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Implementation Guide for Immunization Messaging

Release 1.5

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**U.S. Department of
Health and Human Services**
Centers for Disease
Control and Prevention



Context for Update:

This document combines the original Release 1.5 Implementation Guide and Release 1.5 addendum (both available at <https://www.cdc.gov/vaccines/programs/iis/technical-guidance/hl7.html>). The purpose of this document is to provide a single document containing both the core content of Release 1.5 and the updates provided by the addendum so that implementers and developers have a convenient single document to work from. Where conflicts may arise between this document and the individual documents, the individual documents shall be considered the source of truth.

Further, the new Appendix C provides references to additional guidance documents published by AIRA after the release of the addendum. These guidance documents are the result of issues found during Release 1.5 implementation and clarify the intent of Release 1.5. These additional documents will be useful for implementers and developers but are not referenced by current regulation. This guidance provides a vision for changes to be included in future iterations of the Implementation Guide, including the v2.8.2 Implementation Guide currently being balloted by HL7.

To clearly differentiate the additional information from the original guide, track-changes were typically maintained where new information was added and where it would not adversely affect readability.

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1.Introduction

Immunization Information Systems (IIS) are centralized population based repositories of immunization related information. They receive and share data on individual clients/patients¹ with a number of other systems, including Electronic Health Record systems (EHR-S). Health Level Seven (HL7) is a nationally recognized standard for electronic data exchange between systems housing health care data. The HL7 standard is a key factor that supports this two-way exchange of information because it defines a syntax or grammar for formulating the messages that carry this information. It further describes a standard vocabulary that is used in these messages. It does not depend on specific software, that is, it is platform independent.

This document represents the collaborative effort of the American Immunization Registry Association (AIRA) and the Centers for Disease Control and Prevention (CDC) to improve inter-system communication of immunization records. The effort has received input from the National Institute of Standards and Technology (NIST) to improve the capacity to test conformance with this Implementation Guide. In addition, this Guide addresses a need to specify usage requirements for data elements that are not included in the standard HL7 usage designations. This implementation guide replaces the *Implementation Guide for Immunization Data Transaction Using Version 2.3.1 of the HL7 Standard Protocol*, and previous versions of this Guide. It is based on HL7 Version 2.5.1, as published by the HL7 organization (www.hl7.org). In addition, it pre-adopts a number of features of HL7 Version 2.7.1, such as data types and the conformance model (defined in Chapter 2B).

As HL7 has developed and published new versions of the standard, it has sought to maximize the ability of implementations, based on newer versions to be able to accept messages from earlier versions. Based on this, we anticipate that faithful implementations of this Guide will be able to accept most immunization messages based on the 2.3.1 Guide. Note that variations in current 2.3.1 interfaces increase the risk that faithful 2.5.1 implementations will encounter problems with 2.3.1 messages.

Implementations that are supporting Version 2.3.1 messages should continue to follow the specifications of 2.3.1 messages described in the Implementation Guide Version 2.2, June 2006.

Intended Audience

This Guide has two audiences. The first is the system managers that must understand this process at a high level. The second is the technical group from IIS and EHR-S that must implement these guidelines. For them we strive for an unambiguous specification for creating and interpreting messages. Our goal is for this Guide to be a bridge between the two.

It is important to note that HL7 specifies the interface between 2 systems. It does not specify how any given system is implemented to accomplish the goals of messaging.

Scope

This Guide is intended to facilitate the exchange of immunization records between different systems². This includes

- sending and receiving immunization histories for individuals
- requesting immunization histories for individuals

¹ Note that client, patient and recipient are terms which we interchangeably in this document.

² The exchange partners could be IIS, EHR-S. or other health data systems.

Introduction

- requesting an evaluated history and forecast for individuals
- responding to requests for immunization histories by returning immunization histories
- responding to requests for evaluated history and forecast
- acknowledging receipt of immunization histories and requests for immunization histories
- reporting errors in the messaging process
- sending observations about an immunization event (this may include patient eligibility for a funding program, reactions, forecasts and evaluations).

The Guide is not intended to specify other issues such as

- business rules, which are not implicit in HL7, applied when creating a message
- business rules, which are not implicit in HL7, applied when processing a received message
- a standard transport layer
- search process used when responding to a query
- business rules used to deduplicate clients or events
- management of vaccine inventory
- maintenance of Master Person Index (MPI).³

Local implementations are responsible for the important issues described above. One way to insure success is to publish a local profile or implementation guide that outlines the local business rules and processes. These guides may further constrain this Guide, but may not contradict it. This Guide will identify some of the key issues that should be addressed in local profiles.

This Guide makes the following assumptions:

- Infrastructure is in place to allow accurate and secure information exchange between information systems.⁴
- Providers access immunization information through either an EHR-S or immunization information system (IIS).
- Privacy and security has been implemented at an appropriate level.
- Legal and governance issues regarding data access authorizations, data ownership and data use are outside the scope of this document.
- The immunization record and demographic record for each patient contains sufficient information for the sending system to construct the immunization and demographic message properly.
- External business rules are assumed to be documented locally.

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| <p>It is important to be able to accept complete immunization histories from different sources and have a method for integrating them. This implies that a system should not assume that any record sent is “new”. If</p> |
|---|

³ Note that requesting an immunization history may require interaction with an MPI or other identity source. Those using these services should consult with profiles or implementation guides that support this. Integrating the Healthcare Enterprise (IHE) has profiles that support MPI maintenance and identity resolution.

⁴ This infrastructure is not specified in this document, but is a critical element to successful messaging. Trading partners must select a methodology and should specify how it is used.

the system makes this assumption and receives a complete history that has overlapping immunization records, there is a risk for duplicate records.

There is “best practice” guidance on handling this from the American Immunization Registry Association (AIRA) in the Modeling Immunization Registry Operations Workgroup (MIROW) documents available the AIRA website. (immregistries.org)

Organization and Flow

The first two chapters are meant to lay out what can be done and why. The chapters that follow them describe and specify how. Message profiles will support the major use cases outlined below. Each profile will be in a separate chapter. All profiles will rely on the data type definitions in Chapter 4. Several appendices support implementers with value sets and examples of use.

Boxed notes are used to call attention to areas where there are changes from the version 2.3.1 Implementation Guide or areas where readers should pay special attention.

Chapter 1-Introduction

This chapter describes the scope of the Guide and gives supporting background.

Chapter 2-Actors, Goals and Messaging Transactions

Chapter 2 describes the business motivations that this Guide will support. It will describe the entities (actors) that will rely on the messages. It will lay out the transactions that will support the goals of these actors (use cases). Finally, it will describe the broader context that this messaging occurs in. There are supporting business processes outside of the actual messaging that are keys to success.

Chapter 3-Messaging infrastructure

Chapter 3 focuses on the underlying rules and concepts that are the basis for HL7 messaging. It will illustrate the components of messages, the grammatical rules for specifying the components and subcomponents.

Chapter 4-Data-type Definitions

This chapter will describe and specify all data types anticipated for use by the messages supported by this Guide. Where there are subcomponents to a data type, it will specify any rules related to use. Elements that require the use of coded values will draw on the value sets specified in appendix A.

Chapter 5-Profile Z22 Send Unsolicited Immunization Update Using a VXU

Chapter 5 is the profile specifying a constrained VXU message.

Chapter 6- Profile Z23 Return an Acknowledgement

Chapter 6 is the profile specifying a constrained ACK message.

Chapter 7- Profile Z34 Request a Complete Immunization History

Chapter 7 is the profile with the specifications for a query requesting a Complete Immunization History.

Chapter 8—Profile Z32 Return Complete History

Chapter 8 is the profile with the specifications for a response returning a Complete Immunization History.

Chapter 9-Profile Z31 Return List of Candidates

Introduction

Chapter 9 is the profile with the specifications for a response returning a list of candidate matches.

Chapter 10- Profile Z33 Return Response with No Matches

Chapter 10 is the profile with the specifications for a response returning no matches. It may return errors.

Chapter 11- Profile Z44 Request an Evaluated Immunization History and Forecast

Chapter 11 is the profile specifying a query requesting an evaluated history and forecast. It includes a child profile for responses to this query.

Chapter 12-Profile Z42 Return Evaluated History and Forecast

Chapter 12 is the profile specifying the response to a Request for Evaluated Immunization History and Forecast.

Chapter 13—Batch File Segments

This Chapter gives specifications for packaging messages into batches and files of batches.

Appendix A-Value Sets

This appendix lists expected values for all coded data elements used in this Guide. It is a point in time view of the value sets.

Appendix B- Message examples

This appendix will show detailed examples of how to implement the messages specified in the body of the Implementation Guide.

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| <p>Note that the focus of this guide is on the format and grammar of the messages between systems. The activities shown within a system are intended to put the message in context and to highlight the local responsibilities for successful messaging.</p> |
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2. Actors, Goals, and Messaging Transactions

This chapter will describe the actors (entities) that may be involved in sending or receiving immunization-related messages. It will list and describe the use cases (goals) that they have that can be met by the messages. It will illustrate the messaging interface in context. Finally, it will associate specific HL7 messages with these goals.

Note that there are a number of supporting processes that are not included within the messaging specifications. They are vital to success, but do not belong in this Implementation Guide, but rather in local business rules documentation.

Actors and Goals

There are a number of primary actors involved in data exchange. These include

- Immunization Information System (IIS)
- Electronic Health Record Systems (EHR-S) and other systems⁵
- An actor with a supporting role may be a Master Person Index (MPI)⁶.
- An actor with a supporting role may be a Health Information Exchange (HIE)

We will focus on the first 2 actors but will illustrate how the MPI actor may be integrated. These actors can be suppliers of information/data and consumers/requesters of data. We will consider the initiator of a messaging conversation the sender and the target of this first message the receiver. Obviously, a sender may receive messages. For instance, a sender initiates a request for an immunization history for a client. The receiver responds with a message that is received by the initiating sender. For clarity, the initiator will keep the label of sender.

Note that we do not assume that the sender or receiver is a specific data source (IIS or EHR). One IIS may query another IIS or an EHR-S. Similarly, an EHR-S may send an immunization history to another EHR-S.

Other actors have an interest in the functions of an IIS and messaging. These include:

- Clients/patients
- Users
- Policy makers
- Researchers
- Public Health agencies
- Clinicians
- Billing systems

These actors will not be directly addressed in this Guide. They interact with the primary actors to accomplish their needs.

⁵ The diagrams often show an IIS and an EHRs/other system. The other system may be an IIS.

⁶ A Master Person Index is used by some health data systems to cross-reference a person's identifiers across these systems. If system A needs the person's id from system B, then it may retrieve it from the MPI. The Patient Identifying Cross-referencing (PIX) query asks for one system's personal identifier, based on another system's identifier. PIX is a profile published by Integrating the Healthcare Enterprise (IHE).

TABLE 2-1 ACTORS AND GOALS FOR MESSAGING

| Actor | Responsibility | Messaging Goals |
|--|--|---|
| <p>Immunization Information System (IIS)</p> | <p>Provide access to a complete, consolidated immunization record for each person in its catchment area</p> <p>Supply individual immunization records to authorized users and systems</p> <p>Support aggregate reporting and analysis</p> <p>Evaluate immunization history and make recommendations for next doses</p> <p>Store medical conditions that affect what vaccines are recommended</p> | <p>Receive immunization histories and updates</p> <p>Receive demographic updates</p> <p>Receive requests for individual records</p> <p>Receive observations about a person</p> <p>Send observations about a person</p> <p>Send immunization records to other systems</p> <p>Send other systems evaluated immunization histories and forecasts of next doses due for a specific person</p> <p>Request immunization record</p> <p>Request person id</p> <p>Acknowledge receipt of message</p> <p>Report processing errors from receipt of message</p> |

TABLE 2-1 ACTORS AND GOALS FOR MESSAGING

| Actor | Responsibility | Messaging Goals |
|---|---|--|
| Electronic Health Record system (EHR-S) | <p>House a person's electronic health record</p> <p>Make a person's record available to authorized persons</p> <p>Provide decision support for clinical decisions.</p> | <p>Receive immunization histories and updates</p> <p>Receive demographic updates</p> <p>Receive requests for individual records</p> <p>Send immunization records to IIS</p> <p>Send demographic data</p> <p>Receive observations about a person</p> <p>Send observations about a person</p> <p>Request Immunization record</p> <p>Request person id</p> <p>Acknowledge receipt of message</p> <p>Report processing errors from receipt of message</p> <p>Request evaluation on an immunization history and recommendations for next dose on a given Schedule, such as ACIP</p> |
| Master Person Index or other identity broker. | <p>Maintain a list of patients and identifiers for a set of persons</p> <p>Supply identifiers for other system's use</p> <p>Be a central demographic supplier for participating systems</p> <p>Provide cross-reference for identifiers for participating systems.</p> | <p>Send id for an individual for use in a record request or record update</p> <p>Receive request for person id.</p> <p>Return complete demographic data for an individual from central demographic store</p> |

Chapter 2: Actors, Goals, and Messaging Transactions

The table lists a number of messaging needs that relate to IIS and their trading partners. These are all candidates for HL7 messaging. Some are not currently implemented, but give us the landscape that should be considered. Note that the messaging for maintaining of an MPI is out of scope for this Implementation Guide.

Another way to organize these tasks or goals is to decompose the goals of the entities (actors) into the various roles they may play. These roles include:

1. Immunization history supplier
2. Immunization history consumer
3. Identity resolution broker

Each of the actors above may have the capacity and interest to support some constellation of these roles. This approach is useful for system design and implementation and encourages a services approach to development. Since the goal of this chapter is to provide a non-technical view to help system managers understand how messaging can meet their needs, we will focus on the business entities and their goals.

High-Level View of Use Cases

We can map these actors and messaging goals to use cases. The following diagram maps the messaging goals of the various players to use cases. These use cases will be defined below. These use cases are not intended to be the basis of a software design process.

Several paths may accomplish the request for immunization history. Systems will return an immunization history when they are confident that the person requested has been identified. One path separates identity resolution from the request for immunization history. Another includes implicit identity resolution.

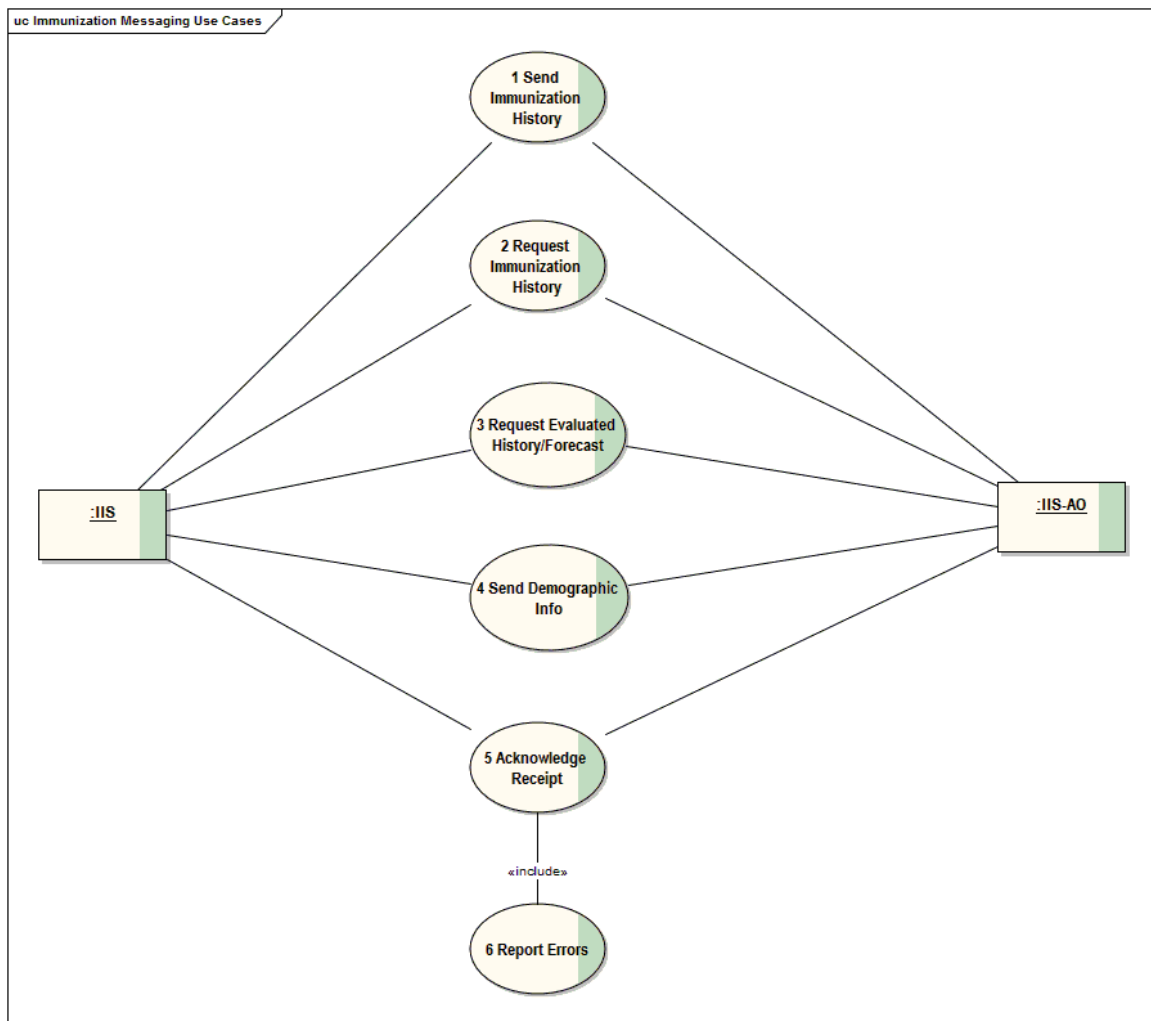


Figure 1 Immunization Messaging Use Cases

An IIS is an Immunization Information System. An IIS AO is an IIS Authorized Organization. It is an entity that is authorized to submit data to an IIS and to request data from an IIS.

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 EHR-S 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 requesting system receives an immunization history. Note that if no matches are found or there are errors, no immunization history will be returned.

There are 5 possible results:

1. One client matches exactly⁷ the criteria sent
2. One or more clients match the criteria sent (inexact match)⁸
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

| |
|--|
| Note that systems must deal with the situation where a Client has indicated that his/her records must be protected. (Only the owning provider may view) This should be clearly documented. |
|--|

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 due 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 requesting 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 exactly⁹ the criteria sent
2. One or more clients match the criteria sent (inexact match)¹⁰
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

| |
|--|
| Note that systems must deal with the situation where a Client has indicated that his/her records must be protected. (Only the owning provider may view) This should be clearly documented. |
|--|

⁷ The definition of “exact” is a local business rule and should be documented locally.

⁸ If more than one client has a high-confidence match with the query parameters, this is an inexact match.

⁹ The definition of “exact” is a local business rule and should be documented locally.

¹⁰ If more than one client has a high-confidence match with the query parameters, this is an inexact match.

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. Refer to the HL7 Standard and to profiles published by groups such as IHE.

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

While this document focuses on the format and content of messages from one system to another, it is useful to understand where this fits into the bigger picture of interoperable communication.

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

- Create message¹¹
 - 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.

¹¹ Identifying which client's record to send is an important consideration, but outside the scope of this document.

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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 data base.¹²
 - 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 acknowledgment and processes it.

Obviously, the interaction may be more complex than this¹³. 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 should be clearly specified so that each side understands how the message will be handled.

When illustrating the processes involved in each message below, we will not elaborate on the processes that occur outside the actual message exchange.

¹² Local business rules determine how this occurs and should be documented clearly.

¹³ See Appendix B for illustrations of the processing rules expected when handling HL7 messages.

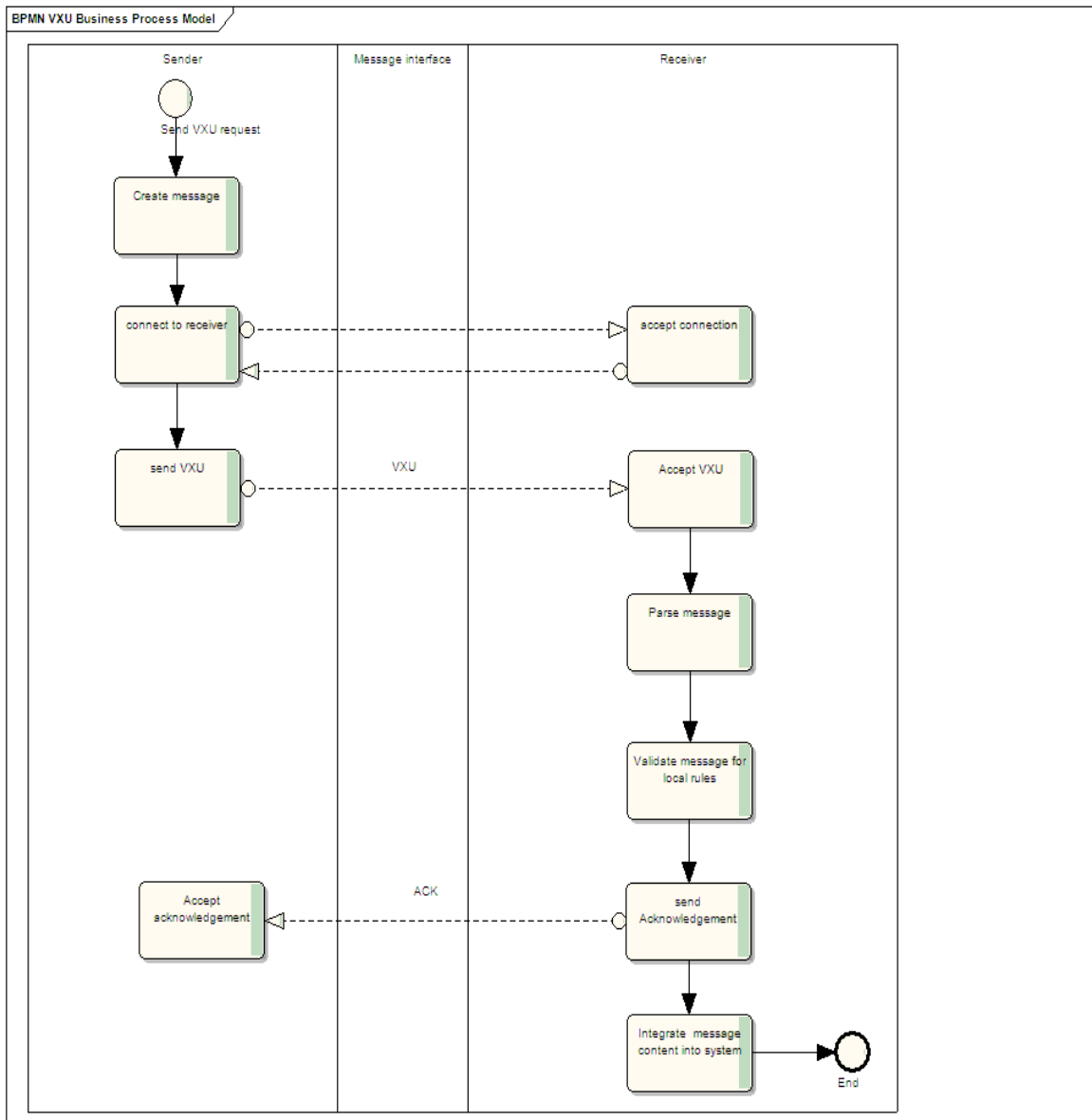


Figure 2 VXU Process Model

Note: It is vital that each implementation clearly document the business rules and special handling in a local Implementation Guide or Profile. Local implementers may place further constraints on the specifications found in this Guide. Optional fields or required fields that are allowed to be empty in this Guide may be made required. Repeating fields may be constrained to fewer repetitions.

Core Data Elements of an Immunization History

Systems that support immunization information have a number of important responsibilities including:

- Consolidation of Immunization records from various sources
- Supplying consolidated immunization history to users

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- Forecasting next doses due¹⁴
- Evaluating vaccine doses administered¹⁵
- Supporting inventory management
- Supporting reports on vaccine usage by eligibility for funding programs
- Assessing coverage rates in a population
- Protecting the privacy of immunization data
- Supporting generation and sending of reminder notices
- Supporting tracking doses administered by lot so that recipients may be notified in the case where the lot is recalled

Each of these requires specific data. The National Vaccine Advisory Committee (NVAC) has identified a core set of data elements to support these responsibilities. These core data elements have been used to determine the usage in this guide. It is expected that systems that are using this Implementation Guide will be able to support these data elements and include them in a message. See Core Data Elements in Appendix B.

These core data elements will also be included in conformance statements. This may be at the HL7 message component level or a data concept level.¹⁶ It is important that these data elements are supported by both sender and receiver.

Key Technical Decisions

One of the primary features of this implementation guide is its focus on key points of broad interoperability.

Pre-Adoption Of Some Features Of HL7 Version 2.7.1

This implementation Guide pre-adopts some features of HL7 Version 2.7.1 to support improved consistency in implementation with the goal of improving interoperability. These include:

- Conformance statements
- Conditional predicates
- Usage guidance
- New fields in MSH segment

Use of Vocabulary Standards

This guide calls for specific vocabulary standards for the exchange of immunization information such as LOINC and SNOMED. Standard vocabularies enable automated decision support for patient healthcare, as well as for public health surveillance of populations. Terminology is updated periodically and it is best practice to use the most current version of the coding system.

¹⁴ The ability to send in an HL7 message is required for systems the output from clinical decisions support engines. The ability to consume is required for systems requesting evaluated history and forecast.

¹⁵ The ability to send in an HL7 message is required for systems the output from clinical decisions support engines. The ability to consume is required for systems requesting evaluated history and forecast.

¹⁶ For instance, the vaccine administered is specified as a required element of the RXA segment by indicating a Usage of Required on the RXA-5 field. The funding program eligibility is specified as conditionally required in a conformance statement not tied to a specific HL7 message component.

Processing Mode

Consolidation of immunization records from multiple sources is a complex process. Receiving systems have varying rules for this process. They expect complete immunization histories (i.e. all immunization information known to sender). They don't process in Snapshot Mode. (Incoming data completely replaces existing data)

Note that receiving systems are responsible for publishing the business rules they apply when consolidating records from different sources.

Message Profiles

This implementation guide defines a number of constrainable profiles. These profiles will be identified in the Message Header (MSH-21).

Conventions

This guide adheres to the following conventions:

- The guide is constructed assuming the implementer has access to the Version 2.5.1 of the HL7 Standard. Although some information from the standard is included in this implementation guide, much information from the standard has not been repeated here.
- The rules outlined in *HL7 2.7.1, Chapter 2B, Section 2B5, Conformance Using Message Profiles*, were used to document the use case for, and constraints applied to, the messages described in this guide.
- Data types have been described separately from the fields that use the data types.
- No conformance information is provided for optional message elements. This includes length, usage, cardinality, value sets and descriptive information. Implementers who want to use optional message elements should refer to the base HL7 V2.5.1 Standard to determine how these optional message elements will be used.
- This guide uses "X" as a conformance usage indicator very sparingly. Where the underlying standard indicates the segments/field/component is present for backwards compatibility ("B") or withdrawn ("W") an "X" will be used. Some conditional elements may have a usage of "X" if the predicate condition is the only case where the element is used. For all other fields/components "O" is used to enable trading partners to explore additional capabilities. Note that without a clearly agreed to complementary profile between trading partners, a sender does not have to send any elements marked as an "O", nor does a receiver have to process any elements marked as an "O".

3. HL7 Messaging Infrastructure

This section will contain a basic description of the terms and definitions, which are used in this document in order to understand the Health Level 7 standard as it applies to immunization information systems. More detail may be found in the HL7 2.5.1 standard in Chapters 1, 2 and 2A.

Keywords

The following keywords in this document are to be interpreted as follows:

MUST or the terms "REQUIRED" or "SHALL", mean that the definition is an absolute requirement of the specification.

MUST NOT or the phrase "SHALL NOT", mean that the definition is an absolute prohibition of the specification.

SHOULD or the adjective "RECOMMENDED", mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.

SHOULD NOT or the phrase "NOT RECOMMENDED" mean that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.

MAY or the adjective "OPTIONAL", mean that an item is truly optional. One software supplier may choose to include the item to enable certain capabilities while another software supplier may omit the same item. In either case, the communication partner cannot be expected to either provide it (sender) or process it (receiver) without clear and voluntary agreement between the partners.

An implementation which does not include a particular segment/field/component marked as optional **MUST** be prepared to interoperate with another implementation which does include the optional segment/field/component, though perhaps with reduced functionality. In the same vein an implementation which includes a particular segment/field/component marked as optional **MUST** be prepared to interoperate with another implementation which does not include the optional segment/field/component.

HL7 definitions

The terms below are organized to move from the message to subsequently more granular components.

Message: A message is the entire unit of data transferred between systems in a single transmission. It is a series of segments in a sequence defined by the message specifications. These specifications are based on constraints to the HL7 specifications, as described in an Implementation Guide.

Example:

| Segment | Description |
|---------|------------------------------|
| MSH ... | Message Header |
| PID ... | Personal Identifiers |
| ORC ... | Order Segment |
| RXA ... | Vaccine administered segment |

The table above shows an immunization history for the patient identified in the PID. This person has one immunization ordered and recorded.

Segment Group: A segment group is a logical collection of segments. Segment groups defined within a message may be required or optional, may occur only once or may be allowed to repeat.

Segment: A segment is a logical grouping of data fields. Segments within a defined message may be required or optional, may occur only once, or may be allowed to repeat. Each segment is named and is identified by a segment ID, a unique 3-character code.

Example:

PID|||12322^^^Assigning authority^MR^||Savage^Robert^^^^^L^|

This PID segment includes a medical record number and a person’s name.

Field: A field is a string of characters and is of a specific data type. Each field is identified by the segment it is in and its position within the segment; e.g., PID-5 is the fifth field of the PID segment. A field is preceded by the | character.

Component: A component is one of a logical grouping of items that comprise the contents of a coded or composite field. Within a field having several components, not all components are required to be valued.

Example: RXA-5 administered code is composed of 6 components.

Code 1^text 1^code set 1^alternate code 2^alt text 2^alt code set 2

Null and empty fields: The null value is transmitted as two double quote marks (“”). A null-valued field differs from an empty field. An empty field should not overwrite previously entered data in the field, while the null value means that any previous value in this field should be overwritten.

| Value in Field | Meaning |
|-------------------|--|
| "" "" | Nullify the value recorded in the receiving system data base. |
| <empty field> | Make no changes to the record in the receiving data base. The sending system has no information on this field. |

Null fields (“”) should not be sent in immunization messages. Systems which will send null fields (“”) must specify their use in local implementation guides. Systems which will accept and process null fields, as described above, must specify their use in local implementation guides.

Data type: A data type restricts the contents and format of the data field. Some data types are coded or composite types with several components. The applicable data type is listed and defined in each field definition.

Chapter 3: HL7 Messaging Infrastructure

Code Sets/Systems and Value sets: Most data elements will have associated lists of acceptable values in tables supported by a standards organization such as HL7 or CDC. These code sets will include definitions to support common usage.

Delimiters: Delimiter characters are used to separate segments, fields and components in an HL7 message. The delimiter values are given in MSH-2 and used throughout the message. Applications must use agreed upon delimiters to parse the message. Messages used in this Guide **SHALL** use the following delimiters:

<CR> = Segment Terminator;

| = Field Separator;

^ = Component Separator;

& = Sub-Component Separator;

~ = Repetition Separator;

\ = Escape Character.

Message syntax: Each message is defined in special notation that lists the segment 3-letter identifiers in the order they will appear in the message. Braces, {}, indicate that one or more of the enclosed group of segments may repeat, and brackets, [], indicate that the enclosed group of segments is optional. Note that segments may be nested within the braces and brackets. This will indicate that the nested segments are units within a subgroup of segments. Their Usage is relative to the parent segment in the group.

Z segments: All message types, trigger event codes, and segment ID codes beginning with Z are reserved for locally defined messages. No such codes will be defined within the HL7 Standard. The users of this Guide have agreed to eliminate Z segments from their implementations in order to produce a standard method that will be used nationally to transmit immunization data. The query profiled in this document does have a name code which begins with Z as specified by HL7. This is not a Z segment.

Basic Message Processing Rules

Message Acknowledgement

Original Mode processing is supported by this Implementation Guide. Enhanced Mode Acknowledgement is not supported.

The conversation between a sending system and a receiving system consists of a Message (VXU, QBP) and a response (ACK, RSP). Receiving systems are expected to process the message and send a response. The system receiving the acknowledgement response does not acknowledge the response. In other words, the system receiving a VXU is expected to return an ACK. The system receiving that ACK is not expected to respond back to that ACK. Receipt and processing of ACK messages has a number of significant benefits:

- Notification of errors and rejected data alerts sender that message has errors and may require correction
- Alerting sending user that the data did not get into the receiver's system

| |
|---|
| Some messages pass through intermediary systems like a Health Information Exchange (HIE). It is important that the intermediary system pass the ACK back to the sending system to allow the sending system to be aware of and deal with messaging errors. |
|---|

The HL7 Standard has two ways to convey acknowledgements: standard mode and enhanced mode. The scope of this document includes only standard mode acknowledgments, i.e. "application acknowledgements" only, which means that the receiving system accept responsibility for the data or identify the error in the message or reject the message for a reason not related to the message itself.

Encoding Rules for Sending

1. Encode each segment in the order specified in the abstract message format.
2. Place the Segment ID first in the segment.
3. Precede each data field with the field separator.
4. Encode the data fields in the order and data type specified in the segment definition table.
5. End each segment with the segment terminator (carriage return).
6. Components, subcomponents, or repetitions that are not valued at the end of a field need not be represented by component separators. The data fields below, for example, are equivalent:

|^XXX&YYY&&^| is equal to|^XXX&YYY^|

|ABC^DEF^^| is equal to|ABC^DEF|

7. Components, subcomponents, or repetitions that are not valued, but precede components, subcomponents or repetitions that are valued must be represented by appropriate separators. For example, the following CE data type element has the first triplicate empty and a populated second triplicate:

|^^^ABC^Text^Codesystem|

8. If a field allows repetition (Cardinality maximum > 1), then the length of the field applies to EACH repetition.
9. No field separator is required after the last required field unless other following fields have data. The presence of a field separator after the last required field is NOT an error and may be ignored.

Processing Rules for Receiving System:

The following table contains the rules for processing received messages. Note that these outcomes may cascade. That is, if a required field has bad data, it is empty. If that required field is empty, the segment is treated as empty. If that segment is not a part of a segment group and is empty, the message is rejected.

| TABLE 3-1 RECEIVING SYSTEM PROCESSING RULES | | | |
|---|--|-----------------------|------------------------------|
| Condition | Outcome | Acknowledgment | Action |
| Data fields are populated after last required field in segment. | Ignore the extra fields. | No Error | Continue processing message. |
| Data field violates data type specifications or contains unacceptable data. | Treat the field as empty. | Send Error | Continue processing message. |
| Required data field is empty. | Treat the segment as empty. | Send Error | Continue processing message. |
| Required But May Be Empty field is empty. | No outcome | No Error | Continue processing message. |
| Required or conditionally required segment is empty or missing. | All data fields in segment are not present | Send Error | Continue processing message. |

| TABLE 3-1 RECEIVING SYSTEM PROCESSING RULES | | | |
|---|--|-----------------------|------------------------------|
| Condition | Outcome | Acknowledgment | Action |
| Optional segment or unexpected segment ¹⁷ is included. | Ignore the segment. This is not an error. | No error | Continue processing message. |
| Data segment out of proper order. | Treat segment as empty. | Send Error | Continue processing message. |
| Required segment that is not part of a segment group is empty. | Reject message | Send Error | Reject message |
| Required segment that is part of a segment group is empty or missing. | Treat segment group as empty. | Send Error | Continue processing message. |
| Required segment group is empty or missing. | Reject message | Send Error | Reject message |

Note that all errors in processing a message should be communicated back to the sending system.

Determining Usage of Segments, Fields and Components

Many fields and segments in HL7 are optional. This guide tightens constraints on some fields to support functionality required for meaningful use of immunization data. The following lists the rules applied to the decisions used to determine usage in this Guide.

1. Any segment, field, or component that is required by HL7 standard is required or required but may be empty.
2. Any field or component that is a required National Vaccine Advisory Committee (NVAC) Core Data element is required or required but may be empty¹⁸.
3. Any segment that contains a required NVAC Core data element is required but may be empty.
4. Any segment, field, or component that is retained for backward compatibility in Version 2.5.1 **SHALL** be unsupported in this Guide.
5. Any segment, field, or component that is conditional but may be empty in Version 2.5.1 shall be conditional or conditional but may be empty in this Guide, unless this conflicts with 2 or 3 above.
6. All other fields will be left optional.

Usage Conformance Testing Recommendations

The following text is pre-adopted from the HL7 V2.7.1 Conformance (Chapter 2B) Please refer to the base standard documentation for a full explanation of conformance concepts. Usage is described here as it introduces the revised approach to conditional element handling.

¹⁷ A segment is not expected if it has been deprecated or is unsupported. A segment that does not belong in the message is also not expected.

¹⁸ In some cases they may not be empty. Client name may never be empty or null, for instance. The NVAC core data elements are listed in the beginning of Appendix B.

----- start citation-----

Usage

Message content is governed by the cardinality specification associated (explicitly or implicitly) with each element of an HL7 message. Usage rules govern the expected behavior of the sending application and receiving application with respect to the element. The usage codes expand/clarify the optionality codes defined in the HL7 standard. Usage codes are employed in a message profile to constrain the use of elements defined in the standard. The usage code definitions are given from a sender and receiver perspective and specify implementation and operational requirements.

The standard allows broad flexibility for the message structures that HL7 applications must be able to receive without failing. But while the standard allows that messages may be missing data elements or may contain extra data elements, it should not be inferred from this requirement that such messages are conformant. In fact, the usage codes specified in a message profile place strict conformance requirements on the behavior of the application.

Definition Of Conditional Usage

C(a/b) - “a” and “b” in the expression are placeholders for usage codes representing the true (“a”) predicate outcome and the false (“b”) predicate outcome of the condition. The condition is expressed by a conditional predicate associated with the element (“See the Error section in V2.7.1 Chapter 2B). “a” and “b” shall be one of “R”, “RE”, “O” and/or “X”. The values of “a” and “b” can be the same.

The example C(R/RE) is interpreted as follows. If the condition predicate associated with the element is true then the usage for the element is R-Required. If the condition predicate associated with the element is false then the usage for the element is RE- Required but may be empty.

There are cases where it is appropriate to value “a” and “b” the same. For example, the base standard defines the usage of an element as “C” and the condition predicate is dependent on the presence or non-presence of another element. The profile may constrain the element that the condition is dependent on to X; in such a case the condition should always evaluate to false. Therefore, the condition is profiled to C(X/X) since the desired effect is for the element to be not supported. Note it is not appropriate to profile the element to X since this breaks the rules of allowable usage profiling (see in V2.7.1 Chapter 2B table HL7 Optionality and Conformance Usage).

Sending And Receiving Application Conformance Requirements

| TABLE 3-2 SENDING APPLICATION CONFORMANCE | | | |
|---|------------|--|--|
| Symbol | Definition | Implementation Requirement | Operation Requirement |
| R | Required | The application SHALL implement “R” elements. | The application SHALL populate “R” elements with a non-empty value. |

| TABLE 3-2 SENDING APPLICATION CONFORMANCE | | | |
|---|-----------------------------|---|---|
| Symbol | Definition | Implementation Requirement | Operation Requirement |
| RE | Required but may be empty | The application SHALL implement "RE" elements. | The application SHALL populate "RE" elements with a non-empty value if there is relevant data. The term "relevant" has a confounding interpretation in this definition ¹⁹ |
| C(a/b) | Conditional | <p>An element with a conditional usage code has an associated condition predicate that determines the operational requirements (usage code) of the element. If the condition predicate associated with the element is true, follow the rules for a which shall be one of "R", "RE", "O" or "X":</p> <p>If the condition predicate associated with the element is false, follow the rules for b which shall be one of "R", "RE", "O" or "X". a and b can be valued the same.</p> <p>Note: when C(O/X) or similar is used a condition predicate will not be provided.</p> | |
| X | Not supported in this guide | The application (or as configured) SHALL NOT implement "X" elements. | The application SHALL NOT populate "X" elements. |
| O | Optional | None. The usage indicator for this element has not yet been defined. For an implementation profile all optional elements must be profiled to R, RE, C(a/b), or X. | Not Applicable |

Note: Implementation Requirement the capability of the system. The Operation Requirement indicates what is included in the message.

¹⁹ There are multiple interpretations of "RE" when a value is known. One is "the capability must always be supported and a value is sent if known", the other is "the capability must always be supported and a value may or may not be sent even when known based on a condition external to the profile specification. The condition may be noted in the profile but cannot be processed automatically". This is what can be interpreted from the "relevant" part of the definition. Regardless of the interpretation the "RE" usage code, a set of test circumstances can be developed to sufficiently test the "RE" element. See the "Conformity Assessment of Conformance Constructs" section for more details.

| TABLE 3-2 RECEIVING APPLICATION CONFORMANCE | | | |
|---|---------------------------|--|--|
| Symbol | Definition | Implementation Requirement | Operation Requirement |
| R | Required | The application SHALL implement "R" elements. | <p>The receiving application SHALL process (save/print/archive/etc.) the information conveyed by a required element.²⁰</p> <p>A receiving application SHALL raise an exception due to the absence of a required element. A receiving application SHALL NOT raise an error due to the presence of a required element.</p> |
| RE | Required but may be empty | The application SHALL implement "RE" elements. | The receiving application SHALL process (save/print/archive/etc.) the information conveyed by a required but may be empty element. The receiving application SHALL process the message if the element is omitted (that is, an exception SHALL NOT be raised because the element is missing). |
| C(a/b) | Conditional | <p>The usage code has an associated condition predicate that determines the operational requirements (usage code) of the element.</p> <p>If the condition predicate associated with the element is true, follow the rules for a which SHALL be one of "R", "RE", "O" or "X" (If the condition predicate associated with the element is false, follow the rules for b which SHALL be one of "R", "RE", "O" or "X".</p> <p>a and b can be the same.)</p> <p>Note: when C(O/X) or similar is used a condition predicate will not be provided.</p> | |

²⁰ Processing does not necessarily require permanent storage of the required element. For instance OBX-4 (sub-id) is used to group associated OBX segments, but will probably not be stored.

| TABLE 3-2 RECEIVING APPLICATION CONFORMANCE | | | |
|---|-----------------------------|---|--|
| Symbol | Definition | Implementation Requirement | Operation Requirement |
| X | Not supported in this guide | The application (or as configured) SHALL NOT implement "X" elements. | None, if the element is not sent. If the element is sent the receiving application may process the message, SHALL ignore the element, and MAY raise an exception. The receiving application SHALL NOT process (save/print/archive/etc.) the information conveyed by a not-supported element. |
| O | Optional | None. The usage indicator for this element has not yet been defined. For an implementation profile all optional elements must be profiled to R, RE, C(a/b), or X. | None |

----- end citation -----

Note that local implementations may constrain the requirements of this Implementation Guide.

These guides should indicate that an element that will be ignored by the local application should use symbol **IX (Element will be ignored)** to indicate that the element will be ignored by the local application. The Operation Requirement will be: If the element is not sent, no action is taken. If the element is sent, it is ignored.

Message Element Attributes

The following describe how message specifications will be illustrated in this Guide. These terms will be used in the tables specifying messages throughout this Guide.

| TABLE 3-3 MESSAGE ELEMENT ATTRIBUTES | |
|--------------------------------------|--|
| Abbreviation | Description |
| SEQ | Sequence of the elements (fields) as they are numbered in the HL7 message element. The SEQ attribute applies to the data type attribute table and the segment attribute table. |
| Segment | Three-character code for the segment and the abstract syntax (i.e., the square and curly braces) [XXX] Optional |

TABLE 3-3 MESSAGE ELEMENT ATTRIBUTES

| Abbreviation | Description |
|-----------------------|--|
| | <p>{XXX} Repeating XXX Required (not inside any braces) [{XXX}] Optional and Repeating</p> <p>[Begin segment group XXX [YYY]] End segment group</p> <p>YYY is nested within the segment block starting with XXX. It is an optional sub-segment to XXX²¹. The whole block is optional.</p> <p>Note that for Segment Groups there will not be a segment code present, but the square and curly braces will still be present.</p> |
| Conditional predicate | Logic for determining the usage of conditional usage for an element. |
| Data Type | Data type used for HL7 element. Data type specifications can be found in Chapter 4. |
| Usage | Usage of the message element for this profile. Indicates whether the message element (segment, segment group, field, component, or subcomponent) is R, RE, O, X or C(a/b) in the corresponding message element. Usage applies to the message attribute table, data type attribute table and the segment attribute table. |
| Cardinality | <p>Indicator of the minimum and maximum number of times the element may appear.</p> <p>[0..0] Element never present. [0..1] Element may be omitted and can have at most, one occurrence. [1..1] Element must have exactly one occurrence. [0..n] Element may be omitted or may repeat up to n times. [1..n] Element must appear at least once, and may repeat up to n times. [0..*] Element may be omitted or repeat for an unlimited number of times. [1..*] Element must appear at least once, and may repeat unlimited number of times. [m..n] Element must appear at least m and, at most, n times.</p> <p>Cardinality applies only to message attribute tables and segment attribute tables.</p> |

²¹ YYY may only be included if XXX is present. XXX may be present without YYY.

TABLE 3-3 MESSAGE ELEMENT ATTRIBUTES

| Abbreviation | Description |
|----------------------|---|
| Value Set | The set of coded values to be used with the field. The value set attribute applies only to the data type attribute tables and the segment attribute tables. The value set may equate with an entire code system part of a code system, or codes drawn from multiple code systems. |
| HL7 Element Name | HL7 descriptor of the element in the segment. |
| Description /Comment | Context and usage for the element. Description/Comments applies to the message attribute table, data type attribute table and the segment attribute table. |

4. HL7 Data Types

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

Appendix A contains the tables of value sets referenced by these data types.

Data Types Used In This Implementation Guide

Data types specify the format and type of data used. A data type may be as simple as a numeric data type, which allows a number. It may be a more complex coded entry that requires a specific set of code values and the name of the code system. Data types may contain subcomponents that are specified by data types.

The following list of data types only includes those that are used by elements that are used in this guide. Data types for elements that are not used in this Guide are not included, even if they are part of segment that is used.

Data types are further defined in this implementation guide for all elements that have a usage of R, RE, C(a/b). Data types used only for optional elements are not included. Many of these data types place constraints on the data types from the base HL7 standard. These constrained data type specifications only apply to elements that have a usage of Required (R), Required But May be Empty (RE) or Conditional. All other elements do not have the constraints applied. Please refer to the base standard for those data types.

Table 4-1 Data Types

| Data type | Data Type Name |
|------------------|--|
| CE | Coded element |
| CE_TX | Text only CE data type |
| CQ | Composite Quantity with Units |
| CWE | Coded with Exceptions |
| CX | Extended Composite Id with Check digit |
| DT | Date |
| DT_D | Date with precision to day |
| DTM | Date/Time |
| EI | Entity Identifier |
| ERL | Error Location |
| FN | Family Name |
| FT | Formatted text |
| HD | Hierarchic Designator |
| ID | Coded Values for HL7 Tables |
| IS | Coded value for User-Defined Tables |
| LA2 | Location with address variation 2 |
| MSG | Message Type |
| NM | Numeric |
| PT | Processing Type |
| SAD | Street Address |
| SI | Sequence ID |
| ST | String |
| TS | Time Stamp |
| TS_M | Time Stamp with optional precision to the day and no time zone |
| TS_NZ | Time Stamp with precision to the day and no time zone |
| TS_Z | Time Stamp requiring time zone |

Table 4-1 Data Types

| Data type | Data Type Name |
|-----------|---|
| VID | Version Identifier |
| XAD | Extended Address |
| XCN | Extended Composite ID Number and Name for Persons |
| XON | Extended Name and Id Number for Organizations |
| XPN | Extended Person Name |
| XPN_M | Extended Person Name (Maiden Name) |
| XTN | Extended telephone number |

CE -- Coded Element (most uses)

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

Table 4-2 Coded Element (CE)

| SEQ | Component Name | Data Type | Usage | LEN | Conditional Predicate | Value Set | Comments |
|-----|---------------------------------|-----------|---------|--------|--|-----------|---|
| 1 | Identifier | ST | R | 1..50 | | | Identifying Code. |
| 2 | Text | ST | RE | 1..999 | | | Human readable text that may be used to review segment content. |
| 3 | Name of Coding System | ID | R | 1..20 | | HL70396 | Value set identifier |
| 4 | Alternate Identifier | ST | O | 1..50 | | | Alternate Identifying code. |
| 5 | Alternate Text | ST | C(RE/X) | 1..999 | If CE-4 (Alternate Identifier) is valued | | Human readable text. |
| 6 | Name of Alternate Coding system | ID | C(R/X) | 1..20 | If CE-4 (Alternate Identifier) is valued | HL70396 | Value set identifier. |

Note:

The alternate identifier (from the alternate coding system) should be the closest match for the identifier found in CE-1.

The order of the contents is not specified. In the previous guide, the first triplet was reserved for CVX codes in RXA-5. This is no longer true, based on HL7 usage of CE data type.

Identifier (ST)

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

Text (ST)

Definition: The descriptive or textual name of the identifier, e.g., DTaP. This is not used by the sending or receiving system, but rather facilitates human interpretation of the code. It may be used as the display text.

Name of Coding System (ID)

Definition: Identifies the coding system being used in the identifier component. The combination of the **identifier** and **name of coding system** components will be a unique code for a data item. Each system has a unique identifier.

Alternate Identifier (ST)

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

Alternate Text (ST)

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

Name of Alternate Coding System (ID)

Definition: Identifies the coding scheme being used in the alternate identifier component.

Example usage:

From RXA 5, Administered Code:

```
|50^DTAP-HIB^CVX^90721^DTAP-HIB^C4|
```

CE_TX -- Coded Element (text only in RXA-9)

Definition: The CE_TX data type definition is used to transmit text only notes in RXA-9 (Administration Notes).

Table 4-3 Coded Element (CE) for Text Only RXA-9

| SEQ | Component Name | Data Type | Usage | LEN | Conditional Predicate | Value Set | Comments |
|-----|----------------------|-----------|-------|-----|-----------------------|-----------|--|
| 1 | Identifier | ST | X | | | | |
| 2 | Text | ST | R | 999 | | | Human readable text that is not further processed. It may be stored by the receiving system. |
| 3 | Name of Coding | ID | X | | | | |
| 4 | Alternate Identifier | ST | X | | | | |
| 5 | Alternate Text | ST | X | | | | |
| 6 | Name of Alternate | ID | X | | | | |

Note: When transmitting text note only, only the first triplet shall be populated.

Text (ST)

Definition: Free text note regarding the immunization reported in this RXA.

CQ -- Composite Quantity with Units

Definition: This data type carries a quantity and attendant units. Its' primary use in this Guide will be for indicating the maximum number of records to return in a query response.

Table 4-4 Composite Quantity with Units (CQ)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value set | COMMENTS |
|-----|----------------|-----------|-------|-----|-----------------------|------------------------|----------|
| 1 | Quantity | NM | R | 16 | | | |
| 2 | Units | CE | R | | | HL7 0126 (constrained) | |

Conformance Statement:

IZ-1: CQ-1 (Quantity) shall be a positive integer.

IZ-2: CQ-2.1 (Units) shall be the literal value “RD”.

Examples:

|10^RD&records&HL70126|

10 records

| |
|--|
| Reminder that the subcomponent separator is used when CE data type is a component of another data type |
|--|

Quantity (NM)

Definition: This component specifies the numeric quantity or amount of an entity.

Units (CE)

Definition: This component species the units in which the quantity is expressed.

CWE -- Coded With Exceptions

Definition: Specifies a coded element and its associated detail. The CWE data type is used when 1) more than one table may be applicable **or** 2) the specified HL7 or externally defined table may be extended with local values **or** 3).

Table 4-5 Coded with Exceptions (CWE)

| SEQ | Component Name | Data Type | Usage | LEN | Conditional Predicate | Value Set | Comments |
|-----|------------------------------------|-----------|---------|--------|---|-----------|---|
| 1 | Identifier | ST | R | 1..999 | | | Identifying Code. |
| 2 | Text | ST | RE | 1..999 | | | Human readable text that is not further used. |
| 3 | Name of Coding | ID | C(R/X) | 1..20 | If CWE.1(Identifier) is valued | HL70396 | |
| 4 | Alternate Identifier | ST | O | 1..999 | | | Alternate Identifying coded. |
| 5 | Alternate Text | ST | C(RE/X) | 1..999 | If CWE.4 (Alternate Identifier) is valued | | Human readable text that is not further used. |
| 6 | Name of Alternate System | ID | C(R/X) | 1..20 | If CWE.4 (Alternate Identifier) is valued | HL70396 | |
| 7 | Coding System Version Id | ST | O | | | | |
| 8 | Alternate Coding System Version Id | ST | O | | | | |
| 9 | Original Text | ST | O | | | | |

Note: The alternate identifier (from the alternate coding system) should be the closest match for the identifier found in component 1.

Identifier (ST)

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

Text (ST)

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

Name of Coding System (ID)

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

Alternate Identifier (ST)

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

Alternate Text (ST)

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

Name of Alternate Coding System (ID)

Definition: Identifies the coding scheme being used in the alternate identifier component.

Example usage:

From RXR: |C28161^IM^NCIT^IM^INTRAMUSCULAR^HL70162|

CX -- Extended Composite ID With Check Digit

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

Table 4-6 Extended Composite ID with Check Digit (CX)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value set | COMMENTS |
|-----|---------------------|-----------|--------|-----|----------------------------------|-----------|----------|
| 1 | ID Number | ST | R | 15 | | | |
| 2 | Check Digit | ST | O | | | | |
| 3 | Check Digit Scheme | ID | C(O/X) | | If CX. 2 (check digit) is valued | HL70061 | |
| 4 | Assigning Authority | HD | R | | | HL70363 | |

Table 4-6 Extended Composite ID with Check Digit (CX)

| | | | | | | | |
|----|--------------------------------|-----|---|------|--|---------|--|
| 5 | Identifier Type Code | ID | R | 2..5 | | HL70203 | |
| 6 | Assigning Facility | HD | O | | | | |
| 7 | Effective Date | DT | O | | | | |
| 8 | Expiration Date | DT | O | | | | |
| 9 | Assigning Jurisdiction | CWE | O | | | | |
| 10 | Assigning Agency or Department | CWE | O | | | | |

Example:

|1234567^^^ME129^MR|

ID Number (ST)

Definition: The value of the identifier itself.

Assigning Authority (HD)

The assigning authority is a unique name of the system (or organization or agency or department) that creates the data. Refer to User-defined Table 0363 – Assigning authority for suggested values. This table shall be populated by each IIS. The first component shall be used for this unique name. The second and third may be used if OIDs²² are recorded.

Identifier Type Code (ID)

A code corresponding to the type of identifier. In some cases, this code may be used as a qualifier to the “Assigning authority” component. Refer to HL7 Table 0203 - Identifier type for suggested values.

²² OIDs are object identifiers. According to Wikipedia: “Health Level Seven (HL7), a standards-developing organization in the area of electronic health care data exchange, is an assigning authority at the 2.16.840.1.113883 (joint-iso-itu-t.country.us.organization.hl7) node. HL7 maintains its own OID registry, and as of January 1, 2008 it contained almost 3,000 nodes, most of them under the HL7 root. The Centers for Disease Control and Prevention has also adopted OIDs to manage the many complex values sets or “vocabularies” used in public health. The various OIDs are available in the Public Health Information Network (PHIN) Vocabulary Access and Distribution System (VADS).”

DT -- Date

Definition: Specifies the century and year with optional precision to month and day.

Table 4-7 Date (DT)

| SEQ | Component Name | Data Type | Usage | LEN | Conditional Predicate | Value Set | Comments |
|-----|----------------|-----------|-------|------|-----------------------|-----------|----------|
| 1 | Date | | | 4..8 | | | |

As of v 2.3, the number of digits populated specifies the precision using the format specification YYYY[MM[DD]]). Thus:

- Four digits are used to specify a precision of "year"
- Six are used to specify a precision of "month"
- Eight are used to specify a precision of "day."

Examples:

|19880704|

|199503|

|2000|

DT_D -- Date with precision to day

Definition: Specifies the century and year with precision to month and day.

Table 4-8 Date (DT_D)

| SEQ | Component Name | Data Type | Usage | LEN | Conditional Predicate | Value Set | Comments |
|---|------------------|-----------|-------|-----|-----------------------|-----------|--|
| 1 | Date | | | 8 | | | Must be 8 digits |
| The Precision of this DT_D data type has the following constraints. | | | | | | | |
| | YYYY | | R | | | | |
| | MM | | R | | | | |
| | DD | | R | | | | |
| | HH | | ⊖ | | | | Not allowed for this data type and shall not be sent |
| | MM | | ⊖ | | | | Not allowed for this data type and shall not be sent |
| | {SS[S[S[S[S]]]]} | | ⊖ | | | | Not allowed for this data type and shall not be sent |
| | +/-ZZZZ | | ⊖ | | | | Not allowed for this data type and shall not be sent |

DTM -- Date/Time

Table 4-9 Date/Time (DTM)

| SEQ | Component Name | Data Type | Usage | LEN | Conditional Predicate | Value Set | Comments |
|-----|----------------|-----------|-------|-------|-----------------------|-----------|----------|
| | Date/time | | | 4..24 | | | |

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

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.

Example: |199904| specifies April 1999.

Note that this data type will be constrained at the field level, depending on the use.

EI -- Entity Identifier

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

Table 4-10 Entity Identifier (EI)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|-------------------|-----------|--------|--------|--------------------------------------|------------------------|----------|
| 1 | Entity Identifier | ST | R | 1..199 | | | |
| 2 | Namespace ID | IS | C(R/O) | 20 | If EI.3 (Universal Id) is not valued | HL70363 | |
| 3 | Universal ID | ST | C(R/O) | 199 | If EI.2 (Namespace ID) is not valued | | |
| 4 | Universal ID Type | ID | C(R/X) | 6 | If EI.3 (Universal Id) is valued | HL70301 (constrained) | |

Conformance Statement:

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

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

Entity Identifier (ST)

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

Namespace ID (IS)

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

Universal ID (ST)

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

Universal ID Type (ID)

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

Example:

From MSH 21 profile identifier:

[Z34^CDCPHINVS]

ERL -- Error Location

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

Table 4-11 Error Location (ERL)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|------------------|-----------|---------|------|---------------------------------------|-----------|--|
| 1 | Segment ID | ST | R | 3..3 | | | The 3-character name for the segment (i.e. PID) |
| 2 | Segment Sequence | NM | R | 1..2 | | | |
| 3 | Field Position | NM | C(R/RE) | 2 | If ERL.4 (Field Repetition) is valued | | This should not be populated if the error refers to the whole segment. |

Table 4-1 1 Error Location (ERL)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|----------------------|-----------|---------|-----|---|-----------|---|
| 4 | Field Repetition | NM | C(R/RE) | 2 | If ERL.5 (Component Number) is valued | | |
| 5 | Component Number | NM | C(R/RE) | 2 | If ERL.6 (Sub-Component Number) is valued | | Should be populated ONLY when a particular component cause the error. |
| 6 | Sub-Component Number | NM | RE | 2 | | | Should be populated ONLY when a particular sub-component cause the error. |

Segment ID (ST)

Definition: Specifies the 3-letter name for the segment.

Segment Sequence (NM)

Definition: Identifies the segment occurrence within the message. That is, for the first instance of the segment in the message the number shall be 1 and for the second 2. It is not the sequence within a sequence group. For example if a message had 3 order groups and each order group had 3 OBX, the Sequence number of the last OBX in the message would be 9.

