HL70064
Vaccine Funding Source			
30963-3	Vaccine funding source	CE	Use code set PHVS_ImmunizationFundingSource_IIS (page 85)

Code	Description	OBX-2 Data Type	OBX-5 notes
Contraindications, Precautions, and Immunities			
30946-8	Vaccination contraindication/precaution effective date	DT	
30944-3	Vaccination temporary contraindication/precaution expiration date	DT	
30945-0	Vaccination contraindication/precaution	CE	Use code set PHVS_VaccinationContraindication_IIS (page 85)
31044-1	Reaction	CE	Use code set PHVS_VaccinationReaction_IIS (page 86)
59784-9	Disease with presumed immunity	CE	Use code set PHVS_HistoryOfDiseaseAsEvidenceOfImmunity_IIS (page 87)
75505-8	Diseases with serological evidence of immunity	CE	Use code set PHVS_SerologicalEvidenceOfImmunity_IIS (page 89)
Vaccine Information Statement (VIS) Dates			
69764-9	Document Type	CE	Use code set PHVS_VISBarcodes_IIS (page 89)
30956-7	Vaccine Type	CE	Use code set PHVS_VISVaccines_IIS (page 90)
29768-9	Date Vaccine Information Statement Published	TS	199000605
29769-7	Date Vaccine Information Statement Presented	TS	199307311615
Forecasting and Evaluating Immunizations			
30979-9	Vaccines due next	CE	HL70292 (CVX)
30980-7	Date vaccine due	TS_NZ	Example: 20150711
30981-5	Earliest date to give	TS_NZ	Example: 20150707
59779-9	Immunization Schedule used	CE	Value Set OID - 2.16.840.1.114222.4.11.23292

Code	Description	OBX-2 Data Type	OBX-5 notes
			Value Set Code:: PHVS_ImmunizationScheduleIdentifier_IIS
59777-3	Latest date next dose may be given	TS_NZ	
59781-5	Dose Validity	ID	Y, N, or empty.

Vaccine Observation Code Sets

HL70064 – Vaccine Program Eligibility

(Use in OBX-5 for client eligibility for a funding program at the dose administered level).

Code	Description
V00	VFC eligibility not determined/unknown
V01	Not VFC eligible
V02	VFC eligible - Medicaid/Medicaid Managed Care
V03	VFC eligible - Uninsured
V04	VFC eligible - American Indian/Alaska Native
V05	VFC eligible - Federally Qualified Health Center Patient (under-insured)
V22	CHIP plan (not Medicaid or VFC eligible)
V23	317 (CO State Adult 317 Program)
V24	Medicare (Client is enrolled in Medicare)
V25	State program eligibility (Do not use if client is enrolled in CHIP or is eligible for Adult 317 Program, use above codes V22 and V23 respectively)

PHVS_ImmunizationFundingSource_IIS - Vaccine Funding Source

Use in OBX-5 when OBX-3 is valued as 30963-3-Vaccine purchased with. Indicates the funding source for a vaccine. Used to support vaccine inventory management at the clinic level.

Code	Description	HL7 Table 0396 Code
PHC70	Private Funds	CDCPHINVS
VXC50	Public Funds	CDCPHINVS
VXC51	Public VFC Funds	CDCPHINVS
VXC52	Public non-VFC Funds (use this code for CO State 317 Program funded vaccine)	CDCPHINVS
PHC68	Military Funds	CDCPHINVS
VXC3	Tribal Funds	CDCPHINVS
OTH	Other	CDCPHINVS
UNK	Unspecified/Unknown	CDCPHINVS

PHVS_VaccinationContraindication_IIS - Contraindications

(Use in OBX-5 when OBX-3 is valued as LOINC® code 30945-0 , Vaccination contraindication/precaution).

Code	Description	HL7 Table 0396 Code	V 2.3.1 Value NIP004
VXC30	Allergy (anaphylactic) to proteins of rodent or neural origin	CDCPHINVS	
VXC17	Allergy (anaphylactic) to 2-phenoxyethanol	CDCPHINVS	
VXC18	Allergy to baker's yeast (anaphylactic)	CDCPHINVS	03
91930004	Allergy to egg ingestion (anaphylactic)	SCT	04
294847001	Allergy to gelatin (anaphylactic)	SCT	05
294468006	Allergy to neomycin (anaphylactic)	SCT	06
294466005	Allergy to streptomycin (anaphylactic)	SCT	07
VXC19	Allergy to thimerosal (anaphylactic)	CDCPHINVS	08
VXC20	Allergy to previous dose of this vaccine or to any of its unlisted vaccine components (anaphylactic)	CDCPHINVS	09
402306009	Anaphylactic (life-threatening) reaction of previous dose of this vaccine or any of its components	SCT	
VXC21	Previous history of intussusception	CDCPHINVS	

Code	Description	HL7 Table 0396 Code	V 2.3.1 Value NIP004
VXC22	Encephalopathy within 7 days of previous dose of DTP or DTaP	CDCPHINVS	15
VXC23	Current fever with moderate-to-severe illness	CDCPHINVS	16
VXC24	Current acute illness, moderate to severe (with or without fever) (e.g., diarrhea, otitis media, vomiting)	CDCPHINVS	21
VXC25	History of Arthus hypersensitivity reaction to a tetanus-containing vaccine administered < 10 yrs previously	CDCPHINVS	
27624003	Chronic illness (e.g., chronic gastrointestinal disease)	SCT	22
77386006	Pregnancy (in recipient)	SCT	39
302215000	Thrombocytopenia	SCT	40
161461006	Thrombocytopenic purpura (history)	SCT	41
VXC26	Underlying unstable, evolving neurologic disorders, (including seizure disorders, cerebral palsy, and developmental delay)	CDCPHINVS	37
VXC27	Immunodeficiency due to any cause, including HIV (hematologic and solid tumors, congenital immunodeficiency, long-term immunosuppressive therapy, including steroids)	CDCPHINVS	36

PHVS_VaccinationReaction_IIS - Reactions

(Use in OBX-5 when OBX-3 is valued as LOINC® code 31044-1, Reaction).

Code	Description	HL7 Table 0396 Code	V 2.3.1 Value NIP004
39579001	Anaphylaxis (disorder)	SCT	
81308009	Disorder of brain (disorder)	SCT	
VXC10	Collapse or shock like state within 48 hours of previous dose of DTP/DTaP	CDCPHINVS	
VXC11	Convulsions (fits, seizures) within 3 days of previous dose of DTP/DTaP	CDCPHINVS	
VXC9	Persistent, inconsolable crying lasting ≥ 3	CDCPHINVS	

Code	Description	HL7 Table 0396 Code	V 2.3.1 Value NIP004
	hours within 48 hours of previous dose of DTP/DTaP		
VXC12	Fever of $\geq 40.5^{\circ}\text{C}$ (105°F) within 48 hours of previous dose of DTP/DTaP	CDCPHINVS	
VXC13	Guillain-Barré syndrome (GBS) within 6 weeks of previous dose of DTP/DTaP	CDCPHINVS	
VXC14	Rash within 14 days of dose	CDCPHINVS	
VXC15	Intussusception within 30 days of dose	CDCPHINVS	

PHVS_ HistoryOfDiseaseAsEvidenceOfImmunity_IIS – History of Disease as Evidence of Immunity indicates that a person has been diagnosed with a particular disease. (Use in OBX-5 when OBX-3 is valued as LOINC® code 59784-9).