Field Position (NM)

Definition: Identifies the number of the field within the segment. The first field is assigned a number of 1. Field number should not be specified when referring to the entire segment.

Field Repetition (NM)

Definition: Identifies the repetition number of the field. The first repetition is counted as 1. If a Field Position is specified, but Field Repetition is not, Field Repetition should be assumed to be 1. If Field Position is not specified, Field Repetition should not be specified.

Component Number (NM)

Definition: Identifies the number of the component within the field. The first component is assigned a number of 1. Component number should not be specified when referring to the entire field.

Sub-Component Number (NM)

Definition: Identifies the number of the sub-component within the component. The first sub-component is assigned a number of 1. Sub-component number should not be specified when referring to the entire component.

Example:

|RXA^1^5^1|

Error in the fifth field of the first occurrence.

FN -- Family Name

Definition: This data type contains a person's family name (i.e. surname).

Table 4-12 Family Name

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|------------------------------------|-----------|-------|-------|-----------------------|-----------|----------|
| 1 | Surname | ST | R | 1..50 | | | |
| 2 | Own Surname Prefix | ST | O | | | | |
| 3 | Own Surname | ST | O | | | | |
| 4 | Surname Prefix From Partner/Spouse | ST | O | | | | |
| 5 | Surname From Partner/Spouse | ST | O | | | | |

Surname (ST)

This is the person's last name.

FT – Formatted Text

Table 14 Formated Text

| Table 4-13 Formatted Text | | | | | | | |
|---------------------------|---------------------|-----------|-------|----------|-----------------------|-----------|----------|
| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
| 1 | Formatted Text Data | | | 1..65536 | | | |

Usage Note

The FT data type allows use of the formatting escape sequences documented in *HL7 Version 2.5.1, Chapter 2, Section 2.7.1 - Use of Escape Sequences in Text Fields*. In this implementation guide, the only allowed escape sequences are those allowed in *HL7 Version 2.5.1, Chapter 2, Section 2.7.4 - Special Characters*. These are the escape sequences for the message delimiters (i.e., |^&~\).

HD -- Hierarchic Designator

The use of OIDs in fields using this data type is encouraged. Note that either HD.1 (name space id) or HD.2 (universal id) is required.

Definition: 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.

** Note that 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 (^).

Table 4-14 Hierarchical Designator (HD)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|-------------------|-----------|--------|--------|--|--|--|
| 1 | Namespace ID | IS | C(R/O) | 1..20 | If the HD.2 (Universal ID) is not valued | HL70300 HL70361 HL70362 HL70363 | This field is used for a locally defined name/id. It may be used as previous version 2.3.1 Implementation Guide specified. The value set used depends on usage. |
| 2 | Universal ID | ST | C(R/O) | 1..199 | If the HD.1 (Namespace ID) is not valued | | |
| 3 | Universal ID Type | ID | C(R/X) | 1..6 | If the HD.2 (Universal ID) is valued | HL70301 (Constrained) | |

Conformance Statement:

IZ-5: If populated, HD.2 (Universal ID) it SHALL be valued with an ISO--compliant OID.

IZ-6: If populated, HD.3 (Universal ID Type) SHALL be valued the literal value: "ISO".

ID -- Coded Values for HL7 Tables

Definition: This data type is used for coded values from an HL7 table.

Table 4-15 ID Data Type

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|------------------------------------|-----------|-------|-------|-----------------------|-----------|----------|
| 1 | Coded Value for HL7-defined Tables | | | 1..15 | | | |

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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. An example of an ID field is PID 24 –Multiple Birth Indicator. This data type should be used only for HL7 tables (see Appendix A).

Example from PID Multiple Birth Indicator:

|Y|

IS -- Coded Values for User Defined Tables

Definition: This data type is used for codes from User-defined Tables.

| Table 4-16 Coded Values for User Defined Tables (IS) | | | | | | | |
|--|-------------------------------------|-----------|-------|--------|-----------------------|------------|----------|
| SEQ | COMPONENT NAME | Data Type | Usage | Length | Conditional Predicate | Value Sets | COMMENTS |
| 1 | Coded Value for User-Defined Tables | | | 1..20 | | | |

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

Example from PID Sex:

|F|

LA2 -- Location with Address Variation 2

Definition: Specifies a location and its address.

Table 4-17 Location with Address Variation 2

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Sets | 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 | | | HL70362 | This represents the location that the service was provided. For example the clinic. |
| 5 | Location Status | 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 or Province | ST | O | | | | |
| 13 | Zip or Postal Code | ST | O | | | | |
| 14 | Country | ID | O | | | | |
| 15 | Address Type | ID | O | | | | |

Table 4-17 Location with Address Variation 2

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Sets | COMMENTS |
|-----|------------------------------|-----------|-------|-----|-----------------------|------------|----------|
| 16 | Other Geographic Designation | ST | O | | | | |

Facility (HD)

This is the location that the service was provided, for example a clinic. This may be a clinic that is a part of a larger provider organization or a provider organization. It is the location that is responsible for the inventory used for this immunization. If it provides Vaccine for Children funded vaccines, then it has a VFC PIN assigned.

MSG -- Message Type

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

Table 4-18 Message Type (MSG)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|-------------------|-----------|-------|------|-----------------------|--------------------------|----------|
| 1 | Message Code | ID | R | 3..3 | | HL70076 (constrained) | |
| 2 | Trigger Event | ID | R | 3..3 | | HL70003 (constrained) | |
| 3 | Message Structure | ID | R | 3..7 | | HL70354 (constrained) | |

Message Code (ID)

Definition: Specifies the message type code. Refer to HL7 Table – Message Type in section 2.17.1 for valid values.

This table contains values such as ACK, ADT, ORU etc.

See section 2.5.1- Messages for further discussion.

Trigger Event (ID)

Definition: Specifies the trigger event code. Refer to HL7 Table – Event Type in section 2.17.2 for valid values.

This table contains values like A01, V01, R01 etc.

Message Structure (ID)

Definition: Specifies the abstract message structure code. Refer to HL7 Table 0354.

Example from MSH:

```
|VXU^V04^VXU_V04|
```

NM -- Numeric

Definition: 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.

Table 4-19 Numeric (NM)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|----------------|-----------|-------|-------|-----------------------|-----------|----------|
| 1 | Numeric | | R | 1..16 | | | |

Examples:

```
|999|
```

```
|-123.792|
```

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

PT -- Processing Type

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

Table 4-20 Processing Type (PT)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|-----------------|-----------|-------|------|-----------------------|-----------|----------|
| 1 | Processing ID | ID | R | 1..1 | | HL70103 | |
| 2 | Processing Mode | ID | O | | | | |

Processing ID (ID)

A value that defines whether the message is intended for a production, training, or debugging system. Refer to HL7 Table 0103 - Processing ID for valid values.

SAD -- Street Address

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

Table 4-21 Street Address (SAD)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|---------------------------|-----------|-------|--------|-----------------------|-----------|----------|
| 1 | Street or Mailing Address | ST | R | 1..120 | | | |
| 2 | Street Name | ST | O | | | | |
| 3 | Dwelling Number | ST | O | | | | |

Note: Appears ONLY in the XAD data type

Street or Mailing Address (ST)

Definition: This component specifies the street or mailing address of a person or institution.

SI -- Sequence Id

Definition: A non-negative integer in the form of a NM field. The uses of this data type are defined in the chapters defining the segments and messages in which it appears.

Table 4-22 Sequence Id (SI)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value set | COMMENTS |
|-----|----------------|-----------|-------|------|-----------------------|-----------|----------|
| 1 | Sequence ID | | | 1..4 | | | |

ST -- String

Definition: 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.

Table 4-22 String (ST)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value set | COMMENTS |
|-----|----------------|-----------|-------|-----|-----------------------|-----------|----------|
| 1 | String Data | | | | | | |

Usage Note

The ST data type is normally used for short text strings. No leading blanks (space characters) are permitted. Trailing blanks are permitted. In this implementation guide, the only allowed escape sequences are those allowed in HL7 Version 2.5.1, Chapter 2, Section 2.7.4 - Special Characters. These are the escape sequences for the message delimiters (i.e., |^&~\)

TS -- Time Stamp

Definition: Specifies a point in time.

Table 4-23 Time Stamp (TS)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|---|---------------------|-----------|-------|-----|-----------------------|-----------|----------|
| 1 | Time | DTM | R | | | | |
| 2 | Degree of Precision | ID | X | | | | |
| The DTM component of this Time Stamp has the following constraints: | | | | | | | |
| | YYYY | | R | | | | |
| | MM | | R | | | | |
| | DD | | R | | | | |
| | HH | | O | | | | |
| | MM | | O | | | | |
| | [SS[S[S[S[S]]]]] | | O | | | | |
| | +/-ZZZZ | | O | | | | |

TS_M -- Time Stamp to Month

Definition: Specifies a point in time. This data type requires a precision to the month. Precision to the day is optional.

Table 4-24 Time Stamp Precision to Month (TS_M)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|---------------------|-----------|-------|-----|-----------------------|-----------|----------|
| 1 | Time | DTM | R | | | | |
| 2 | Degree of Precision | ID | X | | | | |

Table 4-24 Time Stamp Precision to Month (TS_M)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|---|-------------------|-----------|-------|-----|-----------------------|-----------|----------|
| The DTM component of this Time Stamp has the following constraints: | | | | | | | |
| | YYYY | | R | | | | |
| | MM | | R | | | | |
| | DD | | O | | | | |
| | HH | | O | | | | |
| | MM | | O | | | | |
| | [SS[.S[S[S[S]]]]] | | O | | | | |
| | +/-ZZZZ | | O | | | | |

TS_NZ -- Time Stamp No Time Zone

Definition: Specifies a point in time. This data type requires a precision to the day. No Time zone is included.

Table 4-25 Time Stamp No time Zone (TS_NZ)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|---|---------------------|-----------|-------|-----|-----------------------|-----------|----------|
| 1 | Time | DTM | R | | | | |
| 2 | Degree of Precision | ID | X | | | | |
| The DTM component of this Time Stamp has the following constraints: | | | | | | | |
| | YYYY | | R | | | | |
| | MM | | R | | | | |

Table 4-25 Time Stamp No time Zone (TS_NZ)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|------------------|-----------|-------|-----|-----------------------|-----------|----------|
| | DD | | R | | | | |
| | HH | | O | | | | |
| | MM | | O | | | | |
| | [SS[S[S[S[S]]]]] | | O | | | | |
| | +/-ZZZZ | | X | | | | |

TS_Z -- Time Stamp with Time Zone

Definition: Specifies a point in time. This data type requires a precision to the second and requires that the time zone be included.

Table 4-26 Time Stamp with time zone (TS_Z)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|---|---------------------|-----------|-------|-----|-----------------------|-----------|----------|
| 1 | Time | DTM | R | | | | |
| 2 | Degree of Precision | ID | X | | | | |
| The DTM component of this Time Stamp has the following constraints: | | | | | | | |
| | YYYY | | R | | | | |
| | MM | | R | | | | |
| | DD | | R | | | | |
| | HH | | R | | | | |
| | MM | | R | | | | |

Table 4-26 Time Stamp with time zone (TS_Z)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|----------------|-----------|-------|-----|-----------------------|-----------|----------|
| | SS | | R | | | | |
| | [.S[S[S[S]]]] | | O | | | | |
| | +/-ZZZZ | | R | | | | |

VID -- Version Id

Definition: This specifies the HL7 version.

Table 4-27 Version ID (VID)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|---------------------------|-----------|-------|-----|-----------------------|------------------------------|----------|
| 1 | Version ID | ID | R | 5.5 | | HL70104 (constrained) | |
| 2 | Internationalization Code | CE | O | | | | |
| 3 | International Version ID | CE | O | | | | |

Conformance Statement:

IZ-7: VID-1 (Version Id) SHALL be valued with the literal “2.5.1”

Version ID (ID)

Used to identify the HL7 version. Only “2.5.1” will be accepted.

XAD -- Extended Address

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

Table 4-28 Extended Address (XAD)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Sets | COMMENTS |
|-----|------------------------------|-----------|-------|--------|-----------------------|-------------------------------|--|
| 1 | Street Address | SAD | RE | | | | |
| 2 | Other Designation | ST | RE | 1..120 | | | |
| 3 | City | ST | RE | 1..50 | | | |
| 4 | State or Province | ST | RE | 1..50 | | US Postal Service state codes | Two character USPS codes, for example: AL, AK, ME |
| 5 | Zip or Postal Code | ST | RE | 1..12 | | | |
| 6 | Country | ID | RE | 3..3 | | HL70399 | Empty defaults to USA |
| 7 | Address Type | ID | R | 1..3 | | HL70190 | |
| 8 | Other Geographic Designation | ST | O | | | | |
| 9 | County/Parish Code | IS | O | | | | |
| 10 | Census Tract | IS | O | | | | |
| 11 | Address Representation Code | ID | O | | | | |
| 12 | Address Validity Range | DR | X | | | | deprecated as of v 2.5 |

Table 4-28 Extended Address (XAD)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Sets | COMMENTS |
|-----|-----------------|-----------|-------|-----|-----------------------|------------|----------|
| 13 | Effective Date | TS | 0 | | | | |
| 14 | Expiration Date | TS | 0 | | | | |

Example of usage for US:

```
|1000 Hospital Lane^Ste. 123^Ann Arbor ^MI^99999^^B|
```

This would be formatted for postal purposes as

1000 Hospital Lane

Ste. 123

Ann Arbor MI 99999

Street Address (SAD)

Definition: This is the street address.

Other Designation (ST)

Definition: Second line of address. In US usage, it qualifies address. Examples: Suite 555 or Fourth Floor. This can be used for dwelling number.

City (ST)

Definition: This component specifies the city, or district or place where the addressee is located depending upon the national convention for formatting addresses for postal usage.

State or Province (ST)

Definition: This component specifies the state or province where the addressee is located. State or province should be represented by the official postal service codes for that country. In the US it SHALL be the 2 character state codes (ie AK, ME, WI)

Zip or Postal Code (ST)

Definition: This component specifies the zip or postal code where the addressee is located. Zip or postal codes should be represented by the official codes for that country. In the US, the zip code takes the form 99999[-9999], while the Canadian postal code takes the form A9A9A9, and the Australian Postcode takes the form 9999.

Country (ID)

Definition: This component specifies the country where the addressee is located. HL7 specifies that the 3-character (alphabetic) form of ISO 3166 be used for the country code. Refer to HL7 Table 0399 – Country code in section 2.15.9.17 for valid values.

Address Type (ID)

Definition: This component specifies the kind or type of address. Refer to HL7 Table 0190 - Address type for valid values.

XCN - Extended Composite ID Number and Name for Persons

Definition: 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.

Table 4-29 Extended Composite ID Number and Name (XCN)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|--|-----------|---------|-------|--|-----------|---|
| 1 | ID Number | ST | C(R/RE) | 1..15 | If XCN.2.1 (Surname) and XCN.3 (Given Name) are not valued | | |
| 2 | Family Name | FN | RE | | | | |
| 3 | Given Name | ST | RE | 30 | | | |
| 4 | Second and Further Given Names or Initials Thereof | ST | RE | 30 | | | |
| 5 | Suffix (e.g., JR or III) | ST | O | | | | |
| 6 | Prefix (e.g., DR) | ST | O | | | | |
| 7 | Degree (e.g., MD) | IS | X | | | | Use Professional suffix in sequence 21. |
| 8 | Source Table | IS | O | | | | |

Table 4-29 Extended Composite ID Number and Name (XCN)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|--------------------------|-----------|--------|-----|--|-----------|--|
| 9 | Assigning Authority | HD | C(R/X) | | If the XCN-1 (id number) is valued | HL70363 | Note that the subcomponent separator is & when HD is a component of another data type. |
| 10 | Name Type Code | ID | RE | 1 | | HL70200 | |
| 11 | Identifier Check Digit | ST | O | | | | |
| 12 | Check Digit Scheme | ID | C(O/X) | | If XCN-11 (check digit identifier) is valued | | |
| 13 | Identifier Type Code | ID | C(R/X) | | If the XCN-1 (id number) is valued | HL70203 | The combination of the Identifier Type Code and the Assigning Authority (XCN.9) define a unique ID pool. |
| 14 | Assigning Facility | HD | O | | | | |
| 15 | Name Representation Code | ID | O | | | | |
| 16 | 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 | | | | |
| 21 | Professional Suffix | ST | O | | | | |

Table 4-29 Extended Composite ID Number and Name (XCN)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|--------------------------------|-----------|-------|-----|-----------------------|-----------|----------|
| 22 | Assigning Jurisdiction | CWE | 0 | | | | |
| 23 | Assigning Agency or Department | CWE | 0 | | | | |

Note: The ID Number component combined with the Assigning Authority (XCN.9) must uniquely identify the associated person.

Note: If XCN-2.1 (Surname) and XCN-3 (Given Name) are populated then XCN-10 (name type code) defaults to L, legal name.

ID number (ST)

This string refers to the coded ID assigned by the assigning authority.

Family Name (FN)

This component contains the person’s surname.

Given Name (ST)

First name.

Second and Further Given Names or Initials Thereof (ST)

Multiple middle names may be included by separating them with spaces.

Suffix (ST)

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

Prefix (ST)

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

Assigning Authority (HD)

The assigning authority is a unique identifier of the system (or organization or agency or department) that creates the identifier.. User-defined Table 0363 – Assigning authority is used as the HL7 identifier for the user-defined table of values for the first sub-component of the HD component, <namespace ID>.

Note: When HD data type is used as a component of another data type, its components are demoted to subcomponents. This means that each component is separated by & rather than ^. For example:

Name space id^some OID^ISO becomes Name space id&some OID&ISO

Note: User-defined Table 0363 is specified by this Implementation Guide for Assigning Authority.

Name Type Code (ID)

A code that represents the type of name. Refer to HL7 Table 0200 - Name type for valid values. If the field is not populated then the value is assumed to be L.

XON - Extended Composite Name and ID Number and Name for Organizations

Definition: This data type identifies an organization using a unique id and name. The ID is associated with an entity such as an organization, which assigns the ID.

Table 4-30 Extended Composite ID Number and Name for Organizations (XON)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|-----------------------------|-----------|--------|-------|---|-----------|---|
| 1 | Organization Name | ST | RE | 1..50 | | | |
| 2 | Organization Name Type Code | IS | O | | | | |
| 3 | ID Number | | X | | | | |
| 4 | Check Digit | | O | | | | |
| 5 | Check Digit Scheme | | O | | | | |
| 6 | Assigning Authority | HD | C(R/O) | | If XON.10 (Organization Identifier) is valued | HL70363 | The Assigning Authority is used to identify the system, application or organization that assigned the ID in Component 10. |
| 7 | Identifier Type Code | ID | C(R/X) | 2..5 | If XON.10 (Organization Identifier) is valued | HL70203 | |
| 8 | Assigning Facility | HD | O | | | | |

Table 4-30 Extended Composite ID Number and Name for Organizations (XON)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|--------------------------|-----------|---------|-------|--|-----------|----------|
| 9 | Name Representation Code | ID | O | | | | |
| 10 | Organization Identifier | ST | C(R/RE) | 1..20 | If XON.1 (Organization Name) is not valued | | |

XPN -- Extended Person Name

Definition: This is used for representing a person's name.

Table 4-31 Extended Person Name (XPN)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Sets | COMMENTS |
|-----|--|-----------|-------|-----|-----------------------|------------|--|
| 1 | Family Name | FN | R | | | | |
| 2 | Given Name | ST | R | 30 | | | |
| 3 | Second and Further Given Names or Initials Thereof | ST | RE | 30 | | | |
| 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 |

Table 4-31 Extended Person Name (XPN)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Sets | COMMENTS |
|-----|--------------------------|-----------|-------|-----|-----------------------|------------|---|
| 7 | Name Type Code | ID | R | 1 | | HL70200 | If the type of name is not known, a value of U-Unspecified should be used rather than leaving the Name Type Code empty. |
| 8 | Name Representation Code | ID | O | | | | |
| 9 | Name Context | CE | O | | | | |
| 10 | Name Validity Range | DR | X | | | | |
| 11 | Name Assembly Order | ID | O | | | | |
| 12 | Effective Date | TS | O | | | | |
| 13 | Expiration Date | TS | O | | | | |
| 14 | Professional Suffix | ST | O | | | | |

Note: Replaces PN data type as of v 2.3.

Family Name (FN)

This is the person's surname or family name.

Given Name (ST)

First name.

Second and Further Given Names or Initials Thereof (ST)

Multiple middle names may be included by separating them with spaces.

Suffix (ST)

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

Prefix (ST)

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

Name Type Code (ID)

A code that represents the type of name. Refer to HL7 Table 0200 - Name type for valid values.

Note: The content of Legal Name is country specific. In the US the legal name is the same as the current married name.

Professional Suffix (ST)

This is the person’s professional suffix. Replaces degree above.

XPN_M -- Extended Person Name – Maiden Name

Definition: This is used for representing a mother’s maiden name.

| Table 4-32 Extended Person Name (XPN_M) | | | | | | | |
|---|--|-----------|-------|-----|-----------------------|------------|---|
| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Sets | COMMENTS |
| 1 | Family Name | FN | R | | | | |
| 2 | Given Name | ST | O | 30 | | | Only the last name is required for the Maiden Name. The first name is optional. |
| 3 | Second and Further Given Names or Initials Thereof | ST | O | 30 | | | |

Table 4-32 Extended Person Name (XPN_M)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Sets | COMMENTS |
|-----|--------------------------|-----------|-------|-----|-----------------------|------------|--|
| 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 Code | ID | RE | 1 | | HL70200 | |
| 8 | Name Representation Code | ID | O | | | | |
| 9 | Name Context | CE | O | | | | |
| 10 | Name Validity Range | DR | X | | | | |
| 11 | Name Assembly Order | ID | O | | | | |
| 12 | Effective Date | TS | O | | | | |
| 13 | Expiration Date | TS | O | | | | |
| 14 | Professional Suffix | ST | O | | | | |

Note: Replaces PN data type as of v 2.3.

IZ-66: XPN_M.7 (Name Type code) SHALL be valued “M”.

Family Name (FN)

This is the person’s surname or family name.

Given Name (ST)

First name.

Second and Further Given Names or Initials Thereof (ST)

Multiple middle names may be included by separating them with spaces.

Name Type Code (ID)

A code that represents the type of name. This SHALL be valued "M".

XTN - Extended Telecommunication Number

Definition: This contains the extended telephone number.

Table 4-33 XTN Extended Telecommunication Number (XTN)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|----------------------------------|-----------|---------|--------|---|-----------|----------------------|
| 1 | Telephone Number | ST | X | | | | Deprecated as of 2.3 |
| 2 | Telecommunication Use Code | ID | R | | | HL70201 | |
| 3 | Telecommunication Equipment Type | ID | RE | | | HL70202 | |
| 4 | Email Address | ST | C(R/X) | 1..199 | If the XTN-2 (Telecommunication Use Code) is valued "NET" | | |
| 5 | Country Code | NM | O | | | | |
| 6 | Area/City Code | NM | C(RE/X) | 3..5 | If the XTN-2 (Telecommunication Use Code) is valued not "NET" | | |

Table 4-33 XTN Extended Telecommunication Number (XTN)

| SEQ | COMPONENT NAME | Data Type | Usage | LEN | Conditional Predicate | Value Set | COMMENTS |
|-----|------------------------------|-----------|--------|------|---|-----------|----------|
| 7 | Local Number | NM | C(R/X) | 7..9 | If the XTN-2 (telecommunication use code) is valued not "NET" | | |
| 8 | Extension | NM | O | | | | |
| 9 | Any Text | ST | O | | | | |
| 10 | Extension Prefix | ST | O | | | | |
| 11 | Speed Dial Code | ST | O | | | | |
| 12 | Unformatted Telephone number | ST | O | | | | |

Note: The old implementation guide (2.3.1) allowed the first component to be used for phone number. This is not supported by this Guide.

Note: Replaces TN data type as of v 2.3

Each telecommunication use code (ie. Phone number, email address, etc) must be in its own occurrence. For example, a primary residence number and email address:

```
^PRN^PH^^734^6777777~^NET^Internet^bjones7656@isp.com
```

Example: A primary residence number

```
^PRN^PH^^734^6777777
```

Telecommunication Use Code (ID)

A code that represents a specific use of a telecommunication number. Refer to HL7 Table 0201 - Telecommunication use code for valid values.

Telecommunication Equipment Type (ID)

A code that represents the type of telecommunication equipment. Refer to HL7 Table 0202 - Telecommunication equipment type for valid values.

Email Address (ST)

The email address for the entity.

Area/city Code (NM)

The telephone area code for the entity.

Phone Number (NM)

The phone number for the entity.

Extension (NM)

The extension to the phone.

5. 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 Acknowledgment.

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 above for Use Case details.

Interaction Definition:

This sequence diagram illustrates the message flow. 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 accepts the message and processes it. The receiver sends an acknowledgment message in an ACK message. The transactions that are of interest are indicated by bold arrows.

It is important to note that the message may pass through intermediaries, such as a Health Information Exchange (HIE). The message comes from the initiating sender and the acknowledgement **MUST** be returned to the initiating system.

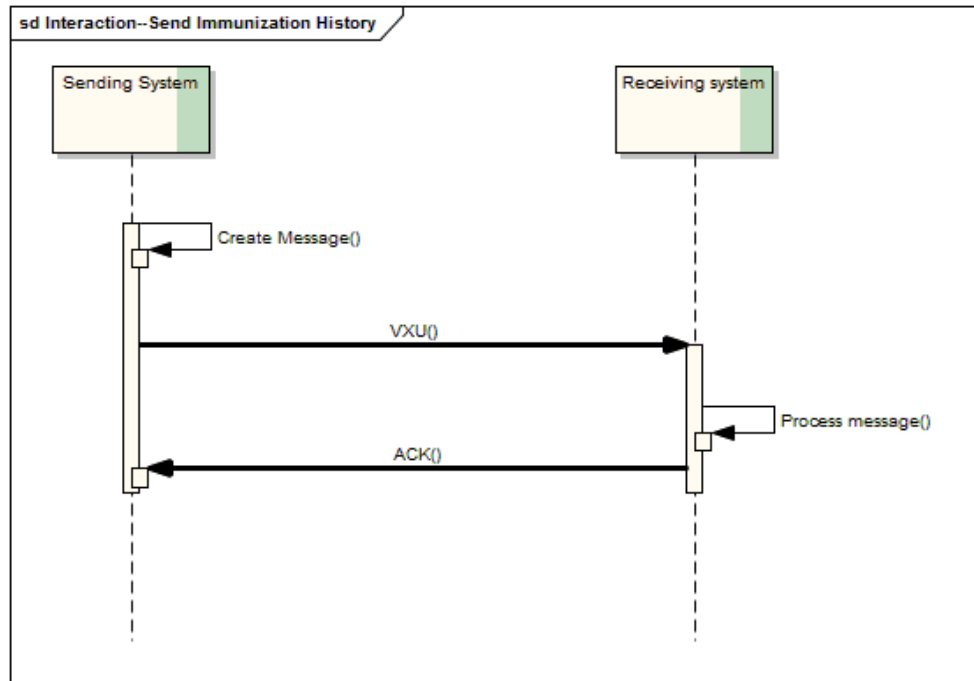


Figure 35 Send Immunization History Sequence Diagram

Dynamic Definition:

The following diagram illustrates the expected flow of events. Some event triggers the sending system to create and send a VXU. The receiving system accepts the VXU. If the message is of an unsupported message type, has an unsupported event code, has an unsupported processing ID or is unable to be processed for reasons unrelated to format or content, then the acknowledgement code is set to “AR”. The receiving system returns an ACK with the acknowledgement code of “AR”. Otherwise, the receiving system continues to process the message. It parses the message and processes according to the specifications of this profile and applies local business rules. If there are no errors, the acknowledgement code is set to “AA”. If there are errors, the acknowledgement code is set to “AE”. If the errors are fatal (See Processing Rules for Receiving Systems above), then the message is rejected, otherwise the data are integrated into the receiving system. The acknowledgement code is returned to the sending system in an ACK message.

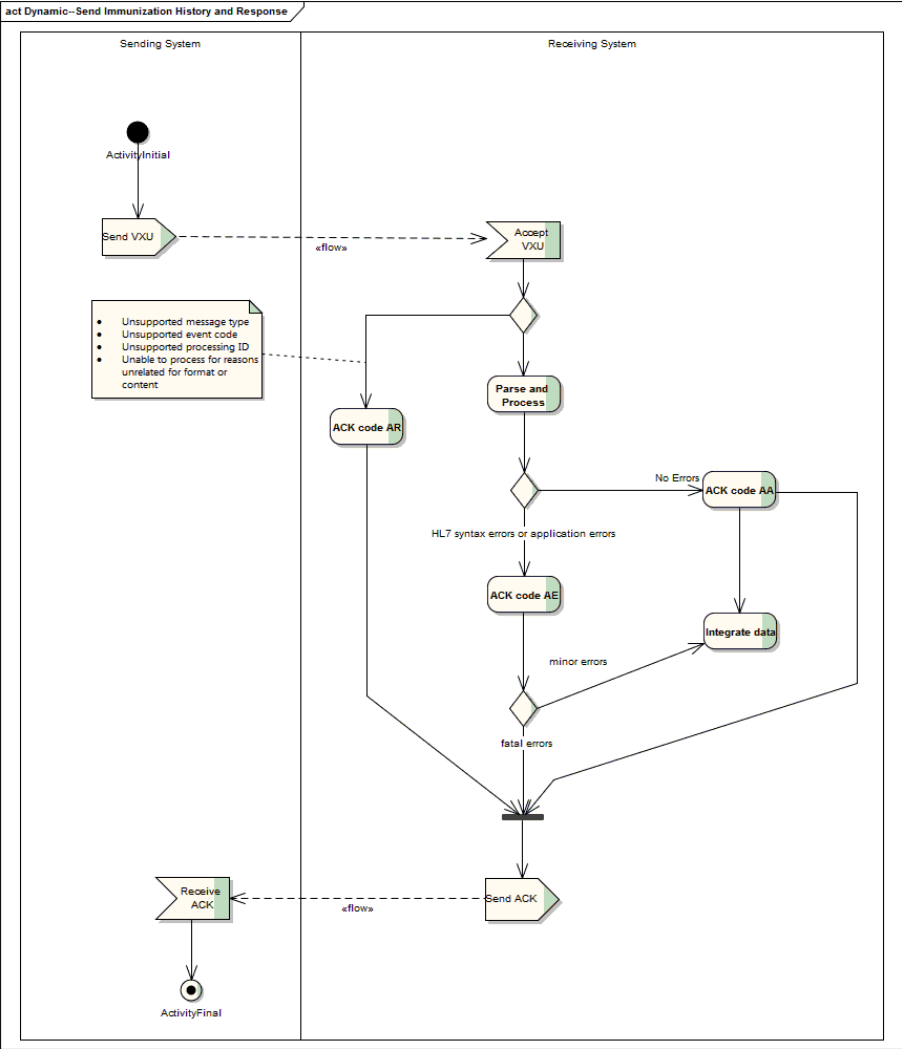


Figure 36 Send VXU Activity Diagram

Static Definition—Message Level:

Systems may send unsolicited immunization records using a VXU. This may be a record that is new to the receiving system or may be an update to an existing record. The following table lists the segments that are part of a VXU. Some of the optional segments are not anticipated to be used. See Appendix B for detailed example messages that illustrate the processing of this message.

| Table 5-1 VXU Segment Usage | | | |
|-----------------------------|-------------|-------|--|
| Segment | Cardinality | Usage | Comment |
| MSH | [1..1] | R | Every message begins with an MSH. |
| [SFT] | [0..*] | O | Not described in this Guide. May be locally specified. |
| PID | [1..1] | R | Every VXU has one PID segment. |
| [PD1] | [0..1] | RE | Every PID segment in VXU may have one or less PD1 segment |
| {[NK1]} | [0..*] | RE | The PID segment in a VXU may have zero or more NK1 segments. |
| [Begin Patient Visit Group | [0..1] | O | Not described in this Guide. May be locally specified. |
| PV1 | [1..1] | R | |
| PV2 | [0..1] | O | |
| End Patient Visit] | | | |
| {GT1 } | [0..*] | O | Not described in this Guide. May be locally specified. |

Table 5-1 VXU Segment Usage

| | | | |
|---------------------------|--------|----|--|
| [| [0..1] | O | The insurance group may not repeat. |
| IN1 | [1..1] | R | |
| IN2 | [0..1] | O | Not described in this Guide. May be locally specified. |
| IN3 | [0..1] | O | Not described in this Guide. May be locally specified. |
| End Insurance group] | | | |
| {[Begin Order group | [0..*] | RE | Each VXU may have zero or more Order groups |
| ORC | [1..1] | R | The order group in a VXU must have one ORC segments. |
| [TQ1] | [0..1] | O | Not described in this Guide. May be locally specified. |
| [TQ2] | [0..1] | O | Not described in this Guide. May be locally specified. |
| RXA | [1..1] | R | Each ORC segment in a VXU must have one RXA segment. Every RXA requires an ORC segment. |
| [RXR] | [0..1] | RE | Every RXA segment in a VXU may have zero or one RXR segments. |
| {[Begin Observation Group | [0..*] | RE | Every RXA segment in a VXU may have zero or more observation groups. |
| OBX | [1..1] | R | |

Table 5-1 VXU Segment Usage

| | | | |
|--------------------------|--------|---|--|
| [NTE] | [0..1] | 0 | Every OBX segment in a VXU may have zero or one NTE segment. |
| End Observation Group]} | | | |
| End Order Group]} | | | |

Static Definition—Segment Level

IN1—Insurance Segment

Local implementations may document use for local purposes in local implementation Guide. Field level specifications follow. They have been constrained, based on current usage. Local implementations that require IN1 should base requirements on this guide. Specifications for IN1 are included because several IIS require this segment and this specification is intended to assure that implementations are consistent across systems.

Note that only the current insurance data should be sent. Historical insurance information should not be sent.

Table 5-2 Insurance Segment (IN1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
|-----|-----------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| 1 | Set ID - IN1 | SI | R | [1..1] | 4 | | | |
| 2 | Insurance Plan ID | CE | R | [1..1] | 250 | | HL70072 | |
| 3 | Insurance Company ID | CX | R | [1..1] | 250 | | | |
| 4 | Insurance Company Name | XON | O | | 250 | | | |
| 5 | Insurance Company Address | XAD | O | | 250 | | | |
| 6 | Insurance Co Contact Person | XPN | O | | 250 | | | |
| 7 | Insurance Co Phone Number | XTN | O | | 250 | | | |
| 8 | Group Number | ST | O | | 12 | | | |
| 9 | Group Name | XON | O | | 250 | | | |
| 10 | Insured's Group Emp ID | CX | O | | 250 | | | |
| 11 | Insured's Group Emp Name | XON | O | | 250 | | | |
| 12 | Plan Effective Date | DT | O | | 8 | | | |
| 13 | Plan Expiration Date | DT | O | | 8 | | | |
| 14 | Authorization Information | AUI | O | | 239 | | | |
| 15 | Plan Type | IS | R | [1..1] | 3 | | HL70086 | |

Table 5-2 Insurance Segment (IN1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
|-----|-----------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| 16 | Name Of Insured | XPN | O | | 250 | | | |
| 17 | Insured's Relationship To Patient | CE | O | | 250 | | HL70063 | |
| 18 | Insured's Date Of Birth | TS | O | | 26 | | | |
| 19 | Insured's Address | XAD | O | | 250 | | | |
| 20 | Assignment Of Benefits | IS | O | | 2 | | HL70135 | |
| 21 | Coordination Of Benefits | IS | O | | 2 | | HL70173 | |
| 22 | Coord Of Ben. Priority | ST | O | | 2 | | | |
| 23 | Notice Of Admission Flag | ID | O | | 1 | | HL70136 | |
| 24 | Notice Of Admission Date | DT | O | | 8 | | | |
| 25 | Report Of Eligibility Flag | ID | O | | 1 | | HL70136 | |
| 26 | Report Of Eligibility Date | DT | O | | 8 | | | |
| 27 | Release Information Code | IS | O | | 2 | | HL70093 | |
| 28 | Pre-Admit Cert (PAC) | ST | O | | 15 | | | |
| 29 | Verification Date/Time | TS_NZ | RE | [0..1] | 26 | | | |

Table 5-2 Insurance Segment (IN1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
|-----|------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| 30 | Verification By | XCN | O | | 250 | | | |
| 31 | Type Of Agreement Code | IS | O | | 2 | | HL70098 | |
| 32 | Billing Status | IS | O | | 2 | | HL70022 | |
| 33 | Lifetime Reserve Days | NM | O | | 4 | | | |
| 34 | Delay Before L.R. Day | NM | O | | 4 | | | |
| 35 | Company Plan Code | IS | O | | 8 | | HL70042 | |
| 36 | Policy Number | ST | O | | 15 | | | |
| 37 | Policy Deductible | CP | O | | 12 | | | |
| 38 | Policy Limit - Amount | CP | X | [0..0] | 12 | | | |
| 39 | Policy Limit - Days | NM | O | | 4 | | | |
| 40 | Room Rate - Semi-Private | CP | X | [0..0] | 12 | | | |
| 41 | Room Rate - Private | CP | X | [0..0] | 12 | | | |
| 42 | Insured's Employment Status | CE | O | | 250 | | HL70066 | |
| 43 | Insured's Administrative Sex | IS | O | | 1 | | HL70001 | |

| Table 5-2 Insurance Segment (IN1) | | | | | | | | |
|-----------------------------------|------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
| 44 | Insured's Employer's Address | XAD | 0 | | 250 | | | |
| 45 | Verification Status | ST | 0 | | 2 | | | |
| 46 | Prior Insurance Plan ID | IS | 0 | | 8 | | HL70072 | |
| 47 | Coverage Type | IS | 0 | | 3 | | HL70309 | |
| 48 | Handicap | IS | 0 | | 2 | | HL70295 | |
| 49 | Insured's ID Number | CX | 0 | | 250 | | | |
| 50 | Signature Code | IS | 0 | | 1 | | HL70535 | |
| 51 | Signature Code Date | DT | 0 | | 8 | | | |
| 52 | Insured's Birth Place | ST | 0 | | 250 | | | |
| 53 | VIP Indicator | IS | 0 | | 2 | | HL70099 | |

IN1 Conformance Statements:

IZ-69: IN1-1 (Set ID-IN1) SHALL be valued "1".

IN1 Field Definitions

IN1-1 Set ID - IN1 (SI) 00426

Definition: *IN1-1 - set ID* contains the number that identifies this transaction. For the first occurrence the sequence number shall be 1, for the second occurrence it shall be 2, etc.

IN1-2 Insurance Plan ID (CE) 00368

Definition: This field contains a unique identifier for the insurance plan. Refer to *User-defined Table 0072 - Insurance Plan ID* for suggested values. To eliminate a plan, the plan could be sent with null values in each subsequent element. If the respective systems can support it, a null value can be sent in the plan field.

IN1-3 Insurance Company ID (CX) 00428

Definition: This field contains unique identifiers for the insurance company. The assigning authority and identifier type code are strongly recommended for all CX data types.

IN1-15 Plan Type (IS) 00440

Definition: This field contains the coding structure that identifies the various plan types, for example, Medicare, Medicaid, Blue Cross, HMO, etc. Refer to *User-defined Table 0086 - Plan ID* for suggested values.

IN1-29 Verification Date/Time (TS) 00454

Definition: This field contains the date/time that the healthcare provider verified that the patient has the indicated benefits.

MSH—Message Header Segment

| |
|---|
| This implementation guide pre-adopts the Version 2.7.1 MSH segment. |
|---|

Table 5-4 Message Header Segment (MSH)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
|-----|---------------------------------|-----------|-------|-------------|--------|-----------------------|--------------------------|---------------------|
| 1 | Field Separator | ST | R | [1..1] | 1..1 | | | |
| 2 | Encoding Characters | ST | R | [1..1] | 4..4 | | | |
| 3 | Sending Application | HD | RE | [0..1] | | | HL70361 | |
| 4 | Sending Facility | HD | RE | [0..1] | | | HL70362 | |
| 5 | Receiving Application | HD | RE | [0..1] | | | HL70361 | |
| 6 | Receiving Facility | HD | RE | [0..1] | | | HL70362 | |
| 7 | Date/Time Of Message | TS_Z | R | [1..1] | | | | |
| 8 | Security | ST | O | | | | | |
| 9 | Message Type | MSG | R | [1..1] | | | | |
| 10 | Message Control ID | ST | R | [1..1] | 1..199 | | | |
| 11 | Processing ID | PT | R | [1..1] | | | | |
| 12 | Version ID | VID | R | [1..1] | | | | |
| 13 | Sequence Number | NM | O | | | | | |
| 14 | Continuation Pointer | ST | O | [0..1] | | | | |
| 15 | Accept Acknowledgement Type | ID | R | [1..1] | | | HL70155 | |
| 16 | Application Acknowledgment Type | ID | R | [1..1] | | | HL70155 (constrained) | |
| 17 | Country Code | ID | O | | | | | |
| 18 | Character Set | ID | O | | | | | |

| Table 5-4 Message Header Segment (MSH) | | | | | | | | |
|--|---|-----------|-------|-------------|-----|-----------------------|-----------|--------------------------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
| 19 | Principal Language Of Message | CE | O | | | | | |
| 20 | Alternate Character Set Handling Scheme | ID | O | | | | | |
| 21 | Message Profile Identifier | EI | R | [1..*] | | | | |
| 22 | Sending Responsible Organization | XON | RE | [0..1] | | | | The initiator of this message. |
| 23 | Receiving Responsible Organization | XON | RE | [0..1] | | | | The final recipient of this message. |
| 24 | Sending Network Address | HD | O | | | | | |
| 25 | Receiving Network Address | HD | O | | | | | |

MSH Conformance Statements:

IZ-12: The MSH.1 (Field Separator) SHALL be valued “|”

IZ-13: The MSH.2 (Encoding Characters) SHALL be valued “^~\& “

IZ-15: The MSH-12 (Version ID) SHALL be valued “2.5.1 “

IZ-17: MSH-9 (Message Type) SHALL contain the constant value “VXU^V04^VXU_V04”

IZ-41: The value of MSH-16 (Application Acknowledgement) shall be “AL”.

IZ-42: The value of MSH-15 (Accept Acknowledgement) shall be “ER”²³.

IZ-43: One occurrence of MSH-21(Message Profile Identifier) SHALL contain the constant value “Z22^CDCPHINVS”

MSH field definitions

MSH-1 Field Separator (ST) 00001

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

Example:

MSH|



MSH-2 Encoding Characters (ST) 00002

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

MSH-3 Sending Application (HD) 00003

Definition: This field uniquely identifies the sending application. The value is locally define and often assigned by the IIS in User-defined table 0361. This is not the product, but rather the name of the specific instance. For instance, the IIS in Georgia(GRITS) is an instance based on the Wisconsin IIS (WIR). The code for GRITS would be specific to GRITS.

MSH-4 Sending Facility (HD) 00004

Definition: This field identifies the organization responsible for the operations of the sending application. Locally defined codes accommodate local needs. The first component shall be the name space id found in User-defined Table 0362. The second and third components are reserved for use of OIDs.

²³ This applies when the message will trigger an “AR” in MSA-1 because the incoming message had one of the following issues: Unsupported message type, Unsupported event code, Unsupported processing ID or Unable to process for reasons unrelated for format or content.

MSH-5 Receiving Application (HD) 00005

Definition: This field uniquely identifies the receiving application. This is not the product, but rather the name of the specific instance. For instance, the IIS in Georgia (GRITS) is an instance based on the Wisconsin IIS (WIR). The code for GRITS would be specific to GRITS. Locally defined codes accommodate local needs.

MSH-6 Receiving Facility (HD) 00006

Definition: This field identifies the organization responsible for the operations of the receiving application. Locally defined codes will accommodate local needs.

MSH-7 Date/Time Of Message (TS_Z) 00007

Definition: This field contains the date/time that the sending system created the message. The degree of precision must be to the second and include time zone.

MSH-9 Message Type (MSG) 00009

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

MSH-10 Message Control ID (ST) 00010

Definition: This field contains the identifier assigned by the sending application (MSH.3) that uniquely identifies a message instance. This identifier is unique within the scope of the sending facility (MSH.4), sending application (MSH.3), and the YYYYMMDD portion of message date (MSH.7). The receiving system echoes this ID back to the sending system in the Message acknowledgment segment (MSA). The content and format of the data sent in this field is the responsibility of the sender.

MSH-11 Processing ID (PT) 00011

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

MSH-12 Version ID (VID) 00012

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

| |
|---|
| Messages conforming to the specifications in this Guide shall indicate that the version is 2.5.1. |
|---|

MSH-15 Accept Acknowledgment Type (ID) 00015

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

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

MSH-16 Application Acknowledgment Type (ID) 00016

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

MSH-17 Country Code (ID) 00017

Definition: This field contains the country of origin for the message. The values to be used are those of ISO 3166,²⁴. The ISO 3166 table has three separate forms of the country code: HL7 specifies that the 3-character (alphabetic) form be used for the country code. If this field is not valued, then assume that the code is USA.

Refer to HL7 Table 0399 – Country code for the 3-character codes as defined by ISO 3166-1.

MSH-21 Message Profile Identifier (EI) 01598

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

MSH-22 Responsible Sending Organization

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

Currently, MSH provides fields to transmit both sending/receiving applications and facilities (MSH.3 – MSH.6). However, these levels of organization do not necessarily relate to or imply a legal entity such as a business organization. As such, multiple legal entities (organizations) may share a service bureau, with the same application and facility identifiers. Another level of detail is required to delineate the various organizations using the same service bureau.

Therefore, the Sending Responsible Organization field provides a complete picture from the application level to the overall business level. The Business Organization represents the legal entity responsible for the contents of the message.

²⁴ Available from ISO 1 Rue de Varembe, Case Postale 56, CH 1211, Geneve, Switzerland

MSH-23 Responsible Receiving Organization

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

This field has the same justification as the Sending Responsible Organization except in the role of the Receiving Responsible Organization. The receiving organization has the legal responsibility to act on the information in the message.

NK1—Next of Kin Segment

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

Table 5-5 Next of Kin Segment (NK1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
|-----|--|-----------|-------|-------------|-----|-----------------------|-----------|---|
| 1 | Set ID - NK1 | SI | R | [1..1] | | | | |
| 2 | Name | XPN | R | [1..*] | | | | The first instance is the legal name and is required. |
| 3 | Relationship | CE | R | [1..1] | | | HL70063 | |
| 4 | Address | XAD | RE | [0..*] | | | | The first instance shall be the primary address. |
| 5 | Phone Number | XTN | RE | [0..*] | | | | The first instance shall be the primary phone number. |
| 6 | Business Phone Number | XTN | O | | | | | |
| 7 | Contact Role | CE | O | | | | | |
| 8 | Start Date | DT | O | | | | | |
| 9 | End Date | DT | O | | | | | |
| 10 | Next of Kin / Associated Parties Job Title | ST | O | | | | | |
| 11 | Next of Kin / Associated Parties Job Code/Class | JCC | O | | | | | |
| 12 | Next of Kin / Associated Parties Employee Number | CX | O | | | | | |
| 13 | Organization Name - NK1 | XON | O | | | | | |

Table 5-5 Next of Kin Segment (NK1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
|-----|----------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| 14 | Marital Status | CE | 0 | | | | | |
| 15 | Administrative Sex | IS | 0 | | | | | |
| 16 | Date/Time of Birth | TS | 0 | | | | | |
| 17 | Living Dependency | IS | 0 | | | | | |
| 18 | Ambulatory Status | IS | 0 | | | | | |
| 19 | Citizenship | CE | 0 | | | | | |
| 20 | Primary Language | CE | 0 | | | | | |
| 21 | Living Arrangement | IS | 0 | | | | | |
| 22 | Publicity Code | CE | 0 | | | | | |
| 23 | Protection Indicator | ID | 0 | | | | | |
| 24 | Student Indicator | IS | 0 | | | | | |
| 25 | Religion | CE | 0 | | | | | |
| 26 | Mother's Maiden Name | XPN | 0 | | | | | |
| 27 | Nationality | CE | 0 | | | | | |
| 28 | Ethnic Group | CE | 0 | | | | | |
| 29 | Contact Reason | CE | 0 | | | | | |

| Table 5-5 Next of Kin Segment (NK1) | | | | | | | | |
|-------------------------------------|--|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
| 30 | Contact Person's Name | XPN | 0 | | | | | |
| 31 | Contact Person's Telephone Number | XTN | 0 | | | | | |
| 32 | Contact Person's Address | XAD | 0 | | | | | |
| 33 | Next of Kin/Associated Party's Identifiers | CX | 0 | | | | | |
| 34 | Job Status | IS | 0 | | | | | |
| 35 | Race | CE | 0 | | | | | |
| 36 | Handicap | IS | 0 | | | | | |
| 37 | Contact Person Social Security Number | ST | 0 | | | | | |
| 38 | Next of Kin Birth Place | ST | 0 | | | | | |
| 39 | VIP Indicator | IS | 0 | | | | | |

NK1 Conformance Statements:

IZ-70: NK1-1 (Set ID-NK1) SHALL be valued sequentially starting with the value "1".

NK1 field definitions**NK1-1 Set ID - NK1 (SI) 00190**

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

NK1-2 Name (XPN) 00191

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

NK1-3 Relationship (CE) 00192

Definition: This field contains the actual personal relationship that the next of kin/associated party has to the patient. Refer to User-defined Table 0063 - Relationship for suggested values.

NK1-4 Address (XAD) 00193

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

Note that an NK1 with a relationship of Self, may contain the patient's address, but the preferred location for a patient's address

NK1-5 Phone Number (XTN) 00194

Definition: This field contains the telephone number of the next of kin/associated party. Multiple phone numbers are allowed for the same person. The primary telephone number must be sent in the first sequence. If the primary telephone number is not sent, then the repeat delimiter must be sent in the first sequence. Refer to HL7 Table 0201 - Telecommunication Use Code and HL7 Table 0202 - Telecommunication Equipment Type for valid values.

NK1-6 Business Phone Number (XTN) 00195

Definition: This field contains the business telephone number of the next of kin/associated party. Multiple phone numbers are allowed for the same person. The primary business telephone number must be sent in the first sequence. If the primary telephone number is not sent, then the repeat delimiter must be sent in the first sequence. Refer to HL7 Table 0201 - Telecommunication Use Code and HL7 Table 0202 - Telecommunication Equipment Type for valid values.

NTE—Note Segment

The NTE segment is used for sending notes and comments.

Table 5-6 Note Segment (NTE)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
|-----|-------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------|
| 1 | Set ID - NTE | SI | O | | | | | |
| 2 | Source of Comment | ID | O | | | | | |
| 3 | Comment | FT | R | [1..1] | | | | |
| 4 | Comment Type | CE | O | | | | | |

NTE field definitions

NTE-3 Comment (FT) 00098

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

OBX—Observation Result Segment

The observation result segment has many uses. It carries observations about the object of its parent segment. In the VXU/RSP it is associated with the RXA or immunization record. The basic format is a question (OBX-3) and an answer (OBX-5).

Consult Appendix B for detailed examples of each of the uses.

Table 5-7 Observation Segment (OBX)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Sets | Comment |
|-----|-------------------------|----------------------|--------|-------------|-------|---|--------------------------------|--|
| 1 | Set ID – OBX | SI | R | [1..1] | 1..4 | | | |
| 2 | Value Type | ID | R | [1..1] | 2..3 | | HL70125 (constrained) | |
| 3 | Observation Identifier | CE | R | [1..1] | | | NIP003 | This indicates what this observation refers to. It poses the question that is answered by OBX-5. |
| 4 | Observation Sub-ID | ST | R | [1..1] | 1..20 | | Constrain to positive integers | |
| 5 | Observation Value | varies ²⁵ | R | [1..1] | | | varies | This is the observation value and answers the question posed by OBX-3 |
| 6 | Units | CE | C(R/O) | [0..1] | | If OBX-2(Value Type) is valued "NM" Note: If there is not a unit of measure available while the Condition Predicated is true, then the value "NA" SHALL be used in CE.1 and "HL70353" in CE.3. | UCUM | |
| 7 | References Range | ST | O | | | | | |
| 8 | Abnormal Flags | IS | O | | | | | |
| 9 | Probability | NM | O | | | | | |
| 10 | Nature of Abnormal Test | ID | O | | | | | |

²⁵ The length of the observation field is variable, depending upon value type. See *OBX-2 value type*.

Table 5-7 Observation Segment (OBX)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Sets | Comment |
|-----|--|-----------|---------|-------------|-----|-------------------------|--------------------------------------|--|
| 11 | Observation Result Status | ID | R | [1..1] | 1 | | HL70085 (constrained) | |
| 12 | Effective Date of Reference Range Values | TS | O | | | | | |
| 13 | User Defined Access Checks | ST | O | | | | | |
| 14 | Date/Time of the Observation | TS_NZ | RE | [0..1] | | | | |
| 15 | Producer's Reference | CE | O | | | | | |
| 16 | Responsible Observer | XCN | O | | | | | |
| 17 | Observation Method | CE | C(RE/O) | [0..1] | | If OBX-3.1 is "64994-7" | PNHV_FundingEligibilityObsMethod_IIS | 64994 "-7" is a LOINC meaning "funding program eligibility". This field is used to distinguish between eligibility that is captured at the visit level versus at the immunization event level. |
| 18 | Equipment Instance Identifier | EI | O | | | | | |
| 19 | Date/Time of the Analysis | TS | O | | | | | |

| Table 5-7 Observation Segment (OBX) | | | | | | | | |
|-------------------------------------|--|-----------|-------|-------------|-----|-----------------------|------------|---------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Sets | Comment |
| 20 | Reserved for harmonization with V2.6 | | X | [0..0] | | | | |
| 21 | Reserved for harmonization with V2.6 | | X | [0..0] | | | | |
| 22 | Reserved for harmonization with V2.6 | | X | [0..0] | | | | |
| 23 | Performing Organization Name | XON | O | | | | | |
| 24 | Performing Organization Address | XAD | O | | | | | |
| 25 | Performing Organization Medical Director | XCN | O | | | | | |

Conformance Statement:

IZ-20: The Value of OBX-1 (Set ID-OBX) SHALL be valued sequentially starting with the value “1” within a message.

IZ-44: The value of OBX-4 SHALL be a positive integer.

IZ-22: The value of OBX-11 (Observation Result Status) SHALL be “F”

IZ-35: If OBX-3.1 is “64994-7” and OBX-2 is “CE” then the value set for OBX-5 shall be HL70064.

IZ-36: If OBX-3.1 is “69764-9” and OBX-2 is “CE” then the value set for OBX-5 shall be PHVS_VISBarcodes_II.

IZ-37: If OBX-3.1 is “30956-7” and OBX-2 is “CE” then the value set for OBX-5 shall be CVX.

OBX field definitions**OBX-1 Set ID - OBX (SI) 00569**

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

In addition, the Set ID is also allowed to restart within a message, between order groups. This is, if a message had 3 order groups and each had 3 OBX, all three order groups would contain OBX segments with Set IDs of 1, 2 and 3. Either approach, restarting or not restarting per order group, is allowed.

OBX-2 Value Type (ID) 00570

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

OBX-3 Observation Identifier (CE) 00571

Definition: This field contains a unique identifier for the observation. The format is that of the Coded Element (CE).

Example: |64994-7^funding pgm elig^LN|.

The identifier will point to a master observation table that will provide other attributes of the observation that may be used by the receiving system to process the observations it receives. This may be thought of as a question that the observation answers. In the example above, the question is “what funding program was this person eligible for when this vaccine was administered” The answer in OBX-5 could be “VFC eligible - MEDICAID”.

LOINC shall be the standard coding system for this field if an appropriate LOINC code exists. Appropriate status is defined in the LOINC Manual Section 11.2 Classification of LOINC Term Status. If a local coding system is in use, a local code should also be sent to help with identification of coding issues. When no valid LOINC exists the local code may be the only code sent. When populating this field with values, this guide does not give preference to the triplet in which the standard (LOINC) code should appear.

The 2.3.1 Implementation Guide used suffixes on the first sequence in OBX-3 to group related observations. For instance, reporting a VIS publication date and VIS receipt date each added a suffix of one LOINC code to a second LOINC code when recording VIS dates for a component vaccine. (38890-0&29768-9^DATE VACCINE INFORMATION STATEMENT PUBLISHED^LN) This is no longer acceptable. Grouping of related observations will be accomplished using Observation sub-id (OBX-4).

OBX-4 Observation Sub-ID (ST) 00572

Definition: This field is used to group related observations by setting the value to the same number. For example, recording VIS date and VIS receipt date for a combination vaccination requires 6 OBX segments. One OBX would indicate the vaccine group. It would have a pair of OBX indicating the

VIS publication date and the VIS receipt date. These would have the same OBX-4 value to allow them to be linked. The second set of three would have another OBX-4 value common to each of them.

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

For example:

```
OBX|1|LN|^observation 1 part 1^^^^^|1|...
```

```
OBX|2|LN|^ observation 1 part 2^^^^^|1|...
```

```
OBX|3|DT|^a different observation^^^^^|2|...
```

Example:

```
OBX|1|CE|64994-7^Eligibility Status^LN|1|V02^Medicaid^HL70064|||||F|||20120113|||VXC40^vaccine level^CDCPHINVS<CR>
```

```
OBX|2|DT|29769-7^VIS presented^LN|2|20120113|||||F|||20120113<CR>
```

```
OBX|3|CE|69764-9^Document Type^LN|2|253088698300026411121116^Multivaccine VIS^cdcgs1vis|||||F|||20120113<CR>
```

OBX-5 Observation Value (varies) 00573

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

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

OBX-6 Units (CE) 00574

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

OBX-11 Observation Result Status (ID) 00579

Definition: This field contains the observation result status. The expected value is F or final.

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

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

OBX-17 Observation Method (CE)

Definition: This optional field can be used to transmit the method or procedure by which an observation was obtained when the sending system wishes to distinguish among one measurement obtained by different methods and the distinction is not implicit in the test ID.

In this Guide, it shall be used to differentiate the way that VFC Eligibility Status was collected. The two choices are:

- Recorded in the sending system at the visit level
- Recorded in the sending system at the immunization level

See examples in Appendix B (Example VXU #2)

Application Conformance Statement:

There are a number of core data elements that are important to support a complete immunization history and the functional requirements of a Immunization Information System (IIS). Some of these utilize the OBX to carry their data. The following table lists the data elements and the usage responsibilities.

Table 5-8 Application Conformance Statements

| Core Data Element | Description | Observation Identifier (OBX-3) | Observation Value Set (OBX-5) | Conformance Statements |
|--|---|---|--|--|
| Patient Eligibility Category for Vaccine Funding Program | This value represents the funding program that should pay for a given immunization. It is determined based on characteristics of the patient/client | 64994-7 | HL70064 | IZ-23: If RXA-20 is valued "CP" or "PA" and the first occurrence of RXA-9.1 (Administration Note.code) is "00" then the message SHALL include an OBX segment associated with the RXA with OBX-3.1 shall equal "64994-7" . This |

| Table 5-8 Application Conformance Statements | | | | |
|---|--|---------------------------------------|--------------------------------------|--|
| Core Data Element | Description | Observation Identifier (OBX-3) | Observation Value Set (OBX-5) | Conformance Statements |
| | and the type of vaccine administered. | | | OBX will indicate the Patient Eligibility Category for Vaccine Funding Program. |
| Vaccine Information Statement (VIS) document type | This value represents the vaccine type that the statement provides information about. | 69764-9 | cdcgs1vis | See VIS related Conformance Statements below. |
| Vaccine Information Statement (VIS) version date | This value represents the date the presented VIS was published | 29768-9 | | Note that this approach to reporting VIS document type is maintained for backward compatibility. The preferred method uses VIS document type approach using code 69764-9. See VIS related Conformance Statements below |
| VIS vaccine type | This value represents the vaccine type that the statement provides information about. In the cases where there are multiple vaccines that can be used, the correct choice is the unspecified vaccine CVX (e.g. CVX 17 (HIB, unspecified formulation) for any HIB vaccine administered. | 30956-7 | CVX | Note that this approach to reporting VIS document type is maintained for backward compatibility. The preferred method uses VIS document type approach using code 69764-9. |
| Vaccine Information Statement (VIS) delivery date | This value represents the date the document was presented to the patient/responsible person. | 29769-7 | | See VIS related Conformance Statements below |

NOTE: There are three things that need to be recorded for documenting VIS:

1. Date VIS was shared with patient or parent
2. Vaccine that the VIS refers to
3. Edition Date of VIS

There are 2 ways that this data is captured. First, it may be captured as vaccine type, Edition/Version Date and presentation date. VIS is bar coded with a 2-d bar code using a Global Document Type Identifier (GDTI). This bar code indicates the specific document type that has been presented and the edition date may be inferred from the bar code.