Code	Description	Explanation	HL7 Table 0396 Code	V 2.3.1 Value NIP004
409498004	Anthrax (disorder)	History of anthrax infection.	SCT	
397428000	Diphtheria (disorder)	History of diphtheria infection.	SCT	24
76902006	Tetanus (disorder)	History of tetanus infection.	SCT	32
27836007	Pertussis (disorder)	History of pertussis infection.	SCT	29
40468003	Viral hepatitis, type A (disorder)	History of Hepatitis A infection.	SCT	
66071002	Type B viral hepatitis (disorder)	History of Hepatitis B infection.	SCT	26
91428005	Haemophilus influenzae infection (disorder)	History of HIB infection.	SCT	25
240532009	Human papillomavirus infection (disorder)	History of HPV infection.	SCT	
6142004	Influenza (disorder)	History of influenza infection.	SCT	
52947006	Japanese encephalitis virus disease (disorder)	History of Japanese encephalitis infection.	SCT	

Code	Description	Explanation	HL7 Table 0396 Code	V 2.3.1 Value NIP004
14189004	Measles (disorder)	History of measles infection.	SCT	27
36989005	Mumps (disorder)	History of mumps infection.	SCT	28
36653000	Rubella (disorder)	History of rubella infection.	SCT	31
23511006	Meningococcal infectious disease (disorder)	History of meningococcal infection.	SCT	
16814004	Pneumococcal infectious disease (disorder)	History of pneumococcal infection.	SCT	
398102009	Acute poliomyelitis (disorder)	History of polio infection.	SCT	30
14168008	Rabies (disorder)	History of rabies infection.	SCT	
18624000	Disease due to Rotavirus (disorder)	History of rotavirus infection.	SCT	
4834000	Typhoid fever (disorder)	History of typhoid infection.	SCT	
111852003	Vaccinia (disorder)	History of vaccinia infection.	SCT	
38907003	Varicella (disorder)	History of Varicella infection.	SCT	33
16541001	Yellow fever (disorder)	History of yellow fever infection.	SCT	
271511000	Hepatitis B immune (finding)	Immunity to hepatitis B	SCT	

PHVS_SerologicalEvidenceOfImmunity_IIS – Serological evidence of immunity to a particular disease indicates that a person has immunity to that disease.

(Use in OBX-5 when OBX-3 is valued as LOINC® code 75505-8).

Code	Description	Explanation	HL7 Table 0396 Code	V 2.3.1 Value NIP004
341112003	Mumps (finding)	Serology confirmed mumps.	SCT	
278968001	Rubella (finding)	Serology confirmed rubella.	SCT	
371111005	Measles (finding)	Serology confirmed measles.	SCT	
371113008	Varicella (finding)	Serology confirmed varicella.	SCT	
271511000	Hepatitis B immune (finding)	Serology confirmed hepatitis B.	SCT	
278971009	Hepatitis A immune (finding)	Serology confirmed hepatitis A.	SCT	

PHVS_VISBarcodes_IIS - VIS Bar Codes (IIS)

Use in OBX-5 when OBX-3 is valued as 69764-9. The purpose of the barcode on the bottom of the Vaccine Information Statement (VIS) is to provide an opportunity to electronically capture the VIS document type (e.g. influenza, MMR) and the edition date of the VIS, as required by the National Childhood Vaccine Injury Act (NCVIA). For more information, please visit -

<http://www.cdc.gov/vaccines/hcp/vis/barcodes.html>

VIS Document Type Description / Concept Name	Edition Date	VIS Fully-encoded text string (Concept Code)	Code System Code (HL7 Table 0396)
Adenovirus VIS	7/14/2011	253088698300001111110714	cdcgs1vis
Anthrax VIS	3/10/2010	253088698300002811100310	cdcgs1vis
Hepatitis A VIS	10/25/2011	253088698300004211111025	cdcgs1vis
Hepatitis B VIS	2/2/2012	253088698300005911120202	cdcgs1vis
Haemophilus Influenzae type b VIS	12/16/1998	253088698300006611981216	cdcgs1vis
Human papillomavirus Vaccine (Cervarix) VIS	5/3/2011	253088698300007311110503	cdcgs1vis
Human papillomavirus Vaccine (Gardasil) VIS	2/22/2012	253088698300008011120222	cdcgs1vis
Influenza Vaccine - Live, Intranasal VIS	7/2/2012	253088698300009711120702	cdcgs1vis

VIS Document Type Description / Concept Name	Edition Date	VIS Fully-encoded text string (Concept Code)	Code System Code (HL7 Table 0396)
Influenza Vaccine - Inactivated VIS	7/2/2012	253088698300010311120702	cdcgs1vis
Japanese Encephalitis VIS	12/7/2011	253088698300011011111207	cdcgs1vis
Measles/Mumps/Rubella VIS	4/20/2012	253088698300012711120420	cdcgs1vis
Measles/Mumps/Rubella/Varicella VIS	5/21/2010	253088698300013411100521	cdcgs1vis
Meningococcal VIS	10/14/2011	253088698300014111111014	cdcgs1vis
Pneumococcal Conjugate (PCV13) VIS	4/16/2010	253088698300015811100416	cdcgs1vis
Pneumococcal Polysaccharide VIS	10/6/2009	253088698300016511091006	cdcgs1vis
Polio VIS	11/8/2011	253088698300017211111108	cdcgs1vis
Rabies VIS	10/6/2009	253088698300018911091006	cdcgs1vis
Shingles VIS	10/6/2009	253088698300020211091006	cdcgs1vis
Tetanus/Diphtheria/(Pertussis) VIS	1/24/2012	253088698300022611120124	cdcgs1vis
Typhoid VIS	5/29/2012	253088698300023311120529	cdcgs1vis

PHVS_VISVaccines_IIS - VIS Vaccines (IIS)

Use in OBX-5 when OBX-3 is valued as 30956-7. This table lists the vaccines which require that a Vaccine Information Statement (VIS) be shared with a patient/parent. The VIS document type, edition date and presentation date are reported in a set of OBX. The current list will be found on PHIN VADS, as the list may change over time.

Code	Description	HL7 Table 0396 Code
106	DTaP, 5 pertussis antigens	CVX
146	DTaP-IPV-Hib-HepB	CVX
110	DTaP-HepB-IPV	CVX
50	DTaP-Hib	CVX
120	DTaP-Hib-IPV	CVX
130	DTaP-IPV	CVX
52	HepA, adult	CVX
83	HepA, ped/adol, 2 dose	CVX
104	HepA-HepB	CVX

Code	Description	HL7 Table 0396 Code
08	HepB, adolescent or pediatric	CVX
42	HepB, adolescent/high risk infant	CVX
43	HepB, adult	CVX
44	HepB, dialysis	CVX
49	Hib (PRP-OMP)	CVX
48	Hib (PRP-T)	CVX
51	Hib-HepB	CVX
118	HPV, bivalent	CVX
62	HPV, quadrivalent	CVX
135	Influenza, high dose seasonal	CVX
111	influenza, live, intranasal	CVX
141	Influenza, seasonal, injectable	CVX
140	Influenza, seasonal, injectable, preservative free	CVX
144	influenza, seasonal, intradermal, preservative free	CVX
10	IPV	CVX
148	Meningococcal C/Y-HIB PRP	CVX
136	Meningococcal MCV4O	CVX
114	meningococcal MCV4P	CVX
32	meningococcal MPSV4	CVX
03	MMR	CVX
94	MMRV	CVX
133	Pneumococcal conjugate PCV13	CVX
100	pneumococcal conjugate PCV7	CVX

Miscellaneous Code Sets

HL70008 – Acknowledgement code

(Use in MSA-1. This code indicates the type of acknowledgement expected).

Code	Description
AA	Application accept. Message was accepted without error.
AE	Application error: Message processed and there are errors being reported.
AR	Application reject: Message was rejected because one of the following occurred: <ul style="list-style-type: none">• Unsupported message type• Unsupported event code• Unsupported processing ID• Unable to process for reasons unrelated for format or content
CA	Enhanced mode code. CIIS does not process in enhanced mode. This code is not supported.
CE	Enhanced mode code. CIIS does not process in enhanced mode. This code is not supported.
CR	Enhanced mode code. CIIS does not process in enhanced mode. This code is not supported.

HL70061 – Check digit scheme

(Use in all CX data types; including PID-2, 3, 4, 18, 21).