The second approach (use the string representation of the GDTI) is preferred. There is a multi-vaccine VIS that cannot be represented using the vaccine type approach. The vaccine type approach is included in this Implementation Guide for backward compatibility.

VIS documentation is required for all patients, but only for specific vaccines. Note that the most current list will be found on PHIN VADS.

See table [Value Set Code: PHVS_VISVaccines_IIS](#) in Appendix A.

VIS Conformance Statements:

IZ-24: If RXA-20 is valued "CP" or "PA" and the first occurrence of RXA- 9.1 is valued "00" and RXA-5.1 is valued with a CVX code from table PHVS_VISVaccines_IIS (See Appendix A) then for each vaccine information statement that was shared there SHALL be:

- one OBX segment with OBX-3.1 valued "69764-9" (bar coded) **and** one OBX with OBX-3.1 valued "29769-7" (presentation /delivery date) associated. Both OBX shall have the same value in OBX-4
- OR**
- one OBX segment with OBX-3.1 valued "30956-7" (vaccine type) and one OBX segment with OBX-3.1 valued "29768-9" (version date) and one OBX with OBX-3.1 valued "29769-7" (presentation /delivery date) associated. All three OBX shall have the same value in OBX-4

Note that 30956-7 (vaccine type) is preferred over the alternative 38890-0 (Component Vaccine Type) even when the vaccine administered is a combination vaccine. For this reason, the test will compare to the 30956-7 value.

ORC—Order Request Segment

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

| Table 5-9 Common Order Segment (ORC) | | | | | | | | |
|--------------------------------------|--------------------------|-----------|---------|-------------|-----|---|--------------------------|--|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 1 | Order Control | ID | R | [1..1] | 2 | | HL70119 (constrained) | |
| 2 | Placer Order Number | EI | RE | [0..1] | | | | See Guidance below. |
| 3 | Filler Order Number | EI | R | [1..1] | | | | See Guidance below. |
| 4 | Placer Group Number | EI | O | | | | | |
| 5 | Order Status | ID | O | | | | | |
| 6 | Response Flag | ID | O | | | | | |
| 7 | Quantity/Timing | TQ | X | [0..0] | | | | |
| 8 | Parent | EIP | O | | | | | |
| 9 | Date/Time of Transaction | TS | O | | | | | |
| 10 | Entered By | XCN | RE | [0..1] | | | | This is the person that entered this immunization record into the system. |
| 11 | Verified By | XCN | O | | | | | |
| 12 | Ordering Provider | XCN | C(RE/O) | [0..1] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | | This shall be the provider ordering the immunization. It is expected to be empty if the immunization record is transcribed from a historical record. |
| 13 | Enterer's Location | PL | O | | | | | |

Table 5-9 Common Order Segment (ORC)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
|-----|----------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---|
| 14 | Call Back Phone Number | XTN | O | | | | | |
| 15 | Order Effective Date/Time | TS | O | | | | | |
| 16 | Order Control Code Reason | CE | O | | | | | |
| 17 | Entering Organization | CE | RE | | | | HL70362 | This is the provider organization that entered this record/order. |
| 18 | Entering Device | CE | O | | | | | |
| 19 | Action By | XCN | O | | | | | |
| 20 | Advanced Beneficiary Notice Code | CE | O | | | | | |
| 21 | Ordering Facility Name | XON | O | | | | | |
| 22 | Ordering Facility Address | XAD | O | | | | | |
| 23 | Ordering Facility Phone Number | XTN | O | | | | | |
| 24 | Ordering Provider Address | XAD | O | | | | | |
| 25 | Order Status Modifier | CWE | O | | | | | |

| Table 5-9 Common Order Segment (ORC) | | | | | | | | |
|--------------------------------------|---|-----------|-------|-------------|-----|-----------------------|-----------|---------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 26 | Advanced Beneficiary Notice Override Reason | CWE | 0 | | | | | |
| 27 | Filler's Expected Availability Date/Time | TS | 0 | | | | | |
| 28 | Confidentiality Code | CWE | 0 | | | | | |
| 29 | Order Type | CWE | 0 | | | | | |
| 30 | Enterer Authorization Mode | CNE | 0 | | | | | |
| 31 | Parent Universal Service Identifier | CWE | 0 | | | | | |

Conformance Statement:

IZ-25: ORC.1 (Order Control) SHALL contain the value “RE “

IZ-45: If RXA-20 is valued “NA” or “RE” then ORC-3.1 SHALL be valued “9999”.

ORC field definitions

ORC-1 Order Control (ID) 00215

Definition: Determines the function of the order segment.

The value for VXU and RSP shall be RE.

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

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

ORC-2 Placer Order Number (EI) 00216

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

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

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

ORC-3 Filler Order Number (EI) 00217

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

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

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

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

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

ORC-10 Entered By (XCN) 00224

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

ORC-12 Ordering Provider (XCN) 00226

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

ORC-17 Entering Organization (CE) 00231

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

ORC-28 Confidentiality Code (CWE) 00615

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

If this field is populated, it indicates the active choice of the patient or responsible person. In other words, if the value indicates that the information must be protected, the person has stated that it must be protected. An empty field indicates that the client has not actively specified the way they want this data to be handled.

Local implementation guides should describe the local usage of this field and value.

PD1—Patient Demographic Segment

The Patient Demographic Segment contains patient demographic information that may change from time to time. There are three primary uses PD1 for in Immunization Messages. These include indicating whether the person wants his/her data protected, whether the person wants to receive recall/reminder notices and the person's current status in the registry.

Table 5-10 Patient Demographic Segment (PD1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
|-----|---|-----------|---------|-------------|-----|--|-----------|---------|
| 1 | Living Dependency | IS | O | | | | | |
| 2 | Living Arrangement | IS | O | | | | | |
| 3 | Patient Primary Facility | XON | O | | | | | |
| 4 | Patient Primary Care Provider Name & ID No. | XCN | X | [0..0] | | | | |
| 5 | Student Indicator | IS | O | | | | | |
| 6 | Handicap | IS | O | | | | | |
| 7 | Living Will Code | IS | O | | | | | |
| 8 | Organ Donor Code | IS | O | | | | | |
| 9 | Separate Bill | ID | O | | | | | |
| 10 | Duplicate Patient | CX | O | | | | | |
| 11 | Publicity Code | CE | RE | [0..1] | | | HL70215 | |
| 12 | Protection Indicator | ID | RE | [0..1] | | | HL70136 | |
| 13 | Protection Indicator Effective Date | DT_D | C(RE/X) | [0..1] | | If PD1-12 (Protection Indicator) is valued | | |
| 14 | Place of Worship | XON | O | | | | | |

Table 5-10 Patient Demographic Segment (PD1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
|-----|---|-----------|---------|-------------|-----|--|-----------|---------|
| 15 | Advance Directive Code | CE | O | | | | | |
| 16 | Immunization Registry Status | IS | RE | [0..1] | | | HL70441 | |
| 17 | Immunization Registry Status Effective Date | DT_D | C(RE/X) | [0..1] | | If the PD1-16 (Registry Status) field is valued. | | |
| 18 | Publicity Code Effective Date | DT_D | C(RE/X) | [0..1] | | If the PD1-11 (Publicity Code) field is valued. | | |
| 19 | Military Branch | IS | O | | | | | |
| 20 | Military Rank/Grade | IS | O | | | | | |
| 21 | Military Status | IS | O | | | | | |

PD1 field definitions

PD1-3 Patient Primary Facility (XON) 00756

Definition: This field contains the name and identifier that specifies the "primary care" healthcare facility selected by the patient at the time of enrollment in an HMO Insurance Plan. It is not the Primary Care Practitioner or Medical Home.

The meaning of this field should not be expanded to include the concept of medical home.

PD1-11 Publicity Code (CE) 00743

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

PD1-12 Protection Indicator (ID) 00744

Definition: This field identifies whether a person's information may be shared with others²⁶. Specific protection policies are a local consideration (opt in or opt out, for instance). This field conveys the current state in the sending system.

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

There are 3 states:

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

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

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

Note that the value sent in a message that is based on the 2.3.1 or 2.4 version of the HL7 standard shall continue to follow the old guidance. That is, Y means sharing is allowed and N means sharing is not allowed.

²⁶ Local policies determine how data are protected. In general, it indicates who may view the client's data. It may be as narrow as just the provider that entered the information.

Note on Null and Empty in HL7

See notes on null and empty fields in Chapter 3.

PD1-13 Protection Indicator Effective Date (DT) 01566

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

PD1-16 Immunization Registry Status (IS) 01569

Definition: This field identifies the current status of the patient in relation to the sending provider organization.. The term “sending provider organization” refers to the organization that is accountable for the content of the message. This may be an EHR for a VXU^V04 message or an IIS for an RSP^K11 message. PD1-16 should reflect the status of the patient relative to the system creating the message. Refer to User-defined Table 0441 - Immunization Registry Status for suggested values.

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

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

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

PD1-18 Publicity Code Effective Date (DT) 01571

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

PID—Patient Identifier Segment

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

Table 5-11 Patient Identifier Segment (PID)

| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
|-----|------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|--|
| 1 | Set ID - PID | SI | R | [1..1] | | | | |
| 2 | Patient ID | CX | X | [0..0] | | | | |
| 3 | Patient Identifier List | CX | R | [1..*] | | | | |
| 4 | Alternate Patient ID - 00106 | CX | X | [0..0] | | | | |
| 5 | Patient Name | XPN | R | [1..*] | | | | The first repetition shall contain the legal name. Multiple given names or initials are separated by spaces. |
| 6 | Mother's Maiden Name | XPN_M | RE | [0..1] | | | | |
| 7 | Date/Time of Birth | TS_NZ | R | [1..1] | | | | |
| 8 | Administrative Sex | IS | R | [1..1] | | | HL70001 | If a sex is not definitively known, use the value U-Unknown from HL70001. |
| 9 | Patient Alias | XPN | X | [0..0] | | | | |
| 10 | Race | CE | RE | [0..*] | | | CDCREC | |
| 11 | Patient Address | XAD | RE | [0..*] | | | | The first repetition should be the primary address. |
| 12 | County Code | IS | X | [0..0] | | | | County belongs in address field. |

| Table 5-11 Patient Identifier Segment (PID) | | | | | | | | |
|---|-----------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|--|
| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
| 13 | Phone Number - Home | XTN | RE | [0..*] | | | | The first instance shall be the primary phone number. Only one item is allowed per repetition. |
| 14 | Phone Number - Business | XTN | O | | | | | |
| 15 | Primary Language | CE | O | | | | | |
| 16 | Marital Status | CE | O | | | | | |
| 17 | Religion | CE | O | | | | | |
| 18 | Patient Account Number | CX | O | | | | | |
| 19 | SSN Number - Patient | ST | X | [0..0] | | | | |
| 20 | Driver's License Number - Patient | DLN | X | [0..0] | | | | |
| 21 | Mother's Identifier | CX | X | [0..0] | | | | |

Table 5-11 Patient Identifier Segment (PID)

| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
|-----|-----------------------------|-----------|---------|-------------|------|--|-----------|---|
| 22 | Ethnic Group | CE | RE | [0..1] | | | CDCREC | |
| 23 | Birth Place | ST | O | | | | | |
| 24 | Multiple Birth Indicator | ID | RE | [0..1] | | | HL70136 | The acceptable values are Y and N. If the status is undetermined, then field shall be empty. |
| 25 | Birth Order | NM | C(RE/O) | [0..1] | 1..2 | If PID-24 (Multiple Birth Indicator) is valued "Y" | | This field contains a number indicating the person's birth order, with 1 for the first child born and 2 for the second. |
| 26 | Citizenship | CE | O | | | | | |
| 27 | Veterans Military Status | CE | O | | | | | |
| 28 | Nationality | CE | O | | | | | |
| 29 | Patient Death Date and Time | TS | C(RE/X) | [0..1] | | If PID-30 (patient death indicator) is valued "Y" | | |
| 30 | Patient Death Indicator | ID | RE | [0..1] | | | HL70136 | |
| 31 | Identity Unknown Indicator | ID | O | | | | | |

| Table 5-11 Patient Identifier Segment (PID) | | | | | | | | |
|---|---------------------------|-----------|-------|-------------|-----|-----------------------|-----------|------------|
| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
| 32 | Identity Reliability Code | IS | 0 | | | | | |
| 33 | Last Update Date/Time | TS | 0 | | | | | |
| 34 | Last Update Facility | HD | 0 | | | | | |
| 35 | Species Code | CE | 0 | | | | | |
| 36 | Breed Code | CE | 0 | | | | | |
| 37 | Strain | ST | 0 | | | | | |
| 38 | Production Class Code | CE | 0 | | | | | |
| 39 | Tribal Citizenship | CWE | 0 | | | | | |

Conformance Statement:

IZ-46: PID-1 (Set ID) SHALL have the literal value “1”

PID field definitions

PID-1 Set ID - PID (SI) 00104

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

PID-3 Patient Identifier List (CX) 00106

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

PID-5 Patient Name (XPN) 00108

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

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

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

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

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

PID-8 Administrative Sex (IS) 00111

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

PID-10 Race (CE) 00113

Definition: This field refers to the patient's race. Refer to User-defined Table 0005 - Race for suggested values. The second triplet of the CE data type for race (alternate identifier, alternate text, and name of alternate coding system) is reserved for governmentally assigned codes.

PID-11 Patient Address (XAD) 00114

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

This field is used for any type of address that is meaningfully associated with the client/patient. For instance Birth State is the state of the address of the birthing location, address type = BDL.

A person's address may be sent in this field or in the NK1 segment with a relationship code indicating Self. A patient's address should be in PID-11. It may also be in NK1.

PID-13 Phone Number - Home (XTN) 00116

Definition: This field contains the patient's personal phone numbers. All personal phone numbers for the patient are sent in the following sequence. The first sequence is considered the primary number (for backward compatibility). If the primary number is not sent, then a repeat delimiter is sent in the first sequence. Each type of telecommunication shall be in its' own repetition. For example, if a person has a phone number and an email address, they

shall each have a repetition. Refer to HL7 Table 0201 - Telecommunication Use Code and HL7 Table 0202 - Telecommunication Equipment Type for valid values.

PID-14 Phone Number - Business (XTN) 00117

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

PID-22 Ethnic Group (CE) 00125

Definition: This field further defines the patient's ancestry. Refer to Table CDCREC - Ethnic Group.

PID-24 Multiple Birth Indicator (ID) 00127

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

Y the patient was part of a multiple birth

N the patient was a single birth

Empty field multiple birth status is undetermined.

PID-25 Birth Order (NM) 00128

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

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

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

PID-30 Patient Death Indicator (ID) 00741

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

Y the patient is deceased

N the patient is not deceased

Empty status is undetermined

PV1—Patient Visit Segment

The PV1 segment is used to convey visit specific information. The primary use in immunization messages in previous releases was to carry information about the client's eligibility status. This is now recorded at the immunization event (dose administered) level. Use of this segment for the purpose of reporting client eligibility for a funding program at the visit level is not supported in the Implementation Guide.

RXA-- Pharmacy/Treatment Administration Segment

The RXA segment carries pharmacy administration data. It is a child of an ORC segment, which a repeating segment in the RSP and VXU messages. Because ORC are allowed to repeat an unlimited numbers of vaccinations may be included in a message. Each RXA must be preceded by an ORC.²⁷

²⁷ The HL7 Version 2.5.1 document clearly indicates that any RXA must be associated with an ORC. In the case of immunization, each immunization will have its own ORC.

| Table 5-12 Pharmacy/Treatment Administration (RXA) | | | | | | | | |
|--|-----------------------------------|-----------|--------|-------------|-----|--|-----------|---|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 1 | Give Sub-ID Counter | NM | R | [1..1] | 1 | | | |
| 2 | Administration Sub-ID Counter | NM | R | [1..1] | 1 | | | |
| 3 | Date/Time Start of Administration | TS_NZ | R | [1..1] | | | | This segment may be used in cases where a vaccine has not been administered. For instance a patient may refuse a vaccination or the sending system may be forecasting a next dose due. See notes below for guidance on the relevant date to include here. |
| 4 | Date/Time End of Administration | TS | O | [0..1] | | | | See not below |
| 5 | Administered Code | CE | R | [1..1] | | | CVX | Support for CVX code is strongly preferred. Local IG may identify NDC or CPT as acceptable alternative code sets. |
| 6 | Administered Amount | NM | R | [1..1] | 20 | | | |
| 7 | Administered Units | CE | C(R/X) | [0..1] | | If Administered Amount is not valued "999" | UCUM | The preferred units of measure for this is "mL". |
| 8 | Administered Dosage Form | CE | O | [0..1] | | | | |

Table 5-12 Pharmacy/Treatment Administration (RXA)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
|-----|------------------------------|-----------|---------|-------------|-----|---|-----------|--|
| 9 | Administration Notes | varies | C(R/O) | [0..*] | | If RXA-20 is valued "CP" or "PA" | NIP001 | <p>If this field is used for a notes only entry, then the data type shall be CE_TX otherwise the data type shall be CE.</p> <p>The primary use of this field is to convey if this immunization record is based on a historical record or was given by the provider recording the immunization. All systems should be able to support this use. Other uses of this field are permitted, but need to be specified locally.</p> |
| 10 | Administering Provider | XCN | C(RE/O) | [0..1] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | | This is the person who gave the administration or the vaccinator. It is not the ordering clinician. |
| 11 | Administered-at Location | LA2 | C(RE/O) | [0..1] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | | This is the clinic/site where the vaccine was administered. |
| 12 | Administered Per (Time Unit) | ST | O | | | | | |
| 13 | Administered Strength | NM | O | | | | | |
| 14 | Administered Strength Units | CE | O | | | | | |

| Table 5-12 Pharmacy/Treatment Administration (RXA) | | | | | | | | |
|--|---|-----------|---------|-------------|-----|---|-----------|--------------------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 15 | Substance Lot Number | ST | C(R/O) | [0..*] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | | Note that "00" is double zero. |
| 16 | Substance Expiration Date | TS_M | C(RE/O) | [0..1] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | | |
| 17 | Substance Manufacturer Name | CE | C(R/O) | [0..1] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | MVX | |
| 18 | Substance/Treatment Refusal Reason | CE | C(R/X) | [0..*] | | If the RXA-20 (Completion Status) is valued "RE " | NIP002 | |
| 19 | Indication | CE | O | | | | | |
| 20 | Completion Status | ID | RE | [0..1] | 2 | | HL70322 | |
| 21 | Action Code - RXA | ID | C(R/O) | [0..1] | 2 | If RXA-5.1 is not valued "998" | HL70323 | |
| 22 | System Entry Date/Time | TS | O | | | | | |
| 23 | Administered Drug Strength Volume | NM | O | | | | | |
| 24 | Administered Drug Strength Volume Units | CWE | O | | | | | |

| Table 5-12 Pharmacy/Treatment Administration (RXA) | | | | | | | | |
|--|---------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 25 | Administered Barcode Identifier | CWE | 0 | | | | | |
| 26 | Pharmacy Order Type | ID | 0 | | | | | |

Conformance Statement:

IZ-28: RXA-1 (Give Sub-id counter) SHALL be valued “0” Note that “0” is zero.

IZ-29: RXA-2 (admin Sub-id) SHALL be valued “1 “

IZ-30: If RXA-4 (Date time of admin end) is populated, then it SHALL be the same as Start time (RXA-3)

IZ-31: If RXA-20 is valued "CP" or "PA" then RXA-9.1 (admin notes) SHALL be valued one of the codes listed in NIP001 in the first occurrence of this field and optionally following repetition valued with a text notes.

IZ-32: If the RXA-18 (Refusal Reason) is populated, RXA-20 SHALL be valued “RE”.

IZ-47: If RXA-20 is NOT valued "CP" or "PA" then the first occurrence of RXA-9.1 (admin notes) SHALL be empty and the following repetitions may be valued with text notes.

IZ-48: If RXA-20 is valued “RE” then RXA-6 shall be valued “999”.

IZ-49: If RXA-5.1 is valued “998” then RXA-6 shall be valued “999”.

RXA field definitions**RXA-1 Give Sub-ID Counter (NM) 00342**

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

Constrain to 0 (zero).

RXA-2 Administration Sub-ID Counter (NM) 00344

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

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

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

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

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

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

Note: This field is specified as required in the HL7 standard. In spite of being Required by the standard, the standard acknowledges that it may be empty. For immunization records, this has no use. An immunization is given at a point in time. For this reason, this Implementation Guide has relaxed the usage to Optional.

RXA-5 Administered Code (CE) 00347

Definition: This field identifies the medical substance administered. If the substance administered is a vaccine, CVX codes are required (see CVX Table - Codes for vaccines administered). The second set of three components may be used to represent the same vaccine using a different coding system. NDC codes are preferred.

RXA-6 Administered Amount (NM) 00348

Definition: This field records the amount of pharmaceutical administered. The units are expressed in the next field, RXA-7. When the administered amount is unknown, this field should record the value “999” in this field.

RXA-7 Administered units (CE) 00349

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

RXA-9 Administration Notes (CE) 00351

Definition: This field is used to indicate whether this immunization record is based on a historical record or was given by the reporting provider. It should contain the information source (see *NIP-defined Table 0001 - Immunization Information Source*). The first component shall contain the code, the second the free text and the third shall contain the name of the code system. (NIP001) Sending systems should be able to send this information. Receiving systems should be able to accept this information.

This field may be used for other notes if specified locally. The first repetition shall be the information source. If other notes are sent when information source is not populated, then the first repetition shall be empty.

Other notes may include text only in component 2 of the repeat. Acceptance of text only is by local agreement only.

Information source is an NVAC core data element. It speaks to the reliability of the immunization record. IIS rely on this information.

RXA-10 Administering Provider (XCN) 00352

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

Note that previous Implementation Guide (2.3.1) overloaded this field by using local codes to indicate administering provider, ordering provider and recording provider. This is a misuse of this field and not supported in this Guide. The ordering and entering providers are indicated in the associated ORC segment.

RXA-11 Administered-at Location (LA2) 00353

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

Component 4: The facility name/identifier.

Subcomponent 1: identifier²⁸

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

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

Component 9-15: Facility address.

²⁸ This value should uniquely identify a specific facility. Systems may choose to publish a table with local values.

Chapter 5: Segments and Message Details

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

RXA-15 Substance Lot Number (ST) 01129

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

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

RXA-16 Substance Expiration Date (TS_M) 01130

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

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

RXA-17 Substance Manufacturer Name (CE) 01131

Definition: This field contains the manufacturer of the medical substance administered.

Note: For vaccines, code system MVX should be used to code this field.

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

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

RXA-20 Completion Status (ID) 01223

This field indicates if the dose was successfully given. It must be populated with RE if RXA-18 is populated.

RXA-21 Action Code – RXA (ID) 01224

This field indicates the action expected by the sending system. It can facilitate update or deletion of immunization records.

If this field is empty, no action is indicated.

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

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

RXR-- Pharmacy/Treatment Route Segment

The Pharmacy/Treatment Route segment contains the alternative combination of route, site, administration device, and administration method that are prescribed as they apply to a particular order.

Table 5-13 Pharmacy/Treatment Route (RXR)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
|-----|------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|------------|
| 1 | Route | CE | R | [1..1] | | | NCIT | |
| 2 | Administration Site | CWE | RE | [0..1] | | | HL70163 | |
| 3 | Administration Device | CE | O | | | | | |
| 4 | Administration Method | CWE | O | | | | | |
| 5 | Routing Instruction | CE | O | | | | | |
| 6 | Administration Site Modifier | CWE | O | | | | | |

RXR field definitions

RXR-1 Route (CE) 00309

Definition: This field is the route of administration.

RXR-2 Administration Site (CWE) 00310

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

6. 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 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.

Interaction Definition:

This sequence diagram illustrates the message flow. 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 accepts the message and processes it. The receiver sends an acknowledgment message in an ACK message. The transactions that are of interest are indicated by bold arrows.

It is important to note that the message may pass through intermediaries, such as a Health Information Exchange (HIE). The message comes from the initiating sender and the acknowledgement **MUST** be returned to the initiating system.

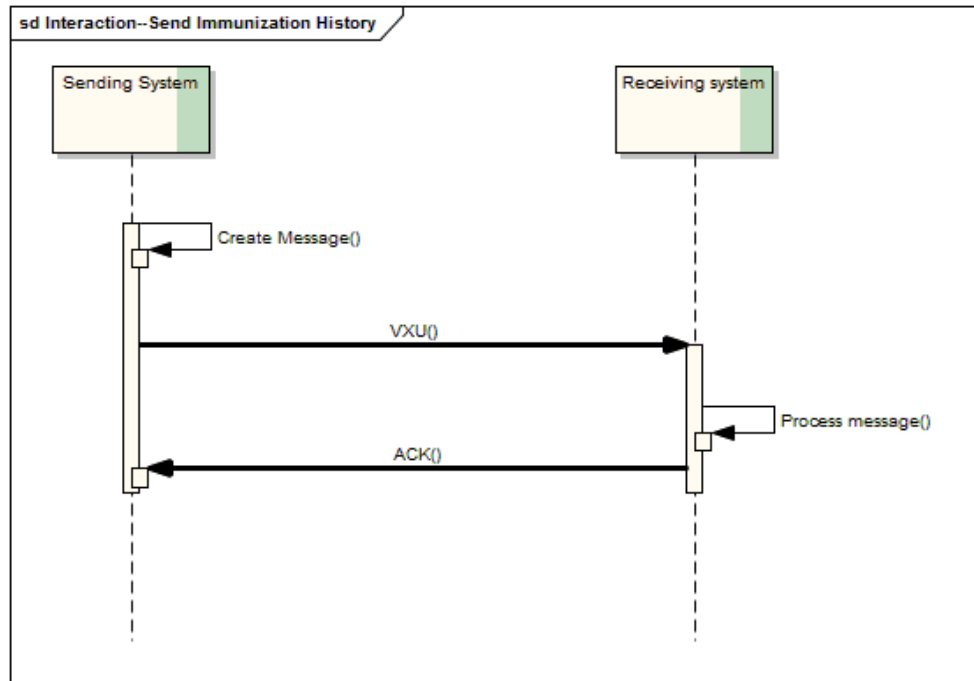


Figure 37 Send Immunization History Sequence Diagram

Dynamic Definition:

The following diagram illustrates the expected flow of events. Some event triggers the sending system to create and send a VXU. The receiving system accepts the VXU. If the message is of an unsupported message type, has an unsupported event code, has an unsupported processing ID or is unable to be processed for reasons unrelated to format or content, then the acknowledgement code is set to “AR”. The receiving system returns an ACK with the acknowledgement code of “AR”. Otherwise, the receiving system continues to process the message. It parses the message and processes according to the specifications of this profile and applies local business rules. If there are no errors, the acknowledgement code is set to “AA”. If there are errors, the acknowledgement code is set to “AE”. If the errors are fatal (See Processing Rules for Receiving Systems above), then the message is rejected, otherwise the data are integrated into the receiving system. The acknowledgement code is returned to the sending system in an ACK message.

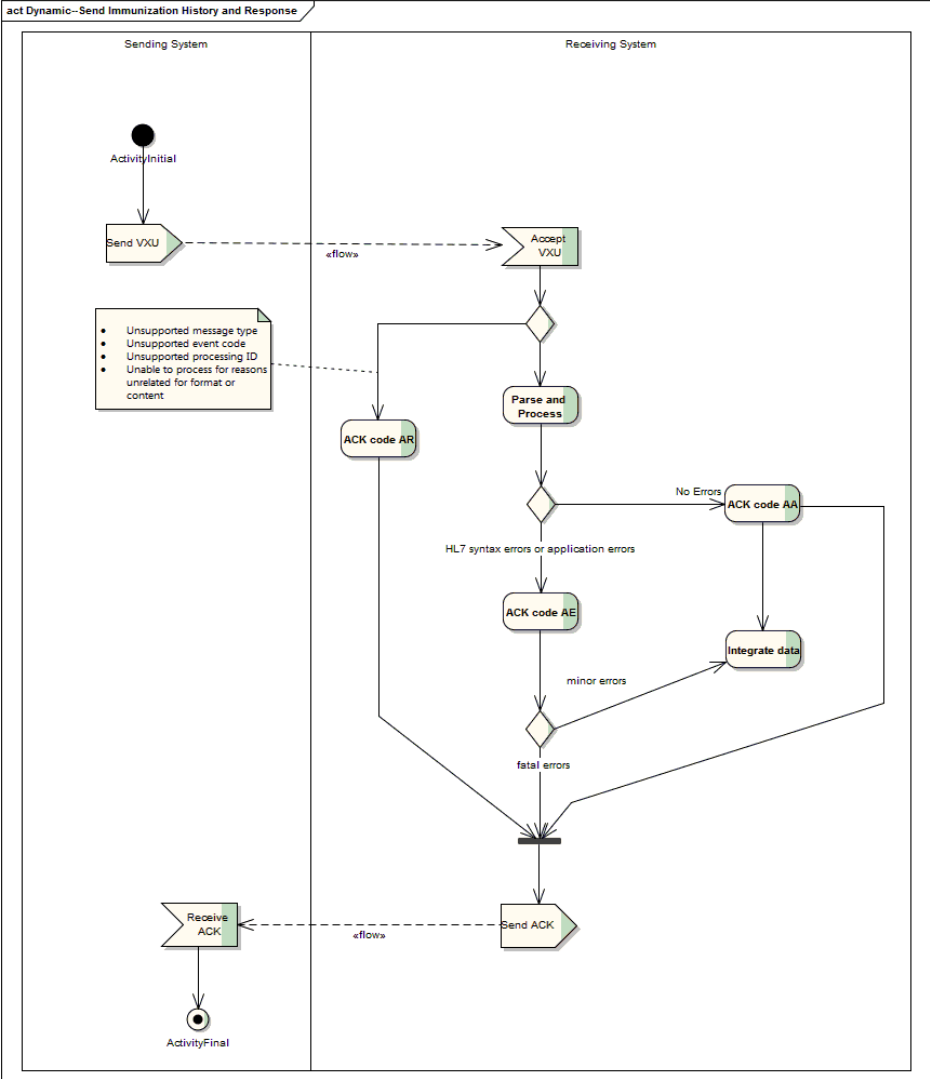


Figure 38 Activity Diagram-Return Acknowledgement

Static Definition- Message Level

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

| Table 6-1 Message Acknowledgement Segment (ACK) | | | |
|--|--------------------|--------------|---|
| Segment | Cardinality | Usage | Comment |
| MSH | (1..1) | R | |
| {{SFT}} | (0..1) | O | Not anticipated for use in immunization messages. |
| MSA | (1..1) | R | |
| {{ERR}} | (0..*) | RE | Include if there are errors. |

Static Definition—Segment Level:

ERR—Error Segment

| Table 6-2 Error Segment (ERR) | | | | | | | | |
|-------------------------------|-----------------------------|-----------|-------|----------------------|------|-----------------------|-----------|---|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
| 1 | Error Code and Location | ELD | X | [0..0] | | | | Not supported for Version 2.5 and above. |
| 2 | Error Location | ERL | RE | [0..1] ²⁹ | 18 | | | |
| 3 | HL7 Error Code | CWE | R | [1..1] | | | HL70357 | |
| 4 | Severity | ID | R | [1..1] | 1..1 | | HL70516 | |
| 5 | Application Error Code | CWE | RE | | | | HL70533 | |
| 6 | Application Error Parameter | ST | O | | | | | |
| 7 | Diagnostic Information | TX | O | | | | | |
| 8 | User Message | TX | RE | | | | | This is a locally specified informative text message about the error. |
| 9 | Inform Person Indicator | IS | O | | | | | |
| 10 | Override Type | CWE | O | | | | | |
| 11 | Override Reason Code | CWE | O | | | | | |
| 12 | Help Desk Contact Point | XTN | O | | | | | |

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.

ERR field definitions:

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

ERR-2 Error Location (ERL) 01812

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

ERR-3 HL7 Error Code (CWE) 01813

Definition: Identifies the HL7 (communications) error code. Refer to HL7 Table 0357 – Message Error Condition Codes for valid values.

ERR-4 Severity (ID) 01814

Definition: Identifies the severity of an application error. Knowing if something is Error, Warning or Information is intrinsic to how an application handles the content. Refer to HL7 Table 0516 - Error severity for valid values. If ERR-3 has a value of "0", ERR-4 will have a value of "I". The Severity code indicates if the system sending the ACK or RSP (with error) is reporting an error that caused significant error loss. For instance the message was rejected or an important segment was rejected (e.g. RXA). This allows the system that initiated the message (VXU or QBP) to alert the user that there were issues with the data sent.

Note that the definitions of these codes has been clarified and corrected.

ERR-5 Application Error Code (CWE) 01815

Definition: Application specific code identifying the specific error that occurred. Refer to *User-Defined Table 0533 – Application Error Code* for appropriate values.

Note, this field is CWE data type. It includes 2 triplets for coded values. One triplet is reserved for Table 0533 values. The other may optionally contain more granular, but equivalent, local codes.

²⁹ This Guide does not support repeat of this field. It assumes that each error will be contained in one ERR segment. If the same error occurs more than once, there will be one ERR for each.

ERR-8 User Message (TX) 01817

Definition: The text message to be displayed to the application user.

Example with error in PID:

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

MSA—Message Acknowledgement Segment

| Table 6-3 Message Acknowledgement Segment (MSA) | | | | | | | | |
|---|-----------------------------|-----------|-------|-------------|--------|-----------------------|-----------|---------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
| 1 | Acknowledgment Code | ID | R | [1..1] | 2..2 | | HL70008 | |
| 2 | Message Control ID | ST | R | [1..1] | 1..199 | | | |
| 3 | Text Message | ST | X | [0..0] | | | | |
| 4 | Expected Sequence Number | NM | O | | | | | |
| 5 | Delayed Acknowledgment Type | | O | | | | | |
| 6 | Error Condition | CE | X | [0..0] | | | | |

MSA field definitions**MSA-1 Acknowledgment Code (ID) 00018**

Definition: This field contains an acknowledgment code, see message processing rules. Refer to HL7 Table 0008 - Acknowledgment code for valid values.

MSA-2 Message Control ID (ST) 00010

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

MSH—Message Header Segment

This implementation guide pre-adopts the Version 2.7.1 MSH segment.

Table 6-4 Message Header Segment (MSH)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
|-----|---------------------------------|-----------|-------|-------------|--------|-----------------------|-----------------------|-----------------------------|
| 1 | Field Separator | ST | R | [1..1] | 1..1 | | | |
| 2 | Encoding Characters | ST | R | [1..1] | 4..4 | | | |
| 3 | Sending Application | HD | RE | [0..1] | | | HL70361 | |
| 4 | Sending Facility | HD | RE | [0..1] | | | HL70362 | |
| 5 | Receiving Application | HD | RE | [0..1] | | | HL70361 | |
| 6 | Receiving Facility | HD | RE | [0..1] | | | HL70362 | |
| 7 | Date/Time Of Message | TS_Z | R | [1..1] | | | | |
| 8 | Security | ST | O | | | | | |
| 9 | Message Type | MSG | R | [1..1] | | | | |
| 10 | Message Control ID | ST | R | [1..1] | 1..199 | | | |
| 11 | Processing ID | PT | R | [1..1] | | | | |
| 12 | Version ID | VID | R | [1..1] | | | | |
| 13 | Sequence Number | NM | O | | | | | |
| 14 | Continuation Pointer | ST | O | [0..1] | | | | |
| 15 | Accept Acknowledgement Type | ID | R | [1..1] | | | HL70155 | Default value is NE (Never) |
| 16 | Application Acknowledgment Type | ID | R | [1..1] | | | HL70155 (constrained) | NE |
| 17 | Country Code | ID | O | | | | | |
| 18 | Character Set | ID | O | | | | | |

| Table 6-4 Message Header Segment (MSH) | | | | | | | | |
|--|---|-----------|-------|-------------|-----|-----------------------|-----------|--------------------------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
| 19 | Principal Language Of Message | CE | O | | | | | |
| 20 | Alternate Character Set Handling Scheme | ID | O | | | | | |
| 21 | Message Profile Identifier | EI | R | [1..*] | | | | |
| 22 | Sending Responsible Organization | XON | RE | [0..1] | | | | The initiator of this message. |
| 23 | Receiving Responsible Organization | XON | RE | [0..1] | | | | The final recipient of this message. |
| 24 | Sending Network Address | HD | O | | | | | |
| 25 | Receiving Network Address | HD | O | | | | | |

MSH Conformance Statements:

IZ-12: The MSH.1 (Field Separator) SHALL be valued “|”

IZ-13: The MSH.2 (Encoding Characters) SHALL be valued “^~\& “

IZ-15: The MSH-12 (Version ID) SHALL be valued “2.5.1 “

IZ-51: MSH-9 (Message Type) SHALL contain the constant value “ACK^VO4^ACK” or “ACK^Q11^ACK”

IZ-52: The value of MSH-16 (Application Acknowledgement) shall be “NE”.

IZ-53: The value of MSH-15(Accept Acknowledgement) shall be “NE”

IZ-54: MSH-21(Profile Identifier ID) SHALL contain the constant value “Z23^CDCPHINVS”

MSH field definitions

See field definitions for MSH under Profile Z22 above.

7.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 records 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 above 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 immunization (i.e. allergies, contraindications, history of vaccine preventable disease)

Table 7-1 Request Complete Immunization History Query Profile

| | |
|---|---|
| Query Statement ID (Query ID=Z34): | Z34 |
| 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 for one client. |
| 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. • 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, 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 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 following sequence diagram shows the message flows involved in this transaction. The sending system creates a query and sends it. The responding system sends a response.

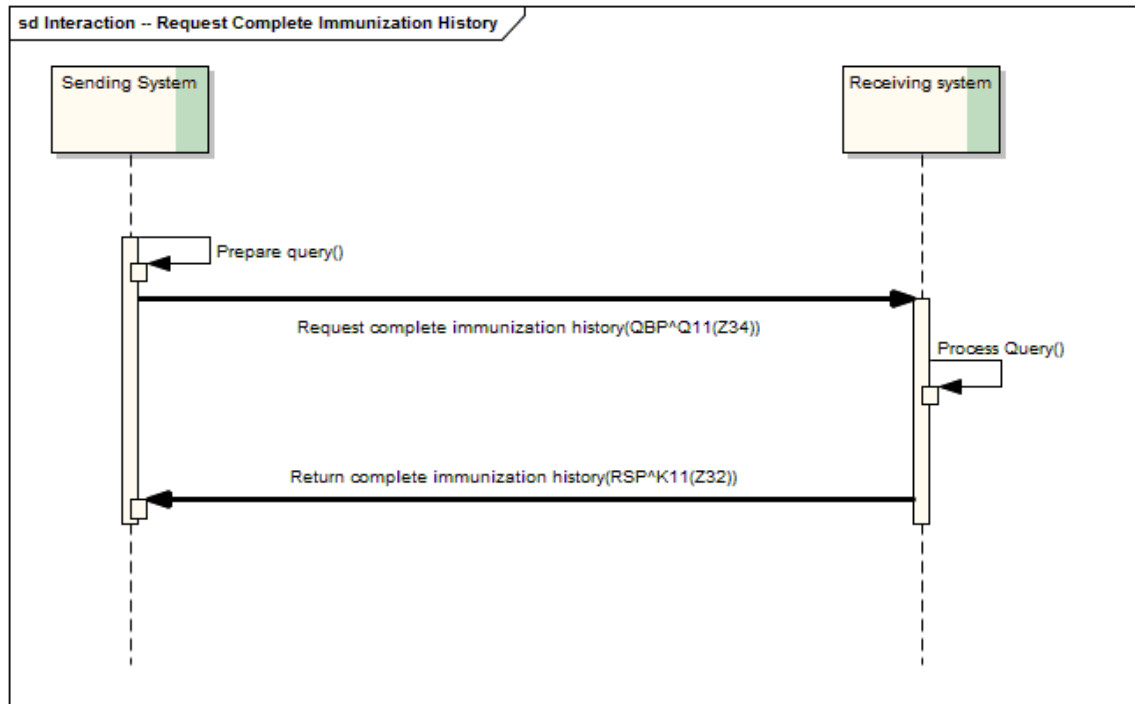


Figure 39 Sequence Diagram-Return Complete Immunization History

Dynamic Definition:

The following activity diagram shows the flow of activities associated with this profile and its partners. This is described in the table below the diagram.

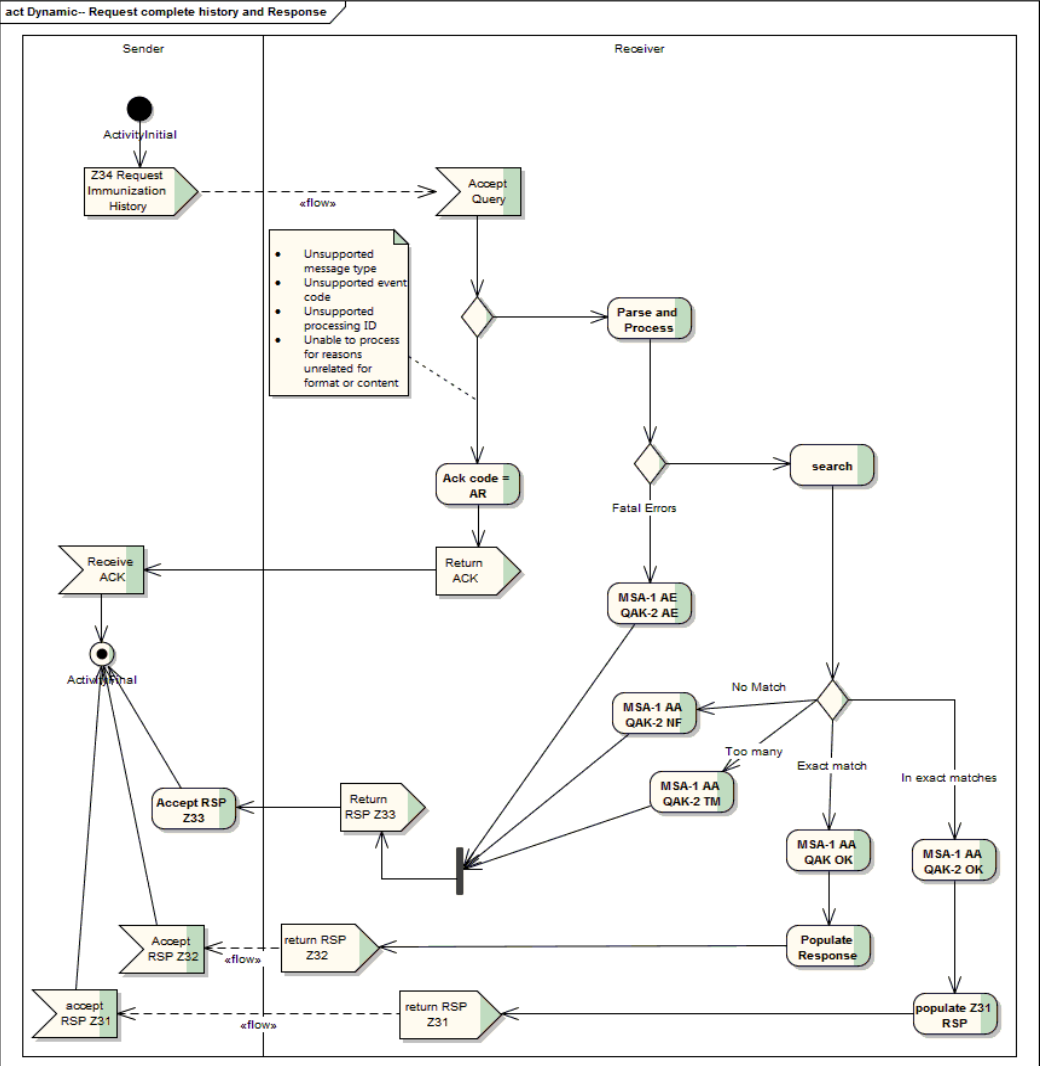


Figure 40 Request Complete History and Responses Activity Diagram

TABLE 7-2 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 <i>Acknowledgement Profile (Z33)</i> . |
| Exactly one high confidence match found ³⁰ | Response includes a complete immunization history as specified below. See Profile <i>Return Immunization History (Z32)</i> . |
| At least one lower confidence match ³¹ is found, but <= maximum number allowed. | If state law allows, the Response returns one PID with associated PD1 and NK1 segments for each potential match. No immunization history is returned. See Profile <i>Return Candidate List (Z31)</i> . |
| More than the maximum number allowed is found. | Response indicates that the message was successfully processed, but that too many potential matches were found. See <i>Return Acknowledgement Profile (Z33)</i> 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 <i>Return Acknowledgement Profile (Z33)</i> . |
| Message was rejected because one of the following occurred: <ul style="list-style-type: none"> • Unsupported message type • Unsupported event code | Return ACK message with errors. |

³⁰ Definition of match is left to local business rules. These rules should be documented in a local implementation guide. For example, a system may only return an immunization history when the match is exact, returning a list of 1 if one person for a lower probability match.

³¹ More than one high confidence match is considered a set of lower confidence matches.

TABLE 7-2 RESPONSE TO DIFFERENT OUTCOMES

| Outcome of Query | Response Message |
|--|-----------------------------|
| <ul style="list-style-type: none"> Unsupported processing ID Unable to process for reasons unrelated for format or content | |
| Message can't be identified as an HL7 message. | No HL7 message is returned. |

Static Definition - Message Level:

TABLE 7-3 Z34 REQUEST COMPLETE IMMUNIZATION HISTORY

| QBP^Q11^QBP_Q11 | Query Grammar: QBP Message | Usage | Comment |
|-----------------|----------------------------|-------|---------------------------|
| MSH | Message Header Segment | R | |
| [[SFT]] | Software Segment | O | Local profile may specify |
| QPD | Query Parameter Definition | R | |
| RCP | Response Control Parameter | R | |
| [DSC] | Continuation Pointer | X | Not supported |

Static Definition – Segment Level:

MSH - Message Header Specification

Table 7-4 MSH Specification for Request Complete Immunization History Query

| SEQ | LEN | Data Type | Cardinality | Value set | ELEMENT NAME | Usage | Constraint |
|-----|-----|-----------|-------------|-----------|---------------------------------|-------|---|
| 1 | 1 | ST | [1..1] | | Field Separator | R | The MSH.1 field shall be |
| 2 | 4 | ST | [1..1] | | Encoding Characters | R | The MSH.2 field shall be ^~\& |
| 3 | | HD | [0..1] | 0361 | Sending Application | RE | No constraint |
| 4 | | HD | [0..1] | 0362 | Sending Facility | RE | No constraint |
| 5 | | HD | [0..1] | 0361 | Receiving Application | RE | No constraint |
| 6 | | HD | [0..1] | 0362 | Receiving Facility | RE | No constraint |
| 7 | 26 | TS_Z | [1..1] | | Date/Time Of Message | R | The degree of precision must be at least to the second, (format YYYYMMDDHHMMSS+/-ZZZZ). |
| 8 | 40 | ST | [0..1] | | Security | O | |
| 9 | 15 | MSG | [1..1] | | Message Type | R | QBP^Q11^QBP_Q11 |
| 10 | 199 | ST | [1..1] | | Message Control ID | R | |
| 11 | 3 | PT | [1..1] | | Processing ID | R | |
| 12 | | VID | [1..1] | | Version ID | R | 2.5.1 |
| 13 | 15 | NM | [0..1] | | Sequence Number | O | |
| 14 | 180 | ST | [0..1] | | Continuation Pointer | O | |
| 15 | 2 | ID | [1..1] | 0155 | Accept Acknowledgment Type | R | ER-Error |
| 16 | 2 | ID | [1..1] | 0155 | Application Acknowledgment Type | R | AL-Always |
| 17 | 3 | ID | [0..1] | 0399 | Country Code | O | blank |
| 18 | 16 | ID | [0..1] | 0211 | Character Set | O | blank |
| 19 | | CE | [0..1] | | Principal Language Of Message | O | blank |

Table 7-4 MSH Specification for Request Complete Immunization History Query

| SEQ | LEN | Data Type | Cardinality | Value set | ELEMENT NAME | Usage | Constraint |
|-----|-----|-----------|-------------|-----------|---|-------|---------------|
| 20 | 20 | ID | [0..1] | 0356 | Alternate Character Set Handling Scheme | O | blank |
| 21 | | EI | [1..*] | | Message Profile Identifier | R | Z34^CDCPHINVS |
| 22 | | XON | [0..1] | | Sending Responsible Organization | RE | |
| 23 | | XON | [0..1] | | Receiving Responsible Organization | RE | |

Conformance Statement:

IZ-12: The MSH.1 (Field Separator) SHALL be valued “|”

IZ-13: The MSH.2 (Encoding Characters) SHALL be valued “^~\& “

IZ-15: The MSH-12 (Version ID) SHALL be valued “2.5.1 “

IZ-55: MSH-9 (Message Type) SHALL contain the constant value “QBP^Q11^QBP_Q11”

IZ-56: One occurrence of MSH-21 (Message Profile Identifier) SHALL contain the constant value “Z34^CDCPHINVS”

IZ-57: MSH-15 (Accept Acknowledgement) SHALL have a value of “ER”.

IZ-58: MSH-16 (Application Acknowledgement) SHALL have a value of “AL”

MSH field definitions

See field definitions for MSH under Profile Z22 above.

QPD Input Parameter Specification

| Table 7-5 QPD Input Parameter Specification | | | | | | | | | |
|---|----------------------------------|-----|-------|-------|-----|-------------|---------|--------------------|--|
| Field Seq (Query ID=Z34) | Name | LEN | TYPE | Usage | Rep | Cardinality | TBL | Segment Field Name | Element Name or Value |
| 1 | MessageQuery Name | | CE | R | | [1..1] | | | |
| 2 | QueryTag | 32 | ST | R | | [1..1] | | | |
| 3 | PatientList | | CX | RE | Y | [0..*] | | PID.3 | PID-3: Patient Identifier List |
| 4 | PatientName | | XPN | RE | | [0..1] | | PID.5 | PID-5: Patient Name |
| 5 | PatientMotherMaidenName | | XPN_M | RE | | [0..1] | | PID.6 | PID-6: Mother's maiden name |
| 6 | Patient Date of Birth | 26 | TS_NZ | RE | | [0..1] | | PID.7 | PID-7: Patient date of birth |
| 7 | Patient Sex | 1 | IS | RE | | [0..1] | HL70001 | PID.8 | PID-8: Patient sex |
| 8 | Patient Address | | XAD | RE | | [0..1] | | PID.11 | PID-11: Patient Address |
| 9 | Patient home phone | | XTN | RE | | [0..1] | | PID.13 | PID-13: Patient home phone |
| 10 | Patient multiple birth indicator | 1 | ID | RE | | [0..1] | HL70136 | PID-24 | PID-24: Patient multiple birth indicator |
| 11 | Patient birth order | 2 | NM | RE | | [0..1] | | PID-25 | PID-25: Patient birth order |
| 12 | Client last updated date | | TS | O | | [0..1] | | PID-33 | PID-33: Patient last update date |
| 13 | Client last update facility | | HD | O | | [0..1] | | PID-34 | PID-34: Patient last update facility |

QPD Conformance Statement:

IZ-67: QPD-1 (Message Query Name) SHALL be valued "Z34^Request Immunization History^CDCPHINVS".

QPD Input Parameter Field Description and Commentary

Table 7-6 QPD Input Parameter Field Description and Commentary

| Input Parameter (Query ID=Z34) | Comp. Name | Data Type | Usage | Description |
|---------------------------------------|---------------------|------------------|--------------|---|
| MessageQueryName | | CE | R | Z34^Request Immunization History^HL70471 |
| QueryTag | | ST | R | Unique to each query message instance. |
| PatientList | | CX | RE | The combination of values for Patientlist.ID, patientlst.identifiercode and Patientlist.AssigningAuthority are intended to allow unique identification of a client, if the data are found in the responding system. |
| | ID | ST | R | If this field, PID.3.1, is not valued, PatientList is not considered when seeking matching clients. |
| | Assigning Authority | HD | R | If this field, PID.3.4, is not valued, PatientList is not considered when seeking matching clients. |
| | IdentifierTypeCode | IS | R | If this field, PID.3.5, is not valued, PatientList is not considered when seeking matching clients. |
| PatientName | | XPN | R | If this field, PID.5, is not valued, then the query will return an error, since this is a required field. |
| | Family Name | FN | R | If this field, PID.5.1, is not valued, then patient name is considered to contain no value. |

Table 7-6 QPD Input Parameter Field Description and Commentary

| Input Parameter (Query ID=Z34) | Comp. Name | Data Type | Usage | Description |
|---------------------------------------|-------------------------|------------------|--------------|---|
| | Given Name | ST | R | If this field, PID.5.2, is not valued, then patient name is considered to contain no value. Given name is required. |
| | Second or further names | ST | RE | If this field, PID.5.3, is not valued, then all values for this field are considered a match. |
| | Suffix | ST | RE | If this field, PID.5.4, is not valued, then all values for this field are considered a match. |
| Mother's Maiden Name | | XPN_M | RE | If this field, PID.6, is not valued, Mother's maiden name is not considered when seeking matching clients. |
| | Family Name | FN | R | If this field, PID.6.1, is not valued, then mother's maiden name is considered to contain no value. |
| | Given Name | ST | RE | If this field, PID.6.2, is not valued, then all values for this field are considered a match. |
| | Name Type Code | ID | RE | If the field, PID-6.7, is not valued, then all values for this field are considered a match. |
| DateOfBirth | | TS_NZ | R | If this field, PID.7, is not valued to an accuracy of at least day, then this field is considered not valued. |

Table 7-6 QPD Input Parameter Field Description and Commentary

| Input Parameter (Query ID=Z34) | Comp. Name | Data Type | Usage | Description |
|---------------------------------------|-------------------|------------------|--------------|--|
| Sex | | IS | RE | If this field, PID.8, is not valued, then all values for this field are considered a match. |
| Address | | XAD | RE | If this field, PID.11, is not valued, then address will not be considered when seeking matching clients. |
| | Street Address | SAD | RE | If this field, PID.11.1, is not valued, then all values for this field are considered a match. |
| | City | ST | RE | If this field, PID.11.3, is not valued, then address is considered to contain no value. |
| | State | ST | RE | If this field, PID.11.4, is not valued, then address is considered to contain no value. |
| | ZIP | ST | RE | If this field, PID.11.5, is not valued, then all values for this field are considered a match. |
| | Address Type | IS | RE | If this field, PID.11.7 is not valued, then it shall default to L, legal address. |
| Phone | | XTN | RE | This field will be considered the Home phone. If this field, PID.13, is not valued, then phone number is not considered when seeking matching clients. |

Table 7-6 QPD Input Parameter Field Description and Commentary

| Input Parameter (Query ID=Z34) | Comp. Name | Data Type | Usage | Description |
|--------------------------------|--------------|-----------|-------|---|
| | Area code | NM | | If this field, PID.13.6, is not valued, then all values for this field shall be considered matches. |
| | Local number | NM | | If this field, PID.13.7, is not valued, then address is considered to contain no value. |
| Multiple Birth Indicator | | ID | RE | If this field, PID.24, is not valued, then Multiple Birth Indicator is not considered when seeking matching clients. |
| Birth Order | | NM | RE | If this field, PID.25, is not valued, then birth order is not considered when seeking matching clients. |
| Client last updated date | | TS | O | If this field, PID.33, is not valued, then client last updated date is not considered when seeking matching clients. |
| Client last update facility | | TS | O | If this field, PID.34, is not valued, then client last updating facility is not considered when seeking matching clients. |

This Guide does not specify the methodology a system uses for searching. It specifies the structure and content of the message used to query. It is incumbent on systems to publically document their expectations within the constraints of this guide.

RCP – Response Control Parameter Segment

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

| Table 7-7 Response Control Parameter | | | | | | | | |
|--------------------------------------|-----------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Comments |
| 1 | Query Priority | ID | RE | [0..1] | | | HL70091 | |
| 2 | Quantity Limited Request | CQ | RE | [0..1] | | | HL70126 | This field may contain a maximum number of records that may be returned. The first component contains the count and the second contains "RD" for records. |
| 3 | Response Modality | CE | O | | | | | |
| 4 | Execution and Delivery Time | TS | O | | | | | |
| 5 | Modify Indicator | ID | O | | | | | |
| 6 | Sort-by Field | SRT | O | | | | | |
| 7 | Segment group inclusion | ID | O | | | | | |

Conformance Statement:

IZ-27: Constrain RCP-1 (Query Priority) to empty or "I". Immediate priority is expected.

RCP field definitions

RCP-1 Query Priority (ID) 00027

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

RCP-2 Quantity Limited Request (CQ) 00031

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

The value sent in RCP-2.1 represents the maximum number of client (patient) records that should be returned in the response message. There is no maximum number of immunization records for the client in the response message.

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

8.Profile Z32 Response Profile – 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. It is a response to the Z34-Request Immunization History query.

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

See Interaction Definition In previous chapter.

Dynamic Definition

See Activity Diagram in previous chapter.

Static Definition – Message Level

| Table 8-1 Return Complete Immunization History Response Grammar RSP^K11 | | | |
|---|-------------|-------|--|
| Segment | Cardinality | Usage | Comment |
| MSH | [1..1] | R | |
| {{SFT}} | [0..*] | O | Local profile may specify |
| MSA | [1..1] | R | |
| [ERR] | [0..1] | RE | If errors exist, then this segment is populated. |
| QAK | [1..1] | R | |
| QPD | [1..1] | R | Query Parameter Definition Segment ³² |
| PID | [1..1] | R | |
| [PD1] | [0..1] | RE | |
| {{NK1 }} | [0..*] | RE | |
| [PV1] | [0..1] | O | |
| [IN1] | [0..1] | O | |
| {{ | [0..*] | RE | Begin Order |
| ORC | [1..1] | R | Required if client has immunization records (RXA). There is one ORC for each RXA |
| RXA | [1..1] | R | |

³² Matches the information in the requesting QBP message.

Table 8-1 Return Complete Immunization History Response Grammar RSP^K11

| Segment | Cardinality | Usage | Comment |
|---------|-------------|-------|-------------------|
| [RXR] | [0..1] | RE | |
| { | [0..*] | RE | Begin Observation |
| OBX | [1..1] | R | |
| [NTE] | [0..1] | O | |
| } | | | End observation |
| }] | | | End Order |

Static Definition -- Segment Level

ERR—Error Segment

| Table 8-2 Error Segment (ERR) | | | | | | | | |
|-------------------------------|-----------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
| 1 | Error Code and Location | ELD | X | [0..0] | | | | Not supported for Version 2.5 and above. |
| 2 | Error Location | ERL | RE | [0..1] | 18 | | | |
| 3 | HL7 Error Code | CWE | R | [1..1] | | | HL70357 | |
| 4 | Severity | ID | R | [1..1] | 1 | | HL70516 | |
| 5 | Application Error Code | CWE | RE | | | | HL70533 | |
| 6 | Application Error Parameter | ST | O | | | | | |
| 7 | Diagnostic Information | TX | O | | | | | |
| 8 | User Message | TX | RE | | | | | This is a locally specified informative text message about the error. |
| 9 | Inform Person Indicator | IS | O | | | | | |
| 10 | Override Type | CWE | O | | | | | |
| 11 | Override Reason Code | CWE | O | | | | | |
| 12 | Help Desk Contact Point | XTN | O | | | | | |

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.