Code	Description
M10	Mod 10 algorithm
M11	Mod 11 algorithm
ISO	ISO 7064: 1983
NPI	Check digit algorithm in the US National Provider Identifier

HL70103 – Processing ID

(Use in MSH-11).

Code	Description
D	Debugging
P	Production
T	Test

HL70136 – Yes/No Indicator

(Use in PID-24, 30; PD1-12).

Code	Description
Y	Yes
N	No

HL70190 – Address type

(Use in all XAD data types; including PID-11).

Code	Description
C	Current or temporary
P	Permanent
M	Mailing
B	Firm/Business
O	Office
H	Home
N	Birth
F	Country of origin
L	Legal address
BDL	Birth delivery location [use for birth facility]
BR	Residence at birth [use for residence at birth]
RH	Registry home
BA	Bad Address

HL70200 – Name Type

(Use in all XCN, XPN data types; including PID-5, 6, 9).

Code	Description	Definition
A	Alias name	This is a nickname or other assumed name.
L	Legal name	This is 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 a 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.

HL70201 – Telecommunications Use Code

(Use in all XTN data types; including PID-13, 14).

Code	Description
PRN	Primary residence number.
ORN	Other residence number.
WPN	Work number.
VHN	Vacation home number.
ASN	Answering service number
EMR	Emergency number
NET	Network (email) address
BPN	Beeper number

HL70202 – Telecommunications Equipment Type
 (Use in all XTN data types; including PID-13, 14).

Code	Description
PH	Telephone
FX	Fax
MD	Modem
CP	Cellular phone
BP	Beeper
INTERNET	Internet address: Use only if telecommunication use code is NET
X.400	X.400 email address: Use only if telecommunication use code is NET
TDD	Telecommunications Device for the Deaf
TTY	Teletypewriter

HL70208 – Query response status
 (Use in QAK-2).

Code	Description
OK	Data found, no errors (this is the default). Similar to AA in code set HL70008.
NF	No data found, no errors
AE	Application error: Query had an error in content of format.
AR	Application reject: Message was rejected because one of the following occurred: <ul style="list-style-type: none"> • Unsupported message type • Unsupported event code • Unsupported processing ID Unable to process for reasons unrelated for format or content
TM	Too many candidates

HL70357 – Message error status codes

(Use in ERR-3).

Code	Description
Success	
0	Message Accepted
Error Status Codes	
100	Segment sequence error (or missing segment)
101	Required field missing
102	Data type error
103	Table value not found
Rejection Status Codes	
200	Unsupported message type
201	Unsupported event code
202	Unsupported processing ID
203	Unsupported version ID
204	Unknown key identifier
205	Duplicate key identifier
206	Application record locked
207	Application internal error

HL70396 - Coding system

[only selected values listed] See Version 2.5.1 Table 0396 for other values. Use in CE data types to denote the coding system used for coded values.

Code	Description
99zzz or L	Local general code (where z is an alphanumeric character)
ART	WHO Adverse Reaction Terms
C4	CPT-4
Value	Description
C5	CPT-5
CDCA	CDC Analyte Codes
CDCM	CDC Methods/Instruments Codes
CDCPHINVS	PHIN VS (CDC Local Coding System)

CDS	CDC Surveillance
CPTM	CPT Modifier Code
CST	COSTART
CVX	CDC Vaccine Codes
E	EUCLIDES
E5	Euclides quantity codes
E6	Euclides Lab method codes
E7	Euclides Lab equipment codes
ENZC	Enzyme Codes
HB	HIBCC
HCPCS	HCFA Common Procedure Coding System
HHC	Home Health Care
HL7nnnn	HL7 Defined Codes where nnnn is the HL7 table number
HPC	HCFA Procedure Codes (HCPCS)
I10	ICD-10
I10P	ICD-10 Procedure Codes
I9	ICD9
I9C	ICD-9CM
ISOnnnn	ISO Defined Codes where nnnn is the ISO table number
LB	Local billing code
LN	Logical Observation Identifier Names and Codes (LOINC [®])
MCD	Medicaid
MCR	Medicare
MEDR	Medical Dictionary for Drug Regulatory Affairs (MEDDRA)
MVX	CDC Vaccine Manufacturer Codes
NDC	National drug codes
NCIT	NCI Thesaurus
NPI	National Provider Identifier
SNM	Systemized Nomenclature of Medicine (SNOMED [®])
SCT	SNOMED Clinical Terminology

SCT2	SNOMED Clinical Terms alphanumeric codes
SNM3	SNOMED International
SNT	SNOMED topology codes (anatomic sites)
UML	Unified Medical Language
UPC	Universal Product Code
UPIN	UPIN
W1	WHO record # drug codes (6 digit)
W2	WHO record # drug codes (8 digit)
W4	WHO record # code with ASTM extension
WC	WHO ATC

HL70516 – Error Severity

Code	Description
E	Error: Serious loss of data, as determined by receiver (for example: vaccination had error and was not accepted.)
W	Warning: Loss of data, but not serious (for example: patient's primary language was not recognized.)
I	Information: No information lost, segment indicate information that may be of interest to the receiver

HL70533 – Application Error Code

This user-defined table has values agreed to by the Immunization Information System Community.

Code	Description
1	Illogical Date error
2	Invalid Date
3	Illogical Value error
4	Invalid value
5	Table value not found
6	Required observation missing
7	Required data missing

Appendix C – Examples

Send Acknowledgement ACK In Response To VXU

Sending an acknowledgement can accomplish one of a number of tasks. It can indicate that the message that was sent was successfully received and processed. It can also indicate that the message had errors.

The ability to accept ACK messages allows sending system managers to trouble-shoot communications. It allows them to identify systematic problems with message creation. Being able to send ACK allows receiving system managers to inform sending system managers about the nature of errors received. The process can keep senders informed that some or all of the data they had sent did not make into the receiving system.

It is vital that when messages are passed on by an intermediary, like a Health Information Exchange (HIE), the ACK is passed back to the initiating system.

Errors may be of a number of types. The error may be caused by:

- a violation of an HL7 standard
- a violation of local processing rules
- a failure in the transport layer between the 2 systems
- a failure by the sending system to be authenticated by the receiving system

Only the first 2 types of errors are addressed by this Implementation Guide.

Send acknowledgement of success in ACK

Initiating system may expect to receive an acknowledgment message, regardless of whether the receiving system had problems with the message. There is a straightforward response.

```
MSH|^~\&|DCS|MYIIS|MYIIS||200906040000-  
0500||ACK^V04^ACK|1234567|P|2.5.1|||NE|NE||||Z23^CDCPHINVS <CR>  
MSA|AA|9299381<CR>
```

In the example above, the system with the code DCS is sending an acknowledgement to the system with the code MYIIS on June 4, 2009. The message indicates that there were no errors in processing. Note that MSH-10 (Message Control ID) is unique identifier generated by the system sending the ACK.

Send Error in ACK

An error may be as serious as rejection of an entire message or as trivial as receipt of an unexpected field of data. ACK messages are intended to inform the original sender of the outcome of the message they had sent.

Acknowledging An Error That Causes Message Rejection (AR response):

If a system received a message with an unrecognized version id (10.0, for instance) the system would return an ACK with an application reject message.

```
MSH|^~\&|DCS|MYIIS|MYIIS||200906040000-
0500||ACK^V04^ACK|12343467|P|2.5.1|||<CR>
MSA|AR|9299381<CR>
ERR||MSH^1^12|203^unsupported version id^HL70357|E|||Unsupported HL7
Version ID-Message rejected<CR>
```

The AR response is reserved by HL7 for 4 errors:

- Unsupported message type
- Unsupported event code
- Unsupported processing ID
- Unable to process for reasons unrelated for format or content

Acknowledging An HL7 Processing Error That Causes Message Rejection (AE response)

There are a number of errors that may cause message rejection when processing an HL7 message that are based on HL7 rules.