ERR field definitions:

See field definitions for ERR under Profile Z23 above.

IN1—Insurance Segment

Local implementations may document use for local purposes in local implementation Guide. Field level specifications follow. They have been constrained, based on current usage. Local implementations that require IN1 should base requirements on this guide. Specifications for IN1 are included because several IIS require this segment and this specification is intended to assure that implementations are consistent across systems.

Note that only the current insurance data should be sent. Historical insurance information should not be sent.

Table 8-3 Insurance Segment (IN1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
|-----|-----------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| 1 | Set ID - IN1 | SI | R | [1..1] | 4 | | | |
| 2 | Insurance Plan ID | CE | R | [1..1] | 250 | | HL70072 | |
| 3 | Insurance Company ID | CX | R | [1..1] | 250 | | | |
| 4 | Insurance Company Name | XON | O | | 250 | | | |
| 5 | Insurance Company Address | XAD | O | | 250 | | | |
| 6 | Insurance Co Contact Person | XPN | O | | 250 | | | |
| 7 | Insurance Co Phone Number | XTN | O | | 250 | | | |
| 8 | Group Number | ST | O | | 12 | | | |
| 9 | Group Name | XON | O | | 250 | | | |
| 10 | Insured's Group Emp ID | CX | O | | 250 | | | |
| 11 | Insured's Group Emp Name | XON | O | | 250 | | | |
| 12 | Plan Effective Date | DT | O | | 8 | | | |
| 13 | Plan Expiration Date | DT | O | | 8 | | | |
| 14 | Authorization Information | AUI | O | | 239 | | | |
| 15 | Plan Type | IS | R | [1..1] | 3 | | HL70086 | |

Table 8-3 Insurance Segment (IN1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
|-----|-----------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| 16 | Name Of Insured | XPN | O | | 250 | | | |
| 17 | Insured's Relationship To Patient | CE | O | | 250 | | HL70063 | |
| 18 | Insured's Date Of Birth | TS | O | | 26 | | | |
| 19 | Insured's Address | XAD | O | | 250 | | | |
| 20 | Assignment Of Benefits | IS | O | | 2 | | HL70135 | |
| 21 | Coordination Of Benefits | IS | O | | 2 | | HL70173 | |
| 22 | Coord Of Ben. Priority | ST | O | | 2 | | | |
| 23 | Notice Of Admission Flag | ID | O | | 1 | | HL70136 | |
| 24 | Notice Of Admission Date | DT | O | | 8 | | | |
| 25 | Report Of Eligibility Flag | ID | O | | 1 | | HL70136 | |
| 26 | Report Of Eligibility Date | DT | O | | 8 | | | |
| 27 | Release Information Code | IS | O | | 2 | | HL70093 | |
| 28 | Pre-Admit Cert (PAC) | ST | O | | 15 | | | |
| 29 | Verification Date/Time | TS_NZ | RE | [0..1] | 26 | | | |

Table 8-3 Insurance Segment (IN1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
|-----|------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| 30 | Verification By | XCN | O | | 250 | | | |
| 31 | Type Of Agreement Code | IS | O | | 2 | | HL70098 | |
| 32 | Billing Status | IS | O | | 2 | | HL70022 | |
| 33 | Lifetime Reserve Days | NM | O | | 4 | | | |
| 34 | Delay Before L.R. Day | NM | O | | 4 | | | |
| 35 | Company Plan Code | IS | O | | 8 | | HL70042 | |
| 36 | Policy Number | ST | O | | 15 | | | |
| 37 | Policy Deductible | CP | O | | 12 | | | |
| 38 | Policy Limit - Amount | CP | X | [0..0] | 12 | | | |
| 39 | Policy Limit - Days | NM | O | | 4 | | | |
| 40 | Room Rate - Semi-Private | CP | X | [0..0] | 12 | | | |
| 41 | Room Rate - Private | CP | X | [0..0] | 12 | | | |
| 42 | Insured's Employment Status | CE | O | | 250 | | HL70066 | |
| 43 | Insured's Administrative Sex | IS | O | | 1 | | HL70001 | |

| Table 8-3 Insurance Segment (IN1) | | | | | | | | |
|-----------------------------------|------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
| 44 | Insured's Employer's Address | XAD | 0 | | 250 | | | |
| 45 | Verification Status | ST | 0 | | 2 | | | |
| 46 | Prior Insurance Plan ID | IS | 0 | | 8 | | HL70072 | |
| 47 | Coverage Type | IS | 0 | | 3 | | HL70309 | |
| 48 | Handicap | IS | 0 | | 2 | | HL70295 | |
| 49 | Insured's ID Number | CX | 0 | | 250 | | | |
| 50 | Signature Code | IS | 0 | | 1 | | HL70535 | |
| 51 | Signature Code Date | DT | 0 | | 8 | | | |
| 52 | Insured's Birth Place | ST | 0 | | 250 | | | |
| 53 | VIP Indicator | IS | 0 | | 2 | | HL70099 | |

IN1 Conformance Statements:

IZ-69: IN1-1 (Set ID-IN1) SHALL be valued "1".

IN1 Field Definitions

See Field Definitions in Z22 Profile.

MSA—Message Acknowledgement Segment

| Table 8-4 Message Acknowledgement Segment (MSA) | | | | | | | | |
|--|-----------------------------|------------------|--------------|--------------------|------------|------------------------------|------------------|----------------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
| 1 | Acknowledgment Code | ID | R | [1..1] | 2..2 | | HL70008 | |
| 2 | Message Control ID | ST | R | [1..1] | 1..199 | | | |
| 3 | Text Message | ST | X | [0..0] | | | | |
| 4 | Expected Sequence Number | NM | O | | | | | |
| 5 | Delayed Acknowledgment Type | | X | [0..0] | | | | |
| 6 | Error Condition | CE | X | [0..0] | | | | |

MSA field definitions

See field definitions for MSA under Profile Z23 above.

MSH - Message Header Specification

Table 8-5 MSH Specification for Return Complete Immunization History Response

| SEQ | LEN | Data Type | Cardinality | Value set | ELEMENT NAME | Usage | Constraint |
|-----|-----|-----------|-------------|-----------|---------------------------------|-------|---|
| 1 | 1 | ST | [1..1] | | Field Separator | R | The MSH.1 field shall be |
| 2 | 4 | ST | [1..1] | | Encoding Characters | R | The MSH.2 field shall be ^~\& |
| 3 | | HD | [0..1] | 0361 | Sending Application | RE | No constraint |
| 4 | | HD | [0..1] | 0362 | Sending Facility | RE | No constraint |
| 5 | | HD | [0..1] | 0361 | Receiving Application | RE | No constraint |
| 6 | | HD | [0..1] | 0362 | Receiving Facility | RE | No constraint |
| 7 | 26 | TS_Z | [1..1] | | Date/Time Of Message | R | The degree of precision must be at least to the second, (format YYYYMMDDHHMMSS+/-ZZZZ). |
| 8 | 40 | ST | [0..1] | | Security | O | |
| 9 | 15 | MSG | [1..1] | | Message Type | R | RSP^K11^RSP_K11 |
| 10 | 199 | ST | [1..1] | | Message Control ID | R | |
| 11 | 3 | PT | [1..1] | | Processing ID | R | |
| 12 | | VID | [1..1] | | Version ID | R | 2.5.1 |
| 13 | 15 | NM | [0..1] | | Sequence Number | O | |
| 14 | 180 | ST | [0..1] | | Continuation Pointer | O | |
| 15 | 2 | ID | [1..1] | 0155 | Accept Acknowledgment Type | R | NE |
| 16 | 2 | ID | [1..1] | 0155 | Application Acknowledgment Type | R | NE |
| 17 | 3 | ID | [0..1] | 0399 | Country Code | O | blank |
| 18 | 16 | ID | [0..1] | 0211 | Character Set | O | blank |
| 19 | | CE | [0..1] | | Principal Language Of Message | O | blank |

| Table 8-5 MSH Specification for Return Complete Immunization History Response | | | | | | | |
|---|-----|-----------|-------------|-----------|---|-------|---------------|
| SEQ | LEN | Data Type | Cardinality | Value set | ELEMENT NAME | Usage | Constraint |
| 20 | 20 | ID | [0..1] | 0356 | Alternate Character Set Handling Scheme | O | blank |
| 21 | | EI | [1..*] | | Message Profile Identifier | R | Z32^CDCPHINVS |
| 22 | | XON | [0..1] | | Sending Responsible Organization | RE | |
| 23 | | XON | | | Receiving Responsible Organization | RE | |

Conformance Statement:

IZ-12: The MSH.1 (Field Separator) SHALL be valued “|”

IZ-13: The MSH.2 (Encoding Characters) SHALL be valued “^~\& “

IZ-15: The MSH-12 (Version ID) SHALL be valued “2.5.1 “

IZ-59: MSH-9 (Message Type) SHALL contain the constant value “RSP^K11^RSP_K11”

IZ-52: The value of MSH-16 (Application Acknowledgement) SHALL be “NE”.

IZ-53: The value of MSH-15 (Accept Acknowledgement) SHALL be “NE”

IZ-60: One occurrence of MSH-21 (Message Profile Identifier) SHALL contain the constant value “Z32^CDCPHINVS”

MSH Field Definitions

See field definitions for MSH under Profile Z22 above.

NK1—Next of Kin Segment

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

Table 8-6 Next of Kin Segment (NK1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
|-----|--|-----------|-------|-------------|-----|-----------------------|-----------|---|
| 1 | Set ID - NK1 | SI | R | [1..1] | | | | |
| 2 | Name | XPN | R | [1..*] | | | | The first instance is the legal name and is required. |
| 3 | Relationship | CE | R | [1..1] | | | HL70063 | |
| 4 | Address | XAD | RE | [0..*] | | | | The first instance shall be the primary address. |
| 5 | Phone Number | XTN | RE | [0..*] | | | | The first instance shall be the primary phone number. |
| 6 | Business Phone Number | XTN | O | | | | | |
| 7 | Contact Role | CE | O | | | | | |
| 8 | Start Date | DT | O | | | | | |
| 9 | End Date | DT | O | | | | | |
| 10 | Next of Kin / Associated Parties Job Title | ST | O | | | | | |
| 11 | Next of Kin / Associated Parties Job Code/Class | JCC | O | | | | | |
| 12 | Next of Kin / Associated Parties Employee Number | CX | O | | | | | |
| 13 | Organization Name - NK1 | XON | O | | | | | |

| Table 8-6 Next of Kin Segment (NK1) | | | | | | | | |
|-------------------------------------|----------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
| 14 | Marital Status | CE | 0 | | | | | |
| 15 | Administrative Sex | IS | 0 | | | | | |
| 16 | Date/Time of Birth | TS | 0 | | | | | |
| 17 | Living Dependency | IS | 0 | | | | | |
| 18 | Ambulatory Status | IS | 0 | | | | | |
| 19 | Citizenship | CE | 0 | | | | | |
| 20 | Primary Language | CE | 0 | | | | | |
| 21 | Living Arrangement | IS | 0 | | | | | |
| 22 | Publicity Code | CE | 0 | | | | | |
| 23 | Protection Indicator | ID | 0 | | | | | |
| 24 | Student Indicator | IS | 0 | | | | | |
| 25 | Religion | CE | 0 | | | | | |
| 26 | Mother's Maiden Name | XPN | 0 | | | | | |
| 27 | Nationality | CE | 0 | | | | | |
| 28 | Ethnic Group | CE | 0 | | | | | |
| 29 | Contact Reason | CE | 0 | | | | | |

Table 8-6 Next of Kin Segment (NK1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
|-----|--|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| 30 | Contact Person's Name | XPN | 0 | | | | | |
| 31 | Contact Person's Telephone Number | XTN | 0 | | | | | |
| 32 | Contact Person's Address | XAD | 0 | | | | | |
| 33 | Next of Kin/Associated Party's Identifiers | CX | 0 | | | | | |
| 34 | Job Status | IS | 0 | | | | | |
| 35 | Race | CE | 0 | | | | | |
| 36 | Handicap | IS | 0 | | | | | |
| 37 | Contact Person Social Security Number | ST | 0 | | | | | |
| 38 | Next of Kin Birth Place | ST | 0 | | | | | |
| 39 | VIP Indicator | IS | 0 | | | | | |

NK1 Conformance Statements:

IZ-70: NK1-1 (Set ID-NK1) SHALL be valued sequentially starting with the value "1".

NK1 field definitions

See field definitions for NK1 under Profile Z22 above.

NTE—Note Segment

The NTE segment is used for sending notes and comments.

| Table 8-7 Note Segment (NTE) | | | | | | | | |
|------------------------------|-------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 1 | Set ID - NTE | SI | O | | | | | |
| 2 | Source of Comment | ID | O | | | | | |
| 3 | Comment | FT | R | [1..1] | | | | |
| 4 | Comment Type | CE | O | | | | | |

NTE field definitions

See field definitions for NTE under Profile Z22 above.

OBX—Observation Result Segment

The observation result segment has many uses. It carries observations about the object of its parent segment. In the VXU/RSP it is associated with the RXA or immunization record. The basic format is a question (OBX-3) and an answer (OBX-5).

Consult Appendix B for detailed examples of each of the uses.

| Table 8-8 Observation Segment (OBX) | | | | | | | | |
|-------------------------------------|------------------------|-----------|--------|-------------|-------|---|--------------------------------|--|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Sets | Comment |
| 1 | Set ID – OBX | SI | R | [1..1] | 1..4 | | | |
| 2 | Value Type | ID | R | [1..1] | 2..3 | | HL70125 (constrained) | |
| 3 | Observation Identifier | CE | R | [1..1] | | | NIP003 | This indicates what this observation refers to. It poses the question that is answered by OBX-5. |
| 4 | Observation Sub-ID | ST | R | [1..1] | 1..20 | | Constrain to positive integers | |
| 5 | Observation Value | varies | R | [1..1] | | | varies | OBX-5 is the observation value and answers the question posed in OBX-3 |
| 6 | Units | CE | C(R/O) | [0..1] | | If OBX-2(Value Type) is valued "NM" Note: If there is not a unit of measure available while the Condition Predicated is true, then the value "NA" SHALL be used in CE.1 and "HL70353" in CE.3. | UCUM | |
| 7 | References Range | ST | O | | | | | |
| 8 | Abnormal Flags | IS | O | | | | | |
| 9 | Probability | NM | O | | | | | |

Table 8-8 Observation Segment (OBX)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Sets | Comment |
|-----|--|-----------|---------|-------------|-----|-------------------------|---|--|
| 10 | Nature of Abnormal Test | ID | O | | | | | |
| 11 | Observation Result Status | ID | R | [1..1] | 1 | | HL70085 (constrained) | |
| 12 | Effective Date of Reference Range Values | TS | O | | | | | |
| 13 | User Defined Access Checks | ST | O | | | | | |
| 14 | Date/Time of the Observation | TS_NZ | RE | [0..1] | | | | |
| 15 | Producer's Reference | CE | O | | | | | |
| 16 | Responsible Observer | XCN | O | | | | | |
| 17 | Observation Method | CE | C(RE/O) | [0..1] | | If OBX-3.1 is "64994-7" | PNHV_FundingEligibilityObservationMethods | 64994 "-7" is a LOINC meaning "funding program eligibility". This field is used to distinguish between eligibility that is captured at the visit level versus at the immunization event level. |
| 18 | Equipment Instance Identifier | EI | O | | | | | |
| 19 | Date/Time of the Analysis | TS | O | | | | | |

| Table 8-8 Observation Segment (OBX) | | | | | | | | |
|-------------------------------------|--|-----------|-------|-------------|-----|-----------------------|------------|---------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Sets | Comment |
| 20 | Reserved for harmonization with V2.6 | | X | [0..0] | | | | |
| 21 | Reserved for harmonization with V2.6 | | X | [0..0] | | | | |
| 22 | Reserved for harmonization with V2.6 | | X | [0..0] | | | | |
| 23 | Performing Organization Name | XON | O | | | | | |
| 24 | Performing Organization Address | XAD | O | | | | | |
| 25 | Performing Organization Medical Director | XCN | O | | | | | |

Conformance Statement:

IZ-20: The Value of OBX-1 (Set ID-OBX) SHALL be valued sequentially starting with the value “1” within a message.

IZ-22: The value of OBX-11 (Observation Result Status) SHALL be “F”

IZ-35: If OBX-3.1 is “64994-7” and OBX-2 is “CE” then the value set for OBX-5 shall be HL70064.

IZ-36: If OBX-3.1 is “69764-9” and OBX-2 is “CE” then the value set for OBX-5 shall be PHVS_VISBarcodes_IIS.

IZ-37: If OBX-3.1 is “30956-7” and OBX-2 is “CE” then the value set for OBX-5 shall be CVX.

IZ-44: The value of OBX-4 SHALL be a positive integer.

OBX field definitions

See field definitions for OBX under Profile Z22 above.

ORC—Order Request Segment

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

Table 8-10 Common Order Segment (ORC)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
|-----|--------------------------|-----------|---------|-------------|-----|---|--------------------------|--|
| 1 | Order Control | ID | R | [1..1] | 2 | | HL70119 (constrained) | |
| 2 | Placer Order Number | EI | RE | [0..1] | | | | See Guidance below. |
| 3 | Filler Order Number | EI | R | [1..1] | | | | See Guidance below. |
| 4 | Placer Group Number | EI | O | | | | | |
| 5 | Order Status | ID | O | | | | | |
| 6 | Response Flag | ID | O | | | | | |
| 7 | Quantity/Timing | TQ | X | [0..0] | | | | |
| 8 | Parent | EIP | O | | | | | |
| 9 | Date/Time of Transaction | TS | O | | | | | |
| 10 | Entered By | XCN | RE | [0..1] | | | | This is the person that entered this immunization record into the system. |
| 11 | Verified By | XCN | O | | | | | |
| 12 | Ordering Provider | XCN | C(RE/O) | [0..1] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | | This shall be the provider ordering the immunization. It is expected to be empty if the immunization record is transcribed from a historical record. |
| 13 | Enterer's Location | PL | O | | | | | |

Table 8-10 Common Order Segment (ORC)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
|-----|----------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---|
| 14 | Call Back Phone Number | XTN | O | | | | | |
| 15 | Order Effective Date/Time | TS | O | | | | | |
| 16 | Order Control Code Reason | CE | O | | | | | |
| 17 | Entering Organization | CE | RE | | | | HL70362 | This is the provider organization that entered this record/order. |
| 18 | Entering Device | CE | O | | | | | |
| 19 | Action By | XCN | O | | | | | |
| 20 | Advanced Beneficiary Notice Code | CE | O | | | | | |
| 21 | Ordering Facility Name | XON | O | | | | | |
| 22 | Ordering Facility Address | XAD | O | | | | | |
| 23 | Ordering Facility Phone Number | XTN | O | | | | | |
| 24 | Ordering Provider Address | XAD | O | | | | | |
| 25 | Order Status Modifier | CWE | O | | | | | |

Table 8-10 Common Order Segment (ORC)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
|-----|---|-----------|-------|-------------|-----|-----------------------|-----------|---------|
| 26 | Advanced Beneficiary Notice Override Reason | CWE | 0 | | | | | |
| 27 | Filler's Expected Availability Date/Time | TS | 0 | | | | | |
| 28 | Confidentiality Code | CWE | 0 | | | | | |
| 29 | Order Type | CWE | 0 | | | | | |
| 30 | Enterer Authorization Mode | CNE | 0 | | | | | |
| 31 | Parent Universal Service Identifier | CWE | 0 | | | | | |

Conformance Statement:

IZ-25: ORC.1 (Order Control) SHALL contain the value "RE "

IZ-45: If RXA-20 is valued "NA" or "RE" then ORC-3.1 SHALL be valued "9999".

ORC field definitions

See field definitions for ORC under Profile Z22 above.

PD1—Patient Demographic Segment

The Patient Demographic Segment contains patient demographic information that may change from time to time. There are three primary uses PD1 for in Immunization Messages. These include indicating whether the person wants his/her data protected, whether the person wants to receive recall/reminder notices and the person's current status in the registry.

Table 8-11 Patient Demographic Segment (PD1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
|-----|---|-----------|---------|-------------|-----|--|-----------|---------|
| 1 | Living Dependency | IS | O | | | | | |
| 2 | Living Arrangement | IS | O | | | | | |
| 3 | Patient Primary Facility | XON | O | | | | | |
| 4 | Patient Primary Care Provider Name & ID No. | XCN | X | [0..0] | | | | |
| 5 | Student Indicator | IS | O | | | | | |
| 6 | Handicap | IS | O | | | | | |
| 7 | Living Will Code | IS | O | | | | | |
| 8 | Organ Donor Code | IS | O | | | | | |
| 9 | Separate Bill | ID | O | | | | | |
| 10 | Duplicate Patient | CX | O | | | | | |
| 11 | Publicity Code | CE | RE | [0..1] | | | HL70215 | |
| 12 | Protection Indicator | ID | RE | [0..1] | | | HL70136 | |
| 13 | Protection Indicator Effective Date | DT_D | C(RE/X) | [0..1] | | If PD1-12 (Protection Indicator) is valued | | |
| 14 | Place of Worship | XON | O | | | | | |

Table 8-11 Patient Demographic Segment (PD1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
|-----|---|-----------|---------|-------------|-----|--|-----------|---------|
| 15 | Advance Directive Code | CE | O | | | | | |
| 16 | Immunization Registry Status | IS | RE | [0..1] | | | HL70441 | |
| 17 | Immunization Registry Status Effective Date | DT_D | C(RE/X) | [0..1] | | If the PD1-16 (Registry Status) field is valued. | | |
| 18 | Publicity Code Effective Date | DT_D | C(RE/X) | [0..1] | | If the PD1-11 (Publicity Code) field is valued. | | |
| 19 | Military Branch | IS | O | | | | | |
| 20 | Military Rank/Grade | IS | O | | | | | |
| 21 | Military Status | IS | O | | | | | |

PD1 field definitions

See field definitions for PD1 under Profile Z22 above.

PID—Patient Identifier Segment

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

Table 8-12 Patient Identifier Segment (PID)

| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
|-----|------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|--|
| 1 | Set ID - PID | SI | R | [1..1] | | | | |
| 2 | Patient ID | CX | X | [0..0] | | | | |
| 3 | Patient Identifier List | CX | R | [1..*] | | | | |
| 4 | Alternate Patient ID - 00106 | CX | X | [0..0] | | | | |
| 5 | Patient Name | XPN | R | [1..*] | | | | The first repetition shall contain the legal name. Multiple given names or initials are separated by spaces. |
| 6 | Mother's Maiden Name | XPN_M | RE | [0..1] | | | | Only last name and name type are required. Set Name Type code to "M" for maiden name usage. |
| 7 | Date/Time of Birth | TS_NZ | R | [1..1] | | | | |
| 8 | Administrative Sex | IS | R | [1..1] | | | HL70001 | If a sex is not definitively known, use the value U-Unknown from HL70001. |
| 9 | Patient Alias | XPN | X | [0..0] | | | | |
| 10 | Race | CE | RE | [0..*] | | | CDCREC | |
| 11 | Patient Address | XAD | RE | [0..*] | | | | The first repetition should be the primary address. |
| 12 | County Code | IS | X | [0..0] | | | | County belongs in address field. |

Table 8-12 Patient Identifier Segment (PID)

| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
|-----|-----------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|--|
| 13 | Phone Number - Home | XTN | RE | [0..*] | | | | The first instance shall be the primary phone number. Only one item is allowed per repetition. |
| 14 | Phone Number - Business | XTN | O | | | | | |
| 15 | Primary Language | CE | O | | | | | |
| 16 | Marital Status | CE | O | | | | | |
| 17 | Religion | CE | O | | | | | |
| 18 | Patient Account Number | CX | O | | | | | |
| 19 | SSN Number - Patient | ST | X | [0..0] | | | | |
| 20 | Driver's License Number - Patient | DLN | X | [0..0] | | | | |
| 21 | Mother's Identifier | CX | X | [0..0] | | | | |

Table 8-12 Patient Identifier Segment (PID)

| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
|-----|-----------------------------|-----------|---------|-------------|------|---|-----------|---|
| 22 | Ethnic Group | CE | RE | [0..1] | | | CDCREC | |
| 23 | Birth Place | ST | O | | | | | |
| 24 | Multiple Birth Indicator | ID | RE | [0..1] | | | HL70136 | The acceptable values are Y and N. If the status is undetermined, then field shall be empty. |
| 25 | Birth Order | NM | C(RE/O) | [0..1] | 1..2 | If PID-24 (Multiple Birth Indicator) is valued "Y " | | This field contains a number indicating the person's birth order, with 1 for the first child born and 2 for the second. |
| 26 | Citizenship | CE | O | | | | | |
| 27 | Veterans Military Status | CE | O | | | | | |
| 28 | Nationality | CE | O | | | | | |
| 29 | Patient Death Date and Time | TS | C(RE/X) | [0..1] | | If PID-30 (patient death indicator) is valued "Y" | | |
| 30 | Patient Death Indicator | ID | RE | [0..1] | | | HL70136 | |
| 31 | Identity Unknown Indicator | ID | O | | | | | |

Table 8-12 Patient Identifier Segment (PID)

| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
|-----|---------------------------|-----------|-------|-------------|-----|-----------------------|-----------|------------|
| 32 | Identity Reliability Code | IS | 0 | | | | | |
| 33 | Last Update Date/Time | TS | 0 | | | | | |
| 34 | Last Update Facility | HD | 0 | | | | | |
| 35 | Species Code | CE | 0 | | | | | |
| 36 | Breed Code | CE | 0 | | | | | |
| 37 | Strain | ST | 0 | | | | | |
| 38 | Production Class Code | CE | 0 | | | | | |
| 39 | Tribal Citizenship | CWE | 0 | | | | | |

Conformance Statement:

IZ-46: PID-1 (Set ID) SHALL have the literal value “1”

PID field definitions

See field definitions for PID under Profile Z22 above.

PV1—Patient Visit Segment

The PV1 segment is used to convey visit specific information. The primary use in immunization messages in previous releases was to carry information about the client’s eligibility status. This is now recorded at the immunization event (dose administered) level. Use of this segment for the purpose of reporting client eligibility for a funding program at the visit level is not supported in the Implementation Guide.

QAK—Query Acknowledgement Segment

Table 8-13 Query Acknowledgement Segment

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Comment |
|-----|-----------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------|
| 1 | Query Tag | ST | R | [1..1] | 32 | | | |
| 2 | Query Response Status | ID | R | [1..1] | | | HL70208 | |
| 3 | Message Query Name | CE | R | [1..1] | | | | |
| 4 | Hit Count | NM | O | [0..1] | | | | |
| 5 | This payload | NM | O | [0..1] | | | | |
| 6 | Hits remaining | NM | O | [0..1] | | | | |

QAK field definitions

QAK-1 Query Tag (ST) 00696

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

QAK-2 Query Response Status (ID) 00708

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

QAK-3 Message Query Name (CE) 01375

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

QPD Input Parameter Specification

| Table 8-14 QPD Input Parameter Specification | | | | | | | | | |
|--|----------------------------------|-----|-------|-------|-----|-------------|---------|--------------------|--|
| Field Seq (Query ID=Z34) | Name | LEN | TYPE | Usage | Rep | Cardinality | TBL | Segment Field Name | Element Name or Value |
| 1 | MessageQueryName | | CE | R | | [1..1] | | | |
| 2 | QueryTag | 32 | ST | R | | [1..1] | | | |
| 3 | PatientList | | CX | RE | Y | [0..*] | | PID.3 | PID-3: Patient Identifier List |
| 4 | PatientName | | XPN | RE | | [0..1] | | PID.5 | PID-5: Patient Name |
| 5 | PatientMotherMaiden Name | | XPN_M | RE | | [0..1] | | PID.6 | PID-6: Mother's maiden name |
| 6 | Patient Date of Birth | 26 | TS_NZ | RE | | [0..1] | | PID.7 | PID-7: Patient date of birth |
| 7 | Patient Sex | 1 | IS | RE | | [0..1] | HL70001 | PID.8 | PID-8: Patient sex |
| 8 | Patient Address | | XAD | RE | | [0..1] | | PID.11 | PID-11: Patient Address |
| 9 | Patient home phone | | XTN | RE | | [0..1] | | PID.13 | PID-13: Patient home phone |
| 10 | Patient multiple birth indicator | 1 | ID | RE | | [0..1] | HL70136 | PID-24 | PID-24: Patient multiple birth indicator |

Table 8-14 QPD Input Parameter Specification

| Field Seq (Query ID=Z34) | Name | LEN | TYPE | Usage | Rep | Cardinality | TBL | Segment Field Name | Element Name or Value |
|-----------------------------|-----------------------------|-----|------|-------|-----|-------------|-----|--------------------|--------------------------------------|
| 11 | Patient birth order | 2 | NM | RE | | [0..1] | | PID-25 | PID-25: Patient birth order |
| 12 | Client last updated date | | TS | O | | [0..1] | | PID-33 | PID-33: Patient last update date |
| 13 | Client last update facility | | HD | O | | [0..1] | | PID-34 | PID-34: Patient last update facility |

QPD Conformance Statement:

IZ-67: QPD-1 (Message Query Name) SHALL be valued "Z34^Request Immunization History^CDCPHINVS".

QPD Input Parameter Field Description and Commentary

See Field Description under QPD in Profile Z34.

RXA-- Pharmacy/Treatment Administration Segment

The RXA segment carries pharmacy administration data.

| Table 8-15 Pharmacy/Treatment Administration (RXA) | | | | | | | | |
|--|-----------------------------------|-----------|--------|-------------|-----|--|-----------|---|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 1 | Give Sub-ID Counter | NM | R | [1..1] | 1 | | | |
| 2 | Administration Sub-ID Counter | NM | R | [1..1] | 1 | | | |
| 3 | Date/Time Start of Administration | TS_NZ | R | [1..1] | | | | This segment may be used in cases where a vaccine has not been administered. For instance a patient may refuse a vaccination or the sending system may be forecasting a next dose due. See notes below for guidance on the relevant date to include here. |
| 4 | Date/Time End of Administration | TS | O | [0..1] | | | | See not below |
| 5 | Administered Code | CE | R | [1..1] | | | CVX | Support for CVX code is strongly preferred. Local IG may identify NDC or CPT as acceptable alternative code sets. |
| 6 | Administered Amount | NM | R | [1..1] | 20 | | | |
| 7 | Administered Units | CE | C(R/X) | [0..1] | | If Administered Amount is not valued "999" | UCUM | The preferred units of measure for this is "mL". |
| 8 | Administered Dosage Form | CE | O | [0..1] | | | | |

| Table 8-15 Pharmacy/Treatment Administration (RXA) | | | | | | | | |
|--|------------------------------|-----------|---------|-------------|-----|---|-----------|--|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 9 | Administration Notes | varies | C(R/O) | [0..*] | | If RXA-20 is valued "CP" or "PA" | NIP001 | <p>If this field is used for a notes only entry, then the data type shall be CE_TX otherwise the data type shall be CE.</p> <p>The primary use of this field is to convey if this immunization record is based on a historical record or was given by the provider recording the immunization. All systems should be able to support this use. Other uses of this field are permitted, but need to be specified locally.</p> |
| 10 | Administering Provider | XCN | C(RE/O) | [0..1] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | | This is the person who gave the administration or the vaccinator. It is not the ordering clinician. |
| 11 | Administered-at Location | LA2 | C(RE/O) | [0..1] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | | This is the clinic/site where the vaccine was administered. |
| 12 | Administered Per (Time Unit) | ST | O | | | | | |
| 13 | Administered Strength | NM | O | | | | | |
| 14 | Administered Strength Units | CE | O | | | | | |

| Table 8-15 Pharmacy/Treatment Administration (RXA) | | | | | | | | |
|--|---|-----------|---------|-------------|-----|---|-----------|--------------------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 15 | Substance Lot Number | ST | C(R/O) | [0..*] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | | Note that "00" is double zero. |
| 16 | Substance Expiration Date | TS_M | C(RE/O) | [0..1] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | | |
| 17 | Substance Manufacturer Name | CE | C(R/O) | [0..1] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | MVX | |
| 18 | Substance/Treatment Refusal Reason | CE | C(R/X) | [0..*] | | If the RXA-20 (Completion Status) is valued "RE " | NIP002 | |
| 19 | Indication | CE | O | | | | | |
| 20 | Completion Status | ID | RE | [0..1] | 2 | | HL70322 | |
| 21 | Action Code - RXA | ID | O | [0..1] | 2 | | HL70323 | |
| 22 | System Entry Date/Time | TS | O | | | | | |
| 23 | Administered Drug Strength Volume | NM | O | | | | | |
| 24 | Administered Drug Strength Volume Units | CWE | O | | | | | |

| Table 8-15 Pharmacy/Treatment Administration (RXA) | | | | | | | | |
|--|---------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 25 | Administered Barcode Identifier | CWE | 0 | | | | | |
| 26 | Pharmacy Order Type | ID | 0 | | | | | |

Conformance Statement:

IZ-28: RXA-1 (Give Sub-id counter) SHALL be valued “0” Note that “0” is zero.

IZ-29: RXA-2 (admin Sub-id) SHALL be valued “1 “

IZ-30: If RXA-4 (Date time of admin end) is populated, then it SHALL be the same as Start time (RXA-3)

IZ-31: If RXA-20 is valued "CP" or "PA" then RXA-9.1 (admin notes) SHALL be valued one of the codes listed in NIP001 in the first occurrence of this field and optionally following repetition valued with a text notes.

IZ-32: If the RXA-18 (Refusal Reason) is populated, RXA-20 SHALL be valued to “RE”.

IZ-47: If RXA-20 is NOT valued "CP" or "PA" then the first occurrence of RXA-9.1 (admin notes) SHALL be empty and the following repetitions may be valued with text notes.

IZ-48: If RXA-20 is valued “RE” then RXA-6 shall be valued “999”.

IZ-49: If RXA-5.3 is valued “998” then RXA-6 shall be valued “999”.

RXA field definitions

See RXA field definitions in the Z22 profile.

RXR-- Pharmacy/Treatment Route Segment

The Pharmacy/Treatment Route segment contains the alternative combination of route, site, administration device, and administration method that are prescribed as they apply to a particular order.

Table 8-16 Pharmacy/Treatment Route (RXR)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
|-----|------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|------------|
| 1 | Route | CE | R | [1..1] | | | NCIT | |
| 2 | Administration Site | CWE | RE | [0..1] | | | HL70163 | |
| 3 | Administration Device | CE | O | | | | | |
| 4 | Administration Method | CWE | O | | | | | |
| 5 | Routing Instruction | CE | O | | | | | |
| 6 | Administration Site Modifier | CWE | O | | | | | |

RXR field definitions

See RXR field definitions in Profile Z22.

9. 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.

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.

Interaction Definition

See Interaction Definition In previous chapter.

Dynamic Definition

See Activity Diagram in previous chapter.

Static Definition – Message Level

Table 9-1 Base Response Grammar RSP^K I 1

| Segment | Cardinality | Usage | Comment |
|----------|-------------|-------|--|
| MSH | [1..1] | R | |
| [[SFT]] | [0..*] | O | Local profile may specify |
| MSA | [1..1] | R | |
| [ERR] | [0..1] | RE | If errors exist, then this segment is populated. |
| QAK | [1..1] | R | |
| QPD | [1..1] | R | Query Parameter Definition Segment ³⁴ |
| | [1..1] | R | --- Response begin |
| { | [1..*] | R | Begin patient identifier list |
| PID | [1..1] | R | |
| [PD1] | [0..1] | O | |
| [[NK1]] | [0..*] | O | |
| | | | End Patient Identifier |
| } | | | Response end |

³⁴ Matches the information in the requesting QBP message.

Segment Level Profile

ERR—Error Segment

| Table 9-2 Error Segment (ERR) | | | | | | | | |
|-------------------------------|-----------------------------|-----------|-------|-------------|------|-----------------------|-----------|---|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
| 1 | Error Code and Location | ELD | X | [0..0] | | | | Not supported for Version 2.5 and above. |
| 2 | Error Location | ERL | RE | [0..1] | 18 | | | |
| 3 | HL7 Error Code | CWE | R | [1..1] | | | HL70357 | |
| 4 | Severity | ID | R | [1..1] | 1..1 | | HL70516 | |
| 5 | Application Error Code | CWE | RE | | | | HL70533 | |
| 6 | Application Error Parameter | ST | O | | | | | |
| 7 | Diagnostic Information | TX | O | | | | | |
| 8 | User Message | TX | RE | | | | | This is a locally specified informative text message about the error. |
| 9 | Inform Person Indicator | IS | O | | | | | |
| 10 | Override Type | CWE | O | | | | | |
| 11 | Override Reason Code | CWE | O | | | | | |
| 12 | Help Desk Contact Point | XTN | O | | | | | |

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.

ERR field definitions:

See field definitions for ERR under Profile Z23 above.

MSA—Message Acknowledgement Segment

| Table 9-3 Message Acknowledgement Segment (MSA) | | | | | | | | |
|---|-----------------------------|-----------|-------|-------------|--------|-----------------------|-----------|---------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
| 1 | Acknowledgment Code | ID | R | [1..1] | 2.2 | | HL70008 | |
| 2 | Message Control ID | ST | R | [1..1] | 1..199 | | | |
| 3 | Text Message | ST | X | [0..0] | | | | |
| 4 | Expected Sequence Number | NM | O | | | | | |
| 5 | Delayed Acknowledgment Type | | O | | | | | |
| 6 | Error Condition | CE | X | [0..0] | | | | |

MSA field definitions

See field definitions for MSA under Profile Z23 above.

MSH - Message Header Specification

| Table 9-4 MSH Specification for Return Complete Immunization History Response | | | | | | | |
|---|-----|-----------|-------------|-----------|---------------------------------|-------|---|
| SEQ | LEN | Data Type | Cardinality | Value set | ELEMENT NAME | Usage | Constraint |
| 1 | 1 | ST | [1..1] | | Field Separator | R | The MSH.1 field shall be |
| 2 | 4 | ST | [1..1] | | Encoding Characters | R | The MSH.2 field shall be ^~\& |
| 3 | | HD | [0..1] | 0361 | Sending Application | RE | No constraint |
| 4 | | HD | [0..1] | 0362 | Sending Facility | RE | No constraint |
| 5 | | HD | [0..1] | 0361 | Receiving Application | RE | No constraint |
| 6 | | HD | [0..1] | 0362 | Receiving Facility | RE | No constraint |
| 7 | 26 | TS_Z | [1..1] | | Date/Time Of Message | R | The degree of precision must be at least to the second, (format YYYYMMDDHHMMSS+/-ZZZZ). |
| 8 | 40 | ST | [0..1] | | Security | O | |
| 9 | 15 | MSG | [1..1] | | Message Type | R | RSP^K11^RSP_K11 |
| 10 | 199 | ST | [1..1] | | Message Control ID | R | |
| 11 | 3 | PT | [1..1] | | Processing ID | R | |
| 12 | | VID | [1..1] | | Version ID | R | 2.5.1 |
| 13 | 15 | NM | [0..1] | | Sequence Number | O | |
| 14 | 180 | ST | [0..1] | | Continuation Pointer | O | |
| 15 | 2 | ID | [1..1] | 0155 | Accept Acknowledgment Type | R | NE |
| 16 | 2 | ID | [1..1] | 0155 | Application Acknowledgment Type | R | NE |
| 17 | 3 | ID | [0..1] | 0399 | Country Code | O | blank |
| 18 | 16 | ID | [0..1] | 0211 | Character Set | O | blank |
| 19 | | CE | [0..1] | | Principal Language Of Message | O | blank |

Table 9-4 MSH Specification for Return Complete Immunization History Response

| SEQ | LEN | Data Type | Cardinality | Value set | ELEMENT NAME | Usage | Constraint |
|-----|-----|-----------|-------------|-----------|---|-------|---------------|
| 20 | 20 | ID | [0..1] | 0356 | Alternate Character Set Handling Scheme | O | blank |
| 21 | | EI | [1..*] | | Message Profile Identifier | R | Z31^CDCPHINVS |
| 22 | | XON | [0..1] | | Sending Responsible Organization | RE | |
| 23 | | XON | [0..1] | | Receiving Responsible Organization | RE | |

Conformance Statement:

IZ-12: The MSH.1 (Field Separator) SHALL be valued “|”

IZ-13: The MSH.2 (Encoding Characters) SHALL be valued “^~\& “

IZ-15: The MSH-12 (Version ID) SHALL be valued “2.5.1 “

IZ-59: MSH-9 (Message Type) SHALL contain the constant value “RSP^K11^RSP_K11”

IZ-52: The value of MSH-16 (Application Acknowledgement) shall be “NE”.

IZ-53: The value of MSH-15 (Accept Acknowledgemnt) shall be “NE”

IZ-61: One occurrence of MSH-21 (Message Profile Identifier) SHALL contain the constant value “Z31^CDCPHINVS”

MSH Field Definitions

See field definitions for MSH under Profile Z22 above.

NK1—Next of Kin Segment

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

| Table 9-5 Next of Kin Segment (NK1) | | | | | | | | |
|-------------------------------------|--|-----------|-------|-------------|-----|-----------------------|-----------|---|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
| 1 | Set ID - NK1 | SI | R | [1..1] | | | | |
| 2 | Name | XPN | R | [1..*] | | | | The first instance is the legal name and is required. |
| 3 | Relationship | CE | R | [1..1] | | | HL70063 | |
| 4 | Address | XAD | RE | [0..*] | | | | The first instance shall be the primary address. |
| 5 | Phone Number | XTN | RE | [0..*] | | | | The first instance shall be the primary phone number. |
| 6 | Business Phone Number | XTN | O | | | | | |
| 7 | Contact Role | CE | O | | | | | |
| 8 | Start Date | DT | O | | | | | |
| 9 | End Date | DT | O | | | | | |
| 10 | Next of Kin / Associated Parties Job Title | ST | O | | | | | |
| 11 | Next of Kin / Associated Parties Job Code/Class | JCC | O | | | | | |
| 12 | Next of Kin / Associated Parties Employee Number | CX | O | | | | | |
| 13 | Organization Name - NK1 | XON | O | | | | | |

Table 9-5 Next of Kin Segment (NK1)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
|-----|----------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| 14 | Marital Status | CE | 0 | | | | | |
| 15 | Administrative Sex | IS | 0 | | | | | |
| 16 | Date/Time of Birth | TS | 0 | | | | | |
| 17 | Living Dependency | IS | 0 | | | | | |
| 18 | Ambulatory Status | IS | 0 | | | | | |
| 19 | Citizenship | CE | 0 | | | | | |
| 20 | Primary Language | CE | 0 | | | | | |
| 21 | Living Arrangement | IS | 0 | | | | | |
| 22 | Publicity Code | CE | 0 | | | | | |
| 23 | Protection Indicator | ID | 0 | | | | | |
| 24 | Student Indicator | IS | 0 | | | | | |
| 25 | Religion | CE | 0 | | | | | |
| 26 | Mother's Maiden Name | XPN | 0 | | | | | |
| 27 | Nationality | CE | 0 | | | | | |
| 28 | Ethnic Group | CE | 0 | | | | | |
| 29 | Contact Reason | CE | 0 | | | | | |

| Table 9-5 Next of Kin Segment (NK1) | | | | | | | | |
|-------------------------------------|--|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
| 30 | Contact Person's Name | XPN | 0 | | | | | |
| 31 | Contact Person's Telephone Number | XTN | 0 | | | | | |
| 32 | Contact Person's Address | XAD | 0 | | | | | |
| 33 | Next of Kin/Associated Party's Identifiers | CX | 0 | | | | | |
| 34 | Job Status | IS | 0 | | | | | |
| 35 | Race | CE | 0 | | | | | |
| 36 | Handicap | IS | 0 | | | | | |
| 37 | Contact Person Social Security Number | ST | 0 | | | | | |
| 38 | Next of Kin Birth Place | ST | 0 | | | | | |
| 39 | VIP Indicator | IS | 0 | | | | | |

NK1 Conformance Statements:

IZ-70: NK1-1 (Set ID-NK1) SHALL be valued sequentially starting with the value "1".

NK1 field definitions

See field definitions for NK1 under Profile Z22 above.

QAK—Query Acknowledgement Segment

Table 9-X Query Acknowledgement Segment

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Comment |
|-----|-----------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------|
| 1 | Query Tag | ST | R | [1..1] | 32 | | | |
| 2 | Query Response Status | ID | R | [1..1] | | | HL70208 | |
| 3 | Message Query Name | CE | R | [1..1] | | | | |
| 4 | Hit Count | NM | O | [0..1] | | | | |
| 5 | This payload | NM | O | [0..1] | | | | |
| 6 | Hits remaining | NM | O | [0..1] | | | | |

QAK field definitions

See field definitions for QAK under Profile Z32 above.

QPD Input Parameter Specification

Table 9-6 QPD Input Parameter Specification

| Field Seq (Query ID=Z34) | Name | LEN | TYPE | Usage | Rep | Cardinality | TBL | Segment Field Name | Element Name or Value |
|--------------------------|------------------|-----|------|-------|-----|-------------|-----|--------------------|--------------------------------|
| 1 | MessageQueryName | | CE | R | | [1..1] | | | |
| 2 | QueryTag | 32 | ST | R | | [1..1] | | | |
| 3 | PatientList | | CX | RE | Y | [0..*] | | PID.3 | PID-3: Patient Identifier List |

Table 9-6 QPD Input Parameter Specification

| Field Seq (Query ID=Z34) | Name | LEN | TYPE | Usage | Rep | Cardinality | TBL | Segment Field Name | Element Name or Value |
|--------------------------|----------------------------------|-----|-------|-------|-----|-------------|---------|--------------------|--|
| 4 | PatientName | | XPN | RE | | [0..1] | | PID.5 | PID-5: Patient Name |
| 5 | PatientMotherMaidenName | | XPN_M | RE | | [0..1] | | PID.6 | PID-6: Mother's maiden name |
| 6 | Patient Date of Birth | 26 | TS_NZ | RE | | [0..1] | | PID.7 | PID-7: Patient date of birth |
| 7 | Patient Sex | 1 | IS | RE | | [0..1] | HL70001 | PID.8 | PID-8: Patient sex |
| 8 | Patient Address | | XAD | RE | | [0..1] | | PID.11 | PID-11: Patient Address |
| 9 | Patient home phone | | XTN | RE | | [0..1] | | PID.13 | PID-13: Patient home phone |
| 10 | Patient multiple birth indicator | 1 | ID | RE | | [0..1] | HL70136 | PID-24 | PID-24: Patient multiple birth indicator |
| 11 | Patient birth order | 2 | NM | RE | | [0..1] | | PID-25 | PID-25: Patient birth order |
| 12 | Client last updated date | | TS | O | | [0..1] | | PID-33 | PID-33: Patient last update date |
| 13 | Client last update facility | | HD | O | | [0..1] | | PID-34 | PID-34: Patient last update facility |

QPD Conformance Statement:

IZ-67: QPD-1 (Message Query Name) SHALL be valued "Z34^Request Immunization History^CDCPHINVS".

QPD field definitions

See QPD field definitions in Profile Z34.

PID – Patient Identification Segment

| Table 9-7 Patient Identification Segment | | | | | | | | |
|--|------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|--|
| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
| 1 | Set ID - PID | SI | R | [1..1] | | | | Each patient segment returned in this message will be numbered, starting with 1 for the first. |
| 2 | Patient ID | CX | X | [0..0] | | | | |
| 3 | Patient Identifier List | CX | R | [1..*] | | | | |
| 4 | Alternate Patient ID - 00106 | CX | X | [0..0] | | | | |
| 5 | Patient Name | XPN | R | [1..*] | | | | The first repetition shall contain the legal name. Multiple given names or initials are separated by spaces. |
| 6 | Mother's Maiden Name | XPN_M | RE | [0..1] | | | | Only last name and name type are required. Set Name Type code to "M" for maiden name usage. |
| 7 | Date/Time of Birth | TS_NZ | R | [1..1] | | | | |
| 8 | Administrative Sex | IS | R | [1..1] | | | HL70001 | If a sex is not definitively known, use the value U-Unknown from HL70001. |
| 9 | Patient Alias | XPN | X | [0..0] | | | | |
| 10 | Race | CE | RE | [0..*] | | | CDCREC | |

Table 9-7 Patient Identification Segment

| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
|-----|-----------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---|
| 11 | Patient Address | XAD | RE | [0..*] | | | | The first repetition should be the primary address. |
| 12 | County Code | IS | X | [0..0] | | | | County belongs in address field. |
| 13 | Phone Number - Home | XTN | RE | [0..*] | | | | The first instance shall be the primary phone number. Only one item is allowed per repetition. |
| 14 | Phone Number - Business | XTN | O | | | | | |
| 15 | Primary Language | CE | O | | | | | |
| 16 | Marital Status | CE | O | | | | | |
| 17 | Religion | CE | O | | | | | |
| 18 | Patient Account Number | CX | O | | | | | |
| 19 | SSN Number - Patient | ST | X | [0..0] | | | | |
| 20 | Driver's License Number - Patient | DLN | X | [0..0] | | | | |
| 21 | Mother's Identifier | CX | X | [0..0] | | | | |

Table 9-7 Patient Identification Segment

| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
|-----|-----------------------------|-----------|---------|-------------|------|--|-----------|---|
| 22 | Ethnic Group | CE | RE | [0..1] | | | CDCREC | |
| 23 | Birth Place | ST | O | | | | | |
| 24 | Multiple Birth Indicator | ID | RE | [0..1] | | | HL70136 | The acceptable values are Y and N. If the status is undetermined, then field shall be empty. |
| 25 | Birth Order | NM | C(RE/O) | [0..1] | 1..2 | If PID-24 (Multiple Birth Indicator) is valued "Y" | | This field contains a number indicating the person's birth order, with 1 for the first child born and 2 for the second. |
| 26 | Citizenship | CE | O | | | | | |
| 27 | Veterans Military Status | CE | O | | | | | |
| 28 | Nationality | CE | O | | | | | |
| 29 | Patient Death Date and Time | TS | C(RE/X) | [0..1] | | If PID-30 (patient death date) is valued "Y" | | |
| 30 | Patient Death Indicator | ID | RE | [0..1] | | | HL70136 | |
| 31 | Identity Unknown Indicator | ID | O | | | | | |

Table 9-7 Patient Identification Segment

| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
|-----|---------------------------|-----------|-------|-------------|-----|-----------------------|-----------|------------|
| 32 | Identity Reliability Code | IS | 0 | | | | | |
| 33 | Last Update Date/Time | TS | 0 | | | | | |
| 34 | Last Update Facility | HD | 0 | | | | | |
| 35 | Species Code | CE | 0 | | | | | |
| 36 | Breed Code | CE | 0 | | | | | |
| 37 | Strain | ST | 0 | | | | | |
| 38 | Production Class Code | CE | 0 | | | | | |
| 39 | Tribal Citizenship | CWE | 0 | | | | | |

Conformance Statement

IZ-72: PID-1 (Set ID-PID) SHALL be valued sequentially starting with the value “1”.

PID Field Definition

See PID field definitions in Z22 Profile.

10.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 not patients being returned in response to the Z34-Request Immunization History.

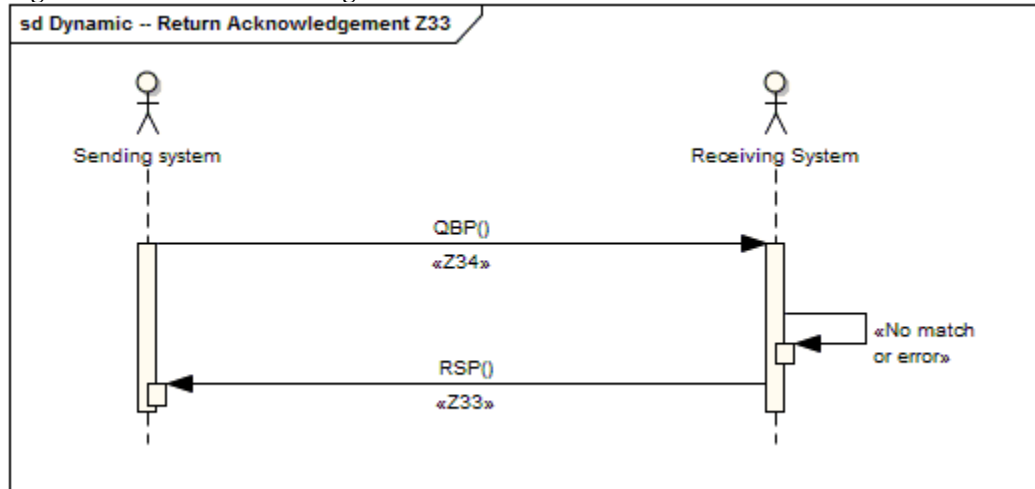
The **goal** of this profile is to return an acknowledgment message. It will indicate that either the message could be parsed, but there was an error processing the message or that no candidates were found. No demographic or immunization history will be returned.

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.
3. Too many matches are found and so none will be returned.

Figure 41 Return Acknowledgement



Dynamic Definition

See Activity Diagram in profile Z34.

Static Definition – Message Level

| Table 10-1 Base Response Grammar RSP^K11 | | | |
|--|-------------|-------|--|
| Segment | Cardinality | Usage | Comment |
| MSH | [1..1] | R | |
| [[SFT]] | [0..*] | O | Local profile may specify |
| MSA | [1..1] | R | |
| [ERR] | [0..1] | RE | If errors exist, then this segment is populated. |
| QAK | [1..1] | R | |
| QPD | [1..1] | R | Query Parameter Definition Segment ³⁵ |

³⁵ Matches the information in the requesting QBP message.

Static Definition -- Segment Level

ERR—Error Segment

| Table 10-2 Error Segment (ERR) | | | | | | | | |
|--------------------------------|-----------------------------|-----------|-------|-------------|------|-----------------------|-----------|---|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
| 1 | Error Code and Location | ELD | X | [0..0] | | | | Not supported for Version 2.5 and above. |
| 2 | Error Location | ERL | RE | [0..1] | 18 | | | |
| 3 | HL7 Error Code | CWE | R | [1..1] | | | HL70357 | |
| 4 | Severity | ID | R | [1..1] | 1..1 | | HL70516 | |
| 5 | Application Error Code | CWE | RE | | | | HL70533 | |
| 6 | Application Error Parameter | ST | O | | | | | |
| 7 | Diagnostic Information | TX | O | | | | | |
| 8 | User Message | TX | RE | | | | | This is a locally specified informative text message about the error. |
| 9 | Inform Person Indicator | IS | O | | | | | |
| 10 | Override Type | CWE | O | | | | | |
| 11 | Override Reason Code | CWE | O | | | | | |
| 12 | Help Desk Contact Point | XTN | O | | | | | |

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.

ERR field definitions:

See field definitions for ERR under Profile Z23 above.

HL7 Version 2.5.1 Message Profile for Returning an acknowledgement in Response to a Request Immunization History Query when no candidates are found or an error has been found in the query.

Table 10-3 Query Response Possibilities

| Outcome | Action |
|--|--|
| No clients are found that match the requested person | Send acknowledgement indicating no matches found. (See Z33 profile) |
| The message is so poorly formed it can't be processed. That is, the message can't be parsed as a query. | Return error acknowledgement (ACK) |
| The message can be parsed but has errors, such as missing data elements that are required to support query processing. | Return acknowledgement indicating errors. (See Z33 profile). |

MSA—Message Acknowledgement Segment

| Table 10-4 Message Acknowledgement Segment (MSA) | | | | | | | | |
|---|-----------------------------|------------------|--------------|--------------------|------------|------------------------------|------------------|----------------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
| 1 | Acknowledgment Code | ID | R | [1..1] | 2..2 | | HL70008 | |
| 2 | Message Control ID | ST | R | [1..1] | 1..199 | | | |
| 3 | Text Message | ST | X | [0..0] | | | | |
| 4 | Expected Sequence Number | NM | O | | | | | |
| 5 | Delayed Acknowledgment Type | | O | | | | | |
| 6 | Error Condition | CE | X | [0..0] | | | | |

MSA field definitions

See MSA field definitions in Z23 Profile.

MSH - Message Header Specification

Table 10-5 MSH Specification for Acknowledgement Response

| SEQ | LEN | Data Type | Cardinality | Value set | ELEMENT NAME | Usage | Constraint |
|-----|-----|-----------|-------------|-----------|---------------------------------|-------|---|
| 1 | 1 | ST | [1..1] | | Field Separator | R | The MSH.1 field shall be |
| 2 | 4 | ST | [1..1] | | Encoding Characters | R | The MSH.2 field shall be ^~\& |
| 3 | | HD | [0..1] | 0361 | Sending Application | RE | No constraint |
| 4 | | HD | [0..1] | 0362 | Sending Facility | RE | No constraint |
| 5 | | HD | [0..1] | 0361 | Receiving Application | RE | No constraint |
| 6 | | HD | [0..1] | 0362 | Receiving Facility | RE | No constraint |
| 7 | 26 | TS_Z | [1..1] | | Date/Time Of Message | R | The degree of precision must be at least to the second, (format YYYYMMDDHHMMSS+/-ZZZZ). |
| 8 | 40 | ST | [0..1] | | Security | O | |
| 9 | 15 | MSG | [1..1] | | Message Type | R | RSP^K11^RSP_K11 |
| 10 | 199 | ST | [1..1] | | Message Control ID | R | |
| 11 | 3 | PT | [1..1] | | Processing ID | R | |
| 12 | | VID | [1..1] | | Version ID | R | 2.5.1 |
| 13 | 15 | NM | [0..1] | | Sequence Number | O | |
| 14 | 180 | ST | [0..1] | | Continuation Pointer | O | |
| 15 | 2 | ID | [1..1] | 0155 | Accept Acknowledgment Type | R | NE |
| 16 | 2 | ID | [1..1] | 0155 | Application Acknowledgment Type | R | |
| 17 | 3 | ID | [0..1] | 0399 | Country Code | O | blank |
| 18 | 16 | ID | [0..1] | 0211 | Character Set | O | blank |
| 19 | | CE | [0..1] | | Principal Language Of Message | O | blank |

Table 10-5 MSH Specification for Acknowledgement Response

| SEQ | LEN | Data Type | Cardinality | Value set | ELEMENT NAME | Usage | Constraint |
|-----|-----|-----------|-------------|-----------|---|-------|---------------|
| 20 | 20 | ID | [0..1] | 0356 | Alternate Character Set Handling Scheme | O | blank |
| 21 | | EI | [1..1] | | Message Profile Identifier | R | Z33^CDCPHINVS |
| 22 | | XON | [0..1] | | Sending Responsible Organization | RE | |
| 23 | | XON | [0..1] | | Receiving Responsible Organization | RE | |

Conformance Statement:

IZ-12: The MSH.1 (Field Separator) SHALL be valued “|”

IZ-13: The MSH.2 (Encoding Characters) SHALL be valued “^~\& “

IZ-15: The MSH-12 (Version ID) SHALL be valued “2.5.1 “

IZ-59: MSH-9 (Message Type) SHALL contain the constant value “RSP^K11^RSP_K11”

IZ-52: The value of MSH-16 (Application Acknowledgement) shall be “NE”.

IZ-53: The value of MSH-15 (Accept Acknowledgement) shall be “NE”

IZ-63: One occurrence of MSH-21 (Message Profile Identifier) SHALL contain the constant value “Z33^CDCPHINVS”

MSH Field Definitions

See field definitions for MSH under Profile Z23 above.