- Empty or missing required (R) segment group
- Empty or missing PID segment or MSH segment (Required segments not in segment group)

The following example reports that the PID-5 (patient name) was missing. It is a required field. This leads to rejection of the PID segment. Because this is an error, the MSA-1 reports an error (“AE”). This error caused the receiving system to identify this as a serious error with data loss. ERR-4 (severity) is set to ‘E’. Note that ERR-8 contains a free text note about the error. These are generated locally by the responding system. They may be standardized locally.

```
MSH|^~\&|DCS|MYIIS|MYIIS||200906040000-
0500||ACK^V04^ACK|13434534|P|2.5.1||| <CR>
MSA|AE|9299381<CR>
ERR||PID^1^5|101^required field missing^HL70357|E|7^required data
missing^HL70533||| Patient last name is required. Message rejected. <CR>
ERR||PID|100^required segment missing^HL70357|E|||PID is required
segment. Message rejected <CR>
```

Acknowledging An HL7 Processing Error That Causes Segment Group Rejection:

The following error illustrates a case where a required (R) field in a required(R) segment is treated as empty. The segment is a child of a segment group. The value in RXA-5 (administered vaccine) is not valid causing the field to be treated as empty. Since it is an R field the segment is treated as empty. RXA is child of the Order Segment group. Any segments in that order group would be treated as empty. (RXR, OBX, NTE). If this is the only order group in the message, then the entire message would be rejected. The following assumes that there were other order groups in the message.

```
MSH|^~\&|DCS|MYIIS|MYIIS||200906040000-
0500||ACK^V04^ACK|49348812|P|2.5.1<CR>
MSA|AE|9299381<CR>
ERR||RXA^1^5|103^table value not found^HL70357|E|5^table value not
found^HL70533||| A valid Vaccination Code is required. Message
rejected.<CR>
```

```
ERR||RXA^1^5|101^required field missing^HL70357|E|7^required data
missing^HL70533||||RXA-5 is required segment rejected<CR>
ERR||RXA|100^required segment missing^HL70357|E||||RXA is required segment
segment-group rejected <CR>
```

Acknowledging An HL7 Processing Error That Causes Segment Rejection:

The following error illustrates a case where a required (R) field in a required but may be empty (RE) segment is treated as empty. The value in NK1-3 (Relationship) is empty. Since it is an R field the segment is treated as empty. NK1 is not a child of a Segment group. The message is not rejected.

```
MSH|^~\&|DCS|MYIIS|MYIIS||200906040000-
0500||ACK^V04^ACK|49348812|P|2.5.1<CR>
MSA|AE|9299381<CR>
ERR||NK1^3|101^required field missing^HL70357|E||||Relationship missing -
- segment rejected <CR>
```

Acknowledging An HL7 Processing Error That Caused a Warning :

A non-fatal error may occur for a number of reasons. One example would occur when a field is not supported and the message contains data in that field. For instance, PID-2 (Patient Id) is not supported. If the message had an identifier, then the system would generate an error.

```
MSH|^~\&|DCS|MYIIS|MYIIS||200906040000-
0500||ACK^V04^ACK|1234886|P|2.5.1<CR>
MSA|AA|9299381<CR>
ERR||PID^2| |W||||PID-2 is not supported -- data ignored<CR>
```

The example above indicates that an error occurred in PID-2 (patient id). The data were ignored, but the initiating system is notified of the error.

Acknowledging an Application Error That Causes Message Rejection Due to Local Business Rule Violation

The following example shows an error that causes an error based on the application rules or functioning. A local business rule may be that “The date of birth shall be on or before today.” If a message were received with a birth date in the future for the patient, the application would generate an error. The field would be treated as empty. The field is a Required field in a Required Segment (Not part of a segment group). The message is rejected.

```
MSH|^~\&|DCS|MYIIS|MYIIS||200906040000-
0500||ACK^V04^ACK|9492823|P|2.5.1<CR>
MSA|AE|9299381<CR>
ERR||PID^1^7|101^required field missing^HL70357 |E|1^illogical date
error^HL700533|||| Patient date of birth cannot be in the future. Message
rejected. <CR>
ERR||PID|100^required segment missing^HL70357|E||||PID is required
segment. Message rejected <CR>
```