QAK—Query Acknowledgement Segment

| Table 10-X Query Acknowledgement Segment | | | | | | | | |
|---|-----------------------|------------------|--------------|--------------------|------------|------------------------------|------------------|----------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Comment |
| 1 | Query Tag | ST | R | [1..1] | 32 | | | |
| 2 | Query Response Status | ID | R | [1..1] | | | HL70208 | |
| 3 | Message Query Name | CE | R | [1..1] | | | | |
| 4 | Hit Count | NM | O | [0..1] | | | | |
| 5 | This payload | NM | O | [0..1] | | | | |
| 6 | Hits remaining | NM | O | [0..1] | | | | |

QAK field definitions

See field definitions for QAK under Profile Z32 above.

QPD Input Parameter Specification

| Table 10-6 QPD Input Parameter Specification | | | | | | | | | | | |
|--|-------------------------|------------|------|-----|-------|-------|-----|-------------|--------------------|---------|--------------------------------|
| Field Seq (Query ID=Z34) | Name | Key/Search | Sort | LEN | TYPE | Usage | Rep | Cardinality | Segment Field Name | Table | Element Name or Value |
| 1 | MessageQueryName | | | | CE | R | | [1..1] | | | |
| 2 | QueryTag | | | 32 | ST | R | | [1..1] | | | |
| 3 | PatientList | | | | CX | RE | Y | [0..*] | PID.3 | | PID-3: Patient Identifier List |
| 4 | PatientName | | | | XPN | RE | | [0..1] | PID.5 | | PID-5: Patient Name |
| 5 | PatientMotherMaidenName | | | | XPN_M | RE | | [0..1] | PID.6 | | PID-6: Mother's maiden name |
| 6 | Patient Date of Birth | | | 26 | TS_NZ | RE | | [0..1] | PID.7 | | PID-7: Patient date of birth |
| 7 | Patient Sex | | | 1 | IS | RE | | [0..1] | PID.8 | HL70001 | PID-8: Patient sex |
| 8 | Patient Address | | | | XAD | RE | | [0..1] | PID.11 | | PID-11: Patient Address |
| 9 | Patient home phone | | | | XTN | RE | | [0..1] | PID.13 | | PID-13: Patient home phone |
| 10 | Patient | | | 1 | ID | RE | | [0..1] | PID-24 | HL70136 | PID-24: Patient |

Table 10-6 QPD Input Parameter Specification

| Field Seq (Query ID=Z34) | Name | Key/Search | Sort | LEN | TYPE | Usage | Rep | Cardinality | Segment Field Name | Table | Element Name or Value |
|--------------------------|-----------------------------|------------|------|-----|------|-------|-----|-------------|--------------------|-------|--------------------------------------|
| | multiple birth indicator | | | | | | | | | | multiple birth indicator |
| 11 | Patient birth order | | | 2 | NM | RE | | [0..1] | PID-25 | | PID-25: Patient birth order |
| 12 | Client last updated date | | | | TS | O | | [0..1] | PID-33 | | PID-33: Patient last update date |
| 13 | Client last update facility | | | | HD | O | | [0..1] | PID-34 | | PID-34: Patient last update facility |

QPD Conformance Statement:

IZ-71: QPD-1 (Message Query Name) SHALL be valued "Z34^Request Immunization History^CDCPHINVS" or "Z44^Request Evaluated History and Forecast^CDCPHINVS" depending on the query profile received.

QPD Field Definitions

See QPD field definitions in Profile Z34.

11. Profile Z44--Request Evaluated Immunization History and Forecast Query Profile

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 a evaluated immunization history and forecast of next doses due. I

See Use Case 3—Request Evaluated History above 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 the person is due to receive next and the dates when due

Table 11- 1 Request Evaluated Immunization History and Forecast Query Profile

| | |
|---|--|
| Query Statement ID (Query ID=Z44): | Z44 |
| Type: | Query |
| Query Name: | Request Evaluated History and Forecast |
| 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 an evaluated immunization history and forecast for one client. |
| 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 evaluated immunization history and forecast will be returned. • In the case where one or more clients are a lower-confidence match for the criteria sent, the acknowledgement response will indicate no matches and no records will be returned. • In the case where receiving system can't process the query, the receiving system will indicate an error in an acknowledgement. |
| Based on Segment Pattern: | NA |

Each system will need to determine the business rules that deal with patients who wish to have their records protected. Some systems may choose to treat the person as if they are not in the system. Others may choose to send a response indicating that the person exists in the system but does not allow sharing. This rule should be clearly documented in the local profile.

Table 11-2 Response Grammar 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 <i>Acknowledgement Profile (Z33)</i> . |
| Exactly one high confidence match found ³⁶ | Response includes an evaluated immunization history and forecast as specified below. See Profile <i>Return Evaluated Immunization History and Forecast (Z42)</i> . |
| A lower confidence match (or matches) is found. | Response indicates that message was successfully processed and that no clients matched the criteria that were sent in the query. See <i>Acknowledgement Profile (Z33)</i> . |
| Message is not well formed and has fatal errors. | Response indicates that the message was not successfully processed and may indicate errors. See <i>Return Acknowledgement Profile (Z33)</i> . |
| Message can't be parsed. | Return ACK, acknowledgement message indicating error, if message can be identified as an HL7 message. |

³⁶ Definition of match is left to local business rules. These rules should be documented in a local implementation guide. For example, a system may only return an immunization history when the match is exact, returning a list of 1 if one person for a lower probability match.

Interaction Definition

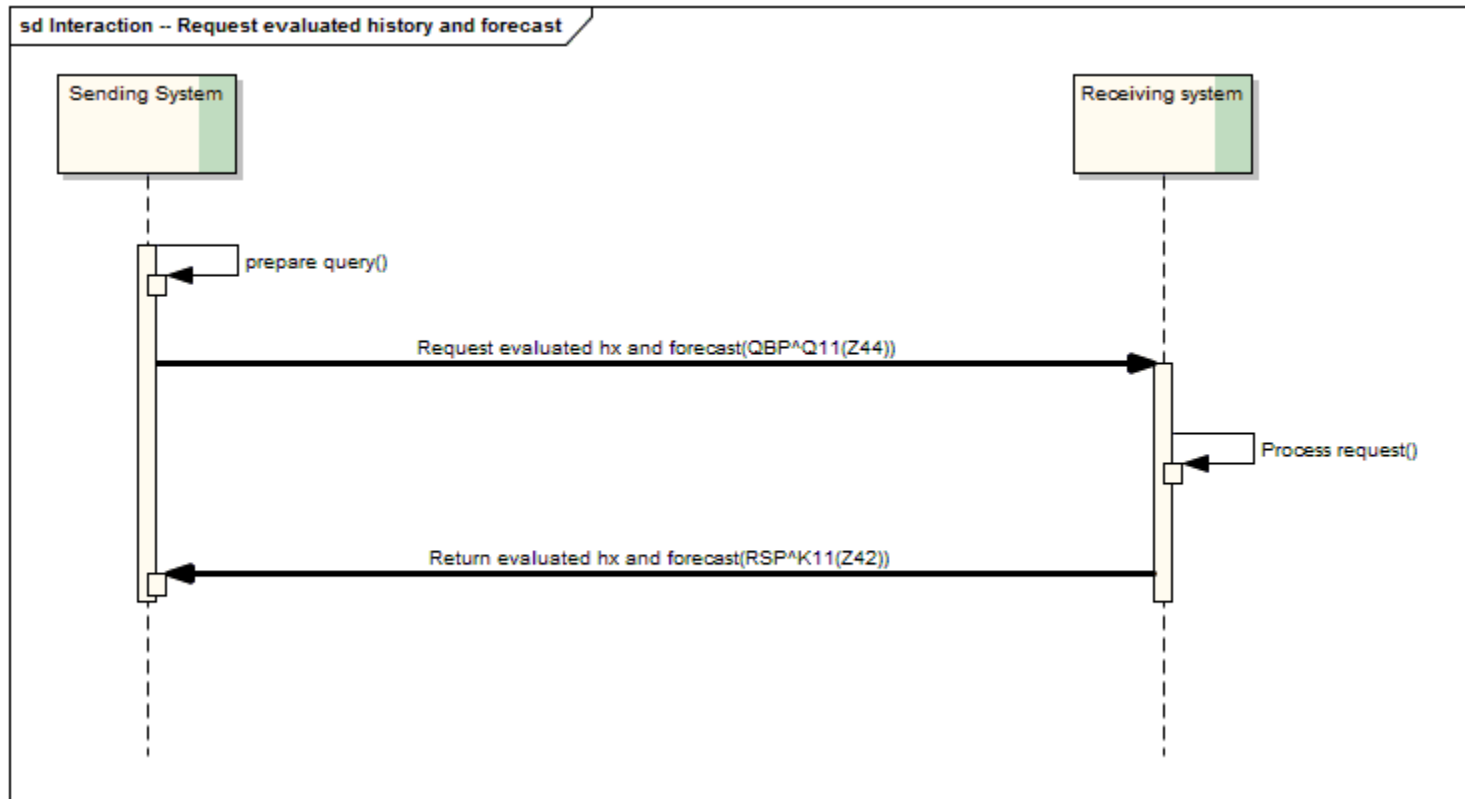


Figure 42 Return Immunization Evaluated History Sequence Diagram

This diagram illustrates the context of the messages. The messages specified in this profile are shown with bolded.

Dynamic Definition

The following activity diagram shows the flow of activities associated with this profile and its partners. This is described in the table below the diagram.

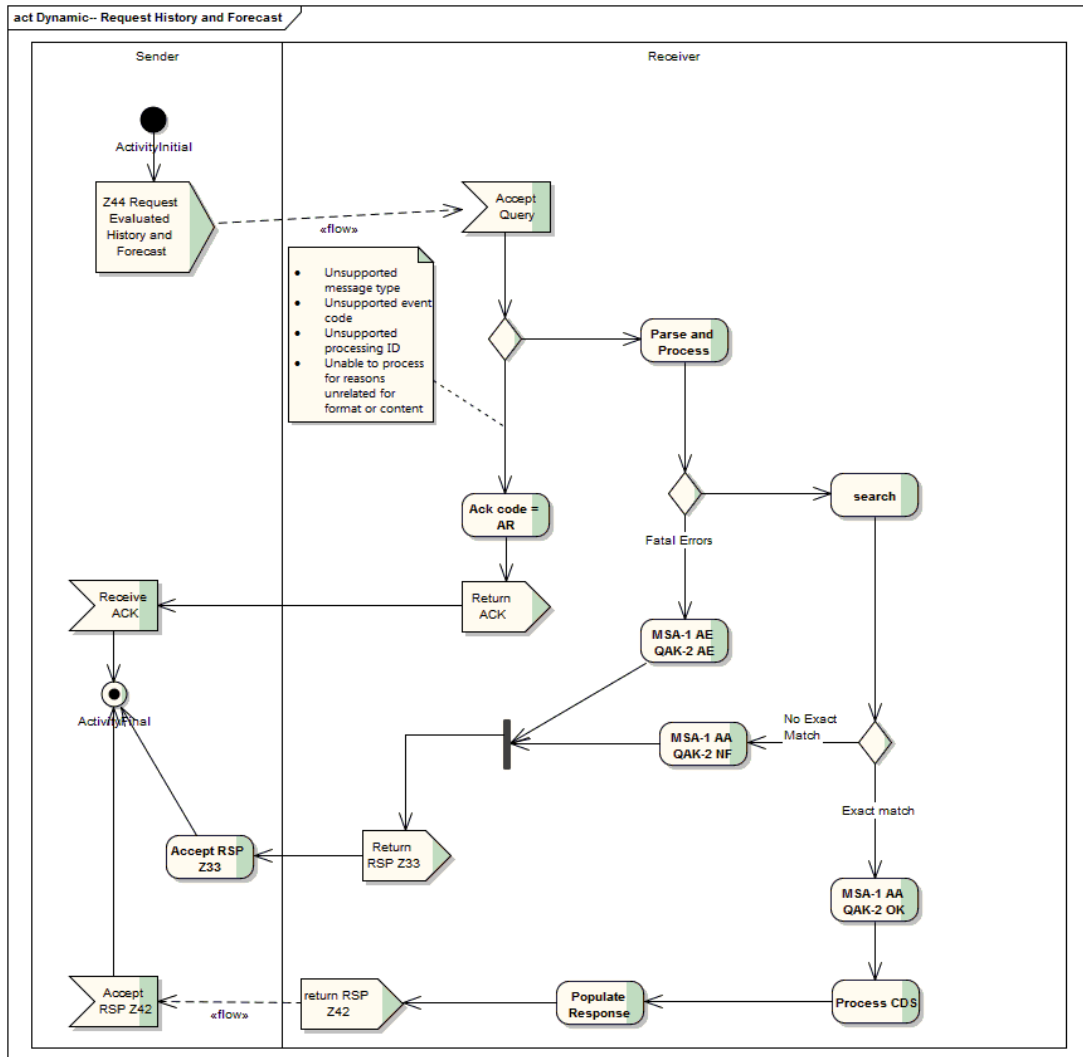


Figure 43 Activity Diagram -Response to Different Outcomes

TABLE 11-3 RESPONSE TO DIFFERENT OUTCOMES

| Outcome of Query | Response Message |
|--|---|
| No high confidence match found | Response indicates that message was successfully processed and that no clients matched the criteria that were sent in the query. See <i>Acknowledgement Profile (Z33)</i> . |
| Exactly one high confidence match found ³⁷ | Response includes a complete immunization history as specified below. See Profile <i>Return Evaluated History and Forecast (Z42)</i> . |
| Message is not well formed and has fatal errors. | Response indicates that the message was not successfully processed and may indicate errors. See <i>Return Acknowledgement Profile (Z33)</i> . |
| 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. |

³⁷ Definition of match is left to local business rules. These rules should be documented in a local implementation guide. For example, a system may only return an immunization history when the match is exact, returning a list of 1 if one person for a lower probability match.

Static Definition - Message Level:

Table 11-4 Z44 Request Complete Immunization History

| TABLE 11-4 Z44 REQUEST EVALUATED IMMUNIZATION HISTORY AND FORECAST | | | |
|---|-----------------------------------|--------------|---------------------------|
| QBP^Q11^QBP_Q11 | Query Grammar: QBP Message | Usage | Comment |
| MSH | Message Header Segment | R | |
| [[SFT]] | Software Segment | O | Local profile may specify |
| QPD | Query Parameter Definition | R | |
| RCP | Response Control Parameter | R | |
| [DSC] | Continuation Pointer | X | Not supported |

Static Definition—Segment Level

MSH - Message Header Specification

Table 11-6 MSH Specification for Request Evaluated History and Forecast Immunization History Query

| SEQ | LEN | Data Type | Cardinality | Value set | ITEM # | ELEMENT NAME | Usage | Constraint |
|-----|-----|-----------|-------------|-----------|--------|---------------------------------|-------|---|
| 1 | 1 | ST | [1..1] | | 00001 | Field Separator | R | The MSH.1 field shall be |
| 2 | 4 | ST | [1..1] | | 00002 | Encoding Characters | R | The MSH.2 field shall be ^~\& |
| 3 | | HD | [0..1] | 0361 | 00003 | Sending Application | RE | No constraint |
| 4 | | HD | [0..1] | 0362 | 00004 | Sending Facility | RE | No constraint |
| 5 | | HD | [0..1] | 0361 | 00005 | Receiving Application | RE | No constraint |
| 6 | | HD | [0..1] | 0362 | 00006 | Receiving Facility | RE | No constraint |
| 7 | 26 | TS_Z | [1..1] | | 00007 | Date/Time Of Message | R | The degree of precision must be at least to the second, (format YYYYMMDDHHMMSS+/-ZZZZ). |
| 8 | 40 | ST | [0..1] | | 00008 | Security | O | |
| 9 | 15 | MSG | [1..1] | | 00009 | Message Type | R | QBP^Q11^QBP_Q11 |
| 10 | 199 | ST | [1..1] | | 00010 | Message Control ID | R | |
| 11 | 3 | PT | [1..1] | | 00011 | Processing ID | R | |
| 12 | | VID | [1..1] | | 00012 | Version ID | R | 2.5.1 |
| 13 | 15 | NM | [0..1] | | 00013 | Sequence Number | O | |
| 14 | 180 | ST | [0..1] | | 00014 | Continuation Pointer | O | |
| 15 | 2 | ID | [1..1] | 0155 | 00015 | Accept Acknowledgment Type | R | ER –On Error |
| 16 | 2 | ID | [1..1] | 0155 | 00016 | Application Acknowledgment Type | R | AL-Always |
| 17 | 3 | ID | [0..1] | 0399 | 00017 | Country Code | O | blank |
| 18 | 16 | ID | [0..1] | 0211 | 00692 | Character Set | O | blank |
| 19 | | CE | [0..1] | | 00693 | Principal Language Of Message | O | blank |

Table 11-6 MSH Specification for Request Evaluated History and Forecast Immunization History Query

| SEQ | LEN | Data Type | Cardinality | Value set | ITEM # | ELEMENT NAME | Usage | Constraint |
|-----|-----|-----------|-------------|-----------|--------|---|-------|---------------|
| 20 | 20 | ID | [0..1] | 0356 | 01317 | Alternate Character Set Handling Scheme | O | blank |
| 21 | | EI | [1..*] | | 01598 | Message Profile Identifier | R | Z44^CDCPHINVS |
| 22 | | XON | [0..1] | 0362 | | Sending Responsible Organization | RE | |
| 23 | | XON | [0..1] | 0362 | | Receiving Responsible Organization | RE | |

Conformance Statement:

IZ-64: One Occurrence of MSH-21 (Message Profile Identifier) SHALL contain the constant value “Z44^CDCPHINVS”

IZ-12: The MSH.1 (Field Separator) SHALL be valued “|”

IZ-13: The MSH.2 (Encoding Characters) SHALL be valued “^~\&”

IZ-15: The MSH-12 (Version ID) SHALL be valued “2.5.1 “

IZ-55: MSH-9 (Message Type) SHALL contain the constant value “QBP^Q11^QBP_Q11”

IZ-57: MSH-15 (Accept Acknowledgement) SHALL have a value of “ER”.

IZ-58: MSH-16 (Application Acknowledgemnt) SHALL have a value of “AL”

MSH field definitions

See field definitions for MSH under Profile Z22 above.

QPD Input Parameter Specification

| Table 11-7 QPD Input Parameter Specification | | | | | | | | | | | |
|--|-------------------------|------------|------|-----|-------|-------|-----|-------------|--------------------|---------|--------------------------------|
| Field Seq (Query ID=Z34) | Name | Key/Search | Sort | LEN | TYPE | Usage | Rep | Cardinality | Segment Field Name | TBL | Element Name or Value |
| 1 | MessageQueryName | | | | CE | R | | [1..1] | | | |
| 2 | QueryTag | | | 32 | ST | R | | [1..1] | | | |
| 3 | PatientList | | | | CX | RE | Y | [0..*] | PID.3 | | PID-3: Patient Identifier List |
| 4 | PatientName | | | | XPN | RE | | [0..1] | PID.5 | | PID-5: Patient Name |
| 5 | PatientMotherMaidenName | | | | XPN_M | RE | | [0..1] | PID.6 | | PID-6: Mother's maiden name |
| 6 | Patient Date of Birth | | | 26 | TS_NZ | RE | | [0..1] | PID.7 | | PID-7: Patient date of birth |
| 7 | Patient Sex | | | 1 | IS | RE | | [0..1] | PID.8 | HL70001 | PID-8: Patient sex |
| 8 | Patient Address | | | | XAD | RE | | [0..1] | PID.11 | | PID-11: Patient Address |

Table 11-7 QPD Input Parameter Specification

| Field Seq (Query ID=Z34) | Name | Key/ Search | Sort | LEN | TYPE | Usage | Rep | Cardinality | Segment Field Name | TBL | Element Name or Value |
|-----------------------------|----------------------------------|----------------|------|-----|------|-------|-----|-------------|--------------------------|---------|---|
| 9 | Patient home phone | | | | XTN | RE | | [0..1] | PID.13 | | PID-13: Patient home phone |
| 10 | Patient multiple birth indicator | | | 1 | ID | RE | | [0..1] | PID-24 | HL70136 | PID-24: Patient multiple birth indicator |
| 11 | Patient birth order | | | 2 | NM | RE | | [0..1] | PID-25 | | PID-25: Patient birth order |
| 12 | Client last updated date | | | | TS | O | | [0..1] | PID-33 | | PID-33: Patient last update date |
| 13 | Client last update facility | | | | HD | O | | [0..1] | PID-34 | | PID-34: Patient last update facility |

QPD Conformance Statement:

IZ-68: QPD-1 (Message Query Name) SHALL be valued "Z44^Request Evaluated History and Forecast^CDCPHINVS".

QPD Field Definitions

The likelihood of finding a particular person is improved when all known parameters are populated. Requesting systems should strive to include values for each query parameter.

Table 11-8 QPD Input Parameter Field Description and Commentary

| Input Parameter (Query ID=Z34) | Comp. Name | DT | Usage | Description |
|---------------------------------------|---------------------|-----------|--------------|---|
| MessageQueryName | | CE | R | Z44^Request Immunization History^HL70471 |
| QueryTag | | ST | R | Unique to each query message instance. |
| PatientList | | CX | RE | The combination of values for Patientlist.ID, patientlst.identifiercode and Patientlist.AssigningAuthority are intended to allow unique identification of a client, if the data are found in the responding system. |
| | ID | ST | R | If this field, PID.3.1, is not valued, PatientList is not considered when seeking matching clients. |
| | Assigning Authority | HD | R | If this field, PID.3.4, is not valued, PatientList is not considered when seeking matching clients. |
| | IdentifierTypeCode | IS | R | If this field, PID.3.5, is not valued, PatientList is not considered when seeking matching clients. |
| PatientName | | XPN | R | If this field, PID.5, is not valued, then the query will return an error, since this is a required field. |
| | Family Name | FN | R | If this field, PID.5.1, is not valued, then patient name is considered to contain no value. |

Table 11-8 QPD Input Parameter Field Description and Commentary

| Input Parameter (Query ID=Z34) | Comp. Name | DT | Usage | Description |
|---------------------------------------|-------------------------|-----------|--------------|---|
| | Given Name | ST | R | If this field, PID.5.2, is not valued, then patient name is considered to contain no value. Given name is required. |
| | Second or further names | ST | RE | If this field, PID.5.3, is not valued, then all values for this field are considered a match. |
| | Suffix | ST | RE | If this field, PID.5.4, is not valued, then all values for this field are considered a match. |
| Mother's Maiden Name | | XPN_M | RE | If this field, PID.6, is not valued, Mother's maiden name is not considered when seeking matching clients. |
| | Family Name | FN | R | If this field, PID.6.1, is not valued, then mother's maiden name is considered to contain no value. |
| | Given Name | ST | RE | If this field, PID.6.2, is not valued, then all values for this field are considered a match. |
| | Name Type Code | ID | RE | If the field, PID-6.7, is not valued, then all values for this field are considered a match. |
| DateOfBirth | | TS | R | If this field, PID.7, is not valued to an accuracy of at least day, then this field is considered not valued. |

| Table 11-8 QPD Input Parameter Field Description and Commentary | | | | |
|---|----------------|-----|-------|--|
| Input Parameter (Query ID=Z34) | Comp. Name | DT | Usage | Description |
| Sex | | IS | RE | If this field, PID.8, is not valued, then all values for this field are considered a match. |
| Address | | XAD | RE | If this field, PID.11, is not valued, then address will not be considered when seeking matching clients. |
| | Street Address | SAD | RE | If this field, PID.11.1, is not valued, then all values for this field are considered a match. |
| | City | ST | RE | If this field, PID.11.3, is not valued, then address is considered to contain no value. |
| | State | ST | RE | If this field, PID.11.4, is not valued, then address is considered to contain no value. |
| | ZIP | ST | RE | If this field, PID.11.5, is not valued, then all values for this field are considered a match. |
| | Address Type | IS | RE | If this field, PID.11.7 is not valued, then it shall default to L, legal address. |
| Phone | | XTN | RE | This field will be considered the Home phone. If this field, PID.13, is not valued, then phone number is not considered when seeking matching clients. |

Table 11-8 QPD Input Parameter Field Description and Commentary

| Input Parameter (Query ID=Z34) | Comp. Name | DT | Usage | Description |
|---------------------------------------|-------------------|-----------|--------------|---|
| | Area code | NM | | If this field, PID.13.6, is not valued, then all values for this field shall be considered matches. |
| | Local number | NM | | If this field, PID.13.7, is not valued, then address is considered to contain no value. |
| Multiple Birth Indicator | | ID | RE | If this field, PID.24, is not valued, then Multiple Birth Indicator is not considered when seeking matching clients. |
| Birth Order | | NM | RE | If this field, PID.25, is not valued, then birth order is not considered when seeking matching clients. |
| Client last updated date | | TS | O | If this field, PID.33, is not valued, then client last updated date is not considered when seeking matching clients. |
| Client last update facility | | TS | O | If this field, PID.34, is not valued, then client last updating facility is not considered when seeking matching clients. |

This Guide does not specify the methodology used by the responding system to search for a person. It specifies the structure and content of the message used to query. It is incumbent on systems to publically document their expectations within the constraints of this guide.

RCP Response Control Parameter Field Description and Commentary

| Table 11-9 RCP Response Control Parameter Field Description and Commentary | | | | | | |
|--|--------------------------|----------------|-----|-----|-------|--|
| Field Seq (Query ID=Z44) | Name | Component Name | LEN | DT | Usage | Description |
| 1 | Query Priority | | 1 | ID | RE | If this field is not valued then it shall default to I. The only value permitted is I. |
| 2 | Quantity Limited Request | | 10 | CQ | X | |
| | | Quantity | | NM | X | |
| | | Units | | CWE | X | |
| 3 | Response Modality | | 60 | CWE | X | |
| 7 | Segment group inclusion | | 256 | ID | X | |
| | | | | | | |

RCP Conformance Statement:

IZ-27: Constrain RCP-1 (Query Priority) to “I”.

RCP Field Definitions

See Z34 Profile above for details.

12.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.

Interaction Definition

See Interaction Definition in Profile Z44 above.

Dynamic Definition

See Dynamic Definition in Profile Z44 above.

Static Definition --Message Level

| Table 12-1 Return Evaluated Immunization History and Forecast Response Grammar RSP^K11 | | | |
|--|-------------|-------|--|
| Segment | Cardinality | Usage | Comment |
| MSH | [1..1] | R | |
| [[SFT]] | [0..*] | O | Local profile may specify |
| MSA | [1..1] | R | |
| [ERR] | [0..1] | RE | If errors exist, then this segment is populated. |
| QAK | [1..1] | R | |
| QPD | [1..1] | R | Query Parameter Definition Segment ³⁹ |
| PID | [1..1] | R | |
| { | [1..*] | R | IMMUNIZATION HISTORY and FORECAST GROUP |
| ORC | [1..1] | R | |
| RXA | [1..1] | R | |
| [RXR] | [0..1] | RE | |
| [{{ | [1..*] | R | Begin Observation |
| OBX | [1..1] | R | |

³⁹ Matches the information in the requesting QBP message.

Table 12-1 Return Evaluated Immunization History and Forecast Response Grammar RSP^K11

| Segment | Cardinality | Usage | Comment |
|---------|-------------|-------|--------------------------|
| } | | | End observation |
| } | | | End Immunization History |

Static Definition -- Segment Level

ERR—Error Segment

| Table 12-x Error Segment (ERR) | | | | | | | | |
|--------------------------------|-----------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
| 1 | Error Code and Location | ELD | X | [0..0] | | | | Not supported for Version 2.5 and above. |
| 2 | Error Location | ERL | RE | [0..1] | 18 | | | |
| 3 | HL7 Error Code | CWE | R | [1..1] | | | HL70357 | |
| 4 | Severity | ID | R | [1..1] | 1 | | HL70516 | |
| 5 | Application Error Code | CWE | RE | | | | HL70533 | |
| 6 | Application Error Parameter | ST | O | | | | | |
| 7 | Diagnostic Information | TX | O | | | | | |
| 8 | User Message | TX | RE | | | | | This is a locally specified informative text message about the error. |
| 9 | Inform Person Indicator | IS | O | | | | | |
| 10 | Override Type | CWE | O | | | | | |
| 11 | Override Reason Code | CWE | O | | | | | |
| 12 | Help Desk Contact Point | XTN | O | | | | | |

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.

ERR field definitions:

See field definitions for ERR under Profile Z23 above.

MSA—Message Acknowledgement Segment

| Table 12-x Message Acknowledgement Segment (MSA) | | | | | | | | |
|--|-----------------------------|-----------|-------|-------------|--------|-----------------------|-----------|---------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
| 1 | Acknowledgment Code | ID | R | [1..1] | 2..2 | | HL70008 | |
| 2 | Message Control ID | ST | R | [1..1] | 1..199 | | | |
| 3 | Text Message | ST | X | [0..0] | | | | |
| 4 | Expected Sequence Number | NM | O | | | | | |
| 5 | Delayed Acknowledgment Type | | O | | | | | |
| 6 | Error Condition | CE | X | [0..0] | | | | |

MSA field definitions

See MSA field definitions in Z23 Profile.

MSH - Message Header Specification

TABLE 12-2 MSH SPECIFICATION FOR RETURN EVALUATED IMMUNIZATION HISTORY AND FORECAST RESPONSE

| SEQ | LEN | Data Type | Cardinality | Value set | ELEMENT NAME | Usage | Constraint |
|-----|-----|-----------|-------------|-----------|---------------------------------|-------|---|
| 1 | 1 | ST | [1..1] | | Field Separator | R | The MSH.1 field shall be |
| 2 | 4 | ST | [1..1] | | Encoding Characters | R | The MSH.2 field shall be ^~ & |
| 3 | | HD | [0..1] | 0361 | Sending Application | RE | No constraint |
| 4 | | HD | [0..1] | 0362 | Sending Facility | RE | No constraint |
| 5 | | HD | [0..1] | 0361 | Receiving Application | RE | No constraint |
| 6 | | HD | [0..1] | 0362 | Receiving Facility | RE | No constraint |
| 7 | 26 | TS_Z | [1..1] | | Date/Time Of Message | R | The degree of precision must be at least to the second, (format YYYYMMDDHHMMSS+/-ZZZZ). |
| 8 | 40 | ST | [0..1] | | Security | O | |
| 9 | 15 | MSG | [1..1] | | Message Type | R | RSP^K11^RSP_K11 |
| 10 | 199 | ST | [1..1] | | Message Control ID | R | |
| 11 | 3 | PT | [1..1] | | Processing ID | R | |
| 12 | | VID | [1..1] | | Version ID | R | 2.5.1 |
| 13 | 15 | NM | [0..1] | | Sequence Number | O | |
| 14 | 180 | ST | [0..1] | | Continuation Pointer | O | |
| 15 | 2 | ID | [1..1] | 0155 | Accept Acknowledgment Type | R | NE |
| 16 | 2 | ID | [1..1] | 0155 | Application Acknowledgment Type | R | NE |
| 17 | 3 | ID | [0..1] | 0399 | Country Code | O | blank |
| 18 | 16 | ID | [0..1] | 0211 | Character Set | O | blank |

TABLE 12-2 MSH SPECIFICATION FOR RETURN EVALUATED IMMUNIZATION HISTORY AND FORECAST RESPONSE

| SEQ | LEN | Data Type | Cardinality | Value set | ELEMENT NAME | Usage | Constraint |
|-----|-----|-----------|-------------|-----------|---|-------|---------------|
| 19 | | CE | [0..1] | | Principal Language Of Message | O | blank |
| 20 | 20 | ID | [0..1] | 0356 | Alternate Character Set Handling Scheme | O | blank |
| 21 | | EI | [1..*] | | Message Profile Identifier | R | Z42^CDCPHINVS |
| 22 | | XON | [0..1] | | Sending Responsible Organization | RE | |
| 23 | | XON | [0..1] | | Receiving Responsible Organization | RE | |

Conformance Statement:

IZ-65: One Occurrence of MSH-21 (Message Profile Identifier) SHALL contain the constant value “Z42^CDCPHINVS”

IZ-12: The MSH.1 (Field Separator) SHALL be valued “|”

IZ-13: The MSH.2 (Encoding Characters) SHALL be valued “^~\& “

IZ-15: The MSH-12 (Version ID) SHALL be valued “2.5.1 “

IZ-59: MSH-9 (Message Type) SHALL contain the constant value “RSP^K11^RSP_K11”

IZ-53: MSH-15 SHALL have a value of “NE”.

IZ-52: MSH-16 SHALL have a value of “NE”.

MSH field definitions

See field definitions for MSH under Profile Z22 above.

OBX—Observation Result Segment

The observation result segment has many uses. It carries observations about the object of its parent segment. In the VXU/RSP it is associated with the RXA or immunization record. The basic format is a question (OBX-3) and an answer (OBX-5).

Consult Appendix B for detailed examples of each of the uses.

Table 12-3 Observation Segment (OBX)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Sets | Comment |
|-----|------------------------|----------------------|--------|-------------|-------|---|--------------------------------|--|
| 1 | Set ID – OBX | SI | R | [1..1] | 1..4 | | | |
| 2 | Value Type | ID | R | [1..1] | 2..3 | | HL70125 (constrained) | |
| 3 | Observation Identifier | CE | R | [1..1] | | | NIP003 | This indicates what this observation refers to. It poses the question that is answered by OBX-5. |
| 4 | Observation Sub-ID | ST | R | [1..1] | 1..20 | | Constrain to positive integers | |
| 5 | Observation Value | varies ⁴⁰ | R | [1..1] | | | varies | This is the observation value and answers the question posed by OBX-3 |
| 6 | Units | CE | C(R/O) | [0..1] | | If OBX-2(Value Type) is valued "NM" Note: If there is not a unit of measure available while the Condition Predicated is true, then the value "NA" SHALL be used in CE.1 and "HL70353" in CE.3. | UCUM | |
| 7 | References Range | ST | O | | | | | |
| 8 | Abnormal Flags | IS | O | | | | | |
| 9 | Probability | NM | O | | | | | |

⁴⁰ The length of the observation field is variable, depending upon value type. See *OBX-2 value type*.

| Table 12-3 Observation Segment (OBX) | | | | | | | | |
|--------------------------------------|--|-----------|-------|-------------|-----|-----------------------|-----------------------|---------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Sets | Comment |
| 10 | Nature of Abnormal Test | ID | O | | | | | |
| 11 | Observation Result Status | ID | R | [1..1] | 1 | | HL70085 (constrained) | |
| 12 | Effective Date of Reference Range Values | TS | O | | | | | |
| 13 | User Defined Access Checks | ST | O | | | | | |
| 14 | Date/Time of the Observation | TS_NZ | RE | [0..1] | | | | |
| 15 | Producer's Reference | CE | O | | | | | |
| 16 | Responsible Observer | XCN | O | | | | | |
| 17 | Observation Method | CE | O | [0..1] | | | | |
| 18 | Equipment Instance Identifier | EI | O | | | | | |
| 19 | Date/Time of the Analysis | TS | O | | | | | |
| 20 | Reserved for harmonization with V2.6 | | X | [0..0] | | | | |

Table 12-3 Observation Segment (OBX)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Sets | Comment |
|-----|--|-----------|-------|-------------|-----|-----------------------|------------|---------|
| 21 | Reserved for harmonization with V2.6 | | X | [0..0] | | | | |
| 22 | Reserved for harmonization with V2.6 | | X | [0..0] | | | | |
| 23 | Performing Organization Name | XON | O | | | | | |
| 24 | Performing Organization Address | XAD | O | | | | | |
| 25 | Performing Organization Medical Director | XCN | O | | | | | |

Conformance Statement:

IZ-20: The Value of OBX-1 (Set ID-OBX) SHALL be valued sequentially starting with the value “1” within a message.

IZ-22: The value of OBX-11 (Observation Result Status) SHALL be “F”

IZ-37: If OBX-3.1 is “30956-7” and OBX-2 is “CE” then the value set for OBX-5 shall be CVX.

IZ-44: The value of OBX-4 SHALL be a positive integer.

OBX field definitions

See field definitions for OBX under Profile Z22 above.

ORC—Order Request Segment

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

The population of the ORC segment will vary for evaluated history and forecast groups. For Forecast segments, Filler Order Number (ORC-3) is still required and is subject to Conformance Statement IZ-45. Placer Order Number (ORC-2) and Entering Organization (ORC-17) both have a usage of RE but are not expected for forecast ORC segments.

Table 12-5 Common Order Segment (ORC)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
|-----|--------------------------|-----------|-------|-------------|-----|-----------------------|--------------------------|--|
| 1 | Order Control | ID | R | [1..1] | 2 | | HL70119 (constrained) | |
| 2 | Placer Order Number | EI | RE | [0..1] | | | | See Guidance below. |
| 3 | Filler Order Number | EI | R | [1..1] | | | | See Guidance below. |
| 4 | Placer Group Number | EI | O | | | | | |
| 5 | Order Status | ID | O | | | | | |
| 6 | Response Flag | ID | O | | | | | |
| 7 | Quantity/Timing | TQ | X | [0..0] | | | | |
| 8 | Parent | EIP | O | | | | | |
| 9 | Date/Time of Transaction | TS | O | | | | | |
| 10 | Entered By | XCN | O | [0..1] | | | | This is the person that entered this immunization record into the system. |
| 11 | Verified By | XCN | O | | | | | |
| 12 | Ordering Provider | XCN | O | [0..1] | | | | This shall be the provider ordering the immunization. It is expected to be empty if the immunization record is transcribed from a historical record. |
| 13 | Enterer's Location | PL | O | | | | | |

| Table 12-5 Common Order Segment (ORC) | | | | | | | | |
|---------------------------------------|----------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|---|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 14 | Call Back Phone Number | XTN | O | | | | | |
| 15 | Order Effective Date/Time | TS | O | | | | | |
| 16 | Order Control Code Reason | CE | O | | | | | |
| 17 | Entering Organization | CE | RE | | | | HL70362 | This is the provider organization that entered this record/order. |
| 18 | Entering Device | CE | O | | | | | |
| 19 | Action By | XCN | O | | | | | |
| 20 | Advanced Beneficiary Notice Code | CE | O | | | | | |
| 21 | Ordering Facility Name | XON | O | | | | | |
| 22 | Ordering Facility Address | XAD | O | | | | | |
| 23 | Ordering Facility Phone Number | XTN | O | | | | | |
| 24 | Ordering Provider Address | XAD | O | | | | | |
| 25 | Order Status Modifier | CWE | O | | | | | |

Table 12-5 Common Order Segment (ORC)

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
|-----|---|-----------|-------|-------------|-----|-----------------------|-----------|---------|
| 26 | Advanced Beneficiary Notice Override Reason | CWE | 0 | | | | | |
| 27 | Filler's Expected Availability Date/Time | TS | 0 | | | | | |
| 28 | Confidentiality Code | CWE | 0 | | | | | |
| 29 | Order Type | CWE | 0 | | | | | |
| 30 | Enterer Authorization Mode | CNE | 0 | | | | | |
| 31 | Parent Universal Service Identifier | CWE | 0 | | | | | |

Conformance Statement:

IZ-25: ORC.1 (Order Control) SHALL contain the value "RE "

IZ-45: If RXA-20 is valued "NA" or "RE" then ORC-3.1 SHALL be valued "9999".

ORC field definitions

See field definitions for ORC under Profile Z22 above.

PID—Patient Identifier Segment

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

Table 12-6 Patient Identifier Segment (PID)

| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
|-----|------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|--|
| 1 | Set ID - PID | SI | R | [1..1] | | | | |
| 2 | Patient ID | CX | X | [0..0] | | | | |
| 3 | Patient Identifier List | CX | R | [1..*] | | | | |
| 4 | Alternate Patient ID - 00106 | CX | X | [0..0] | | | | |
| 5 | Patient Name | XPN | R | [1..*] | | | | The first repetition shall contain the legal name. Multiple given names or initials are separated by spaces. |
| 6 | Mother's Maiden Name | XPN_M | O | [0..1] | | | | Only last name and name type are required. Set Name Type code to "M" for maiden name usage. |
| 7 | Date/Time of Birth | TS_NZ | R | [1..1] | | | | |
| 8 | Administrative Sex | IS | R | [1..1] | | | HL70001 | If a sex is not definitively known, use the value U-Unknown from HL70001. |
| 9 | Patient Alias | XPN | X | [0..0] | | | | |
| 10 | Race | CE | O | [0..*] | | | CDCREC | |
| 11 | Patient Address | XAD | RE | [0..*] | | | | The first repetition should be the primary address. |
| 12 | County Code | IS | X | [0..0] | | | | County belongs in address field. |

| Table 12-6 Patient Identifier Segment (PID) | | | | | | | | |
|---|-----------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|--|
| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
| 13 | Phone Number - Home | XTN | O | [0..*] | | | | The first instance shall be the primary phone number. Only one item is allowed per repetition. |
| 14 | Phone Number - Business | XTN | O | | | | | |
| 15 | Primary Language | CE | O | | | | | |
| 16 | Marital Status | CE | O | | | | | |
| 17 | Religion | CE | O | | | | | |
| 18 | Patient Account Number | CX | O | | | | | |
| 19 | SSN Number - Patient | ST | X | [0..0] | | | | |
| 20 | Driver's License Number - Patient | DLN | X | [0..0] | | | | |
| 21 | Mother's Identifier | CX | X | [0..0] | | | | |

Table 12-6 Patient Identifier Segment (PID)

| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
|-----|-----------------------------|-----------|-------|-------------|------|-----------------------|-----------|---|
| 22 | Ethnic Group | CE | O | [0..1] | | | CDCREC | |
| 23 | Birth Place | ST | O | | | | | |
| 24 | Multiple Birth Indicator | ID | O | [0..1] | | | HL70136 | The acceptable values are Y and N. If the status is undetermined, then field shall be empty. |
| 25 | Birth Order | NM | O | [0..1] | 1..2 | | | This field contains a number indicating the person's birth order, with 1 for the first child born and 2 for the second. |
| 26 | Citizenship | CE | O | | | | | |
| 27 | Veterans Military Status | CE | O | | | | | |
| 28 | Nationality | CE | O | | | | | |
| 29 | Patient Death Date and Time | TS | O | [0..1] | | | | |
| 30 | Patient Death Indicator | ID | RE | [0..1] | | | HL70136 | |
| 31 | Identity Unknown Indicator | ID | O | | | | | |

| Table 12-6 Patient Identifier Segment (PID) | | | | | | | | |
|---|---------------------------|-----------|-------|-------------|-----|-----------------------|-----------|------------|
| SEQ | Element Name | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
| 32 | Identity Reliability Code | IS | O | | | | | |
| 33 | Last Update Date/Time | TS | O | | | | | |
| 34 | Last Update Facility | HD | O | | | | | |
| 35 | Species Code | CE | O | | | | | |
| 36 | Breed Code | CE | O | | | | | |
| 37 | Strain | ST | O | | | | | |
| 38 | Production Class Code | CE | O | | | | | |
| 39 | Tribal Citizenship | CWE | O | | | | | |

Conformance Statement:

IZ-46: PID-1 (Set ID) SHALL have the literal value “1”

PID field definitions

See field definitions for PID under Profile Z22 above.

QAK—Query Acknowledgement Segment

Table 12-7 Query Acknowledgement Segment

| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Comment |
|-----|-----------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------|
| 1 | Query Tag | ST | R | [1..1] | 32 | | | |
| 2 | Query Response Status | ID | R | [1..1] | | | HL70208 | |
| 3 | Message Query Name | CE | R | [1..1] | | | | |
| 4 | Hit Count | NM | O | [0..1] | | | | |
| 5 | This payload | NM | O | [0..1] | | | | |
| 6 | Hits remaining | NM | O | [0..1] | | | | |

QAK field definitions

QAK-1 Query Tag (ST) 00696

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

QAK-2 Query Response Status (ID) 00708

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

QAK-3 Message Query Name (CE) 01375

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

QPD Input Parameter Specification

| Table 12-8 QPD Input Parameter Specification | | | | | | | | | | | |
|--|----------------------------------|------------|------|-----|-------|-------|-----|----------|--------------------|---------|--|
| Field Seq (Query ID=Z34) | Name | Key/Search | Sort | LEN | TYPE | Usage | Rep | Match Op | Segment Field Name | TBL | Element Name or Value |
| 1 | MessageQueryName | | | | CE | R | | [1..1] | | | |
| 2 | QueryTag | | | 32 | ST | R | | [1..1] | | | |
| 3 | PatientList | | | | CX | RE | Y | [0..*] | PID.3 | | PID-3: Patient Identifier List |
| 4 | PatientName | | | | XPN | RE | | [0..1] | PID.5 | | PID-5: Patient Name |
| 5 | PatientMotherMaidenName | | | | XPN_M | RE | | [0..1] | PID.6 | | PID-6: Mother's maiden name |
| 6 | Patient Date of Birth | | | 26 | TS_NZ | RE | | [0..1] | PID.7 | | PID-7: Patient date of birth |
| 7 | Patient Sex | | | 1 | IS | RE | | [0..1] | PID.8 | HL70001 | PID-8: Patient sex |
| 8 | Patient Address | | | | XAD | RE | | [0..1] | PID.11 | | PID-11: Patient Address |
| 9 | Patient home phone | | | | XTN | RE | | [0..1] | PID.13 | | PID-13: Patient home phone |
| 10 | Patient multiple birth indicator | | | 1 | ID | RE | | [0..1] | PID-24 | HL70136 | PID-24: Patient multiple birth indicator |
| 11 | Patient birth order | | | 2 | NM | RE | | [0..1] | PID-25 | | PID-25: Patient birth order |

Table 12-8 QPD Input Parameter Specification

| Field Seq (Query ID=Z34) | Name | Key/ Search | Sort | LEN | TYPE | Usage | Rep | Match Op | Segment Field Name | TBL | Element Name or Value |
|--------------------------|-----------------------------|-------------|------|-----|------|-------|-----|----------|--------------------|-----|--------------------------------------|
| 12 | Client last updated date | | | | TS | O | | [0..1] | PID-33 | | PID-33: Patient last update date |
| 13 | Client last update facility | | | | HD | O | | [0..1] | PID-34 | | PID-34: Patient last update facility |

QPD Conformance Statement:

IZ-68: QPD-1 (Message Query Name) SHALL be valued "Z44^Request Evaluated History and Forecast^CDCPHINVS".

QPD Input Parameter Field Description and Commentary

See Field Description under QPD in Profile Z34.

RXA-- Pharmacy/Treatment Administration Segment

The RXA segment carries pharmacy administration data.

| Table 12-9 Pharmacy/Treatment Administration (RXA) | | | | | | | | |
|--|-----------------------------------|-----------|--------|-------------|-----|--|-----------|---|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 1 | Give Sub-ID Counter | NM | R | [1..1] | 1 | | | |
| 2 | Administration Sub-ID Counter | NM | R | [1..1] | 1 | | | |
| 3 | Date/Time Start of Administration | TS_NZ | R | [1..1] | | | | This segment may be used in cases where a vaccine has not been administered. For instance a patient may refuse a vaccination or the sending system may be forecasting a next dose due. See notes below for guidance on the relevant date to include here. |
| 4 | Date/Time End of Administration | TS | O | [0..1] | | | | See not below |
| 5 | Administered Code | CE | R | [1..1] | | | CVX | Support for CVX code is strongly preferred. Local IG may identify NDC or CPT as acceptable alternative code sets. |
| 6 | Administered Amount | NM | R | [1..1] | 20 | | | |
| 7 | Administered Units | CE | C(R/X) | [0..1] | | If Administered Amount is not valued "999" | UCUM | The preferred units of measure for this is "mL". |
| 8 | Administered Dosage Form | CE | O | [0..1] | | | | |

| Table 12-9 Pharmacy/Treatment Administration (RXA) | | | | | | | | |
|--|------------------------------|-----------|---------|-------------|-----|---|-----------|--|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 9 | Administration Notes | varies | C(R/O) | [0..*] | | If RXA-20 is valued "CP" or "PA" | NIP001 | <p>If this field is used for a notes only entry, then the data type shall be CE_TX otherwise the data type shall be CE.</p> <p>The primary use of this field is to convey if this immunization record is based on a historical record or was given by the provider recording the immunization. All systems should be able to support this use. Other uses of this field are permitted, but need to be specified locally.</p> |
| 10 | Administering Provider | XCN | C(RE/O) | [0..1] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | | This is the person who gave the administration or the vaccinator. It is not the ordering clinician. |
| 11 | Administered-at Location | LA2 | C(RE/O) | [0..1] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | | This is the clinic/site where the vaccine was administered. |
| 12 | Administered Per (Time Unit) | ST | O | | | | | |
| 13 | Administered Strength | NM | O | | | | | |
| 14 | Administered Strength Units | CE | O | | | | | |

| Table 12-9 Pharmacy/Treatment Administration (RXA) | | | | | | | | |
|--|---|-----------|--------|-------------|-----|---|-----------|---------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 15 | Substance Lot Number | ST | O | [0..*] | | | | |
| 16 | Substance Expiration Date | TS_M | O | [0..1] | | | | |
| 17 | Substance Manufacturer Name | CE | C(R/O) | [0..1] | | If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" | MX | |
| 18 | Substance/Treatment Refusal Reason | CE | C(R/X) | [0..*] | | If the RXA-20 (Completion Status) is valued "RE " | NIP002 | |
| 19 | Indication | CE | O | | | | | |
| 20 | Completion Status | ID | RE | [0..1] | 2 | | HL70322 | |
| 21 | Action Code - RXA | ID | O | [0..1] | 2 | | HL70323 | |
| 22 | System Entry Date/Time | TS | O | | | | | |
| 23 | Administered Drug Strength Volume | NM | O | | | | | |
| 24 | Administered Drug Strength Volume Units | CWE | O | | | | | |
| 25 | Administered Barcode Identifier | CWE | O | | | | | |

| Table 12-9 Pharmacy/Treatment Administration (RXA) | | | | | | | | |
|--|---------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Comment |
| 26 | Pharmacy Order Type | ID | O | | | | | |

Conformance Statement:

IZ-28: RXA-1 (Give Sub-id counter) SHALL be valued “0” Note that “0” is zero.

IZ-29: RXA-2 (admin Sub-id) SHALL be valued “1 “

IZ-30: If RXA-4 (Date time of admin end) is populated, then it SHALL be the same as Start time (RXA-3)

IZ-31: If RXA-20 is valued "CP" or "PA" then RXA-9.1 (admin notes) SHALL be valued one of the codes listed in NIP001 in the first occurrence of this field and optionally following repetition valued with a text notes.

IZ-32: If the RXA-18 (Refusal Reason) is populated, RXA-20 SHALL be valued to “RE”.

IZ-47: If RXA-20 is NOT valued "CP" or "PA" then the first occurrence of RXA-9.1 (admin notes) SHALL be empty and the following repetitions may be valued with text notes.

IZ-48: If RXA-20 is valued “RE” then RXA-6 shall be valued “999”.

IZ-49: If RXA-5.1 is valued “998” then RXA-6 shall be valued “999”.

RXA field definitions

See RXA field definitions in the Z22 profile.

RXR-- Pharmacy/Treatment Route Segment

The Pharmacy/Treatment Route segment contains the alternative combination of route, site, administration device, and administration method that are prescribed as they apply to a particular order.

| Table 12-10 Pharmacy/Treatment Route (RXR) | | | | | | | | |
|--|------------------------------|-----------|-------|-------------|-----|-----------------------|-----------|------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Constraint |
| 1 | Route | CE | R | [1..1] | | | NCIT | |
| 2 | Administration Site | CWE | RE | [0..1] | | | HL70163 | |
| 3 | Administration Device | CE | O | | | | | |
| 4 | Administration Method | CWE | O | | | | | |
| 5 | Routing Instruction | CE | O | | | | | |
| 6 | Administration Site Modifier | CWE | O | | | | | |

RXR field definitions

See RXR field definitions in Profile Z22.

13.Batch File Specifications

Sending Messages in a Batch

Systems may choose to send messages in batches. A batch begins with a batch header statement (BHS) and ends with a Batch Trailer Segment. Batches may in turn be batched into files of batches using File Header Statement and File Trailer statement. If a system is sending a single batch, the FHS/FTS is not necessary. A stream of messages may be sent without use of either BHS or FHS.

The generic layout of a batch message is as follows:

BHS
VXU
VXU
...
BTS

Similarly, a file of batches is laid out as follows:

FHS
BHS
VXU
VXU
...
BTS
BHS
VXU
...

BTS

...

FTS

BHS—Batch Header Segment

| Table 13-1 Batch Header Segment (BHS) | | | | | | | | |
|---------------------------------------|-----------------------------|-----------|-------|-------------|------|-----------------------|-----------|---------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
| 1 | Batch Field Separator | ST | R | [1..1] | 1,,1 | | | |
| 2 | Batch Encoding Characters | ST | R | [1..1] | 4..4 | | ^~\& | |
| 3 | Batch Sending Application | HD | O | | | | | |
| 4 | Batch Sending Facility | HD | O | | | | | |
| 5 | Batch Receiving Application | HD | O | | | | | |
| 6 | Batch Receiving Facility | HD | O | | | | | |
| 7 | Batch Creation Date/Time | TS | O | | | | | |
| 8 | Batch Security | ST | O | | | | | |
| 9 | Batch Name/ID/Type | ST | O | | | | | |
| 10 | Batch Comment | ST | O | | | | | |
| 11 | Batch Control ID | ST | O | | | | | |
| 12 | Reference Batch Control ID | ST | O | | | | | |

Conformance Statement

IZ-8: BHS.1 (Batch Field Separator) SHALL be |

IZ-9: BHS.2 (Batch Encoding Characters) SHALL be ^~\&

BHS field definitions

BHS-1 Batch Field Separator (ST) 00081

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

BHS|

↑

separator

BHS-2 Batch Encoding Characters (ST) 00082

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

BTS—Batch Trailer Segment

| Table 13-2 Batch Trailer Segment (BTS) | | | | | | | | |
|--|---------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
| 1 | Batch Message Count | ST | 0 | | | | | |
| 2 | Batch Comment | ST | 0 | | | | | |
| 3 | Batch Totals | NM | 0 | | | | | |

BTS field definitions

BTS-1 - BTS-3 Not anticipated to be used for immunization messages.

Example: BTS||

FHS—File Header Segment

| Table 13-3 File Header Segment (FHS) | | | | | | | | |
|--------------------------------------|----------------------------|-----------|-------|-------------|------|-----------------------|-----------|---------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value Set | Description/Comment |
| 1 | File Field Separator | ST | R | [1..1] | 1..1 | | | |
| 2 | File Encoding Characters | ST | R | [1..1] | 4..4 | | ^~\& | |
| 3 | File Sending Application | HD | O | | | | | |
| 4 | File Sending Facility | HD | O | | | | | |
| 5 | File Receiving Application | HD | O | | | | | |
| 6 | File Receiving Facility | HD | O | | | | | |
| 7 | File Creation Date/Time | TS | O | | | | | |
| 8 | File Security | ST | O | | | | | |
| 9 | File Name/ID | ST | O | | | | | |
| 10 | File Header Comment | ST | O | | | | | |
| 11 | File Control ID | ST | O | | | | | |
| 12 | Reference File Control ID | ST | O | | | | | |

Conformance Statement:

IZ-10: The FSH.1 (File Field Separator) SHALL be |

IZ-11: The FSH.2 (File Encoding Characters) SHALL be ^~\&

FHS field definitions

FHS-1 File Field Separator (ST) 00067

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

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

FHS|

FHS-2 File Encoding Characters (ST) 00068

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

FTS—File Trailer Segment

| Table 13-4 File Trailer Segment (FTS) | | | | | | | | |
|---------------------------------------|----------------------|-----------|-------|-------------|-----|-----------------------|-----------|---------------------|
| SEQ | ELEMENT NAME | Data Type | Usage | Cardinality | LEN | Conditional Predicate | Value set | Description/Comment |
| 1 | File Batch Count | NM | 0 | | | | | |
| 2 | File Trailer Comment | ST | 0 | | | | | |

Change History Details

Release 1.1

| Release 1.1 Changes | |
|----------------------|---|
| Location | Change |
| Page 100 | PD1-4 Primary Provider. Corrected data type to XCN. |
| Page 46 | Corrected usage definitions for EI-Entity Identifier data type. |
| Page 124 | Clarified default action if RXA-21 Action Code is not populated. |
| Appendix A-1 | Added copyright note on LOINC codes. Added reference to SNOMED. Added reference to PHIN VADS |
| Appendix A-2 and A-3 | Removed links to dead web pages on Race and Ethnicity. |
| Appendix A-33 | Added NCIT to codes |
| Appendix A-2 | Corrected Value set OID for race. |
| Appendix A-30 | Corrected code for Allergy to protein of rodent origin. |
| Appendix A-30 | Removed duplicate row VXC28 |
| Appendix A-36 | Corrected LOINC code for contraindication |

Release 1.2

| Release 1.2 Changes | |
|---------------------|---|
| Location | Change |
| Appendix A-18 | Added example of response to query that found too many candidates. |
| Appendix A-multiple | Corrected use of profile identifiers in the responses. Changed HL70396 to CDCPHIVS. |
| Chapter 6, page 129 | Corrected cardinality of GT1 and Insurance segment group. |
| Chapter 5, p72 | Corrected spelling of BHS |

Change History

| Release 1.2 Changes | |
|-------------------------------------|--|
| Location | Change |
| Chapter 5, p72 and throughout Guide | Changed “null” to “empty” in data types, fields and segments. In some cases deleted contents of cell |
| Chapter 7, p 140 | Corrected cardinality |
| Chapter 7, page 156 | Removed extraneous RCP row in table. |
| Chapter 7, page 157 | Include profile id in the text explaining Z32^CDCPHINVS |
| Chapter 4, page 61 | Illustrated use of HD data type in XCN |
| Appendix B, throughout | Corrected Query name to Z34^Request Immunization History^CDCPHINVS |
| Appendix B-15 | Corrected LOINC in example message. It was set to Reaction, but should be 59779-9, schedule used. |
| Chapter 5, page 105 | Corrected cardinality of PID-1 |
| Chapter 5, various pages | Corrected cardinality of fields with usage of X (not supported) from [0..1] to [0..0] |
| Chapter 5, page 108 | Corrected data type of PID-39 Tribal citizenship from CE to CWE |
| Chapter 5, page 101 | Corrected data types for all PD1 fields. |
| Chapter 5, page 91 | Corrected usage of OBX-1 |
| Chapter 4, page 50 | Added reference to User defined tables 0361-0363 |
| Chapter 5, page 82-3 | Clarified usage of tables 0361 and 0362 |
| Chapter 5, page 96 | Corrected ORC-3 usage |
| Appendix A, Table 0363 | Added table with value set |

Release 1.3

| Release 1.3 Changes | |
|--|--|
| Location | Change |
| Chapter 2, Use Case 9 – report error | Added clarifying statement. |
| Chapter 3, usage guidance | Clarified RE and CE usage. These are SHOULD rather than SHALL |
| Chapter 4, HD data type and Appendix A | Changed references to Table HL70300 to the more specific HL70361-HL70363 |
| Chapter 4, FT data type | FT data type added |
| Chapter 5, MSH-11 | Clarify use of field and attendant table |
| Chapter 5, PID 14 | Correct cardinality |
| Chapter 5, PID-15 note box | Clarified difference between V2.3.1 and V2.5.1 IG value sets. |
| Chapter 5, RXA-10 | Added clarifying statement. |
| Chapter 5, RXA 20 | Clarified definition and codes |
| Chapter 5, NK1-20 and PID-15 | Corrected table reference for language to ISO 0639 |
| Appendix A, User-defined Table 0064 | Updated to accommodate change in eligibility coding. |
| Appendix A, Table NIP 003 | Added new LOINC for eligibility |
| Appendix A, | Added new value set for client risk factors to be used for priority groups. |
| Appendix B, immunization history table | Added new concepts |
| Appendix B, Example VXU #2 | Added description of messaging eligibility status using OBX, per immunization. |
| Appendix B | Forecast examples updated to include ORC segment for each RXA |
| Appendix B, Forecasting messages | Added new examples and improved existing examples |
| Chapter 5, VXU table | Changed PV1 to optional |
| Chapter 5, page 112 | Note on changing PV1 to optional |

Change History

| Release 1.3 Changes | |
|---|--|
| Location | Change |
| Chapter 5, page 115 | Note on changing PV1 to optional |
| Chapter 6, page 131 | Clarified cardinality and usage of Order group |
| Chapter 7, page 142 | Changed cardinality and usage of PV1 in response grammar table |
| Appendix A, table 0064 | Updated notes and definitions to reflect MIROW guidance |
| Appendix B, Example VXU #2 | Extensive rewrite to reflect MIROW guidance |
| Appendix B, Example VXU #2 | Removed guidance on use of PV1 for eligibility status |
| Appendix A and Appendix B | Removed references to messaging funding source. |
| Chapter 7, response grammar | Corrected usage of IN1 from RE to O. |
| Appendix A, Table 0064 And examples using VFC codes throughout Appendix B | Corrected VFC codes. Deprecated V06 and V08 |

Release 1.4

| Release 1.4 Changes | |
|-------------------------------------|--|
| Location | Change |
| Chapter 2 | Added documentation of core data elements |
| XAD, table 4-23 | Specified use of US Postal Service state codes |
| RXA, table 5-20, | Specified use of NIP002 for RXA-18 |
| RXA-3 text, page 123 | Clarified appropriate date for forecast. |
| Appendix A | Set table title to be a header, so it is included in Table of Contents |
| Table 0064-Financial Class | Clarified use of V07 |
| Table 0289-County/Parish, page A-21 | Corrected codes for county. |
| CDC-defined table NIP-003 | Added new observation code for document type |

| Release 1.4 Changes | |
|-------------------------------|--|
| Location | Change |
| Evidence of Immunity-IIS | Added new codes for evidence of immunity |
| VIS Document Type-IIS | Added new table for identifying VIS document types |
| Appendix B-core data elements | Updated table and added more data concepts. |
| Appendix B- VXU #2 example | Added guidance to incorporate guidance on eligibility from MIROW work. |
| Appendix B-VXU #7 example | Added guidance on using the new barcodes for VIS document type. |
| Through out document | Added conformance statements for key elements |
| Chapter 3 | Modified usage descriptions to separate sender and receiver responsibilities. |
| Throughout document | Changed C and CE usage to use the pre-adopted Version 2.7.1 conditional usage |
| Throughout document | Reformatted the tables for elements to support changes to Conditional usage |
| Appendix B | Restored table for indicating funding source for an immunization. |
| Appendix A | Added new table for VIS barcode, VIS vaccines and Eligibility Observation Method |

Release 1.5

| Release 1.5 Changes | |
|----------------------------|--|
| Location | Change |
| | Reorganized IG, creating a separate profile for VXU, ACK and queries |
| ACK Z23 profile | Set MSH-15 and MSH-16 to "NE" |
| Appendix B | Updated Message examples to align with RXA-21 changes and correct some RXA-20 positions. |

Change History

| Release 1.5 Changes | |
|-----------------------------------|---|
| Location | Change |
| CE data type | Changed CE.4 usage to O |
| Chapter 2, Preadoption of V 2.7.1 | Dropped 2.7.1 guidance on field length. |
| Chapter 3, HL7 definitions | Added Segment Groups definition. |
| CWE data type | Changed CWE.4 usage to O (optional) |
| ERL (Error Location) Data type | Clarified how to count segment count when reporting error. |
| ERL data type | Clarified usage of subcomponents to harmonize across implementations. |
| Ethnicity codes | Removed reference to HL70189 code table and associated ethnicity codes (H,N,U) |
| HD data type | Added note on use of subcomponent separator when HD data type is a subcomponent of another data type. |
| IN1 segment | Added constrained field level specifications. IN1 still optional segment. |
| Insurance Group | Optional, and not repeating |
| IZ-14 | removed |
| IZ-16 | Removed |
| IZ-23 | Updated to match in Addendum |
| IZ-24 | Updated to match in Addendum |
| IZ-34 | Corrected to match addendum |
| MSH-15 | Usage is required (R) Z32,Z42,Z23,Z31 and Z33 set to "NE", Z22,Z34 and Z44 set to "ER" |

| Release 1.5 Changes | |
|---|---|
| Location | Change |
| MSH-16 | Usage is required (R) Z32,Z42,Z23,Z31 and Z33 set to "NE", Z22,Z34 and Z44 set to "AL" |
| MSH-21 | Applied conditional predicates to each MSH segment requiring the appropriate profile ID. |
| MSH-22, MSH-23 | Preadopted MSH22 and MSH 23 from V 2.7.1 |
| MSH-7 (message date) | Changed data type to TS_Z, requiring precision to second and time zone. |
| MSH-7 examples | Corrected all MSH-7 message examples to be TS_Z data type |
| NIP003 | Added 59777-3, latest date to administer And 59778-1, date overdue And 59778-1, reason code |
| OBX | Correct typo from cdcg1lvis to cdcgs1vis |
| OBX Application level conformance statements Table 5-15 | Clarified existing statements and added statements. |
| OBX-1 | Clarified numbering across segment. Numbering is now continuous. Corrected example messages |
| OBX-14 | Changed data type to TS_NZ |
| OBX-4 | Conformance statement requires positive integer. |
| ORC-12 | Changed usage to C(RE/O) |
| ORC-17 | Changed usage to RE |
| ORC-3 | Conformance added |
| PID, IZ-26 | removed |
| PID-1 for all profiles. | Changed usage to R and added conformance statement. |
| PID-29 | Corrected conditional predicate |

Change History

| Release 1.5 Changes | |
|-----------------------------|---|
| Location | Change |
| PID-6 , Mothers maiden name | Changed to XPN_M |
| QUERY /RESPONSE MSH-7 | Changed data type to TS_Z |
| QUERY /RESPONSE PID-7 | Changed Data type to TS_NZ |
| RXA conformance statement | Added conformance statement: IZ-xx: If RXA-20 is NOT valued "CP" or "PA" then the first occurrence of RXA-9.1 (admin notes) SHALL be empty and the following repetitions should be empty or valued with text notes. |
| RXA, IZ-34 | removed |
| RXA, IZ-37, IZ-38 | Removed |
| RXA-10 | Updated conditional predicate |
| RXA-11 | Updated conditional predicate |
| RXA-15 | Updated conditional predicate and changed usage to C(R/O). |
| RXA-16 | Updated conditional predicate |
| RXA-17 | Updated conditional predicate and changed usage to C(R/O) |
| RXA-21 | Changed usage to C(R/O). Deleted guidance indicating that an empty field meant "A". |
| RXA-3 | Changed data type to TS_NZ |
| RXA-4 | Changed usage to O (optional). |
| RXA-6 | Conformance statement requiring "999" for non-administered doses. |
| Table 2-1 | Added new goal, send evaluated history and forecast. |
| Table 2-1 | Updated Use Cases. Collapse "send" and "receive" use cases into one use case. Added use case for request evaluated history and forecast. |
| Table 2-1 | Updated all use case narratives |

| Release 1.5 Changes | |
|---|--|
| Location | Change |
| Table 6-2 | Corrected Patient visit group and PV1 |
| TS_M data type | Constrained version of the TS data type, requiring precision to the month and permitting to the day. |
| TS_NZ data type | Created a constrained version of the TS data type, requiring precision to the day. |
| TS_Z data type | Created a constrained version of the TS data type, requiring precision to the second and time zone. |
| XPN_M data type | Added XPN_M to data types |
| XTN data type | Corrected typos in conditional predicates. |
| Z32 RXA-21 | Set RXA-21 (Action code) to O |
| Z34 Message level definition | Set Changed ORC to O |
| Appendix B, VXU Example #9 | Clarified when and how to send 2 lots number for one immunization |
| Profile Z32-Return Complete history | Loosened conditional predicates and removed conformance statements for OBX segment |
| Profile Z42-Return Evaluated History and Forecast | Loosened conditional predicates and removed conformance statements for OBX segment |
| Profile Z42-Return Evaluated History and Forecast | Loosened requirements and removed conditional predicates for ORC segment |
| Profile Z42-Return Evaluated History and Forecast | Loosened requirements and removed conditional predicates for PID |
| Profile Z42-Return Evaluated History and Forecast | Loosened requirements and removed conditional predicates for RXA |
| CWE-1 | Changed from RE to R |
| MSH-21 for all profiles | Change cardinality to [1..*] |
| Appendix B, Example #4 | Corrected Reaction observation. Removed Reaction to Current Immunization |
| Table 0361, Table 0362 and Table 0363 | Added clarifying language |

Change History

| Release 1.5 Changes | |
|--------------------------------|--|
| Location | Change |
| Appendix B, VXU Example #9 | Clarified when and how to send 2 lots number for one immunization |
| MSH-3, MSH-4, MSH-5, MSH-6 | Modified field definitions to clarify that values in tables 0361, 0362 and 0363 are defined locally. |
| Table 0086 | Values recorded |
| Value Set-Evidence of Immunity | Deprecated existing table and created 2 new tables. One for history of disease and one for serological evidence of immunity. |
| Observation Identifier table | Added LOINC for Serological Evidence of Immunity |
| | |
| | |
| | |
| | |
| | |
| | |

APPENDIX A:

Code Tables

Table A-1 Appendix A Revision History

| Revision History | | |
|------------------|-------------|-----------|
| Author | Revision | Date |
| Rob Savage | Release 1 | 5/1/2010 |
| Rob Savage | Release 1.1 | 8/15/2010 |
| Rob Savage | Release 1.2 | 2/15/2011 |
| Rob Savage | Release 1.3 | 8/15/2011 |
| Rob Savage | Release 1.4 | 8/1/2012 |
| Rob Savage | Release 1.5 | 10/1/2014 |

NOTE: In this appendix, values are selected from standard code sets where available. The Value Sets are maintained in the PHIN VADS for use in Public Health. The main purpose of PHIN VADS is to distribute vocabulary subsets needed in Public Health. The latest version of value sets referenced in this Implementation Guide can be obtained from PHIN VADS at (<http://phinvads.cdc.gov>). Search using keyword “immunization”.

Note that the PHIN VADS value sets are the source of truth for use in Meaningful Use testing.

This material contains content from LOINC® (<http://loinc.org>). The LOINC table and LOINC codes are copyright © 1995-2010, Regenstrief Institute, Inc. and the Logical Observation Identifiers Names and Codes (LOINC) Committee.

This material contains content from SNOMED CT. SNOMED CT (Systematized Nomenclature of Medicine--Clinical Terms) is a comprehensive clinical terminology, originally created by the College of American Pathologists (CAP) and, as of April 2007, owned, maintained, and distributed by the International Health Terminology Standards Development Organization (IHTSDO), a non-for-profit association in Denmark. The CAP continues to support SNOMED CT operations under contract to the IHTSDO and provides SNOMED-related products and services as a licensee of the terminology.

User-defined Table 0001 - Sex

This code reflects the self reported gender. Use in PID-8, NK1-15. These codes are pre-adopted from HL7 Version 3 Administrative Gender.

Value set OID: 2.16.840.1.113883.1.11.1

| Value | Description | Definition |
|-------|--------------------------|--|
| F | Female | Person reports that she is female. |
| M | Male | Person reports that he is male. |
| U | Unknown/undifferentiated | No assertion is made about the gender of the person. |

HL7-defined Table 0003 - Event type

This code indicates the trigger event. Refer to Chapter 3, Version 2.5.1 for further information on HL7 event triggers.

Each profile identifies the appropriate value for Event Type in a conformance statement.

User-defined Table 0004 - Patient class

Use in PV1-2.

This code categorizes the patient in the current event. The only value supported is R for recurring patient. For a current list of HL7 values please reference the HL7 version 2.5.1 documents.

User-defined Table 0005 - 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.

This code represents the client’s self-reported race.

<https://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.113883.3.2074.1.1.3>

Value set OID: 2.16.840.1.113883.3.2074.1.1.3

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

HL7-defined Table 0008 - Acknowledgment code

Use in MSA-1.

This code indicates the type of acknowledgement expected.

| Value | Description | Comment |
|-------|--|-------------------------------------|
| AA | Original mode: Application Accept Enhanced mode: Application acknowledgment: Accept | Message was accepted without error. |

| Value | Description | Comment |
|-------|--|--|
| AE | Original mode: Application Error Enhanced mode: Application acknowledgment: Error | Message was processed and errors are being reported. ⁴¹ |
| AR | Original mode: Application Reject Enhanced mode: Application acknowledgment: 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: Accept acknowledgment: Commit Accept | Not supported in this Implementation Guide |
| CE | Enhanced mode: Accept acknowledgment: Commit Error | |
| CR | Enhanced mode: Accept acknowledgment: Commit Reject | |

User-defined Table 0010 - Physician ID

Use in all XCN data types; including PV1-7,8,9,17, RXA-10.

Each registry should establish a system of coding its reporting physicians. The National Provider Identifier (NPI) adopted for the HIPAA legislation may be used for this purpose.

HL7-defined Table 0061 - Check digit scheme

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

| Value | Description |
|-------|--|
| M10 | <i>Mod 10 algorithm</i> |
| M11 | Mod 11 algorithm |
| ISO | ISO 7064: 1983 |
| NPI | Check digit algorithm in the US National Provider Identifier |

User-defined Table 0063 - Relationship

Use in NK1-3, IN1-17

⁴¹ AE is sent whenever an error is detected. This may range from data that are ignored because they are not wanted to rejection of the entire message.

Change History

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

User-defined Table 0064 - Financial class

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

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

Local implementations may define and document local codes. Each state immunization program may have locally specified funding programs for immunizations. In order to assure that each is unique across states, codes should be created that begin with the grantee assigning authority code from table 0363 in the Implementation Guide for Immunization Messaging, release 1.3. This would be followed by sequential number, left padded to a length of 2. For example if Alaska had a funding program, they would create a code of AKA01 for the first program. It is incumbent on the state or other jurisdiction to clearly describe the requirements that qualify a person for that funding program. For instance if the hypothetical funding program in Alaska covered people who were too old for VFC program but would otherwise qualify because they were Medicaid eligible, then they would define the code as:

“Client is currently on MEDICAID and is older than 19 years old.”

Note that funding source for a specific immunization is different from client eligibility for funding program (Financial Class).

| Code | Label | Definition |
|------|------------------|---|
| V01 | Not VFC eligible | Client does not qualify for VFC because they do not have one of the statuses below. (V02-V05) |

| Code | Label | Definition |
|------|--|---|
| V02 | VFC eligible-Medicaid/Medicaid Managed Care | All of the following are true: <ul style="list-style-type: none"> Client is currently eligible for Medicaid or Medicaid managed care Client is < 19 years old The type of vaccine administered is eligible for VFC funding |
| V03 | VFC eligible- Uninsured | All of the following are true: <ul style="list-style-type: none"> Client does not have health insurance Client is < 19 years old The type of vaccine administered is eligible for VFC funding |
| V04 | VFC eligible- American Indian/Alaskan Native | All of the following are true: <ul style="list-style-type: none"> Client is a member of a federally recognized tribe Client is < 19 years old The type of vaccine administered is eligible for VFC funding |
| V05 | VFC eligible-Federally Qualified Health Center Patient (under-insured) | All of the following are true: <ul style="list-style-type: none"> Client has insurance but insurance does not cover vaccines, limits the vaccines covered or caps vaccine coverage at a certain amount Client is receiving care at an FQHC, RHC or deputized provider Client is < 19 years old The type of vaccine administered is eligible for VFC funding |
| V22 | CHIP | Client is eligible for the CHIP program, a separate state health insurance that is NOT a Medicaid expansion program |
| V23 | 317 | Client is eligible to receive vaccines under the state/program immunization policy and the vaccine administered is eligible for 317 funding |
| V24 | Medicare | Client is enrolled in Medicare |
| V25 | State program eligibility | Client is eligible for a state vaccine program |
| *** | Specific state codes | Client is eligible for a specific state vaccine program (may be used instead of V25) |
| | | |
| | | |
| | | |

HL7-defined Table 0076 - Message type

Only selected values listed. Use in MSH-9, first component.

Only these values are expected.

Change History

| Value | Description | Usage in this guide |
|-------|---------------------------------------|---------------------|
| ACK | General acknowledgment | Supported |
| ADT | ADT message | Supported |
| QBP | Query by Parameter | Supported |
| RSP | Response to Query by parameter | Supported |
| VXU | Unsolicited vaccination record update | Supported |

HL7-defined Table 0078 - Abnormal flags

Use in OBX-8.

Fields using this code set are expected to be empty. For a current list of HL7 values please reference the HL7 version 2.5.1 documents.

HL7-defined Table 0085 - Observation result status codes interpretation

Use in OBX-11.

Fields using this value set are constrained to F for Final. For a current list of HL7 values please reference the HL7 version 2.5.1 documents.

User Defined Table 0086 - Plan Type ID

The values in this value set are drawn from the Source of Payment Typology (PHVS_SourceOfPaymentTypology_PHDSC). New values may be added from that value set.

| Value | Description | Usage in this guide |
|-------|-------------------|---------------------|
| 5 | Private Insurance | |
| 2 | Medicaid | |
| 1 | Medicare | |
| 81 | Self pay | |
| | | |

HL7-defined Table 0091 - Query priority

Fields using this code set are expected to be I or empty, which indicates Immediate processing is expected. For a current list of HL7 values please reference the HL7 version 2.5.1 documents.

HL7-defined Table 0102 - Delayed acknowledgment type

Use in MSA-5.

Fields using this code set are expected to be empty. For a current list of HL7 values please reference the HL7 version 2.5.1 documents.

HL7-defined Table 0103 - Processing ID

Use in MSH-11.

| Value | Description |
|-------|-------------|
| D | Debugging |
| P | Production |
| T | Training |

HL7-defined Table 0104 - Version ID

Use in MSH-12. Only these values are expected.

| Value | Description |
|-------|--------------------------|
| 2.5.1 | Release 2.5.1 April 2007 |

HL7-defined Table 0119 - Order Control Codes

Use in ORC-1.

| Value | Description | Usage |
|-------|------------------------|---------------|
| OK | Order accepted & OK | Not supported |
| RE | Observations to follow | Supported |

HL7-defined Table 0125 – Value Type

Constrained for this Implementation Guide.

| Value | Description |
|-------|--|
| CE | Coded element |
| | |
| CQ | Composite Quantity with Units |
| CWE | Coded with Exceptions |
| CX | Extended Composite Id with Check digit |

Change History

| Value | Description |
|-------|---|
| DT | Date |
| | |
| DTM | Date/Time |
| EI | Entity Identifier |
| ERL | Error Location |
| FN | Family Name |
| FT | Formatted text |
| HD | Hierarchic Designator |
| ID | Coded Values for HL7 Tables |
| IS | Coded value for User-Defined Tables |
| LA2 | Location with address variation 2 |
| MSG | Message Type |
| NM | Numeric |
| PT | Processing Type |
| SAD | Street Address |
| SI | Sequence ID |
| ST | String |
| TS | Time Stamp |
| | |
| | |
| | |
| VID | Version Identifier |
| XAD | Extended Address |
| XCN | Extended Composite ID Number and Name for Persons |
| XON | Extended Name and Id Number for Organizations |
| XPN | Extended Person Name |
| XTN | Extended telephone number |
| | |

HL7-defined Table 0126 - Quantity limited request

Use in RCP-2.

Fields using this code set are expected to be set to RD for records. For a current list of HL7 values please reference the HL7 version 2.5.1 documents.

HL7-defined Table 0136 - Yes/No indicator

Use in PID-24,30; PD1-12

| Value | Description |
|-------|-------------|
| Y | Yes |
| N | No |

HL7-defined Table 0155 - Accept/Application acknowledgment conditions

Use in MSH-15 and 16

| Value | Description |
|-------|------------------------------|
| AL | Always |
| NE | Never |
| ER | Error/Reject conditions only |
| SU | Successful completion only |

NCI Thesaurus (NCIT) – Route of Administration

HL7-defined Table 0162 - Route of administration

Note that HITSP has specified the use of the FDA route of administration. The following table maps these to the HL7 table 0162 values. NCIT values should be used.

| FDA NCI Thesaurus (NCIT) | HL7-0162 | Description | Definition |
|-----------------------------------|----------|---------------|---|
| C38238 | ID | Intradermal | within or introduced between the layers of the skin |
| C28161 | IM | Intramuscular | within or into the substance of a muscle |
| C38284 | NS | Nasal | Given by nose |

Change History

| FDA NCI Thesaurus (NCIT) | HL7-0162 | Description | Definition |
|-----------------------------------|---------------|-----------------------|---|
| | IN | Intranasal | <i>{Do not use this older code}</i> |
| C38276 | IV | Intravenous | administered into a vein |
| C38288 | PO | Oral | administered by mouth |
| | OTH | Other/Miscellaneous | |
| C38676 | | Percutaneous | made, done, or effected through the skin. |
| C38299 | SC | Subcutaneous | Under the skin or between skin and muscles. |
| C38305 | TD | Transdermal | describes something, especially a drug, that is introduced into the body through the skin |

Example

[C28161^Intramuscular^NCIT]

HL7-defined Table 0163 - Administrative site

Only selected values listed. Use in RXR-2. Only these values are expected.

| HL7 0163 | Description |
|----------|------------------------|
| LT | Left Thigh |
| LA | Left Arm |
| LD | Left Deltoid |
| LG | Left Gluteous Medius |
| LVL | Left Vastus Lateralis |
| LLFA | Left Lower Forearm |
| RA | Right Arm |
| RT | Right Thigh |
| RVL | Right Vastus Lateralis |
| RG | Right Gluteous Medius |
| RD | Right Deltoid |

| HL7 0163 | Description |
|----------|---------------------|
| RLFA | Right Lower Forearm |

CDCREC - Ethnic Group

User-defined Table 0189

Table 0189 values should not be used. The codes from the CDCREC value set are the correct ones to use. Legacy systems may still send HL70189, so receivers should be prepared to accept.

The US ethnicity codes are actually from the CDCREC table. They should be identified as CDCREC.

| US ethnicity codes (CDCREC) | Description |
|--------------------------------|------------------------|
| 2135-2 | Hispanic or Latino |
| 2186-5 | not Hispanic or Latino |
| | Unknown |

HL7-defined Table 0190 - Address type

Use in all XAD data types; including PID-11

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

Change History

Recording of Birth State uses the BDL, birth delivery location code.

HL7-defined Table 0200 - Name type

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

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

HL7-defined Table 0201 - Telecommunication use code

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

| Value | 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 |

HL7-defined Table 0202 - Telecommunication equipment type

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

| Value | Description |
|-------|-------------|
| PH | Telephone |
| FX | Fax |

| Value | Description |
|----------|--|
| 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 |

User-defined Table 0203 - Identifier type

Values suggested by HL7; with CDC-suggested additions. Use in all CX, XCN type codes; including PID-2,3,4,18,21 and RXA-10

| Value | Description | Comment |
|-------|--------------------------|--|
| AN | Account number | An identifier that is unique to an account. |
| ANON | Anonymous identifier | An identifier for a living subject whose real identity is protected or suppressed Justification: For public health reporting purposes, anonymous identifiers are occasionally used for protecting patient identity in reporting certain results. For instance, a state health department may choose to use a scheme for generating an anonymous identifier for reporting a patient that has had a positive human immunodeficiency virus antibody test. Anonymous identifiers can be used in PID 3 by replacing the medical record number or other non-anonymous identifier. The assigning authority for an anonymous identifier would be the state/local health department. |
| ANC | Account number Creditor | Class: Financial A more precise definition of an account number: sometimes two distinct account numbers must be transmitted in the same message, one as the creditor, the other as the debtor. |
| AND | Account number debtor | Class: Financial A more precise definition of an account number: sometimes two distinct account numbers must be transmitted in the same message, one as the creditor, the other as the debtor. |
| ANT | Temporary Account Number | Class: Financial |

Change History

| Value | Description | Comment |
|-------|---|--|
| | | Temporary version of an Account Number. Use Case: An ancillary system that does not normally assign account numbers is the first time to register a patient. This ancillary system will generate a temporary account number that will only be used until an official account number is assigned. |
| APRN | Advanced Practice Registered Nurse number | An identifier that is unique to an advanced practice registered nurse within the jurisdiction of a certifying board |
| BA | Bank Account Number | Class: Financial |
| BC | Bank Card Number | Class: Financial An identifier that is unique to a person's bank card. Replaces AM, DI, DS, MS, and VS beginning in v 2.5. |
| BR | Birth registry number | |
| CC | Cost Center number | Class: Financial Use Case: needed especially for transmitting information about invoices. |
| CY | County number | |
| DDS | Dentist license number | An identifier that is unique to a dentist within the jurisdiction of the licensing board |
| DEA | Drug Enforcement Administration registration number | An identifier for an individual or organization relative to controlled substance regulation and transactions. Use case: This is a registration number that identifies an individual or organization relative to controlled substance regulation and transactions. A DEA number has a very precise and widely accepted meaning within the United States. Surprisingly, the US Drug Enforcement Administration does not solely assign DEA numbers in the United States. Hospitals have the authority to issue DEA numbers to their medical residents. These DEA numbers are based upon the hospital's DEA number, but the authority rests with the hospital on the assignment to the residents. Thus, DEA as an Identifier Type is necessary in addition to DEA as an Assigning Authority. |
| DFN | Drug Furnishing or prescriptive authority Number | An identifier issued to a health care provider authorizing the person to write drug orders Use Case: A nurse practitioner has authorization to furnish or prescribe pharmaceutical substances; this identifier is in component 1. |
| DL | Driver's license number | |

| Value | Description | Comment |
|-------|---------------------------------------|---|
| DN | Doctor number | |
| DPM | Podiatrist license number | An identifier that is unique to a podiatrist within the jurisdiction of the licensing board. |
| DO | Osteopathic License number | An identifier that is unique to an osteopath within the jurisdiction of a licensing board. |
| DR | Donor Registration Number | |
| EI | Employee number | A number that uniquely identifies an employee to an employer. |
| EN | Employer number | |
| FI | Facility ID | |
| GI | Guarantor internal identifier | Class: Financial |
| GL | General ledger number | Class: Financial |
| GN | Guarantor external identifier | Class: Financial |
| HC | Health Card Number | |
| JHN | Jurisdictional health number (Canada) | Class: Insurance 2 uses: a) UK jurisdictional CHI number; b) Canadian provincial health card number: |
| IND | Indigenous/Aboriginal | A number assigned to a member of an indigenous or aboriginal group outside of Canada. |
| LI | Labor and industries number | |
| LN | License number | |
| LR | Local Registry ID | |
| MA | Patient Medicaid number | Class: Insurance |
| MB | Member Number | An identifier for the insured of an insurance policy (this insured always has a subscriber), usually assigned by the insurance carrier. Use Case: Person is covered by an insurance policy. This person may or may not be the subscriber of the policy. |
| MC | Patient's Medicare number | Class: Insurance |
| MCD | Practitioner Medicaid number | Class: Insurance |
| MCN | Microchip Number | |
| MCR | Practitioner Medicare number | Class: Insurance |
| MD | Medical License number | An identifier that is unique to a medical doctor within the jurisdiction of a licensing board. Use Case: These license numbers are sometimes used as identifiers. In some states, the same authority issues all three identifiers, e.g., medical, osteopathic, and physician assistant licenses all issued by one state medical board. For this case, the CX data type requires distinct identifier types to accurately interpret component 1. Additionally, the distinction among these license types is critical in most health care |

Change History

| Value | Description | Comment |
|-------|--|---|
| | | settings (this is not to convey full licensing information, which requires a segment to support all related attributes). |
| MI | Military ID number | A number assigned to an individual who has had military duty, but is not currently on active duty. The number is assigned by the DOD or Veterans' Affairs (VA). |
| MR | Medical record number | An identifier that is unique to a patient within a set of medical records, not necessarily unique within an application. |
| MRT | Temporary Medical Record Number | Temporary version of a Medical Record Number Use Case: An ancillary system that does not normally assign medical record numbers is the first time to register a patient. This ancillary system will generate a temporary medical record number that will only be used until an official medical record number is assigned. |
| NE | National employer identifier | In the US, the Assigning Authority for this value is typically CMS, but it may be used by all providers and insurance companies in HIPAA related transactions. |
| NH | National Health Plan Identifier | Class: Insurance Used for the UK NHS national identifier. In the US, the Assigning Authority for this value is typically CMS, but it may be used by all providers and insurance companies in HIPAA related transactions. |
| NI | National unique individual identifier | Class: Insurance In the US, the Assigning Authority for this value is typically CMS, but it may be used by all providers and insurance companies in HIPAA related transactions. |
| NII | National Insurance Organization Identifier | Class: Insurance In Germany a national identifier for an insurance company. It is printed on the insurance card (health card). It is not to be confused with the health card number itself. |
| NIIP | National Insurance Payor Identifier (Payor) | Class: Insurance Use case: a subdivision issues the card with their identifier, but the main division is going to pay the invoices. |
| NNxxx | National Person Identifier where the xxx is the ISO table 3166 3-character (alphabetic) country code | |
| NP | Nurse practitioner number | An identifier that is unique to a nurse practitioner within the jurisdiction of a certifying board. |
| NPI | National provider identifier | Class: Insurance |

| Value | Description | Comment |
|-------|--|--|
| | | In the US, the Assigning Authority for this value is typically CMS, but it may be used by all providers and insurance companies in HIPAA related transactions. |
| OD | Optometrist license number | A number that is unique to an individual optometrist within the jurisdiction of the licensing board. |
| PA | Physician Assistant number | An identifier that is unique to a physician assistant within the jurisdiction of a licensing board |
| PCN | Penitentiary/correctional institution Number | A number assigned to individual who is incarcerated. |
| PE | Living Subject Enterprise Number | An identifier that is unique to a living subject within an enterprise (as identified by the Assigning Authority). |
| PEN | Pension Number | |
| PI | Patient internal identifier | A number that is unique to a patient within an Assigning Authority. |
| PN | Person number | A number that is unique to a living subject within an Assigning Authority. |
| PNT | Temporary Living Subject Number | Temporary version of a Lining Subject Number. |
| PPN | Passport number | A unique number assigned to the document affirming that a person is a citizen of the country. In the US this number is issued only by the State Department. |
| PRC | Permanent Resident Card Number | |
| PRN | Provider number | A number that is unique to an individual provider, a provider group or an organization within an Assigning Authority. Use case: This allows PRN to represent either an individual (a nurse) or a group/organization (orthopedic surgery team). |
| PT | Patient external identifier | |
| QA | QA number | |
| RI | Resource identifier | A generalized resource identifier. Use Case: An identifier type is needed to accommodate what are commonly known as resources. The resources can include human (e.g. a respiratory therapist), non-human (e.g., a companion animal), inanimate object (e.g., an exam room), organization (e.g., diabetic education class) or any other physical or logical entity. |
| RPH | Pharmacist license number | An identifier that is unique to a pharmacist within the jurisdiction of the licensing board. |
| RN | Registered Nurse Number | An identifier that is unique to a registered nurse within the jurisdiction of the |

Change History

| Value | Description | Comment |
|-------|---|---|
| | | licensing board. |
| RR | Railroad Retirement number | |
| RRI | Regional registry ID | |
| SL | State license | |
| SN | Subscriber Number | Class: Insurance An identifier for a subscriber of an insurance policy which is unique for, and usually assigned by, the insurance carrier. Use Case: A person is the subscriber of an insurance policy. The person's family may be plan members, but are not the subscriber. |
| SR | State registry ID | |
| SS | Social Security number | |
| TAX | Tax ID number | |
| U | Unspecified identifier | |
| UPIN | Medicare/CMS (formerly HCFA)'s Universal Physician Identification numbers | Class: Insurance |
| VN | Visit number | |
| WC | WIC identifier | |
| WCN | Workers' Comp Number | |
| XX | Organization identifier | |

User-defined Table 0204 - Organizational name type

Values suggested by HL7 Use in all XON data types

| Value | Description |
|-------|--------------|
| L | Legal name |
| D | Display name |

HL7-defined Table 0207 - Processing mode

Use in MSH-11

Fields using this code set are expected to be empty. For a current list of HL7 values please reference the HL7 version 2.5.1 documents.

User-defined Table 0208 - Query response status

Values suggested by HL7. Use in QAK-2)

| Value | Description | Comment |
|-------|---|--------------------------------|
| OK | Data found, no errors (this is the default) | Similar to AA in table HL70008 |
| NF | No data found, no errors | |

| Value | Description | Comment |
|-------|---------------------------|---|
| 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 found | |

User-defined Table 0215 - Publicity code

Values suggested by CDC. (use in PD1-11)

| Value | Description |
|-------|--------------------------------------|
| 01 | No reminder/recall |
| 02 | Reminder/recall - any method |
| 03 | Reminder/recall - no calls |
| 04 | Reminder only - any method |
| 05 | Reminder only - no calls |
| 06 | Recall only - any method |
| 07 | Recall only - no calls |
| 08 | Reminder/recall - to provider |
| 09 | Reminder to provider |
| 10 | Only reminder to provider; no recall |
| 11 | Recall to provider |
| 12 | Only recall to provider; no reminder |

User-defined Table 0220 - Living arrangement

Fields using this code set are expected to be empty. For a current list of HL7 values please reference the HL7 version 2.5.1 documents.

HL7-defined Table 0227 - Manufacturers of vaccines (code = MVX)

(use in RXA-17) The table below represents the February 2010 version of the MVX code set. The CDC's National Center for Immunization and Respiratory Diseases (NCIRD) maintains the HL7 external code set MVX. <http://www2a.cdc.gov/vaccines/IIS/IISStandards/vaccines.asp?rpt=mvx> ⁴²

NOTE: The MVX table reflects name changes and changes in corporate status. Where there have been company mergers/acquisitions, the affected old codes have been labeled "inactive". The inactive manufacturer codes are retained to allow manufacturer to be identified for historic immunization records. They should not be used for current immunizations. Inactive codes should not be cross-walked to the code for the current manufacturer.

Alphabetized by manufacturer name

| MVX CODE | Manufacturer Name | Notes |
|----------|--|--|
| AB | Abbott Laboratories | includes Ross Products Division, Solvay |
| ACA | Acambis, Inc | acquired by sanofi in sept 2008 |
| AD | Adams Laboratories, Inc. | |
| AKR | Akorn, Inc | |
| ALP | Alpha Therapeutic Corporation | |
| AR | Armour | part of CSL |
| AVB | Aventis Behring L.L.C. | part of CSL |
| AVI | Aviron | acquired by Medimmune |
| 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 |
| BAY | Bayer Corporation | Bayer Biologicals now owned by Talecris |
| BP | Berna Products | |
| BPC | Berna Products Corporation | includes Swiss Serum and Vaccine Institute Berne |
| BRR | Barr Laboratories | Subsidiary of Teva Pharmaceuticals |
| BTP | Biotest Pharmaceuticals Corporation | New owner of NABI HB as of December 2007, Does NOT replace |

⁴² This link is current as of 2/15/2011.

| MVX CODE | Manufacturer Name | Notes |
|-----------------|--|--|
| | | NABI Biopharmaceuticals in this code list. |
| CEN | Centeon L.L.C. | |
| CHI | Chiron Corporation | Part of Novartis |
| CMP | Celltech Medeva Pharmaceuticals | Part of Novartis |
| CNJ | Cangene Corporation | |
| CON | Connaught | acquired by Merieux |
| CRU | Crucell | acquired Berna, now a J & J company |
| CSL | CSL Behring, Inc | CSL Biotherapies renamed to CSL Behring |
| DVC | DynPort Vaccine Company, LLC | |
| EVN | Evans Medical Limited | Part of Novartis |
| GEO | GeoVax Labs, Inc. | |
| GRE | Greer Laboratories, Inc. | |
| GRF | Grifols | |
| IAG | Immuno International AG | Part of Baxter |
| IDB | ID Biomedical | |
| IM | Merieux | Part of sanofi |
| INT | Intercell Biomedical | |
| IUS | Immuno-U.S., Inc. | |
| JNJ | Johnson and Johnson | acquired CRUCELL which acquired Berna |
| JPN | The Research Foundation for Microbial Diseases of Osaka University (BIKEN) | |
| KGC | Korea Green Cross Corporation | |
| LED | Lederle | became a part of WAL, now owned by Pfizer |
| MA | Massachusetts Public Health Biologic Laboratories | |
| MBL | Massachusetts Biologic Laboratories | formerly Massachusetts Public Health Biologic Laboratories |

Change History

| MVX CODE | Manufacturer Name | Notes |
|----------|--|--|
| 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 our new parent company, AstraZeneca, in 2007. |
| MIL | Miles | |
| MIP | Emergent BioDefense Operations Lansing | Bioport renamed. Formerly Michigan Biologic Products Institute |
| MSD | Merck and Co., Inc. | |
| NAB | NABI | formerly North American Biologicals, Inc. |
| NAV | North American Vaccine, Inc. | part of Baxter |
| NOV | Novartis Pharmaceutical Corporation | includes Chiron, PowderJect Pharmaceuticals, Celltech Medeva Vaccines and Evans Limited, Ciba-Geigy Limited and Sandoz Limited |
| NVX | Novavax, Inc. | |
| NYB | New York Blood Center | |
| ORT | Ortho-clinical Diagnostics | a J & J company (formerly Ortho Diagnostic Systems, Inc.) |
| OTC | Organon Teknika Corporation | |
| OTH | Other manufacturer | |
| PD | Parkedale Pharmaceuticals | no website and no news articles (formerly Parke-Davis) |
| PFR | Pfizer, Inc | includes Wyeth-Lederle Vaccines and Pediatrics, Wyeth Laboratories, Lederle Laboratories, and Praxis Biologics, |
| PMC | sanofi pasteur | formerly Aventis Pasteur, Pasteur Merieux Connaught; includes Connaught Laboratories and Pasteur Merieux. Acquired ACAMBIS. |
| PRX | Praxis Biologics | became a part of WAL, now owned by Pfizer |
| PSC | Protein Sciences | |

| MVX CODE | Manufacturer Name | Notes |
|-----------------|--|---|
| PWJ | PowderJect Pharmaceuticals | See Novartis |
| SCL | Sclavo, Inc. | |
| SI | Swiss Serum and Vaccine Inst. | Part of Berna |
| SKB | GlaxoSmithKline | includes SmithKline Beecham and Glaxo Wellcome |
| SOL | Solvay Pharmaceuticals | Part of Abbott |
| TAL | Talecris Biotherapeutics | includes Bayer Biologicals |
| UNK | Unknown manufacturer | |
| USA | United States Army Medical Research and Material Command | |
| VXG | VaxGen | acquired by Emergent Biodefense Operations Lansing, Inc |
| WA | Wyeth-Ayerst | became WAL, now owned by Pfizer |
| WAL | Wyeth | acquired by Pfizer 10/15/2009 |
| ZLB | ZLB Behring | acquired by CSL |

User-defined Table 0288 - Census tract

Use in all XAD; including PID-11

Fields using this code set are expected to be empty. For a current list of HL7 values please reference the HL7 version 2.5.1 documents.

User-defined Table 0289 - County/parish

Use in all XAD; including PID-11

A complete list of FIPS 6-4 county codes is available at <https://phinivads.cdc.gov/vads/ViewValueSet.action?id=20D34BBC-617F-DD11-B38D-00188B398520>

For example:

04001 = Apache County, Arizona

01001 = Autauga County, Alabama

HL7-defined Table 0292 - Codes for Vaccines administered (code=CVX)

Use in RXA-5

The table below represents the March 2014 version of the CVX code set. New codes are added as needed; therefore, see the most current version of this code set at the website Web site:

<http://www2a.cdc.gov/vaccines/IIS/IISStandards/vaccines.asp?rpt=cvx> ⁴³

The CDC's National Center for Immunization and Respiratory Diseases (NCIRD) maintains the HL7 external code set CVX.

CVX – Vaccines Administered

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|-------------------------------------|---|---|
| 99 | RESERVED - do not use | RESERVED - do not use | Code 99 will not be used in this table to avoid confusion with code 999. |
| 998 | no vaccine administered | no vaccine administered | Code 998 was added for use in VXU HL7 messages where the OBX segment is nested with the RXA segment, but the message does not contain information about a vaccine administration. An example of this use is to report the vaccines due next for a patient when no vaccine administration is being reported. |
| 999 | unknown | unknown vaccine or immune globulin | This CVX code has little utility and should rarely be used. |
| 143 | Adenovirus types 4 and 7 | Adenovirus, type 4 and type 7, live, oral | This vaccine is administered as 2 tablets. |
| 54 | adenovirus, type 4 | adenovirus vaccine, type 4, live, oral | |
| 55 | adenovirus, type 7 | adenovirus vaccine, type 7, live, oral | |
| 82 | adenovirus, unspecified formulation | adenovirus vaccine, unspecified formulation | This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a adenovirus vaccination |

⁴³ Link is current as of 8/1/2011.

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|-------------------------------|--|---|
| | | | when noted on a vaccination card) |
| 24 | anthrax | anthrax vaccine | |
| 801 | AS03 Adjuvant | AS03 Adjuvant | This is the adjuvant that is packaged with H5N1 vaccine, adjuvanted |
| 19 | BCG | Bacillus Calmette-Guerin vaccine | |
| 27 | botulinum antitoxin | botulinum antitoxin | |
| 26 | cholera | cholera vaccine | |
| 29 | CMVIG | cytomegalovirus immune globulin, intravenous | |
| 56 | dengue fever | dengue fever vaccine | |
| 12 | diphtheria antitoxin | diphtheria antitoxin | |
| 28 | DT (pediatric) | diphtheria and tetanus toxoids, adsorbed for pediatric use | |
| 20 | DTaP | diphtheria, tetanus toxoids and acellular pertussis vaccine | |
| 106 | DTaP, 5 pertussis antigens | diphtheria, tetanus toxoids and acellular pertussis vaccine, 5 pertussis antigens | |
| 107 | DTaP, unspecified formulation | diphtheria, tetanus toxoids and acellular pertussis vaccine, unspecified formulation | This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a DTaP vaccination when noted on a vaccination card) |

Change History

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|--------------------------------|---|--|
| 146 | DTaP,IPV,Hib,HepB | Diphtheria and Tetanus Toxoids and Acellular Pertussis Adsorbed, Inactivated Poliovirus, Haemophilus b Conjugate (Meningococcal Outer Membrane Protein Complex), and Hepatitis B (Recombinant) Vaccine. | Note that this vaccine is different from CVX 132. |
| 110 | DTaP-Hep B-IPV | DTaP-hepatitis B and poliovirus vaccine | |
| 50 | DTaP-Hib | DTaP-Haemophilus influenzae type b conjugate vaccine | |
| 120 | DTaP-Hib-IPV | diphtheria, tetanus toxoids and acellular pertussis vaccine, Haemophilus influenzae type b conjugate, and poliovirus vaccine, inactivated (DTaP-Hib-IPV) | |
| 130 | DTaP-IPV | Diphtheria, tetanus toxoids and acellular pertussis vaccine, and poliovirus vaccine, inactivated | |
| 132 | DTaP-IPV-HIB-HEP B, historical | Historical record of vaccine containing <ul style="list-style-type: none"> * diphtheria, tetanus toxoids and acellular pertussis, * poliovirus, inactivated, * Haemophilus influenzae type b conjugate, * Hepatitis B (DTaP-Hib-IPV) | This is not the same as CVX 146, Hexavalent vaccine. |
| 01 | DTP | diphtheria, tetanus toxoids and pertussis vaccine | |

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|---|--|---|
| 22 | DTP-Hib | DTP-Haemophilus influenzae type b conjugate vaccine | |
| 102 | DTP-Hib-Hep B | DTP- Haemophilus influenzae type b conjugate and hepatitis b vaccine | |
| 57 | hantavirus | hantavirus vaccine | |
| 30 | HBIG | hepatitis B immune globulin | |
| 52 | Hep A, adult | hepatitis A vaccine, adult dosage | |
| 154 | Hep A, IG | Hepatitis A immune globulin | Do not use this code. This product may be used for Hep A and other viral infections. The correct vaccine / CVX is 86 (IG). |
| 83 | Hep A, ped/adol, 2 dose | hepatitis A vaccine, pediatric/adolescent dosage, 2 dose schedule | |
| 84 | Hep A, ped/adol, 3 dose | hepatitis A vaccine, pediatric/adolescent dosage, 3 dose schedule | This vaccine formulation is inactive and should not be used, except to record historic vaccinations with this formulation. |
| 31 | Hep A, pediatric, unspecified formulation | hepatitis A vaccine, pediatric dosage, unspecified formulation | Do NOT use this code. If formulation is unknown, use CVX 85. There is only one formulation of Hep A, peds. |
| 85 | Hep A, unspecified formulation | hepatitis A vaccine, unspecified formulation | This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a HepA vaccination when noted on a vaccination card) |

Change History

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|------------------------------------|---|---|
| 104 | Hep A-Hep B | hepatitis A and hepatitis B vaccine | |
| 08 | Hep B, adolescent or pediatric | hepatitis B vaccine, pediatric or pediatric/adolescent dosage | This code applies to any standard pediatric formulation of Hepatitis B vaccine. It should not be used for the 2-dose hepatitis B schedule for adolescents (11-15 year olds). It requires Merck's Recombivax HB® adult formulation. Use code 43 for that vaccine |
| 42 | Hep B, adolescent/high risk infant | hepatitis B vaccine, adolescent/high risk infant dosage | As of August 27, 1998, Merck ceased distribution of their adolescent/high risk infant hepatitis B vaccine dosage. Code 42 should only be used to record historical records. For current administration of hepatitis B vaccine, pediatric/adolescent dosage, use |
| 43 | Hep B, adult | hepatitis B vaccine, adult dosage | As of September 1999, a 2-dose hepatitis B schedule for adolescents (11-15 year olds) was FDA approved for Merck's Recombivax HB® adult formulation. Use code 43 for the 2-dose. This code should be used for any use of standard adult formulation of hepatiti |

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|--------------------------------|--|---|
| 44 | Hep B, dialysis | hepatitis B vaccine, dialysis patient dosage | |
| 45 | Hep B, unspecified formulation | hepatitis B vaccine, unspecified formulation | This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a HepB vaccination when noted on a vaccination card) |
| 58 | Hep C | hepatitis C vaccine | |
| 59 | Hep E | hepatitis E vaccine | |
| 60 | herpes simplex 2 | herpes simplex virus, type 2 vaccine | |
| 47 | Hib (HbOC) | Haemophilus influenzae type b vaccine, HbOC conjugate | |
| 46 | Hib (PRP-D) | Haemophilus influenzae type b vaccine, PRP-D conjugate | |
| 49 | Hib (PRP-OMP) | Haemophilus influenzae type b vaccine, PRP-OMP conjugate | |
| 48 | Hib (PRP-T) | Haemophilus influenzae type b vaccine, PRP-T conjugate | |
| 17 | Hib, unspecified formulation | Haemophilus influenzae type b vaccine, conjugate unspecified formulation | |

Change History

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|--|---|--|
| 51 | Hib-Hep B | Haemophilus influenzae type b conjugate and Hepatitis B vaccine | |
| 61 | HIV | human immunodeficiency virus vaccine | |
| 118 | HPV, bivalent | human papilloma virus vaccine, bivalent | |
| 62 | HPV, quadrivalent | human papilloma virus vaccine, quadrivalent | |
| 137 | HPV, unspecified formulation | HPV, unspecified formulation | This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a HPV vaccination when noted on a vaccination card) |
| 86 | IG | immune globulin, intramuscular | |
| 14 | IG, unspecified formulation | immune globulin, unspecified formulation | |
| 87 | IGIV | immune globulin, intravenous | |
| 160 | Influenza A monovalent (H5N1), ADJUVANTED-2013 | Influenza A monovalent (H5N1), adjuvanted, National stockpile 2013 | Approved by FDA 2013, adjuvant is mixed at point of administration. |
| 151 | influenza nasal, unspecified formulation | influenza nasal, unspecified formulation | 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) | |
| 135 | Influenza, high dose seasonal | influenza, high dose seasonal, preservative-free | |

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|--|--|---|
| 153 | Influenza, injectable, MDCK, preservative free | Influenza, injectable, Madin Darby Canine Kidney, preservative free | cclIV3 |
| 158 | influenza, injectable, quadrivalent | influenza, injectable, quadrivalent, contains preservative | New in 2013. IIV4 |
| 150 | influenza, injectable, quadrivalent, preservative free | Influenza, injectable, quadrivalent, preservative free | New in 2012. IIV4 |
| 111 | influenza, live, intranasal | influenza virus vaccine, live, attenuated, for intranasal use | LAIV3 |
| 149 | influenza, live, intranasal, quadrivalent | influenza, live, intranasal, quadrivalent | new in 2012. LAIV4 |
| 155 | influenza, recombinant, injectable, preservative free | Seasonal, trivalent, recombinant, injectable influenza vaccine, preservative free | RIV |
| 141 | Influenza, seasonal, injectable | Influenza, seasonal, injectable | IIV3. This is one of two codes replacing CVX 15, which is being retired. |
| 140 | Influenza, seasonal, injectable, preservative free | Influenza, seasonal, injectable, preservative free | IIV3. This vaccine code is one of two which replace CVX 15, influenza, split virus. |
| 144 | influenza, seasonal, intradermal, preservative free | seasonal influenza, intradermal, preservative free | IIV3 |
| 15 | influenza, split (incl. purified surface antigen) | influenza virus vaccine, split virus (incl. purified surface antigen)-retired CODE | This code is being retired. It will still be found in older immunization records. It included both preservative free and non-preservative free. |
| 88 | influenza, unspecified formulation | influenza virus vaccine, unspecified formulation | This CVX code allows reporting of a vaccination when formulation is unknown (for example, |

Change History

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|--|---|---|
| | | | when recording a Influenza vaccination when noted on a vaccination card) |
| 16 | influenza, whole | influenza virus vaccine, whole virus | |
| 10 | IPV | poliovirus vaccine, inactivated | |
| 134 | Japanese Encephalitis IM | Japanese Encephalitis vaccine for intramuscular administration | |
| 39 | Japanese encephalitis SC | Japanese Encephalitis Vaccine SC | |
| 129 | Japanese Encephalitis, unspecified formulation | Japanese Encephalitis vaccine, unspecified formulation | This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a JE vaccination when noted on a vaccination card) |
| 63 | Junin virus | Junin virus vaccine | |
| 64 | leishmaniasis | leishmaniasis vaccine | |
| 65 | leprosy | leprosy vaccine | |
| 66 | Lyme disease | Lyme disease vaccine | |
| 04 | M/R | measles and rubella virus vaccine | |
| 67 | malaria | malaria vaccine | |
| 05 | measles | measles virus vaccine | |
| 68 | melanoma | melanoma vaccine | |
| 103 | meningococcal C conjugate | meningococcal C conjugate vaccine | |
| 148 | Meningococcal C/Y-HIB PRP | Meningococcal Groups C and Y and Haemophilus b Tetanus Toxoid Conjugate Vaccine | |

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|---|--|---|
| 147 | meningococcal MCV4, unspecified formulation | Meningococcal, MCV4, unspecified formulation(groups A, C, Y and W-135) | This CVX should only be used for historical doses of meningococcal conjugate vaccine where the formulation is unknown (oligosaccharide vs polysaccharide). It is not the same as CVX 108, Meningococcal, unspecified formulation. |
| 136 | Meningococcal MCV4O | meningococcal oligosaccharide (groups A, C, Y and W-135) diphtheria toxoid conjugate vaccine (MCV4O) | |
| 114 | meningococcal MCV4P | meningococcal polysaccharide (groups A, C, Y and W-135) diphtheria toxoid conjugate vaccine (MCV4P) | |
| 32 | meningococcal MPSV4 | meningococcal polysaccharide vaccine (MPSV4) | |
| 108 | meningococcal, unspecified formulation | meningococcal vaccine, unspecified formulation | This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a meningococcal vaccination when noted on a vaccination card) |
| 03 | MMR | measles, mumps and rubella virus vaccine | |
| 94 | MMRV | measles, mumps, rubella, and varicella virus vaccine | |
| 07 | mumps | mumps virus vaccine | |
| 127 | Novel influenza-H1N1-09 | Novel influenza-H1N1-09, injectable | |

Change History

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|---|--|---|
| 128 | Novel Influenza-H1N1-09, all formulations | Novel influenza-H1N1-09, all formulations | This code is used whenever the actual formulation is not determined or when aggregating all Novel H1N1 Influenza-09 immunizations for reporting to CRA. It should not be used for seasonal influenza vaccine that is not otherwise specified. (NOS) |
| 125 | Novel Influenza-H1N1-09, nasal | Novel Influenza-H1N1-09, live virus for nasal administration | |
| 126 | Novel influenza-H1N1-09, preservative-free | Novel influenza-H1N1-09, preservative-free, injectable | |
| 02 | OPV | poliovirus vaccine, live, oral | |
| 69 | parainfluenza-3 | parainfluenza-3 virus vaccine | |
| 11 | pertussis | pertussis vaccine | |
| 23 | plague | plague vaccine | |
| 133 | Pneumococcal conjugate PCV 13 | pneumococcal conjugate vaccine, 13 valent | |
| 100 | pneumococcal conjugate PCV 7 | pneumococcal conjugate vaccine, 7 valent | |
| 152 | Pneumococcal Conjugate, unspecified formulation | Pneumococcal Conjugate, unspecified formulation | This CVX should only be used for historical records where the formulation of pneumococcal conjugate vaccine is not known. |
| 33 | pneumococcal polysaccharide PPV23 | pneumococcal polysaccharide vaccine, 23 valent | |
| 109 | pneumococcal, unspecified formulation | pneumococcal vaccine, unspecified formulation | This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a |

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|----------------------------------|---|---|
| | | | pneumococcal vaccination when noted on a vaccination card) |
| 89 | polio, unspecified formulation | poliovirus vaccine, unspecified formulation | This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a polio vaccination when noted on a vaccination card) |
| 70 | Q fever | Q fever vaccine | |
| 40 | rabies, intradermal injection | rabies vaccine, for intradermal injection | |
| 18 | rabies, intramuscular injection | rabies vaccine, for intramuscular injection | |
| 90 | rabies, unspecified formulation | rabies vaccine, unspecified formulation | This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a rabies vaccination when noted on a vaccination card) |
| 72 | rheumatic fever | rheumatic fever vaccine | |
| 159 | Rho(D) - Unspecified formulation | Rho(D) Unspecified formulation | |
| 157 | Rho(D) -IG IM | Rho(D) Immune globulin - IM | This immune globulin may be administered IM only. |
| 156 | Rho(D)-IG | Rho(D) Immune globulin- IV or IM | This immune globulin may be administered either IM or IV. |
| 73 | Rift Valley fever | Rift Valley fever vaccine | |
| 34 | RIG | rabies immune globulin | |
| 119 | rotavirus, monovalent | rotavirus, live, monovalent vaccine | |
| 116 | rotavirus, pentavalent | rotavirus, live, pentavalent vaccine | |

Change History

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|------------------------------------|--|---|
| 74 | rotavirus, tetravalent | rotavirus, live, tetravalent vaccine | |
| 122 | rotavirus, unspecified formulation | rotavirus vaccine, unspecified formulation | |
| 71 | RSV-IGIV | respiratory syncytial virus immune globulin, intravenous | |
| 93 | RSV-MAb | respiratory syncytial virus monoclonal antibody (palivizumab), intramuscular | |
| 145 | RSV-MAb (new) | respiratory syncytial virus monoclonal antibody (motavizumab), intramuscular | |
| 06 | rubella | rubella virus vaccine | |
| 38 | rubella/mumps | rubella and mumps virus vaccine | |
| 76 | Staphylococcus bacterio lysate | Staphylococcus bacteriophage lysate | |
| 138 | Td (adult) | tetanus and diphtheria toxoids, not adsorbed, for adult use | Note that this Td is not adsorbed. |
| 113 | Td (adult) preservative free | tetanus and diphtheria toxoids, adsorbed, preservative free, for adult use | |
| 09 | Td (adult), adsorbed | tetanus and diphtheria toxoids, adsorbed, for adult use | Note that this vaccine name has changed. See also Td (adult). It is not adsorbed. |
| 139 | Td(adult) unspecified formulation | Td(adult) unspecified formulation | This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a Td vaccination when noted on a vaccination card) |

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|--|--|--|
| 115 | Tdap | tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine, adsorbed | |
| 35 | tetanus toxoid, adsorbed | tetanus toxoid, adsorbed | |
| 142 | tetanus toxoid, not adsorbed | tetanus toxoid, not adsorbed | |
| 112 | tetanus toxoid, unspecified formulation | tetanus toxoid, unspecified formulation | |
| 77 | tick-borne encephalitis | tick-borne encephalitis vaccine | |
| 13 | TIG | tetanus immune globulin | |
| 98 | TST, unspecified formulation | tuberculin skin test; unspecified formulation | TB Skin test is not vaccine. |
| 95 | TST-OT tine test | tuberculin skin test; old tuberculin, multipuncture device | TB Skin test is not vaccine. |
| 96 | TST-PPD intradermal | tuberculin skin test; purified protein derivative solution, intradermal | TB Skin test is not vaccine. |
| 97 | TST-PPD tine test | tuberculin skin test; purified protein derivative, multi-puncture device | TB Skin test is not vaccine. |
| 78 | tularemia vaccine | tularemia vaccine | |
| 25 | typhoid, oral | typhoid vaccine, live, oral | |
| 41 | typhoid, parenteral | typhoid vaccine, parenteral, other than acetone-killed, dried | |
| 53 | typhoid, parenteral, AKD (U.S. military) | typhoid vaccine, parenteral, acetone-killed, dried (U.S. military) | |
| 91 | typhoid, unspecified formulation | typhoid vaccine, unspecified formulation | This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a typhoid vaccination when noted on a vaccination card) |

Change History

| CVX Code | Short Description | Full Vaccine Name | Note |
|----------|------------------------------|---|--|
| 101 | typhoid, ViCPs | typhoid Vi capsular polysaccharide vaccine | |
| 131 | typhus, historical | Historical record of a typhus vaccination | |
| 75 | vaccinia (smallpox) | vaccinia (smallpox) vaccine | |
| 105 | vaccinia (smallpox) diluted | vaccinia (smallpox) vaccine, diluted | |
| 79 | vaccinia immune globulin | vaccinia immune globulin | |
| 21 | varicella | varicella virus vaccine | |
| 81 | VEE, inactivated | Venezuelan equine encephalitis, inactivated | |
| 80 | VEE, live | Venezuelan equine encephalitis, live, attenuated | |
| 92 | VEE, unspecified formulation | Venezuelan equine encephalitis vaccine, unspecified formulation | This CVX code allows reporting of a vaccination when formulation is unknown (for example, when recording a VEE vaccination when noted on a vaccination card) |
| 36 | VZIG | varicella zoster immune globulin | |
| 117 | VZIG (IND) | varicella zoster immune globulin (Investigational New Drug) | |
| 37 | yellow fever | yellow fever vaccine | |
| 121 | zoster | zoster vaccine, live | |

User-defined Table 0296 - Language

ISO 639 shall be used for Language. It is available from PHIN-VADS at:

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

The code used from HL70396 table is ISO6392.

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

| Value | Description |
|-------|-------------------------|
| ara | Arabic |
| arm | Armenian |
| cat | Catalan; Valencian |
| chi | Chinese |
| dan | Danish |
| eng | English |
| fre | French |
| ger | German |
| hat | Haitian; Haitian Creole |
| heb | Hebrew |
| hin | Hindi |
| hmn | Hmong |
| jpn | Japanese |
| kor | Korean |
| rus | Russian |
| som | Somali |
| spa | Spanish; Castilian |
| vie | Vietnamese |

User-defined Table 0297 - CN ID source

Use in all XCN data types. [locally-defined]

User-defined Table 0300 - Namespace ID

Use in all EI, HD data types

[locally-defined]

See tables 0361-0363 for Application Identifier, Facility Identifier, and Assigning Authority. These tables are more specific than 0300 and are preferred.

HL7-defined Table 0301 - Universal ID type

Use in all HD data types. Constrained to “OID”

HL7-defined Table 0322 - Completion status

Use in RXA-20

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

HL7-defined Table 0323 - Action code

Use in RXA-21

| Value | Description |
|-------|-------------|
| A | Add |
| D | Delete |
| U | Update |

HL7-defined Table 0354 - Message structure

Use in MSH-9, third component. [only selected values listed] These are the only values expected.

| Value | Events |
|---------|--------|
| ACK | ACK |
| QBP_Q11 | QBP |
| RSP_K11 | RSP |
| VXU_V04 | VXU |

HL7-defined Table 0356 - Alternate character set handling scheme

Use in MSH-20

Fields using this code set are expected to be empty. For a current list of HL7 values please reference the HL7 version 2.5.1 documents.

HL7-defined Table 0357 - Message error status codes

(use in ERR-3)

| Status code | Status text | Description/Comment |
|-------------------------------|----------------------------|--|
| <i>Success</i> | | |
| 0 | Message accepted | Success. Optional, as the AA conveys this. Used for systems that must always return a status code. |
| <i>Error status codes</i> | | |
| 100 | Segment sequence error | The message segments were not in the proper order or required segments are missing. |
| 101 | Required field missing | A required field is missing from the segment. |
| 102 | Data type error | The field contained data of the wrong data type, e.g., an NM field contained letters of the alphabet. |
| 103 | Table value not found | A field of data type ID or IS was compared against the corresponding table, and no match was found. |
| <i>Rejection status codes</i> | | |
| 200 | Unsupported message type | The Message type is not supported. |
| 201 | Unsupported event code | The Event Code is not supported. |
| 202 | Unsupported processing ID | The Processing ID is not supported. |
| 203 | Unsupported version ID | The Version ID is not supported. |
| 204 | Unknown key identifier | The ID of the patient, order, etc. was not found. Used for transactions <i>other</i> than additions, e.g., transfer of a non-existent patient. |
| 205 | Duplicate key identifier | The ID of the patient, order, etc. already exists. Used in response to addition transactions (Admit, New Order, etc.). |
| 206 | Application record locked | The transaction could not be performed at the application storage level, e.g., database locked. |
| 207 | Application internal error | A catchall for internal errors not explicitly covered by other codes. |

User-defined Table 0360 - Degree

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

| Value | Description |
|-------|---|
| PN | <i>Advanced Practice Nurse</i> |
| AA | Associate of Arts |
| AS | Associate of Science |
| BA | Bachelor of Arts |
| BN | Bachelor of Nursing |
| BS | Bachelor of Science |
| BSN | <i>Bachelor of Science in Nursing</i> |
| CER | Certificate |
| CANP | <i>Certified Adult Nurse Practitioner</i> |
| CMA | <i>Certified Medical Assistant</i> |
| CNP | <i>Certified Nurse Practitioner</i> |
| CNM | <i>Certified Nurse Midwife</i> |
| CNA | <i>Certified Nurse's Assistant</i> |
| CRN | <i>Certified Registered Nurse</i> |
| CNS | <i>Certified Nurse Specialist</i> |
| CPNP | <i>Certified Pediatric Nurse Practitioner</i> |
| DIP | Diploma |
| PHD | Doctor of Philosophy |
| MD | Doctor of Medicine |
| DO | Doctor of Osteopathy |
| EMT | <i>Emergency Medical Technician</i> |
| EMT-P | <i>Emergency Medical Technician – Paramedic</i> |
| FPNP | <i>Family Practice Nurse Practitioner</i> |
| HS | High School Graduate |
| JD | Juris Doctor |
| LPN | <i>Licensed Practical Nurse</i> |
| MA | Master of Arts |
| MBA | Master of Business Administration |
| MPH | <i>Master of Public Health</i> |
| MS | Master of Science |
| MSN | <i>Master of Science – Nursing</i> |
| MDA | <i>Medical Assistant</i> |

| Value | Description |
|---------------|-------------------------------------|
| <i>MT</i> | <i>Medical Technician</i> |
| NG | Non-Graduate |
| <i>NP</i> | <i>Nurse Practitioner</i> |
| <i>PharmD</i> | <i>Doctor of Pharmacy</i> |
| <i>PA</i> | <i>Physician Assistant</i> |
| <i>PHN</i> | <i>Public Health Nurse</i> |
| <i>RMA</i> | <i>Registered Medical Assistant</i> |
| <i>RN</i> | <i>Registered Nurse</i> |
| <i>RPH</i> | <i>Registered Pharmacist</i> |
| SEC | Secretarial Certificate |
| TS | Trade School Graduate |

User-defined Table 0361 - Application

No suggested values defined. The values are locally defined by the Immunization Information System (IIS) or by mutual agreement.

Note: In most cases, the value set will be managed by the IIS.

User-defined Table 0362 - Facility

No suggested values defined. The values are locally defined by the Immunization Information System (IIS) or by mutual agreement.

Note: In most cases, the value set will be managed by the IIS.

User-defined Table 0363 - Assigning Authority

Local implementations will need to add codes to this table to identify local assigning authorities. The values in this table are intended to be used by state and regional immunization programs. In the case of an ID generated by a facility, such as a medical record number, the identifier from Table 0362 should be used.

| Code | Grantee |
|------|----------------|
| AKA | ALASKA |
| ALA | ALABAMA |
| ARA | ARKANSAS |
| ASA | AMERICAN SAMOA |
| AZA | ARIZONA |
| BAA | NEW YORK CITY |

Change History

| Code | Grantee |
|------|----------------------|
| CAA | CALIFORNIA |
| CHA | CHICAGO |
| COA | COLORADO |
| CTA | CONNECTICUT |
| DCA | DISTRICT OF COLUMBIA |
| DEA | DELAWARE |
| FLA | FLORIDA |
| FMA | FED STATES MICRO |
| GAA | GEORGIA |
| GUA | GUAM |
| HIA | HAWAII |
| IAA | IOWA |
| IDA | IDAHO |
| ILA | ILLINOIS |
| INA | INDIANA |
| KSA | KANSAS |
| KYA | KENTUCKY |
| LAA | LOUISIANA |
| MAA | MASSACHUSETTS |
| MDA | MARYLAND |
| MEA | MAINE |
| MHA | REP MARS ISLANDS |
| MIA | MICHIGAN |
| MNA | MINNESOTA |
| MOA | MISSOURI |
| MPA | NO. MARIANA ISLAND |
| MSA | MISSISSIPPI |
| MTA | MONTANA |
| NCA | NORTH CAROLINA |
| NDA | NORTH DAKOTA |
| NEA | NEBRASKA |
| NHA | NEW HAMPSHIRE |
| NJA | NEW JERSEY |

| Code | Grantee |
|------|----------------|
| NMA | NEW MEXICO |
| NVA | NEVADA |
| NYA | NEW YORK STATE |
| OHA | OHIO |
| OKA | OKLAHOMA |
| ORA | OREGON |
| PAA | PENNSYLVANIA |
| PHA | PHILADELPHIA |
| PRA | PUERTO RICO |
| RIA | RHODE ISLAND |
| RPA | REPUBLIC PALAU |
| SCA | SOUTH CAROLINA |
| SDA | SOUTH DAKOTA |
| TBA | SAN ANTONIO |
| THA | HOUSTON |
| TNA | TENNESSEE |
| TXA | TEXAS |
| UTA | UTAH |
| VAA | VIRGINIA |
| VIA | VIRGIN ISLANDS |
| VTA | VERMONT |
| WAA | WASHINGTON |
| WIA | WISCONSIN |
| WVA | WEST VIRGINIA |
| WYA | WYOMING |

User-defined Table 0396 - 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

| Value | Description |
|------------|---|
| 99zzz or L | Local general code (where z is an alphanumeric character) |
| ART | WHO Adverse Reaction Terms |
| C4 | CPT-4 |
| C5 | CPT-5 |

Change History

| Value | Description |
|-----------|--|
| 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 |

User-defined Table 0441 - Immunization registry status

Use in PD1-16.

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

The code O (Other) has been removed, do not use

User-defined Table 0471 - Query Name

| Value | Description |
|-------|--|
| Z34 | Request Immunization History |
| Z44 | Request Evaluated History and Forecast |

HL7 Table 0516 - Error Severity

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

User-defined Table 0533 - Application Error Code

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

Change History

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

Illogical Date Error would include:

- Before birth immunization date
- Immunization date in the future

Invalid Date Error would include:

- 20130230 (February 30, 2013)
- 201302 (lacks required precision)

CDC-defined NIP001- Immunization information source

Use in RXA-9

| Value | Description | Operational Definition |
|--------------|---|--|
| 00 | New immunization record | The record of a newly administered dose of vaccine. The dose was administered by the organization that is reporting this dose. |
| 01 | Historical information - source unspecified | The record of a vaccine dose from a reliable historical source, such as an immunization card. |
| 02 | Historical information - from other provider | The record of a vaccine dose from another health care provider's historical records. |
| 03 | Historical information - from parent's written record | The record of a vaccine dose from parentally maintained written records. |
| 04 | Historical information - from parent's recall | The record of a vaccine dose from a parents recall. The reliability of this record is considered low. |
| 05 | Historical information - from other registry | The record of a vaccine dose from another Immunization Information System (IIS). |
| 06 | Historical information - from birth certificate | The record of a vaccine dose from a birth record. |
| 07 | Historical information - from school record | The record of a vaccine dose from a written school record. |
| 08 | Historical information - from public agency | The record of a vaccine dose from a written public health agency record. |

CDC-defined NIP002 - Substance refusal reason

Use in RXA-18

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

CDC-defined NIP003 - Observation identifiers

Use in OBX-3)⁴⁴

Data within this column is a mixture of base HL7 data types (CE, DT, etc) and data type flavors defined by the implementation guide (TS_NZ). When a guide specific flavor is specified, OBX-2 of the message should be populated with the base HL7 data type for that flavor. For example, if DT_D is listed in the table, OBX-2 will be populated with DT.

| LOINC ® Code⁴⁵ | Description | Corresponding data type (indicate in OBX-2) | Corresponding observation value EXAMPLE OR code table to use (value in OBX-5) |
|--|--|--|--|
| Vaccine Funding Program Eligibility Category —Use in OBX-3 to indicate that OBX-5 will contain the funding program eligibility category for a given immunization. | | | |
| 64994-7 | Vaccine funding program eligibility category | (CE) | HL70064 |
| Vaccine Funding Source – Use in OBX-3 to indicate that OBX-5 will contain the funding source for a given immunization. | | | |
| 30963-3 | Vaccine funding source | (CE) | Value Set OID - 2.16.840.1.114222.4.11.3287 Value Set Code:: PHVS_ImmunizationFundingSource_IIS |
| Vaccine Type Identifier | | | |
| 30956-7 | Vaccine Type (Vaccine group or family) | (CE) | CVX (CVX codes – use the codes described as “unspecified formulation” as needed.) NOTE: this code is preferred over 38890-0. |
| 38890-0 | Component Vaccine Type | (CE) | CVX (CVX codes – use the codes described as “unspecified formulation” as needed.) |
| Contraindications, Precautions, Indications and Immunities | | | |

⁴⁴ All VAERS-only items removed.

⁴⁵ This material contains content from LOINC® (<http://loinc.org>). The LOINC table and LOINC codes are copyright © 1995-2010, Regenstrief Institute, Inc. and the Logical Observation Identifiers Names and Codes (LOINC) Committee.

| LOINC ® Code ⁴⁵ | Description | Corresponding data type (indicate in OBX-2) | Corresponding observation value <i>EXAMPLE OR</i> code table to use (value in OBX-5) |
|--|--|--|--|
| 30946-8 | Vaccination contraindication/precaution effective date | (DT_D) | 19970522 |
| 30944-3 | Vaccination temporary contraindication/precaution expiration date | (DT_D) | 19990523 |
| 30945-0 | Vaccination contraindication/precaution | (CE) | Value Set OID - 2.16.840.1.114222.4.11.3288 Value Set Code:: PHVS_VaccinationContraindication_IIS |
| 31044-1 | Reaction | (CE) | Value Set OID - 2.16.840.1.114222.4.11.3289 Value Set Code:: PHVS_VaccinationReaction_IIS |
| 59784-9 | Disease with presumed immunity | (CE) | Value Set OID - 2.16.840.1.114222.4.11.3293 Value Set Code:: PHVS_EvidenceOfImmunity_IIS |
| 75505-8 | Serological Evidence of Immunity | (CE) | Value Set OID - 2.16.840.1.114222.4.11.7245 Value Set Code:: PHVS_SerologicalEvidenceOfImmunity_IIS |
| 59785-6 | Indications to immunize | (CE) | Value Set OID - 2.16.840.1.114222.4.11.3290 Value Set Code:: PHVS_VaccinationSpecialIndications_IIS |
| Vaccine Information Statement (VIS) Dates | | | |
| 69764-9 | Document type | CE | Value Set OID: 2.16.840.1.114222.4.11.6041 Value Set Code: PHVS_VISBarcodes_IIS |

Change History

| LOINC ® Code⁴⁵ | Description | Corresponding data type (indicate in OBX-2) | Corresponding observation value <i>EXAMPLE OR</i> code table to use (value in OBX-5) |
|---|--|--|---|
| 29768-9 | Date Vaccine Information Statement Published | DT_D | <i>19900605</i> |
| 29769-7 | Date Vaccine Information Statement Presented | DT_D | <i>199307311615</i> |
| Forecasting and Evaluating Immunizations | | | |

| LOINC ® Code⁴⁵ | Description | Corresponding data type (indicate in OBX-2) | Corresponding observation value EXAMPLE OR code table to use (value in OBX-5) |
|--|--|--|--|
| 30973-2 | 30973-2 -- Dose number in series | (NM) | 2 |
| 30979-9 | Vaccines due next | (CE) | HL70292 (CVX) |
| 30980-7 | 30980-7 – Date vaccine due | (DT_D) | 19980526 |
| 30981-5 | 30981-5 – Earliest date to give | (DT_D) | 19980522 |
| 30982-3 | 30982-3 – Reason applied by forecast logic to project this vaccine | (CE) or (ST) | <i>Codes for forecast logic reason locally defined.</i> |
| 59779-9 | Immunization Schedule used | CE | Value Set OID - 2.16.840.1.114222.4.11.23292 Value Set Code:: PHVS_ImmunizationScheduleIdentifier_IIS |
| 59777-3 | Latest date next dose may be given | DT_D | 19980522 |
| 59778-1 | Date when overdue | DT_D | 19980522 |
| 59780-7 | Immunization Series name | CE | Locally Defined |
| 59782-3 | Number of doses in primary series | NM | 2 |
| 59781-5 | Dose validity | ID | Y, N or empty |
| 59783-1 | Status in immunization series | CE | Locally defined value set |
| Smallpox Take Read: These codes allow information about evaluation of a smallpox vaccination, called the take response. | | | |
| 46249-9 | VACCINATION TAKE-RESPONSE TYPE | (ST) | Major Take, Equivocal, Not Available |
| 46250-7 | VACCINATION TAKE-RESPONSE DATE | DT_D | 20091221 |

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The following CDC defined tables are not included in this Guide. They support VAERS reporting, which is not within the scope of this Guide.

- NIP 005 – Event Consequences

Change History

- **NIP 007 – Vaccinated at Location**
- **NIP 008 – Vaccine purchased with Funds**
- **NIP 009 – Adverse event previously reported**
- **NIP 010 – Report type**

The following value sets replace a number of CDC defined tables. These have been registered in the CDC local value set, CDCPHINVS. Where appropriate, existing codes are used. For example SNOMED codes are used for some contraindications. Local codes (VXCxx) will be replaced as new SNOMED codes are published.

CDC-defined NIP004 - Contraindications, Precautions, and Immunities

This table has been replaced by separate tables for contraindications, indications, reactions and immunities.

Value Set Name – Immunization Funding Source

Used in OBX- 5

Value Set OID - 2.16.840.1.114222.4.11.3287

Value Set Code:: PHVS_ImmunizationFundingSource_IIS

Value set definition: Indicates funding source for an immunization. This is used to support vaccine inventory management.

These codes indicate the inventory stock (i.e., Public or Private – with a two-stock storage model; Public VFC, Public non-VFC, Private – with a three-stock storage model) from which each vaccine dose was taken. For publicly purchased vaccine, an IIS will use either VXC50 code (i.e., public) or the combination of VXC51 (i.e., Public VFC) and VXC52 (i.e., Public non-VFC) codes to record the inventory stock for publicly purchased vaccines.

Code Set OID:

NULLFL: 2.16.840.1.113883.5.1008

CDCPHINVS: 2.16.840.1.114222.4.5.274

Local implements may expand this list.

| Concept Code | Concept Name | Definition | HL7 Table 0396 Code | V 2.3.1 Value NIP008 |
|--------------|----------------|--|---------------------|----------------------|
| PHC70 | Private funds | Immunization was funded by private funds, including insurance. | CDCPHINVS | PVF |
| VXC50 | Public | Vaccine stock used was publicly funded | CDCPHINVS | |
| VXC51 | Public VFC | Vaccine stock used was publicly funded by the VFC program | CDCPHINVS | |
| VXC52 | Public non-VFC | Vaccine stock used was publicly funded by a non-VFC program | CDCPHINVS | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Examples:

|PHC70^Private funds^CDCPHINVS|

|OTH^Other^NULLFL|

Value Set Name – Vaccination Contraindications

Used in OBX- 5

Value Set OID - 2.16.840.1.114222.4.11.3288

Value Set Code:: PHVS_VaccinationContraindication_IIS

Value set definition: indicates a contraindication to vaccination.

Code Set OID:

SNOMED: 2.16.840.1.113883.6.96

CDCPHINVS: 2.16.840.1.114222.4.5.274

Change History

| Concept Code | Concept Name | Definition | HL7 Table 0396 Code | V 2.3.1 Value NIP004 |
|---------------------|--|--|----------------------------|-----------------------------|
| VXC30 | allergy (anaphylactic) to proteins of rodent or neural origin | allergy (anaphylactic) to proteins of rodent or neural origin | CDCPHINVS | |
| VXC17 | allergy (anaphylactic) to 2-phenoxyethanol | allergy (anaphylactic) to 2-phenoxyethanol | CDCPHINVS | |
| VXC18 | allergy to baker's yeast (anaphylactic) | allergy to baker's yeast (anaphylactic) | CDCPHINVS | 03 |
| 91930004 | Allergy to eggs (disorder) | allergy to egg ingestion (anaphylactic) | SCT | 04 |
| 294847001 | Gelatin allergy (disorder) | allergy to gelatin (anaphylactic) | SCT | 05 |
| 294468006 | Neomycin allergy (disorder) | allergy to neomycin (anaphylactic) | SCT | 06 |
| 294466005 | Streptomycin allergy (disorder) | allergy to streptomycin (anaphylactic) | SCT | 07 |
| VXC19 | allergy to thimerosal (anaphylactic) | allergy to thimerosal (anaphylactic) | CDCPHINVS | 08 |
| VXC20 | allergy to previous dose of this vaccine or to any of its unlisted vaccine components (anaphylactic) | allergy to previous dose of this vaccine or to any of its unlisted vaccine components (anaphylactic) | CDCPHINVS | 09 |
| 402306009 | Allergy to aluminum (disorder) | allergy (anaphylactic) to alum | SCT | |
| 300916003 | Latex allergy (disorder) | allergy (anaphylactic) to latex | SCT | |
| 294530006 | Polymyxin B allergy (disorder) | allergy (anaphylactic) to polymycin B | SCT | |
| VXC21 | Previous history of intussusception | Previous history of intussusception | CDCPHINVS | |
| VXC22 | encephalopathy within 7 days of previous dose of DTP or DTaP | encephalopathy within 7 days of previous dose of DTP or DTaP | CDCPHINVS | 15 |
| VXC23 | current fever with moderate-to-severe illness | current fever with moderate-to-severe illness | CDCPHINVS | 16 |
| VXC24 | current acute illness, moderate to severe (with or | current acute illness, moderate to severe | CDCPHINVS | 21 |

| Concept Code | Concept Name | Definition | HL7 Table 0396 Code | V 2.3.1 Value NIP004 |
|--------------|---|---|---------------------|----------------------|
| | without fever) (e.g., diarrhea, otitis media, vomiting) | (with or without fever) (e.g., diarrhea, otitis media, vomiting) | | |
| 27624003 | Chronic disease (disorder) | chronic illness (e.g., chronic gastrointestinal disease) | SCT | 22 |
| VXC25 | History of Arthus hypersensitivity reaction to a tetanus-containing vaccine administered < 10 yrs previously | History of Arthus hypersensitivity reaction to a tetanus-containing vaccine administered < 10 yrs previously | CDCPHINVS | |
| VXC26 | underlying unstable, evolving neurologic disorders, (including seizure disorders, cerebral palsy, and developmental delay) | 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) | immunodeficiency due to any cause, including HIV (hematologic and solid tumors, congenital immunodeficiency, long-term immunosuppressive therapy, including steroids) | CDCPHINVS | 36 |
| 77386006 | Patient currently pregnant (finding) | pregnancy (in recipient) | SCT | 39 |
| 302215000 | Thrombocytopenic disorder (disorder) | thrombocytopenia | SCT | 40 |
| 161461006 | History of - purpura (situation) | thrombocytopenic purpura (history) | SCT | 41 |

Examples:

|VXC18^allergy to bakers yeast^CDCPHINVS|

|77386006^patient currently pregnant^SCT|

Value Set Name – Vaccination Reaction - IIS

Used in OBX- 5

Value Set OID - 2.16.840.1.114222.4.11.3289

Value Set Code:: PHVS_VaccinationReaction_IIS

Value set definition: indicates a reaction or adverse event associate in time with an immunization.

Code Set OID:

SNOMED: 2.16.840.1.113883.6.96

CDCPHINVS: 2.16.840.1.114222.4.5.274

| Concept Code | Concept Name | Definition | HL7 Table 0396 Code | V 2.3.1 Value NIP004 |
|--------------|---|---|---------------------|----------------------|
| 39579001 | Anaphylaxis (disorder) | Anaphylaxis | SCT | |
| 81308009 | Disorder of brain (disorder) | Encephalopathy | SCT | |
| VXC9 | persistent, inconsolable crying lasting > 3 hours within 48 hours of dose | persistent, inconsolable crying lasting > 3 hours within 48 hours of dose | CDCPHINVS | |
| VXC10 | collapse or shock-like state within 48 hours of dose | collapse or shock-like state within 48 hours of dose | CDCPHINVS | |
| VXC11 | convulsions (fits, seizures) within 72 hours of dose | convulsions (fits, seizures) within 72 hours of dose | CDCPHINVS | |
| VXC12 | fever of >40.5C (105F) within 48 hours of dose | fever of >40.5C (105F) within 48 hours of dose | CDCPHINVS | |
| VXC13 | Guillain-Barre syndrome (GBS) within 6 weeks of dose | Guillain-Barre syndrome (GBS) within 6 weeks of dose | CDCPHINVS | |
| VXC14 | Rash within 14 days of dose | Rash within 14 days of dose | CDCPHINVS | |
| VXC15 | Intussusception within 30 days of dose | Intussusception within 30 days of dose | CDCPHINVS | |

Examples:

[39579001^anaphylaxis^SCT]

[VXC14^Rash within 14 days^CDCPHINVS]

Value Set Name – Vaccination Special Indications - IIS

Used in OBX- 5

Value Set OID - 2.16.840.1.114222.4.11.3290

Value Set Code:: PHVS_VaccinationSpecialIndications_IIS

Value set definition: Describes a factor about the client which may impact forecasting of next dose of vaccine needed.

Code Set OID:

CDCPHINVS: 2.16.840.1.114222.4.5.274

| Concept Code | Concept Name | Definition | HL7 Table 0396 Code | V 2.3.1 Value |
|--------------|--|--|---------------------|---------------|
| VXC7 | Rabies exposure within previous 10 days. | Rabies exposure within previous 10 days. | CDCPHINVS | |
| VXC8 | Member of special group | Member of special group | CDCPHINVS | |
| | | | | |

Example:

[VXC7^Rabies exposure^CDCPHINVS]

Value Set Name – Immunization Profile Identifiers - IIS

Used in MSH-21

Value Set OID - 2.16.840.1.114222.4.11.3291

Value Set Code:: PHVS_ImmunizationProfileIdentifier_IIS

Value set definition: Identifies the profile used by the message.

Code Set OID:

CDCPHINVS: 2.16.840.1.114222.4.5.274

Change History

| Concept Code | Concept Name | Definition | HL7 Table 0396 Code |
|--------------|--|---|---------------------|
| Z22 | Send Unsolicited Update | Send Immunization History | CDCPHINVS |
| Z23 | Return ACK | Return Acknowledgement | CDCPHINVS |
| Z31 | Return Candidate Clients | Return Candidate Clients | CDCPHINVS |
| Z32 | Return Immunization History | Return Immunization History | CDCPHINVS |
| Z33 | Return acknowledgment | Return acknowledgment (no match, too many match, error) | CDCPHINVS |
| Z34 | Request Immunization History | Request Immunization History | CDCPHINVS |
| Z44 | Request Evaluated History and Forecast | Request Evaluated History and Forecast | CDCPHINVS |
| Z42 | Return Evaluated History and Forecast | Return Evaluated History and Forecast | CDCPHINVS |

Example:

|Z34^ CDCPHINVS|

Value Set Name – Immunization Schedule Identifiers - IIS

Used in OBX-5

Value Set OID - 2.16.840.1.114222.4.11.3292

Value Set Code:: PHVS_ImmunizationScheduleIdentifier_IIS

Value set definition: Identifies the schedule used for immunization evaluation and forecast.

Code Set OID:

CDCPHINVS: 2.16.840.1.114222.4.5.274

| Concept Code | Concept Name | Definition | HL7 Table 0396 Code | V 2.3.1 Value |
|--------------|---------------|--|---------------------|---------------|
| VXC16 | ACIP Schedule | This indicates that the current ACIP Schedule of recommendations were used to forecast next doses due. | CDCPHINVS | |

Example:

|VXC16^ACIP Schedule^CDCPHINVS|

Local Implementations may add local codes for local schedules. In order to do this, the local implementation guide should publish the code in a local table. The code system identifier (CDCPHINVS use above is an example) needs to be included in a local copy of Table 0396. See first row for example. The local schedule code should be recorded as follows:

|yourLocalcode^your schedule name here^99xxx|

The 99xxx is the local code table identifier. xxx are alpha characters.

Value Set Name – History of Disease as Evidence of Immunity - IIS

Used in OBX- 5

Value Set OID - 2.16.840.1.114222.4.11.7244

Value Set Code:: PHVS_HistoryOfDiseaseAsEvidenceOfImmunity_IIS

Value set definition: History of Disease as Evidence of immunity indicates that a person has been diagnosed with a particular disease.

Code Set OID:

SNOMED: 2.16.840.1.113883.6.96

| Concept Code | Concept Name | Definition | 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 |

Change History

| Concept Code | Concept Name | Definition | HL7 Table 0396 Code | V 2.3.1 Value NIP004 |
|--------------|--|---|---------------------|----------------------|
| 240532009 | Human papilloma virus 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 | |
| 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 | |
| 16541001 | Yellow fever (disorder) | History of yellow fever infection. | SCT | |

Value Set Name – Serological Evidence of Immunity - IIS

Used in OBX- 5

Value Set OID - 2.16.840.1.114222.4.11.7245

Value Set Code:: PHVS_SerologicalEvidenceOfImmunity_IIS

Value set definition: Serological Evidence of immunity to a particular disease indicates that a person immunity to that disease.

Code Set OID:

SNOMED: 2.16.840.1.113883.6.96

| Concept Code | Concept Name | Definition | 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 (finding) | Serology confirmed hepatitis B | SCT | |
| 278971009 | Hepatitis A (finding) | Serology confirmed hepatitis A | SCT | |
| 341112003 | Mumps (finding) | Serology confirmed mumps | SCT | |

Value Set Code – PHVS_VISBarcodes_IIS

Value Set Name: VIS Bar Codes (IIS)

Value Set OID: 2.16.840.1.114222.4.11.6041

Value Set Definition: 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/pubs/vis/vis-barcodes.htm>

| 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 | cdcgslvis |
| Anthrax VIS | 3/10/2010 | 253088698300002811100310 | cdcgslvis |
| Hepatitis A VIS | 10/25/2011 | 253088698300004211111025 | cdcgslvis |
| Hepatitis B VIS | 2/2/2012 | 253088698300005911120202 | cdcgslvis |
| Haemophilus Influenzae type b VIS | 12/16/1998 | 253088698300006611981216 | cdcgslvis |
| Human papillomavirus Vaccine (Cervarix) VIS | 5/3/2011 | 253088698300007311110503 | cdcgslvis |
| Human papillomavirus Vaccine (Gardasil) VIS | 2/22/2012 | 253088698300008011120222 | cdcgslvis |

Change History

| VIS Document Type Description / Concept Name | Edition Date | VIS Fully-encoded text string (Concept Code) | Code System Code (HL7 Table 0396) |
|---|---------------------|---|--|
| Influenza Vaccine - Live, Intranasal VIS | 7/2/2012 | 253088698300009711120702 | cdcgs1vis |
| 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/Vari cella 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 |

Value Set Name – Funding Eligibility Observation Method (IIS)

Value Set OID - 2.16.840.1.114222.4.11.6039

Value Set Code: PHVS_FundingEligibilityObsMethod_IIS

Value set definition: The Funding Eligibility Observation Method identifies the method for capturing funding program eligibility. Note that it is always reported at the immunization level. Used in OBX- 17

| Concept Names | Concept code | Code System Identifier – HL7 Table 0396 |
|---|---------------------|--|
| Eligibility captured at the immunization level | VXC40 | CDCPHINVS |
| Eligibility captured at the visit level | VXC41 | CDCPHINVS |

Value Set Name – VIS Vaccines (IIS)

Value Set OID - 2.16.840.1.114222.4.11.6040

Value Set Code:: PHVS_VISVaccines_IIS

Value set definition: 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.

Table 1 -- CVX Codes of Vaccines Requiring VIS Recording

| CVX | Description | Code System Table 0396 code |
|------------|---|------------------------------------|
| 106 | DTaP, 5 pertussis antigens | CVX |
| 146 | DTaP,IPV,Hib,HepB | CVX |
| 110 | DTaP-Hep B-IPV | CVX |
| 50 | DTaP-Hib | CVX |
| 120 | DTaP-Hib-IPV | CVX |
| 130 | DTaP-IPV | CVX |
| 52 | Hep A, adult | CVX |
| 83 | Hep A, ped/adol, 2 dose | CVX |
| 104 | Hep A-Hep B | CVX |
| 08 | Hep B, adolescent or pediatric | CVX |
| 42 | Hep B, adolescent/high risk infant | CVX |
| 43 | Hep B, adult | CVX |
| 44 | Hep B, dialysis | CVX |
| 49 | Hib (PRP-OMP) | CVX |
| 48 | Hib (PRP-T) | CVX |
| 51 | Hib-Hep B | 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 |

Change History

| CVX | Description | Code System Table 0396 code |
|------------|-------------------------------|------------------------------------|
| 03 | MMR | CVX |
| 94 | MMRV | CVX |
| 133 | Pneumococcal conjugate PCV 13 | CVX |
| 100 | pneumococcal conjugate PCV 7 | CVX |
| 119 | rotavirus, monovalent | CVX |
| 116 | rotavirus, pentavalent | CVX |
| 138 | Td (adult) | CVX |
| 113 | Td (adult) preservative free | CVX |
| 09 | Td (adult), adsorbed | CVX |
| 115 | Tdap | CVX |
| 21 | varicella | CVX |

Appendix B – Guidance on Usage and Example Messages

Table B-1 Appendix B Revision History

| Revision History | | |
|-------------------------|-----------------|-------------|
| Author | Revision | Date |
| Rob Savage | Release 1 | 5/1/2010 |
| Rob Savage | Release 1.1 | 2/15/2011 |
| Rob Savage | Release 1.3 | 8/15/2011 |
| Rob Savage | Release 1.4 | 8/1/2012 |
| Rob Savage | Release 1.5 | 8/11/2014 |
| | | |

Core Data Elements for an Immunization History

A number of core data elements are messaged in OBX (observation segments). While they are not directly specified in the HL7 standards, they are crucial to support immunization information systems. The following table lists all core data elements and indicates their usage.

Table B-2--Immunization History Core Data Elements

| Data Element | Description | Support Status⁴⁶ | Location in Message |
|-------------------------------------|--|------------------------------------|----------------------------|
| Client Related Data Elements | | | |
| Client Id | A list of client identifiers for the person that is the subject of a given immunization history. The id includes both a unique identifier and the context/owner of the identifier. | Required | PID-3 |
| Client Name | A list of names for the subject of the immunization history. The name is composed of both the names and the name type (legal, alias, etc.) | Required | PID-5 |
| Mother's Maiden Name | The family name of the person's mother. This is an important key to assuring an accurate match. | Required | PID-6 |
| Race | Patient's self reported race. | Required | PID-10 |
| Ethnicity | Patient's self reported ethnicity | Required | PID-22 |
| Gender | Patients gender | Required | PID-8 |
| Birth date | Date patient was born | Required | PID-7 |
| Birth order | If patient was part of a multiple birth, this indicates the ordinal position in that birth. | Required | PID-24 |
| Multiple Birth Indicator | Indicates if person was member of multiple birth. | Optional | PID-25 |
| Birth State | The state the person was born in. | Required | PID-11 |
| Birth facility | The name of the facility where the person was born. | Required | |
| Client address | Address of the client's residence | Required | PID-11 |
| Client Phone | List of telecommunication numbers/address | Required | PID-13 |

⁴⁶ Support Status indicates whether the field must be supported by the information system and messaged if known. It does not indicate whether all messages must contain the data element. That is indicated in the usage column for each field.

Appendix B: Guidance on Usage and Example Messages

| Data Element | Description | Support Status ⁴⁶ | Location in Message |
|---|---|------------------------------|----------------------|
| Client IIS status | Indicates if client is currently associated with the IIS | Required | PD1-16 |
| Client Provider organization status (Registry status) | Indicates if client is currently associated with the provider organization | Required | PD1-16 ⁴⁷ |
| Responsible person name | A list of names of a responsible person | Required | NK1-2 |
| Responsible person address | Address of the responsible person | Optional | NK1-4 |
| Responsible person relationship | Relationship of the responsible person to the patient/client | Required | NK1-3 |
| Responsible person phone | Phone number of responsible person | Optional | NK1-5 |
| Client Primary language | Primary language of client/patient | optional | PID-15 |
| Vaccination Related Data Elements | | | |
| Vaccine administered product type | Indicates which product (vaccine) was administered | Required | RXA-5 |
| Vaccine product manufacturer | Indicates the company which manufactured the vaccine | Required | RXA-17 |
| Vaccine administered date | Indicates the date that the vaccine was administered | Required | RXA-3 |
| Vaccine Lot Number | Indicates the lot number for the vaccine administered | Required | RXA-15 |
| Vaccine Lot Expiration Date | Indicates the expiry date for the vaccine administered | Required | RXA-16 |
| Vaccine site of administration | Indicates the body site where the vaccine was administered | Required | RXR-2 |
| Vaccine route of administration | Indicates the route that was used to administer the vaccine | Required | RXR-1 |
| Vaccine ordering provider | Indicates the clinician who ordered the vaccination | Required | ORC-12 |
| Vaccine administering provider | Indicates the clinician who administered the vaccine | Required | RXA-10 |
| Vaccine Event information source | Indicates whether the vaccine was administered by the provider organization recording | Required | RXARXA-9 |

⁴⁷ PD1-16 indicates the status from the message sender's perspective. In the case of a message coming from a provider, it indicates if the client is an active patient of that sender.

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| Data Element | Description | Support Status ⁴⁶ | Location in Message |
|---|---|------------------------------|---------------------|
| | the immunization or obtained from a historical record | | |
| Vaccine Information Sheet (VIS) type | Indicates the subject of the VIS, that is which vaccine(s) it refers to | Required | OBX-5 |
| Vaccine Information Sheet (VIS) version date | Indicates the publication date of the VIS | Required | OBX-5 |
| Vaccine information Sheet date given to client/responsible person | Indicates the date the VIS was given to the patient/responsible person | Required | OBX-5 |
| Patient Eligibility Category for Vaccine Funding Program | This value represents the funding program that should pay for a given immunization. It is determined based on characteristics of the patient/client and the type of vaccine administered. | Required | OBX-5 |
| Vaccine Funding Source | Indicates the Funding Source of the vaccine administered. That is was the vaccine administered federally funded, privately funded, etc. | Optional | OBX-5 |
| Observations About the Client | | | |
| Contraindications/precautions | A contraindication is categorical indicator of the medical conditions of the patient which has that indicate that the patient should not receive a vaccine. A precaution is a medical condition of the patient that indicates the clinician should make a determination whether the patient should receive the vaccine. | Required | OBX-5 |
| Contraindication observation date | Indicates the date that the contraindication was noted | Required | OBX-14 |
| Exemption/refusal reason | Indicates the reason the patient is either exempt from the immunization or refuses the immunization. | Required | RXA-18 |
| Exemption / refusal date | Date the patient refused or was exempted from vaccination | Required | RXA-3 |
| Vaccine reaction | A categorical indicator of an adverse health consequence | Optional | OBX-5 |

| Data Element | Description | Support Status⁴⁶ | Location in Message |
|--|--|------------------------------------|----------------------------|
| | with onset that follows immunization | | |
| History of vaccine preventable disease | Indicates a vaccine preventable disease that a patient has had | Required | OBX-5 |
| Date of history of vaccine preventable disease | Indicates the date the disease occurred (or was noted if onset is uncertain) | Required | OBX-14 |

Send Immunization History (VXU)

Business Process

The following activity diagram illustrates the process of sending and receiving an immunization history. It is meant to be illustrative and not prescriptive. With the exception of the HL7 message structure processing and the return of an acknowledgement, the activities are based on local business rules. These rules must be documented for smooth interoperability. HL7 only addresses the messages, VXU and ACK.

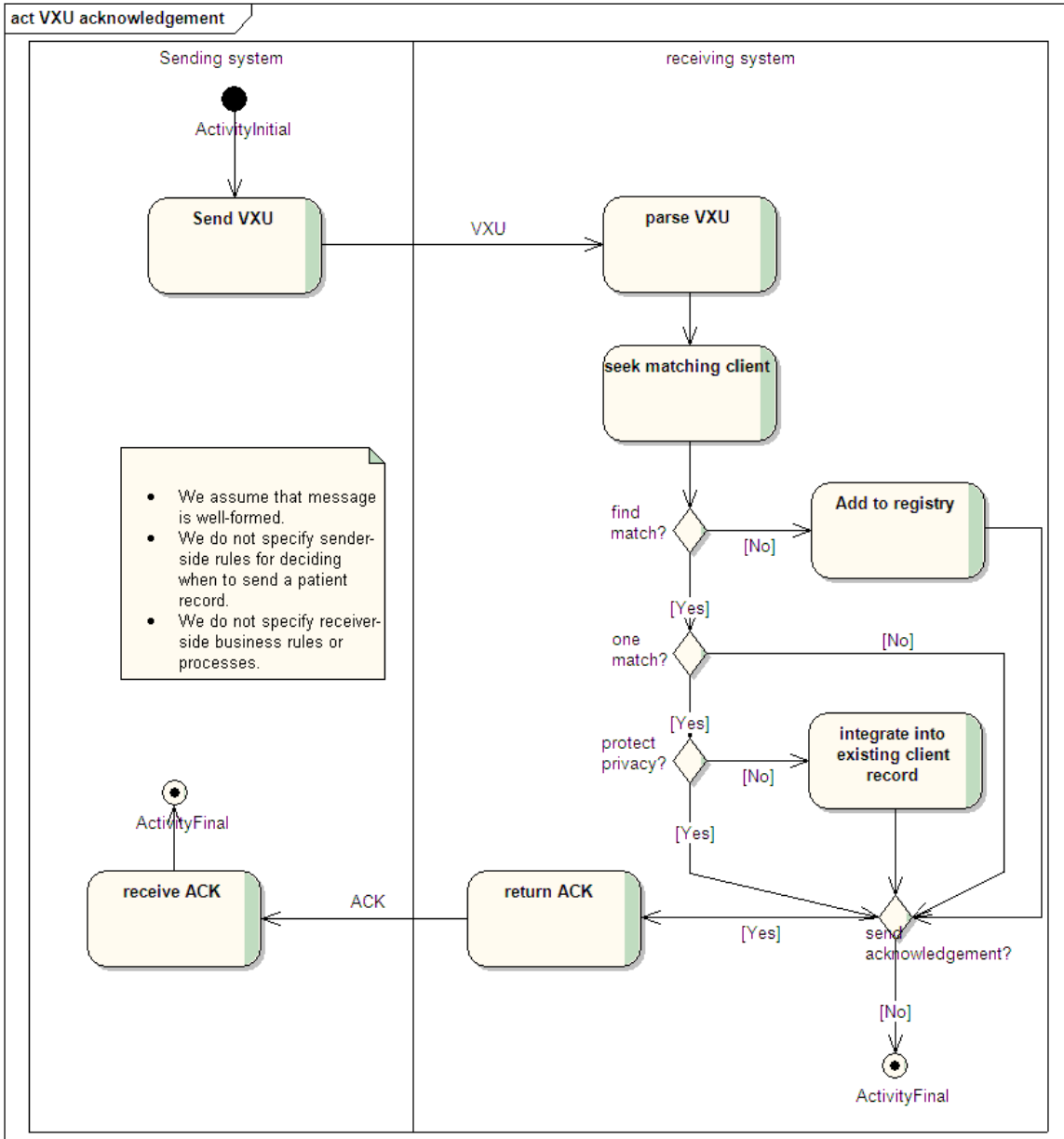


Figure B-44-VXU Business Process

1. The process for sending a VXU (Immunization history) begins with the sending system building the VXU message.
2. The sending system connects to the receiving system and sends the VXU.
3. The receiving system accepts the message.
4. The receiving system parses the message and validates.
 - a. Determine if message meets HL7 rules
 - b. Validate based on local business rules⁴⁸
5. Seek matching client in receiver data base

⁴⁸ See Send Error in ACK for dealing with errors if either of these two tasks identifies problems.

- a. No match is found⁴⁹
 - i. Add the client to the receiver database.
 - ii. Send acknowledgement message⁵⁰
 - b. Exactly one match found
 - i. Determine if client in receiver data base has indicated that his/her data is to be protected (protection indicator = Y)⁵¹
 - ii. Protection indicator = Y
 1. Do not integrate record into receiver data base
 2. Send acknowledgement⁵²
 - iii. Protection indicator = N
 1. Based on local business rules, integrate incoming record into receiver data base.
 2. Send acknowledgement
 - c. More than one match found
 - i. Send acknowledgement⁵³
6. Send acknowledgment to sending system
 7. Sending system accepts acknowledgement message.⁵⁴

Note that sending system may indicate that it does not accept acknowledgement messages. In this case, no acknowledgement is returned. This is not recommended.

It is expected that a client's immunization history is the complete history known to the sending system, and not just updates on new information in the sending system. While some systems may send updates only, the receiving system should make no assumptions about this. This has important implications for processing those incoming records. At the same time, the sending system may not know of all immunizations, so receiving system must have a process for integrating the received data into an existing record. The Modeling Immunization Registry Operations Workgroup (MIROW) has produced a chapter of best practices on this process. This is available on the American Immunization Registry Association web site (www.immregistries.org).

The following example messages represent straightforward immunization history messages. They do not illustrate dealing with specific use cases, such as messaging reactions, client specific conditions or vaccine forecasts. Clearly, these may be components of a VXU, but will be addressed separately to simplify the messages.

It is important to reiterate here that conformant systems should be able to successfully populate and process the VXU message segments and fields identified as Required or Required but may be empty. They should be able to populate and process conditional items when the predicate conditions are met. If segments or fields are optionally repeating, they should be able to gracefully handle the repetitions. Systems that do not conform to these expectations risk missed data.

⁴⁹ Local business rules determine what happens next, but we assume that it is a simple insert of the client record. The receiving system may require review and confirmation prior to insertion. Other systems may choose to require human review before adding to data base.

⁵⁰ See Send Acknowledgement with no error.

⁵¹ Locally, this may be known as the sharing indicator. In this case, the equivalent value is sharing = N.

⁵² Local business rules may vary. In general, the acknowledgement may reject the client record, but not indicate the existence of the client record in the receiver system.

⁵³ Local business rules will determine how the multiple matches are to be handled. The record could be put into a pending state, rejected outright, loaded in as a new record for clean up later.

⁵⁴ The sending system response to an acknowledgement message (ACK) is locally determined. Good practice would be to have a way to use the ACK to alert user to outcome and to allow trouble-shooting of problem messages.

Example VXU # 1-Basic message:

Note that all example messages that follow are hand-crafted and may contain errors. They are not the source of truth for message format and content.

Storyboard:

On 01/13/2012 Mom brought her son ,Johnny New Patient (male), to the clinic. He was born 4/14/11 has had 1 dose of Hep B on 4/15/11, according the medical record brought in by Mom (Sally Patient). They live at 123 Any Street, Somewhere, Wisconsin 54000. Mom gives her maiden name as Lastname. Johnny's mom indicates that his Native American and not Hispanic. There home phone number is (111)232-0112.

Mom was given the Vaccine Information Sheet (VIS) that covered the following vaccine types:

- DTaP, IPV, Hib, PCV, Hepatitis B, and Rotavirus (publication date 11/16/12)

The clinician scanned the VIS bar code on the VIS (253088698300026411121116).

Nurse Sticker at Dalittle Clinic (name space id =DCS_DC), administers the following shots on 1/13/2012:

DTAP-Hep B-IPV (Pediarix), 0.5 mL, lot # xy3939, lot expiration 12/12/14, IM, right thigh

HIB (ActHIB) , 0.5 mL, lot # 33k2a, lot expiration 03/09/13, IM, left thigh

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

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

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

Message Example

```
MSH|^~\&|MYEHR|DCS|MYIIS||201201130000-  
500||VXU^V04^VXU_V04|45646ug|P|2.5.1|||ER|AL|||Z22^CDCPHINVS <CR>  
  
PID|1||432155^^^dcs^MR||Patient^Johnny^New^^^^L|Lastname^Sally^^^^M  
|20110411|M||1002-5^Native American^HL70005|123 Any  
St^^Somewhere^WI^54000^^L||^PRN^PH^^^111^2320112|||2186-5^not  
Hispanic^CDCREC<CR>  
  
NK1|1|Patient^Sally^^^^L|MTH^Mom^HL70063|123 Any  
St^^Somewhere^WI^54000^^L<CR>  
  
ORC|RE||65929^DCS|||^^Clerk^Myron||<CR>  
  
RXA|0|1|20110415||85^hep B,  
unspec^CVX|999|||01^historical^NIP001|||CP|A<CR>
```

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ORC|RE||65930^DCS|||||20120113|^Clerk^Myron|^Pediatric^Mary^^^^^^
^^^^^^^MD||||||Dabig Clinic System<CR>

RXA|0|1|20120113||110^DTaP HIB IPV^CVX|0.5|mL^^UCUM||00^New
admin^NIP001|^Sticker^Nurse^^^^^^^^^^^^^^^^^^^^RN|^DCS_DC|||xy3939|
20141212|SKB^GlaxoSmithKline^MVX||CP|A<CR>

RXR|C28161^IM^NCIT^IM^HL70162|RT^Right Thigh^HL70163<CR>

OBX|1|CE|64994-7^Eligibility
Status^LN|1|V02^Medicaid^HL70064||||F||||VXC40^vaccine
level^CDCPHINVS<CR>

OBX|2|DT|29769-7^VIS presented^LN|2|20120113||||F<CR>

OBX|3|CE|69764-9
^Document type^LN|2|253088698300026411121116^Multivaccine
VIS^cdcgs1vis||||F<CR>

ORC|RE||65949^DCS|||||20120113|^Clerk^Myron|^Pediatric^Mary^^^^^^
^^^^^^^MD||||||Dabig Clinic System<CR>

RXA|0|1|20120113||48^HIB PRP-T^CVX|0.5|mL^^UCUM||00^New
admin^NIP001|^Sticker^Nurse^^^^^^^^^^^^^^^^^^^^RN|^DCS_DC|||32k2a|2
0130309|PMC^sanofi^MVX||CP|A<CR>

RXR|C28161^IM^NCIT^IM^HL70162|LT^left Thigh^HL70163<CR>

OBX|4|CE|64994-7^Eligibility
Status^LN|1|V02^Medicaid^HL70064||||F||||VXC40^vaccine
level^CDCPHINVS<CR>

OBX|5|DT|29769-7^VIS presented^LN|2|20120113||||F<CR>

OBX|6|CE|69764-9^Eligibility
Status^LN|2|253088698300026411121116^Multivaccine
VIS^cdcgs1vis||||F<CR>

Example VXU #2 - Indicate client eligibility status for a funding program for vaccines administered:

Federal regulations specify that Patient Eligibility status be assessed at each immunization encounter. It is a key data element for creating the Vaccines for Children (VFC) report on vaccine usage. Support for this report requires that systems store a history of eligibility statuses at the dose administered level.

Immunization messages must be able to convey the eligibility status of a recipient when they received immunizations. That is, for each dose administered, the person's eligibility should be recorded. Eligibility refers to what funding program should pay for the vaccine. This is distinctly different from funding source, which refers to what funding program actually paid for the vaccine. This document will illustrate the former.

Guidance for systems which collect eligibility at the encounter level:

Some systems may not have the capability to capture eligibility for each immunization administered. The eligibility should be messaged using the OBX with each immunization record. Ideally, these systems would know the vaccines that are VFC eligible (or state program eligible) and correctly associate VFC eligibility with each vaccine administered. In practical terms if the person was VFC eligible because they were covered by MEDICAID, and received 2 doses of vaccine, each vaccine record would have an associated OBX segment. These segments would indicate V02 as the eligibility.

Patient Eligibility Status:

In the past, eligibility was recorded for each visit where a patient received an immunization. Recent guidance from the Modeling Immunization Registry Operations Workgroup (MIROW) ⁵⁵ has clarified that the eligibility status of the patient should be recorded for each vaccine dose administered. It does not need to be recorded for immunizations that represent a historical record of an immunization.

Sending systems which collect the eligibility status for each visit will need to associate the status recorded for that visit on each immunization administered at that visit. They should consider if the vaccine administered was eligible for the funding program when deciding what to assign as the eligibility for each immunization.

The method of capture is messaged in OBX-17 (observation method). If the eligibility is captured by vaccine dose, OBX-17 will be valued:

“VXC40^per immunization^CDCPHINVS”

If the method of capture is per visit, OBX-17 shall be valued:

“VXC41^per visit^CDCPHINV”

Patient Eligibility Status is conveyed in an OBX segment for each vaccine dose administered. While this document will describe how to accomplish this in an HL7 message and give a high-level view of patient eligibility status, readers should refer to the MIROW document for a complete understanding of correct usage.

As described in the MIROW document, a variety of factors play a role in determination of Patient Eligibility Status: VFC and grantee policies, age, private insurance coverage, type of provider, and type of vaccine to be administered. For instance a person who was an Alaska Native receiving an MMR would have an eligibility status code of V04. The following table gives a simplified view of the most common cases.

⁵⁵ http://www.aira.browsermedia.com/resources/AIRA-MIROW_DQA_Selected_Aspects_best_practice_guide_05-17-2013.pdf

Technical Note: The design of the information systems interface and validation functionality should ensure a match between reported/messaged Patient Eligibility Status and administered Vaccine Eligibility Status – they have to be eligible for the same funding program. The following table is an illustration of the logic found in table 0064.

Note that a person can't be eligible for VFC and a state program for the same immunization. That is, only one eligibility should apply to a given immunization.

Table B-2 -- Eligibility Outcomes

| Determined Patient Eligibility | Vaccine type eligibility | Record for patient eligibility for vaccine dose administered |
|--|---|---|
| VFC eligible (V02-V05) | Vaccine type is eligible for VFC (e.g. DTAP, MMR, etc.) | V02-V05 |
| Any patient eligibility reason | Vaccine type is not eligible for VFC (e.g. Yellow fever) | V01 |
| Not VFC eligible (V01) and no state or local program applies. | Any | V01 |
| Eligible for state or local vaccine program and not eligible for VFC | Vaccine is eligible for state or local program. | State or local eligibility code. |

The funding programs listed in table HL70064 are those associated with the Vaccines for Children program. Local funding program eligibility would be published in the local Implementation Guide in table 0064. The code V07 may be used if the person is not eligible for VFC funding program, but is eligible for a state or local funding program. The use of locally specified codes may be preferable to provide more granular information. If a locally defined funding program eligibility code is sent, then the person is presumed to be not eligible for VFC funded vaccine.

The coding scheme uses codes in table HL70363 to indicate the assigning authority. The code is composed of the code from table HL70363 and 2 character number assigned by the state (The state may add to this list for other local assigning authorities.)

For example, if Alaska had a funding program and the person and vaccination met the eligibility criteria, the code in OBX-5 would be as follows:

```
|AKA01^Alaska special eligibility^AKA|
```

AKA01 is the code. AKA in the third triplet is the assigning authority. The text in the second triplet is not processed and so may be any text.

The OBX segment indicating patient eligibility in association with the dose administered is composed of a number of data elements. OBX-3 indicates that the segment contains patient eligibility status (LOINC

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64994-7). OBX-5 indicates the eligibility status. OBX-17 indicates the method of observation (per visit or per immunization).

Technical note on LOINC code 64994-7:

The formal short name for this LOINC code is "Vaccine fund pgm elig cat", this means it is the patient eligibility status associated with a vaccine dose administered.

The following message fragment indicates that the patient was eligible for VFC vaccine for the associated vaccination because they were Native American/Alaskan Native and the vaccine administered was an eligible vaccine type. The method of capture was per immunization.

VFC Eligible Client Received Vaccine That Is VFC eligible

RXA|0|1|....

RXR| ...

OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V04^VFC eligible
NA/AN^HL70064|||||F|||20090531|||XVC40XVC40^per imm^CDCPHINVS <CR>

VFC Ineligible Client Received Vaccine That Is VFC eligible

RXA...

RXR ...

OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V01^Not VFC eligible
^HL70064|||||F|||20090531||| XVC40XVC40^per imm^CDCPHINVS <CR>

VFC Eligible Client Received Vaccine That Is Not VFC eligible

RXA...

RXR...

OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V01^Not VFC elig
^HL70064|||||F|||20090531|XVC40XVC40^per imm^CDCPHINVS <CR>

VFC Eligible Client Received Vaccine That Is Eligible for Local Funding Program

RXA...

RXR...

```
OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|AKA01^Alaska Special
Funding Program^AKA|||||F|||20090531|XVC40XVC40^per imm^CDCPHINVS
<CR>
```

Example VXU #3 - Include immunization history evaluation and forecast in VXU

It is uncommon that a VXU will include an evaluated history and forecast. Therefore there it is not an example shown. The example has been removed. See QBP/RSP example below.

Example VXU #4 - Send client specific conditions

Evaluation of immunization history and forecasting next dose due are important services provided by many IIS. There are a number of factors that can impact these evaluations and forecasts. In general terms, some factors contraindicate next doses, while others recommend next doses. These factors may be messaged in OBX segments associated with an RXA.

Reaction Associated with a Previous Dose of Vaccine

Some people experience adverse events after receipt of an immunization. In many cases, Immunization Information Systems (IIS) record these in conjunction with a specific immunization event. Occasionally, the exact immunization event information is unknown. (e.g. anaphylaxis occurred after a previous dose, years in the past.)

Definition:

An adverse reaction is a negative physical condition that occurs shortly after one or more immunizations have been received.

Adverse Reaction:

```
ORC|RE||9999^DCS|||||^Clerk^Myron| <CR>
```

```
RXA|0|1|20090412|20090412|998^No vaccine
administered^CVX|999|||||||||||||NA<CR>
```

```
OBX|1|CE|31044-1^Reaction^LN|1|39579001^Anaphylaxis^SCT
|||||F|||20090412<CR>
```

Evidence of immunity:

Infection with the diseases that are the target of immunizations leads to long-term immunity. Further immunization against the disease is not likely to provide benefit.

Definition:

Evidence of immunity indicates that a person has plausible evidence that they have already developed immunity to a particular disease. The strongest evidence of immunity is when serological evidence

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indicates immunity. An alternative evidence of immunity is when a clinician has determined that the patient has a history of the disease.

The example below shows that no dose of vaccine was given because the person had evidence of previous infection with Hep B.

```
ORC|RE||9999^DCS|||||^Clerk^Myron| <CR>
```

```
RXA|0|1|20090412|20090412|998^No vaccine  
administered^CVX|999|||||||NA<CR>
```

```
OBX|1|CE|59784-9^Disease with presumed immunity ^LN|1|66071002^HISTORY  
OF HEP B INFECTION^SCT|||||F|||20090412<CR>
```

Contraindications to immunization:

There are a number of contraindications to immunization. These may be temporary or permanent. One is a history of reactions to previous immunization. That is dealt with above. Others include allergies to components of vaccines, physical conditions, current medication and current illnesses.

Definition:

A contraindication is any physical condition, current medication or other factor that indicates that a person should not receive an immunization that may be associated with the contraindication. This contraindication may be temporary or permanent.

LOINC: 30945-0

Examples:

```
OBX|1|CE|30945-0^Vaccination contraindication^LN|1|91930004^allergy  
to eggs^SCT|||||F|||20090415<CR>
```

```
OBX|1|CE|30945-0^Vaccination contraindication^LN|1|VXC19^allergy to  
thimerasol (anaphylactic)^CDCPHINVS|||||F|||20090415<CR>
```

Factors which indicate the need for an immunization or a changed recommendation:

Several factors can drive the need for a specific immunization or a change in the normal schedule for immunization. These may be an exposure to an infection, such as rabies. Other risk factors may include membership in a risk group.

Definition:

A risk factor is some characteristic of an individual, which may lead to a recommendation for a specific vaccine.

```
OBX|1|CE|59785-6^Special Indication for
vaccination^LN|1|VXC7^exposure to
rabies^CDCPHINVS|||||F||||20090415<CR>
```

Example VXU #6 –Delete an Immunization Record

There are occasions when a system that has sent an immunization record to another system wishes to delete the record on the other system. Each system may have rules about the requester’s right to delete records.

If a system allows deletions by HL7 message, use the RXA-21, Action Code to request deletion of a specific record. The following diagram illustrates how the ORC-3 may be used to identify an immunization record for deletion⁵⁶. Note that the sending system includes the sending system unique id for the immunization in the ORC-3 first component. The second component is the assigning authority, in this case a system that is labeled MYIIS. In order for a later delete request to be successful, the receiving system must store those values. A subsequent request to delete an immunization record includes the sending system id and assigning authority. The receiving system searches for an immunization record with the same sending system id and assigning authority. In this case we show that the record match is made and the record is deleted from the receiving system.

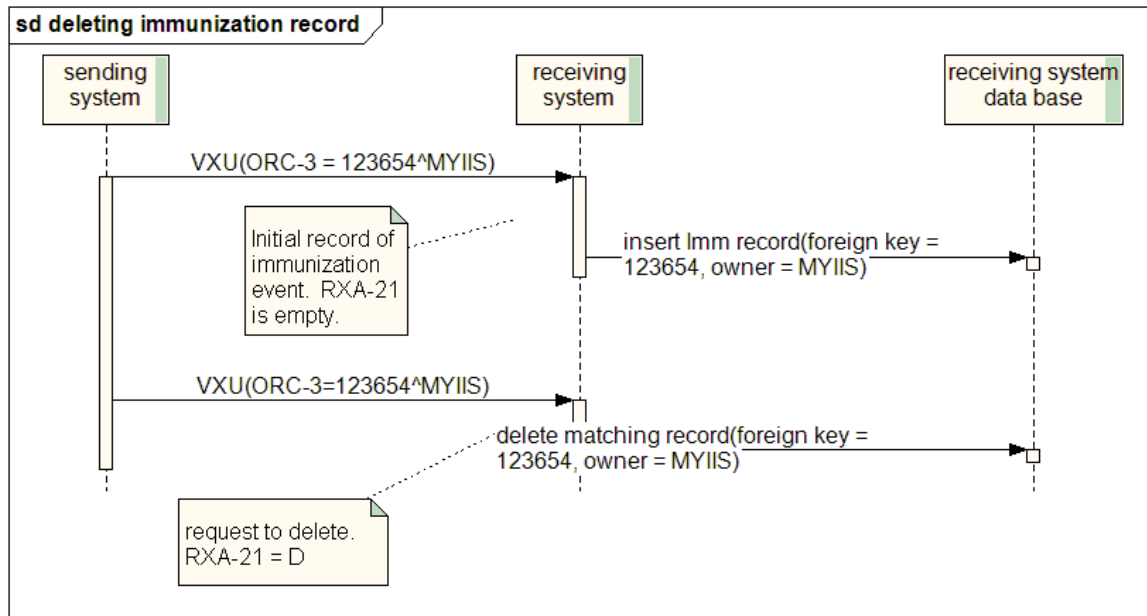


Figure B-45 Sequence Diagram-Deleting an Immunization Record

VXU Example #7--Send Information About Vaccine Information Statement (VIS)

The Vaccine Information Statement (VIS) is a document that explains the reasons for a vaccine and the potential risks from receiving the vaccine. IIS track the fact that a VIS was shared with the client or parent. There are three pieces of information about each event.

- The focus of the VIS or the VIS document type

⁵⁶ The other approaches will not be further illustrated here.

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- The date that the VIS was presented to the client/parent.
- The publication date (also known as Edition Date) of the VIS that was presented.

These are carried in separate OBX segments associated with a vaccination event (RXA). These OBX are linked by the value in the sub-id field. (OBX-4)

The VIS type may be indicated in one of two ways. The original way is to indicate the vaccine type in an OBX using a CVX code. For a vaccine that is a combination of vaccines, there are often separate VIS for each vaccine. This may be handled by sending 2 sets of OBX, one for each vaccine component.

This method will not allow reporting of presentation of the multi-vaccine VIS and so all systems are urged to support the bar code approach illustrated below.

The preferred method for indicating VIS type is based on a scanned bar code of a Global Document Type Identifier (GDTI). The GDTI is composed of a document owner, an application, a document type identifier and a check digit. The fully encoded text string of the GDTI will be sent in an OBX segment. The mapping of the fully encoded string will be found in a table supported by the CDC. The publication date maybe inferred from the fully encoded GDTI. Therefore only the presentation date and GDTI need to be sent.

Two methods exist to transmit information in an HL7 message describing the VIS document(s) presented to patients or the legal guardians. The first involves the use of 2D VIS barcode data strings, “VIS Fully-encoded text string”, while the second involves the identification of the vaccine type or group along with the VIS publication date. The use of the VIS Fully-encoded text string is highly recommended when messaging VIS information. The alternative of using the vaccine type, publication date and presentation date LOINC codes is problematic and fails in several use cases including when sending manufacturer specific VIS information (such as for HPV) or when sending the Multiple Vaccines VIS document. It is anticipated that this second method will be retired in a future release of the implementation guide. (Note: Scanning does not need to be used for this first method to work.)

The 13 digit Global Document Type Identifier (GDTI) is used to identify a document type while the 24 digit VIS Fully-encoded text string begins with “253” and includes the GDTI as well as the publication date. The VIS Fully-encoded text string represents a particular version of the VIS document. The Implementation Guide currently says that the publication date may be inferred from the fully encoded GDTI. The term “fully encoded GDTI” here refers to the VIS Fully-encoded text string (24 digits) and not the 13 digit GDTI. As stated, it is the VIS Fully-encoded text string and not the GDTI that should be sent in OBX-5. The GDTI, Fully-encoded text string, and Edition Date are available in the VIS Lookup Table (<http://www.cdc.gov/vaccines/programs/iis/code-sets/vis-barcode-lookup-table.html>).

Example 1-Single vaccine (GDTI approach)

```
RXA|...  
OBX|1|CE|69764-9^document type^LN|1|253088698300012711120420^MMR^  
cdcgs1vis|||||F|||20091010<CR>  
  
OBX|2|TS|29769-7^VIS Presentation  
Date^LN|1|20091010|||||F|||20091010<CR>
```

In this example the person received a dose of MMR on 10/10/2009. They received a VIS sheet on the same day. The document had a publication date of 1/10/2008 (determined from the lookup table of VIS GDTI).

Example 2-Combination vaccine, 2 VIS (GDTI approach)

RXA|0|1|20091010||94^MMRV^CVX|...

OBX|1|CE|69764-9^Document Type^LN|1|253088698300012711120420^MMRV^
cdcgs1vis |||||F|||20091010<CR>

OBX|2|TS|29769-7^VIS Presentation
Date^LN|1|20101010|||F|||20091010<CR>

OBX|3|CE|69764-9^Document
Type^LN|2|253088698300024011080313^varicella^ cdcgs1vis
|||F|||20091010<CR>

OBX|4|TS|29769-7^VIS Presentation Date^LN|3|20101010|||F<CR>

This example shows that a person received an MMRV on 10/10/2009. They received 1 VIS document for MMR and one for Varicella.

Example 3-Single vaccine (vaccine type approach)

RXA|...

OBX|1|CE|30956-7^vaccine type^LN|1|03^MMRV^CVX|||F|||20120223<CR>

OBX|2|TS|29768-9^VIS Publication
Date^LN|1|20080110|||F|||20120223<CR>

OBX|3|TS|29769-7^VIS Presentation
Date^LN|1|20091010|||F|||20120223<CR>

In this example the person received a dose of MMR on 10/10/2009. They received a VIS sheet on the same day. The document had a publication date of 1/10/2008.

VXU Example #8—Send Information Indicating Immunization Refusal

Clients or their parents may choose not to be immunized against a particular disease or diseases. It is important to share this information when sending immunization histories using HL7. There are several components to messaging a refusal. The refusal reason is indicated in RXA-18. The Completion Status in RXA-20 indicates that the vaccine was not given. The amount given should be 0. The following example illustrates how to accomplish this.

ORC|RE||9999^DCS|||Clerk^Myron <CR>

RXA|0|1|20091010||107^DTAP-NOS^CVX|999|||00^Parental
refusal^NIP002||RE<CR>

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This example shows that on 10/10/2009 this client's parent refused to have the child receive a DTAP immunization. Note that the ORC is still required. Filler Order Number is still required, but meaningless.

Note that RXA-2 is NOT used to indicate dose number, as it had in the past 2.3.1 Guide. It is constrained to have a value of 1.

VXU Example #9—Send Two Lot Numbers in RXA

There are a number of situations when a vaccine has more than one lot number. The way these are recorded depends on the specific situation. Each is defined below and guidance is given for recording lot number.

Two Vaccine Components Are Packaged Together And The Lot Numbers Are Inextricable Linked

There are occasions when two vaccines or a vaccine component, such as a diluent are combined at the time of administration. This does not apply to the case where an adjuvant must be reported as well as the vaccine. (See below) In most cases, the components are packaged together and the lot numbers of each component are linked by the manufacturer. In this case record it is not necessary to message both lot numbers.

For example, if we needed to include an immunization record where the vaccine was Pentacel, we would put the lot number from the first component in sequence 15. The specific RXA field is highlighted below in yellow.

Example:

```
RXA|0|1|20080907|20080907|120^DTAP-IPV-HIB^CVX^^^
|0.5|mL^^UCUM||00^NEW
IMMUNIZATION RECORD^NIP001|1234567890^SMITH^SALLY^S||
|||1234ad||PMC^Sanofi^MVX|||CP|A<CR>
```

Adjuvant Is Recorded Separately From Vaccine

When a vaccine has an adjuvant added at the time of administration and their lot numbers are not inextricably linked, it may be important to record each component as a separate event. That is, each is recorded in a separate RXA. The vaccine is recorded in one order group (ORC/RXA) and the adjuvant is recorded in a second order group (ORC/RXA).

Example:

```
RXA|0|1|20140907|20140907|160^Influenza H5N1 -2013^CVX^^^
|0.5|mL^^UCUM||00^NEW
IMMUNIZATION RECORD^NIP001|1234567890^SMITH^SALLY^S||
|||1234ad||IDB^ID Biomedical^MVX|||CP|A <CR>
```

```
RXA|0|1|20140907|20140907|801^AS03^CVX^^^ |0.5|mL^^UCUM||00^NEW
IMMUNIZATION RECORD^NIP001|1234567890^SMITH^SALLY^S||
|||455sd|| |||CP|A|<CR>
```


VXU Example #10—Recording Birth Information

Birth information can be a powerful tool in identity resolution. Components of birth information are listed in the NVAC core data elements. The information that can be carried in an HL7 message includes:

Table B-3--Birth Information Fields

| Field | HL7 message Component | Example |
|---------------------------|---|--------------------------------|
| Birth date | PID-7 | 19500512 |
| Birth Registration Number | PID-3 (as one identifier in list) | 12345^^^assigning authority^BR |
| Birth order | PID-24 | 2 |
| Multiple Birth Indicator | PID-25 | Y |
| Birth State | PID-11 (as one address in list, use address type BDL) | ^^^WI^^^BDL |
| Birth facility | PID-23 | Children's Hospital |

Note that Birth Facility is not used for Birth State.

VXU Example #11—Recording an incompletely administered dose or a non-potent dose.

There are occasions when a dose is not completely administered. For example a child may jump away during injection and an unknown quantity was administered. In this case, the dose needs to be recorded to support accurate inventory management and to allow for recall of the client if there is a recall of the vaccine. This is accomplished using the Completion status in RXA-20. The RXA is completed as usual, but the completion status is set to PA. If more details are of interest, then this information may be placed in an NTE segment under an OBX segment.

```
RXA|0|1|20091010||03^MMR^CVX|0.5|mL^^UCUM|||||A23E1||MSD^^MVX|||P
A|A<CR>
```

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 name is required <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|||Vaccine code not recognized—field 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|7^required data
missing^HL70533||||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|||| Birth data after today <CR>
```

```
ERR||PID|100^required segment missing^HL70357|E||||PID is required
segment. Message rejected <CR>
```

Example Return an Evaluated History and Forecast (RSP(Z42))

Evaluating an immunization history, based on the recommendations of the ACIP schedule or other schedule is an important function provided by many IIS. Based on this evaluation and other factors, recommendations may be made for next doses due. Some of their trading partners would like to receive the outcome of this evaluation. The previous implementation guide included a method for accomplishing this using OBX segments, but showed it in a VXU. This document illustrates how this is done in response to a request and expands on the types of information that may be messaged.

A requesting system sends a query requesting and evaluated history and forecast for a specific person. (QBP^Q11^QBP_Q11, profile id = Z44) If that person is found in the responding system, the responding system evaluates the immunizations administered against a schedule (e.g. ACIP) and forecasts when next doses are due. These are returned in an RSP message. (RSP^K11^RSP_K11, profile id = Z42) If an exact

match can't be found an acknowledgement message is returned indicating no match or errors in the message.

This document does not describe nor specify the functionality or accuracy of the forecasting service. The focus is only on the content of the messages. Implementations should publish documentation on local specifics.

This document is not meant to support a call to a forecasting and evaluation service. It is meant to support existing applications that message vaccine forecasts and evaluation as a part of a complete immunization history.

When a clinician evaluates a person's immunization history and makes recommendations, she/he must use a standard (schedule). Traditionally, clinicians have evaluated based on vaccine groups or families. The schedule has one or more sets of immunization events that can be satisfied to indicate protection against the diseases of the vaccine group of interest. These constitute a series.

The following table lays out the information needed to convey an evaluation and forecast.

Table B-3--Codes Supporting Messaging Evaluation and Forecasting

| Data element | Use | OBX-3 Value | Optionality for meaningful evaluation and forecast⁵⁷. |
|------------------------------------|--|---|---|
| Schedule | Identifies the standards used. ACIP is the prototypical example. | 59779-9 | Required |
| Vaccine group/family | Identifies which diseases are expected to be prevented by completion of series. | Vaccine type 30956-7 Combination vaccine component 38890-0 ⁵⁸ | Required |
| Series name | Name of the specific set of doses and recommendations that were used to evaluate this dose and make recommendations. | 59780-7 | Optional |
| Ordinal position in primary series | Indicates which dose in a series this given immunization fulfills. | 30973-2 | Required |
| Dose Validity | Indicates if this dose was given appropriately for this series in this schedule. | 59781-5 | Optional |

⁵⁷ This does not mean that every message must have one of the required OBX. It just means that this concept needs to be known to put the evaluation and forecast in context.

⁵⁸ Vaccine type 30956-7 is preferred, but support for 38890-0 is needed to support backward compatibility.

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| Data element | Use | OBX-3 Value | Optionality for meaningful evaluation and forecast⁵⁷. |
|-----------------------------------|---|--------------------|---|
| Number of doses in primary Series | <p>Indicates how many appropriately given doses are required to meet the goals of this series.</p> <p>Note that in the case where there are doses that may be skipped, due to the age of the client/patient, the number shall reflect the adjusted number of doses.</p> | 59782-3 | Optional |
| Series Status | This indicates the status of the client's progress toward meeting the goals of the series selected. This could be complete, overdue, in progress, etc. | 59783-1 | optional |
| Next dose forecast | Earliest date dose should be given. | 30981-5 | Required for forecast |
| | Date next dose recommended | 30980-7 | |
| | Latest date next dose should be given | 59777-3 | |
| | Date dose is overdue | 59778-1 | |
| Reason code | This can indicate why a dose is not valid or that the recommendation was changed because of a special circumstance. | 30982-3 | Optional |

It is important to note that evaluation relates to doses received, but recommendations relate to doses not yet given. Each will be addressed separately. Evaluation will be associated with an immunization received. Recommendations will be associated with future events. That is, they will be associated with an RXA that

indicates that no dose was given. They will not be associated with existing immunization records (RXA). This means that if a person has received one hep B dose (valid). The evaluation will be associated with the first RXA indicating that she/he received the dose. The OBX following this will indicate the evaluation. The recommendations for the next dose due will be associated with a second RXA.

There are other factors relating to forecasting, such as exemption and previous immunity. These are dealt with in the client specific conditions impacting forecasting.

When a given dose is evaluated against a schedule, we can make a number of observations about it. Each dose of vaccine recorded is transmitted in an RXA segment. Each RXA segment may have one or more OBX, observation segments. Each distinct piece of information is found in its own OBX segment and follows its associated RXA.

Note that the order of the OBX segments is not regulated. The receiving system will need to link the OBX with the appropriate data elements.

The basic structure for including evaluation in a message is:

- ORC-Order segment
- RXA-the immunization and vaccine
- OBX-vaccine group
- OBX-the schedule
- OBX-series used
- OBX-dose number in series (ordinal position)
- OBX-doses in series
- OBX-dose validity
- OBX-series status

The basic structure for evaluation of combination vaccine components is:

- ORC-order segment
- RXA-the immunization and vaccine
- OBX-vaccine group one⁵⁹
- OBX-the schedule
- OBX-series used
- OBX-dose number in series (ordinal position)
- OBX-doses in series

⁵⁹ All of the related observations are linked to the vaccine group using the OBX-4, observation sub-id.

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OBX-dose validity
OBX-vaccine group two ⁶⁰
OBX-the schedule
OBX-series used
OBX-dose number in series (ordinal position)
OBX-doses in series
OBX-dose validity
OBX-series status

The basic structure for the recommendation in the message is:

ORC-order segment
RXA-vaccine, **CVX-No Vaccine Administered (998)** OBX-the schedule
OBX-the series used
OBX-dose number in the series
OBX-number of doses in the series
OBX-earliest next dose due
OBX-recommended next dose due
OBX-overdue next dose due
OBX-series status

This document will first illustrate how to build each OBX to support reporting the key information. The next section will show how to put these pieces together to create evaluation and recommendations in RSP message. Note that the same approach may be used in a VXU.

Indicating the Schedule that was used:

Evaluation is only meaningful in the context of a defined schedule. Schedule is a required element in a message that is carrying evaluation or recommendation information.

The only schedule supported by CDC is the ACIP schedule. Some systems may choose to develop other schedules that meet local needs. We assume that ACIP is the schedule used in our examples.

There are no differences between recommendation and evaluation in the OBX indicating the schedule used.

The following example shows that the ACIP schedule was used to evaluate this immunization.

```
ORC|RE||197027^DCS|||||^Clerk^Myron|^Pediatric^MARY^^^^^^L^^^^^^  
^^^^^MD<CR>
```

```
RXA|0|1|20090412|20090412|48^HIB PRP-T^CVX|0.5|mL^UCUM||00^new  
immunization
```

⁶⁰ All of the related observations are linked to the vaccine group using the OBX-4, observation sub-id.


```
record^NIP0001|^Sticker^Nurse|^DCS_DC||||33k2a||PMC^sanofi^MVX|||C
P|A<CR>
```

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

```
OBX|1|CE|59779-9^Schedule
used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|||20090415<CR>
```

Indicating Vaccine Group associated:

Evaluation and forecast are considered by vaccine group. Some immunizations are composed of one vaccine group while others are combinations of several vaccine groups. The first is more straightforward when constructing a message. The second requires 2 sets of observations, one for each vaccine group. The vaccine group is indicated in an OBX. All following OBX relate to that vaccine group, using the OBX-4 Observation sub-id.

Single Vaccine group Vaccine:

```
RXA|0|1|20091010||03^MMR^CVX|0.5|mL^^UCUM|||||||EZ342|20111001|MSD^
^MVX|||CP|A<CR>
```

```
OBX|1|CE|30956-7^vaccine type^LN|1|03^MMR^CVX|||||F|||20091010<CR>
```

In the case where a combination vaccine is given, each vaccine group is identified and has segments describing its evaluation. This case requires that the information about each vaccine group be handled separately. Each vaccine group is associated with a group of OBX, using the OBX-4 observation sub-id.

Combination vaccine:

```
RXA|0|1|20091010||94^MMRV^CVX|0.5|mL^^UCUM|||||||EZ342|20111001|MSD
^^MVX|||CP|A<CR>
```

```
OBX|1|CE|30956-7^vaccine type^LN |1|21^Varicella^CVX|||||F<CR>
```

... evaluation observations about this vaccine group

```
OBX|4|CE|30956-7^vaccine type^LN |2|03^MMR^CVX|||||F<CR>
```

... evaluation observations about this vaccine group

Note that the vaccine group could also be indicated with 38890-0^Component Vaccine Type^LN.

Reporting the Ordinal Position In A Series:

Evaluation:

Reporting the ordinal position in a selected series may be reported in an OBX segment. The ordinal position is the dose number being satisfied by a given immunization. (dose #1 in a 3 dose series) The next

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section illustrates how to report the expected number of doses in the series. (3 in the example above) It would be empty for a booster dose and for doses which are not valid.

```
ORC|RE||197027^DCS|||||^Clerk^Myron|^Pediatric^MARY^^^^^^L^^^^^^  
^^MD<CR>
```

```
RXA|0|1|20090412|20090412|48^HIB PRP-T^CVX|0.5|mL^UCUM||00^new  
immunization  
record^NIP0001|^Sticker^Nurse|^DCS_DC||||33k2a||PMC^sanofi^MVX||||CP|A  
<CR>
```

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

```
OBX|1|CE|30956-7^vaccine type^LN|1|17^HIB, NOS^CVX|||||F<CR>
```

```
OBX|2|CE|59779-9^Immunization Schedule  
used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|||20090415<CR>
```

```
OBX|3|NM|30973-2^dose number in series^LN|1|1|||||F|||20090415<CR>
```

Recommendation:

There is a different code to be used for indicating the number of the next dose due.

Note that the preferred LOINC codes are not vaccine group specific. The use of old vaccine specific LOINC should not occur. For example, **30936-9 DTaP/DTP dose count in combination vaccine** should not be used.

Reporting the Number of Doses in a Series:

There are no differences between recommendations and evaluations when reporting number of doses in series. This numeric field indicates the number of doses required to meet the goals of the primary series for this vaccine group. It would be empty for a booster dose.

```
OBX|1|NM|59782-3^number of doses in  
series^LN|1|1|||||F|||20090415<CR>
```

Reporting Next Dose Recommendation Dates (forecast only):

Forecasting next dose due is an important function that can be reported in a message. There are a number of key dates that can be communicated:

Table B-4--Due Date Definitions

| Date type | Definition |
|---|--|
| The earliest acceptable date based on the schedule used | This is the earliest date that a person should receive the next dose for the vaccine group. It does not include any grace period. For example, |

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| Date type | Definition |
|--|---|
| | the earliest data a person should receive a DTAP is age 42 days. |
| The recommended date | This is the date that a person should ideally receive the next dose for the vaccine group. |
| The overdue date (the date the person is considered late for getting the vaccine) | This is the date that the person is considered late for getting the next dose for the vaccine group. It is a locally defined value. |
| The latest date that a dose should be given (e.g. for HIB it is currently 5 years old) | This is the last possible date that a person should receive the next dose for the vaccine group. Generally, this is related to age of recipient. For example the oldest a person should receive a dose of HIB is 5 years old. |

Not all dates may be relevant and so may be omitted.

```
RXA|0|1|20090412|20090412|998^No vaccine administered^CVX|999|||
|||||||NA<CR>
```

```
OBX|1|CE|30956-7^vaccine type^LN|1|17^HIB, NOS^CVX|||||F<CR>
```

```
OBX|2|CE|59779-9^Immunization Schedule
used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|||20090415<CR>
```

```
OBX|3|DT|30980-7^Date vaccination
due^LN|1|20090615|||||F|||20090415<CR>
```

```
OBX|4|DT|59777-3^Latest date to give
vaccine^LN|1|20100615|||||F|||20090415<CR>
```

Reporting Recommendation Reasons:

Sometimes a dose may break a specific rule in the schedule. Alternatively conditions may trigger special rules, such as the need for accelerating the recommendations to catch up with the preferred schedule. This may be reported from the system in a message. The list of values is locally determined. These should be documented locally.

Local Codes drive the answers.

Complete Example Of Evaluation And Forecasting:

```
MSH|^~\&|MYEHR|DCS|||200910311452-
0500||RSP^K11^RSP_K11|3533469|P|2.5.1|||NE|NE||||Z42^CDCPHINVS|DCS
<CR>
```

```
MSA|AA|793543<CR>
```

```
QAK|37374859|OK|Z44^request evaluated Immunization
history^CDCPHINVS<CR>
```

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QPD| Z44^Request Evaluated Immunization History^CDCPHINVS
|37374859|123456^^^MYEHR^MR|Child^Bobbie^Q^^^^L|Que^Suzy^^^^^M|20090
214|M|10 East Main St^^Myfaircity^GA^^^L<CR>

PID|1||123456^^^MYEHR^MR|| Child^Bobbie^Q^^^^L||20090214|M|||10 East
Main St^^Myfaircity^GA^^^L<CR>

ORC|RE||197023^DCS|||||^Clerk^Myron|||||DCS^Dabig Clinical
System^StateIIS<CR>

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

OBX|1|CE|30956-7^vaccine type^LN|1|31^Hep B Peds NOS^CVX |||||F<CR>

OBX|2|CE|59779-9^Immunization Schedule
used^LN|1|VXC16^ACIP^CDCPHINVS|||||F||200900531<CR>

OBX|3|NM|30973-2^dose number in series^LN|1|1|||||F||200900531<CR>

OBX|4|NM|59782-3^number of doses in series^LN|1|3|||||F||200900531<CR>

ORC|RE||197027^DCS|||||^Clerk^Myron|^Pediatric^MARY^^^^^^L^^^^^^
^^^^^MD<CR>

RXA|0|1|20090731132511|20090731132511|48^HIB PRP-
T^CVX|0.5|ML^^UCUM||00^new immunization
record^NIP0001|^Sticker^Nurse|^DCS_DC|||33k2a||PMC^sanofi^MVX|||C
P|A<CR>

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

OBX|5|CE|30956-7^vaccine type^LN|2|17^HIB NOS^CVX |||||F<CR>

OBX|6|CE|59779-9^Immunization Schedule
used^LN|2|VXC16^ACIP^CDCPHINVS|||||F||200900731<CR>

OBX|7|NM|30973-2^dose number in series^LN|2|1|||||F<CR>

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OBX|8|NM|59782-3^number of doses in series^LN|2|4|||||F<CR>

ORC|RE||197028^DCS|||||^Clerk^Myron|^Pediatric^MARY^^^^^^L^^^^^^
^^^^^MD<CR>

RXA|0|1|20091051132511|20091051132511|110^DTAP-Hep B-
IPV^CVX|0.5|ML^^UCUM||00^new immunization
record^NIP0001|^Sticker^Nurse|^DCS_DC||||xy3939||SKB^GSK^MVX|||CP<
CR>

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

OBX|9|CE|30956-7^vaccine type^LN|1|31^Hep B Peds NOS^CVX |||||F<CR>

OBX|10|CE|59779-9^Immunization Schedule
used^LN|3|VXC16^ACIP^CDCPHINVS|||||F|||200900531<CR>

OBX|11|NM|30973-2^dose number in series^LN|3|2|||||F<CR>

OBX|13|NM|59782-3^number of doses in series^LN|3|3|||||F<CR>

OBX|14|CE|30956-7^vaccine type^LN|4|10^IPV^CVX |||||F<CR>

OBX|15|CE|59779-9^Immunization Schedule
used^LN|2|VXC16^ACIP^CDCPHINVS|||||F|||200901031<CR>

OBX|16|NM|30973-2^dose number in series^LN|4|1|||||F<CR>

OBX|17|NM|59782-3^number of doses in series^LN|4|4|||||F<CR>

OBX|18|CE|30956-7^vaccine type^LN|5|20^DTAP^CVX |||||F<CR>

OBX|19|CE|59779-9^Immunization Schedule
used^LN|5|VXC16^ACIP^CDCPHINVS|||||F<CR>

OBX|20|NM|30973-2^dose number in series^LN|5|1|||||F<CR>

OBX|21|NM|59782-3^number of doses in series^LN|5|5|||||F<CR>

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```
ORC|RE||197023^DCS|||||^Clerk^Myron|||||DCS^Dabig Clinical  
System^StateIIS<CR>
```

```
RXA|0|1|20091031|20091031|998^no vaccine admin^CVX|999|||  
|||||||NA <CR>
```

```
OBX|22|CE|30956-7^vaccine type^LN|1|31^Hep B Peds NOS^CVX |||||F<CR>
```

```
OBX|23|CE|59779-9^Immunization Schedule  
used^LN|1|VXC16^ACIP^CDCPHINVS|||||F<CR>
```

```
OBX|24|DT|30980-7^Date vaccination due^LN|1|20091015|||||F<CR>
```

Important notes:

1. Note that the OBX set id increases for each OBX through out the message
2. The observation sub-id holds to one value for each related set of observations under the vaccine group OBX. The observation Sub-ID must be unique for each related set of observations under a given vaccine order group. Sub-IDs may be re-used between order groups in the message.
3. Either of the LOINC for vaccine group could have been used under the combination vaccine (30956-7 (vaccine type) or 38890-0 (component vaccine type)), but 30956-7 is preferred.
4. If VIS observation (OBX) is included in the above message, it requires its' own OBX with vaccine group and has a different sub-id from the evaluation observations.

Using The NTE Segment Associated With An OBX To Provide More Information:

Each OBX may have an associated NTE segment. This may be used for sending notes or comments that the receiving system may choose to display to a user. Any use of this is local and requires local documentation.

Issues That Are Outside Of Messaging But Impact The Value Sent In A Message

1. There are some series where doses may be skipped. For instance a person who gets significantly behind on some HIB series may skip a dose and complete "early". Local profiles should specify how these doses will be handled and messaged.
2. Some vaccines have a numbered primary series and are followed by intermittent booster doses. These do not increase the number of doses in the primary series.
3. Persons who have been previously infected may not need further doses of vaccine. This can be messaged in an OBX reporting client immunity.

Sending Multiple Recommendations:

When sending multiple recommendations in a single query response message, the recommendations are sent using a single ORC/RXA pair followed by multiple sets of related OBX segments (grouped via the Sub-ID in OBX-4) for each recommendation.

Sample message for multiple recommendations:

```
MSH|^~\&|MYIIS|StatePH|MyEHR|DCS|20150131145233-
0500||RSP^K11^RSP_K11|3533469|P|2.5.1|||NE|NE|||Z42^CDCPHINVS|DCS^
^^^^DCS^XX^^^6439432|StatePH
MSA|AA|793543
QAK|37374859|OK|Z44^request evaluated Immunization history^CDCPHINVS
QPD|Z44^Request Evaluated History and Forecast^CDCPHINVS
|37374859|123456^^^MYEHR^MR|Child^Bobbie^Q^^^^L|Que^Suzy^^^^M|20110
214|M|10 East Main St^^Myfaircity^GA^^^L
PID|1||123456^^^MYEHR^MR~34500907^^^MyIIS^SR||
Child^Bobbie^Q^^^^L||20110214|M||10 East Main St^^Myfaircity^GA^^^L
<...patient history...>
ORC|RE|8788^IIS|197023^IIS
RXA|0|1|20150131|20150131|998^no vaccine
admin^CVX|999|||||||||||||NA
OBX|22|CE|30956-7^vaccine type^LN|1|03^MMR^CVX|||||F|||20150131
OBX|23|CE|59779-9^Immunization Schedule
used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|||20150131
OBX|24|DT|30980-7^Date vaccination
due^LN|1|20150214|||||F|||20150131
OBX|25|CE|30956-7^vaccine type^LN|2|10^IPV^CVX|||||F|||20150131
OBX|26|CE|59779-9^Immunization Schedule
used^LN|2|VXC16^ACIP^CDCPHINVS|||||F|||20150131
OBX|27|DT|30980-7^Date vaccination
due^LN|2|20150214|||||F|||20150131
OBX|28|CE|30956-7^vaccine type^LN|3|107^DTAP^CVX|||||F|||20150131
OBX|29|CE|59779-9^Immunization Schedule
used^LN|3|VXC16^ACIP^CDCPHINVS|||||F|||20150131
OBX|30|DT|30980-7^Date vaccination
due^LN|3|20150214|||||F|||20150131
```

Send Request for Complete Immunization History (QBP/RSP)

Process for requesting Immunization History

Requesting an immunization history is a key function supported by messaging. As described above, a complete immunization history includes all the information needed for evaluating what immunizations have been received and what ones are needed next. This query is defined in a Query Profile in Chapter 7 of the Implementation Guide. The requesting system sends a request with some combination of demographic and identifier information.

When a client is does not want his/her data shared and is found, local business rules need to be applied. For instance, some applications may behave as if the client record does not exist in the system. That is, it would respond with a “no records found” message. The exception to this would be if the requesting provider were the one who set the protection indicator. In this case, the person may be a candidate that is returned. Another response might be to send limited information notifying the requesting system that the person exists, but wants his/her records protected.

The sending system must deal with the returned messages. While it is outside the scope of this implementation guide, there are some logical actions. These actions should be documented locally. The following indicate some of the possibilities. The list is neither prescriptive nor complete.

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- One candidate immunization history is returned.
 - User reviews and accepts
 - User reviews and rejects
 - Requesting system accepts and marks for review.
- A list of candidates are returned
 - User reviews and selects one
 - New QBP is sent using the identifying information from the RSP list
 - User reviews and rejects all
 - User creates a new query with more or different information
 - Requesting system accepts and stores the list for later review.

The following is an example query using the QBP^Q11 Z34 query profile specified in the Implementation Guide.

```
MSH|^~\&|||||201405150010-  
0500||QBP^Q11^QBP_Q11|793543|P|2.5.1|||||||Z34^CDCPHINVS <CR>  
  
QPD| Z34^Request Immunization History^CDCPHINVS  
|37374859|123456^^^MYEHR^MR|Child^Bobbie^Q^^^^L|Que^Suzy^^^^M|20050  
512|M|10 East Main St^^Myfaircity^GA^^^L<CR>  
  
RCP|I|5^RD&records&HL70126 <CR>
```

This query is being sent from a system with a name space identifier of MYEHR. It is requesting an immunization history for a person named Bobbie Q Child. His mother's maiden name was Suzy Que. He was born 5/12/2005 and lives at 10 East Main St, Myfaircity, Georgia. His medical record number with MYEHR is 12345. The most records that the requesting system wants returned if lower confidence candidates are returned is 5. Processing is expected to be "immediate".

Local implementations will specify which fields are required in the QPD. All fields have a usage of RE (required, but may be empty). This means that sending systems may populate any or all of these fields. Receiving systems must accept values in any of these fields, but may specify which are required and which will be ignored.

Returning a list of candidate clients in response to QBP^Q11 query

When a system receives a QBP^Q11 Request for Immunization History query, it may find one or more, lower confidence candidates. In this case it returns an RSP that contains a list of these candidates. It includes all pertinent information in PID, NK1 and PD1 segments. If the number of candidates is greater than the maximum number requested by the querying system or greater than the maximum number the responding system allows to be returned, then an error acknowledgment will be sent. (See below)

Note that PID-1, Set Id, is required when returning a list of PID. It is incremented for each PID returned (i.e. 1,2,3...)

The following example RSP message illustrates the case when 2 candidates have been found by the responding system. All known information for each candidate that can be included in PID, NK1 and PD1 segments is returned. We assume that the medical record number sent in the query is not known to the responding system. If it were, it is unlikely that the responding system would find lower confidence candidates.

The actual logic used to find the candidates is not specified by this document. It may be as simple as exact string and date matching or as complex as a probabilistic search algorithm.

```
MSH|^~\&|SOME_SYSTEM|A_Clinic |MYIIS|MyStateIIS|200911051000-
0500||RSP^K11^RSP_K11|37374859|P|2.5.1|||NE|NE|||Z31^CDCPHINVS|
A_Clinic <CR>
```

```
MSA|AA|793543<CR>
```

```
QAK|37374859|OK<CR>
```

```
QPD| Z34^Request Immunization History^CDCPHINVS
|37374859|123456^^^MYEHR^MR|Child^Bobbie^Q^^^^L|Que^Suzy^^^^^M|20050
512|M|10 East Main St^^Myfaircity^GA^^^L<CR
```

```
PID|1||99445566^^^MYStateIIS^SR||Child^Robert^^^^^L||20050512|M<CR>
```

```
NK1|1|Child^Susan|MTH^Mother^HL70063|^Myfaircity^GA<CR>
```

```
PID|2||123456^^^MYStateIIS^SR||Child^Robert^^^^^L||20050512|M<CR>
```

This response includes 2 candidates that must be reviewed by the person requesting records. If they select a specific client and repeat the Request Immunization History query with the refined information, they should receive a response that includes the complete immunization history from the IIS. Note the use of PID-1, set id.

Returning an immunization history in response to a Request for Immunization History query

When the Request Immunization History query finds one high-confidence match, the matching client's immunization history is returned in the response. The following example message shows a simple response. Note that this query could have been a secondary query that occurred after preliminary identity resolution or a primary query with sufficient demographic data to permit matching.

```
MSH|^~\&|MYIIS|MyStateIIS|MYEHR|Myclinic|200911300200-
0500||RSP^K11^RSP_K11|7731029|P|2.5.1|||NE|NE|||Z32^CDCPHINVS|MySt
ateIIS|Myclinic<CR>
```

```
MSA|AA|793543<CR>
```

```
QAK|37374859|OK| Z34^Request Immunization History^CDCPHINVS <CR>
```

```
QPD| Z34^Request Immunization History^CDCPHINVS
|37374859|123456^^^MYEHR^MR|Child^Bobbie^Q^^^^L|Que^Suzy^^^^^M|20050
512|M|10 East Main St^^Myfaircity^GA^^^L<CR
```

```
PID|1||123456^^^MYEHR^MR~987633^^^MYIIS^SR||Child^Robert^Quenton^^^^
L|Que^Suzy^^^^^M|||10 East Main St^^Myfaircity^GA<CR>
```

```
PD1|||||||||N|20091130<CR>
```

```
NK1|1|Child^Suzy^^^^^L|MTH^Mother^HL70063<CR>
```

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```
ORC|RE||142324567^YOUR_EHR|||||^Shotgiver^Fred|^Orderwriter^Sally  
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^MD<CR>
```

```
RXA|0|1|20050725||03^MMR^CVX|0.5|mL^^UCUM||00^New Immunization  
Record^NIP001<CR>
```

```
RXR|SC^^HL70162<CR>
```

Note that the response returned the medical record number from the MYEHR system. It also returned the IIS id.

Acknowledging Query That Returns No Clients/Patients

Acknowledging a Query that finds no candidate clients

A well-formed query may find no matching candidates. This is not an error, but should be acknowledged in a response message. The following example message shows how this may be done. Note that the Request Immunization History response grammar indicates that MSH, MSA, QAK and QPD are required segments.

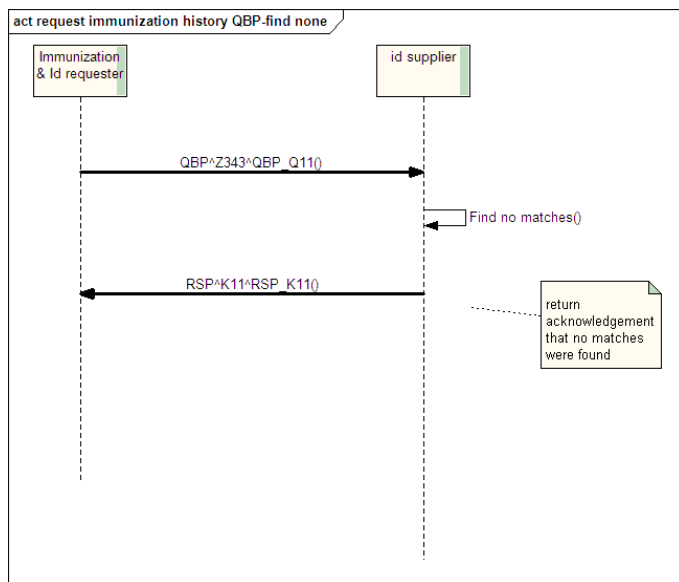


Figure B-46--Sequence Diagram Acknowledging Response Indicating No Matches

QAK-2 indicates that no data were found that matched the query parameters.

```
MSH|^~\&|MYIIS|MyStateIIS||MYEHR|200911302300-  
0500||RSP^K11^RSP_K11|7731029|P|2.5.1|||NE|NE||||Z33^  
CDCPHINVS|MyStateIIS|MYEHR<CR>
```

```
MSA|AA|793543<CR>
```

```
QAK|37374859|NF|Z34^request Immunization history^CDCPHINVS<CR>
```

```
QPD| Z34^Request Immunization History^CDCPHINVS  
|37374859|123456^^^MYEHR^MR|Child^Bobbie^Q^^^^L|Que^Suzy^^^^M|20050  
512|M|10 East Main St^^Myfaircity^GA^^^L<CR>
```

Acknowledging a query that finds more candidates than requested

The sending system sets an upper limit on the number of candidates it will accept in response to a query in RCP-2. It expects that a responding system will send no more candidates than this number. In addition, the responding system may have an upper limit on the number of candidates that it will return. This number may be lower than the requesting system. It will trump the requesting system upper limit. In either case, if the responding system finds more candidates than the upper limit, then it responds with and acknowledgement indicating that too many candidates were found. QAK-2 indicates that there were too many candidates found that matched the query parameters.

```
MSH|^~\&|MYIIS|MyStateIIS||MYEHR|200911300000-  
0500||RSP^K11^RSP_K11|7731029|P|2.5.1|||NE|NE|||Z33^CDCPHINVS|MySt  
ateIIS|MYEHR <CR>
```

```
MSA|AA|793543<CR>
```

```
QAK|37374859|TM|Z34^request Immunization history^CDCPHINVS<CR>
```

```
QPD| Z34^Request Immunization History^CDCPHINVS  
|37374859|123456^^^MYEHR^MR|Child^Bobbie^Q^^^^L|Que^Suzy^^^^M|20050  
512|M|10 East Main St^^Myfaircity^GA^^^L<CR>
```

Using a Two-step process to request an immunization history

The IHE profile defines 2 queries for obtaining an ID of interest. One query requests an id based on the demographic information included in the query (PDQ, using the Pediatric Demographic profile). When a match is found, it returns the relevant id and demographic information. The other query seeks an id for a person from one registered provider based on the id from another registered provider (PIX).

The use of the IHE Patient Identification Cross-Referencing (PIX) and Patient Demographic Query (PDQ) transactions is an alternative approach which separates retrieval/update of a patient identifier and retrieval/update of immunization data into two messaging transactions.

A Patient Demographic Supplier may be a Master Person Index or other source of patient demographic and identification information. While we will focus on an MPI below, any Patient Demographic Supplier may be substituted.

A Master Person Index is a database that contains demographic and locating information of registered persons and associates each person with the identifiers for the person from each of the participating systems. This allows one system to request the identifier for a person that was assigned by another system. This id may be used to request data from that second system and assures a positive match.

Systems that participate in an MPI should register each person they are interested in with the MPI. An

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excellent profile for maintaining and interacting with an MPI has been published by the group, Integrating the Healthcare Enterprise (IHE). That profile will not be replicated here. However, the process for requesting personal identifier outlined below is based on that profile.

Adding a patient record to an MPI is done by a PIX transaction using an ADT message. This method may be used by an EHR or by an IIS, or both, to add a patient identifier to an MPI. The PIX profile, described in the IHE Technical Framework Volume I, includes specific transactions that describe the segments and fields to be used. These ADT-based transactions are described in the IHE Technical Framework Volume II. The standard transaction used by PIX is ITI-8, which uses an HL7 V2.3.1 ADT. The Pediatric Demographics Option, described at this writing in a supplement to PIX and PDQ, is preferred for interactions with MPIs managing IIS data. The use of the Pediatric Demographics Option adds ITI-30, which uses an HL7 V2.5 ADT.

Once a person has been registered with the MPI, a PIX Query may be used to retrieve the cross-referenced IIS identifier (if any).

The following diagram illustrates the use of the PIX query to get a pre-registered patient identifier. This requires that the cross-referenced identifiers are registered using the ADT message.

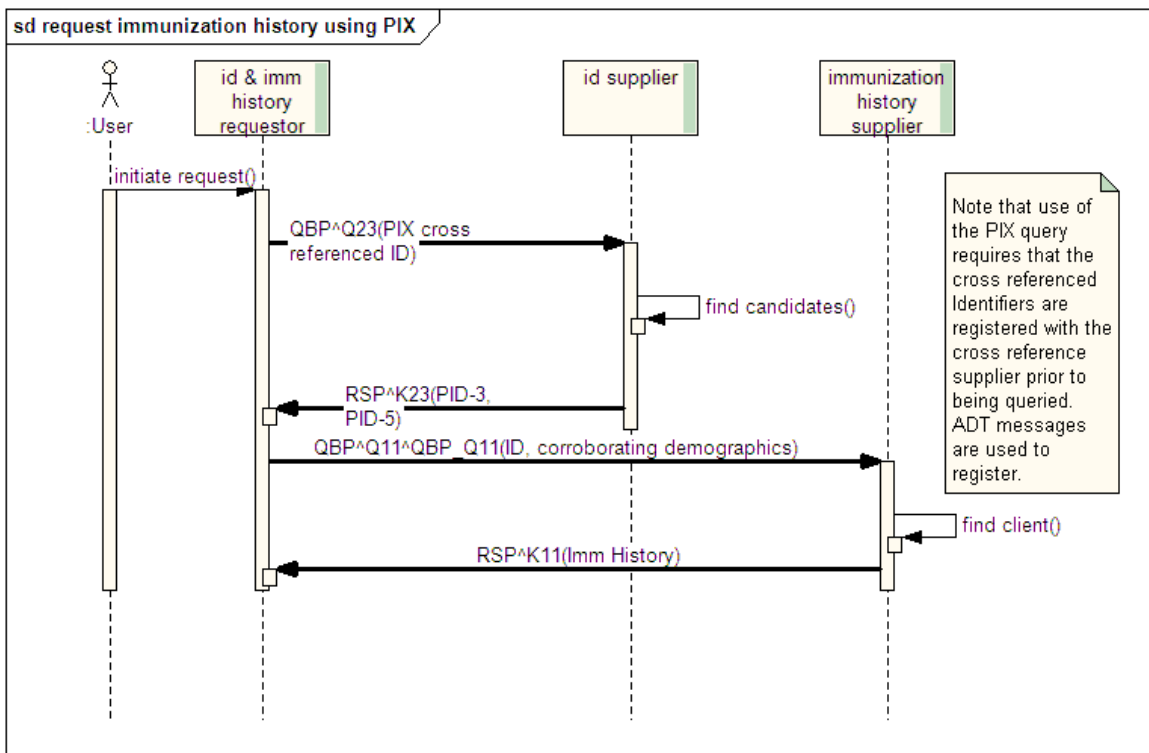


Figure B-47-- Sequence Diagram -Two Step Request

Note that this interaction is simplified. The initiating system sends a request for a patient identifier. The request includes one identifier in a PID-3. The identity supplier looks for a matching identifier of interest and returns it along with the patient name (PID-5). This information is included in the request immunization history query (QBP^Q11). Assuming that the identifier used is the one in the immunization history supplier, there should be a one to one match.

If the EHR wishes to retrieve the IIS id without previously registering the patient with the MPI, or if it wishes to query the MPI by demographics for some other reason, it may use a Patient Demographics Query

to do so.

The following diagram illustrates the use of PDQ to obtain an id and how this would be used to request an immunization record. The record seeker uses a Patient Demographic Query (PDQ) to a Master Person Index (MPI), requesting the identifiers for the person of interest. The MPI finds the person of interest and returns the demographic information and identifiers. The record seeker system uses this information to create a request for immunization history, which it sends to the record source. The record source uses this information to find the immunization history for the person of interest.

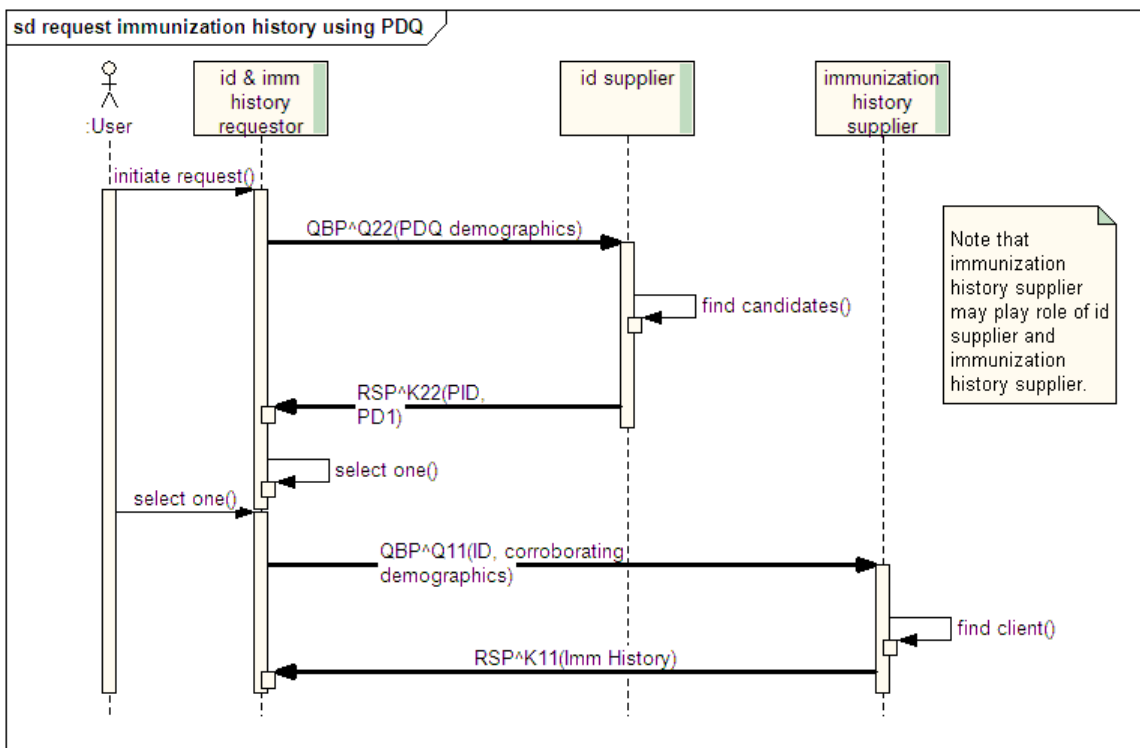


Figure B-48—Sequence Diagram- Request Immunization History using PDQ

Note that this interaction is simplified. The client of interest would be selected and that client’s information would populate the query requesting an immunization history. To be assured of success, the record source system would need to have registered the person in the MPI. In that way the person id in the record source would be available in the MPI.

Receiving system determines that message has errors

HL7 Message Rule Errors

There are two classes of error related to HL7 message rules. The first is when a message is well formed, but the query has errors in content or format. The second occurs when the message is malformed and cannot be parsed by the recipient.

The following examples illustrate how each is reported.

Content or Format Error

Initiating Query:

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```
MSH|^~\&||SendingOrg||ReceivingOrg|20091130000-  
0500||QBP^Q11^QBP_Q11|793543|P|2.5.1|||ER|AL|||Z34^CDCPHINVS|  
SendingOrg|ReceivingOrg<CR>
```

```
QPD|Z34^Request Immunization  
History^CDCPHINVS||123456^^^MYEHR^MR|Child^Bobbie^Q^^^L|Que^Suzy^^^  
^M|20050512|M|10 East Main St^Myfaircity^GA^^^L<CR>
```

Note that only the MSH and QPD segments will be displayed above. The QPD does not have data in a required field, the Query Tag field (QPD-2).

```
MSH|^~\&|MYIIS|ReceivingOrg||SendingOrg|200911300000-  
0500||RSP^K11^RSP_K11|7731029|P|2.5.1|||NE|NE|||Z33^CDCPHINVS|ReceivingOrg|SendingOrg <CR>
```

```
MSA|AE|7731029<CR>
```

```
ERR||QPD^1^2|101^required field missing^HL70357|E<CR>
```

```
QAK||AE|Z34^CDCPHINVS<CR>
```

```
QPD| Z34^Request Immunization History^CDCPHINVS  
||123456^^^MYEHR^MR|Child^Bobbie^Q^^^L|Que^Suzy^^^M|20050512|M|10  
East Main St^Myfaircity^GA^^^L<CR>
```

Note that QAK-1 Query tag is empty in this case, because it was missing in the initiating query.

Message Is Rejected Due to Unrecognized Message Type

When a message is received that is an unrecognized message type, the response is an ACK with AR in the MSA-1 (Acknowledgement Code)

```
MSH|^~\&|MYIIS|MyStateIIS||MYEHR|200911301000-0500||ACK^Q11^ACK||P  
<CR>
```

```
MSA|AR|<CR>
```

This message indicates that the application rejected the message.

Appendix C – Post-Publication Guidance

The following guidance information was developed after the original guide publication to solve specific interoperability issues not completely addressed by Release 1.5. While not binding on implementers, the contents of these guidance documents are essential for understanding current implementations and the future direction of the community. Future releases will require support for many of the recommendations in these documents. Implementers will benefit now by adopting these best practices in the current version.

The following documents provide additional guidance on implementing Release 1.5:

- Release 1.5 addendum
 - Some of the content of the addendum has been inserted in-line elsewhere in this document
- Guidance for HL7 Acknowledgement Messages to Support Interoperability (<http://repository.immregistries.org/resource/guidance-for-hl7-acknowledgement-messages-to-support-interoperability/>)
- National Set of Error Codes (<http://repository.immregistries.org/resource/national-set-of-error-codes/>)
- Guidance for HL7 RSP Messages to Support Interoperability (<http://repository.immregistries.org/resource/guidance-for-hl7-rsp-messages-to-support-interoperability/>)
- Guidance on Detailed Message Structure and the Use of Specific LOINC Codes (<http://repository.immregistries.org/resource/guidance-on-detailed-message-structure-and-the-use-of-specific-loinc-codes/>)
- [Functional Guide Volume 1: Query Response](http://repository.immregistries.org/resource/aira-discovery-session-functional-guide-volume-1-query-and-response/) (<http://repository.immregistries.org/resource/aira-discovery-session-functional-guide-volume-1-query-and-response/>)

The content of this Appendix is not called out in the 2015 EHR certification requirements as it was published after those regulations were released.

Coding Systems and Value Sets (from Addendum)

This document references both Coding Systems (AKA Code Sets) and Value Sets in relation to coded message elements (including the CE, CWE, CX, IS, ID and XCN data types). While related, these terms are distinct. A Coding System is an extensive, and in some cases extendable, list of values available for use in a message. A single Coding System may be relevant to a number of different parts of a single message. For example, HL7 table 0203 contains a list of Identifier Types. This table is called out as part of the CX data type (used in PID-3 and QPD-3) as well as the XCN data type (used in ORC-12 and RXA-10). A Coding System tends to be a very broad list and not all values are appropriate to use in a given message element. For example HL7 table 0203 contains the ID types of MR (Medical Record Number) and NPI (National Provider Identifier) which are appropriate for use in PID-3 and ORC-12 respectively. In contrast, a Value Set is a more refined list of values, taken from one or more Coding Systems, applied at a more granular level of the message and which contains only values appropriate for that location in the message. In some cases, a Value Set may have the same content as the underlying Coding System.

Note that for coded data types (a data type of CE or CWE), the Name of Coding System (CE.3/CE.6/CWE.3/CWE.6) in the message should reference the Coding System, not the Value Set. Given the distinctions between value sets and coding system, often there is confusion as to the value to send in the message in the CE and CWE data types. For coded data types, the coding system in the third component is drawn from table HL70396. Changes to Table 0396 occur frequently. The most recent version of this table is available at http://www.hl7.org/special/committees/vocab/table_0396/index.cfm which contains a list of possible values. The intended coding systems expected in coded fields are as follows:

| Message Field | Field Description | Coding System for CE.3/CWE.3 |
|----------------------|--------------------------|--|
| ERR-2 | HL7 Error Code | HL70357 |
| ERR-5 | Application Error Code | HL70533 |
| IN1-2 | Insurance Plan | HL70072 |
| NK1-3 | Relationship | HL70063 |
| OBX-3 | Observation ID | LN which using LOINC otherwise some other value from HL0396 |
| OBX-6 | Units | UCUM or HL70353 |
| OBX-17 | Observation Method | CDCPHINVS |
| ORC-17 | Entering Organization | HL70362 |
| PD1-11 | Publicity Code | HL70215 |
| PID-10 | Race | CDCREC |
| PID-22 | Ethnic Group | CDCREC |
| QAK-3 | Message Query Name | CDCPHINVS |
| QPD-1 | Message Query Name | CDCPHINVS |
| RCP-2.2 | Units | HL70126 |
| RXA-5 | Administered Code | CVX when transmitting CVX codes, otherwise NDC, CPT, etc. as appropriate |
| RXA-7 | Administered Units | UCUM |
| RXA-9 | Administration Notes | NIP001 |
| RXA-17 | Manufacturer | MVX when transmitting MVX codes |
| RXA-18 | Refusal Reason | NIP002 |
| RXR-1 | Route | NCIT |
| RXR-2 | Site | HL70163 |

Repetitions and Occurrences (from Addendum)

Various fields and data types, such as PID-5, PID-11 and ERL, contain references to “repetitions”. The word repetition is intended to be synonymous with the word occurrence. That is, the “first repetition” is not the “second occurrence”. For example if the value of PID-3 is “1234^^^AA1^MR~5678^^^AA2^DL”, “1234^^^AA1^MR” is the first repetition and “5678^^^AA2^DL” is the second repetition.

Acknowledgement Pattern (from Addendum)

All response messages (profiles Z23, Z32, Z31, Z33 and Z42) should be returned synchronously. That is, the receiving process gives the response immediately or in a short period during which the originating process will wait for the response. The originating process will not send a new message until a response has been received. A system may initiate multiple simultaneous processes if allowed, but each process must wait for a response to a given message before sending the next one. For query interactions, this behavior is controlled by the constrained value of “I” in the Query Priority (RCP-2) field. See Chapter 5 of the HL7 2.5.1 Base Standard for more details.

Profiles Z22, Z34 and Z44 have constrained values of ER for Accept Acknowledgement Type (MSH-15) and AL for Application Acknowledgement Type (MSH-16). When processing a message conformant with one of these profiles, the receiving system shall evaluate the

message for unsupported message types, version ID, and processing IDs or other issues unrelated to format or content. If the message fails this validation, an ACK message conforming to profile Z23 shall be returned. This is consistent with “ER” in MSH-15. Messages which pass this initial validation are then processed and an appropriate Application level response message is returned. This is consistent with “AL” in MSH-16. Note that messages which fail the initial validation are not processed further and therefore do not have the opportunity to trigger an Application level response message. The receiving system only returns one message per incoming message. This process is diagrammed in Figure 37 (Z22 profile), Figure 41 (Z34 profile) and Figure 44 (Z44 profile).

Processing Mode Clarification (from Addendum)

Chapter 2 includes a section entitled “Processing Mode” which discusses consolidation of records from multiple sources. However, messages conforming to the different profiles described by this guide may be populated with different quantities of data depending on the profile they conform to.

- **Z22 (Transmit Unsolicited Vaccine Update –VXU):** The goal of a Z22 message is to send up-to-date information about a vaccination event and the patient receiving the vaccine. A conformant message may contain a view of the entire patient vaccination history as known by the system originating the VXU^V04 message, but it is not required to do so. In other words, a given Z22 conformant message may only contain a subset of all vaccinations events on the patient record, typically only those that have been added, updated or deleted as part of the event leading to the triggering of a message. The receiving system is responsible for applying business rules to integrate the data received but should not assume that the message being processed represents the entire patient vaccination history. The data within any single order group (set of one ORC segment, one RXA segment and associated RXR and OBX segments, if any) should represent the complete set of data about the vaccination event as known by the system originating the message. A complete set of data is defined by the required (as per this implementation guide) and locally agreed to data elements.
- **Z32 (Return complete immunization history):** The goal of the Z32 is to return a complete immunization history in response to a query request. Conformant messages should contain a view of the entire patient vaccination history as known by the system that originates the RSP^K11 message. The receiving system may process the message as required by local rules and needs. Depending on the situation and construction of the receiving system data base, the content of the message may completely overwrite existing query response data or may need to be reconciled against existing data on the patient record, the latter happening when the receiving system is likely to contain data not known to the system originating the RSP^K11 message. The data within any single order group (set of one ORC segment, one RXA segment and associated RXR and OBX segments, if any) should represent the complete set of data about the vaccination event as known by the system originating the message. A complete set of data is defined by the required (as per this implementation guide) and locally agreed to data elements.
- **Z42 (Return Evaluated History and Forecast):** The goal of a Z42 message is to return an evaluated history and forecast in response to a query request. It is intended to be displayed back to the requesting provider to inform clinical care. The evaluated

history portion of the message contains all immunizations for the patient known to the responding system. Each of these will be evaluated against a set of rules, such as ACIP. The forecast portion of the message should be considered to be a complete representation of the patient forecast. This message is not intended to return all the details expected of a complete immunization history. This message may not include information about Lot Number or other data in a complete history, for instance. A Z34 query and Z32 response should be used for that purpose. The data within any single order group (set of one ORC segment, one RXA segment and associated RXR and OBX segments, if any) should represent the complete set of data about the vaccination event as known by the system originating the message. A complete set of data is defined by the required (as per this implementation guide) and locally agreed to data elements.

Deletions (from Addendum)

Sometimes it is necessary to remove a previously submitted vaccination administration record. If the existing record must simply be deleted, that is it should never have been entered, then a second VXU^V04 message should be sent where all data in the message, including the ORC and RXA segments, is the same as the most recent message for the administration, except for the Action Code (RXA-20) which should be D. Importantly, the filler ID in ORC-3 should be the same between messages as this ID may be crucial to identifying the correct administration to remove. Once the inaccurate data has been deleted, additional independent messages (adds, refusals, etc) can be sent to accurately populate the receiving system.