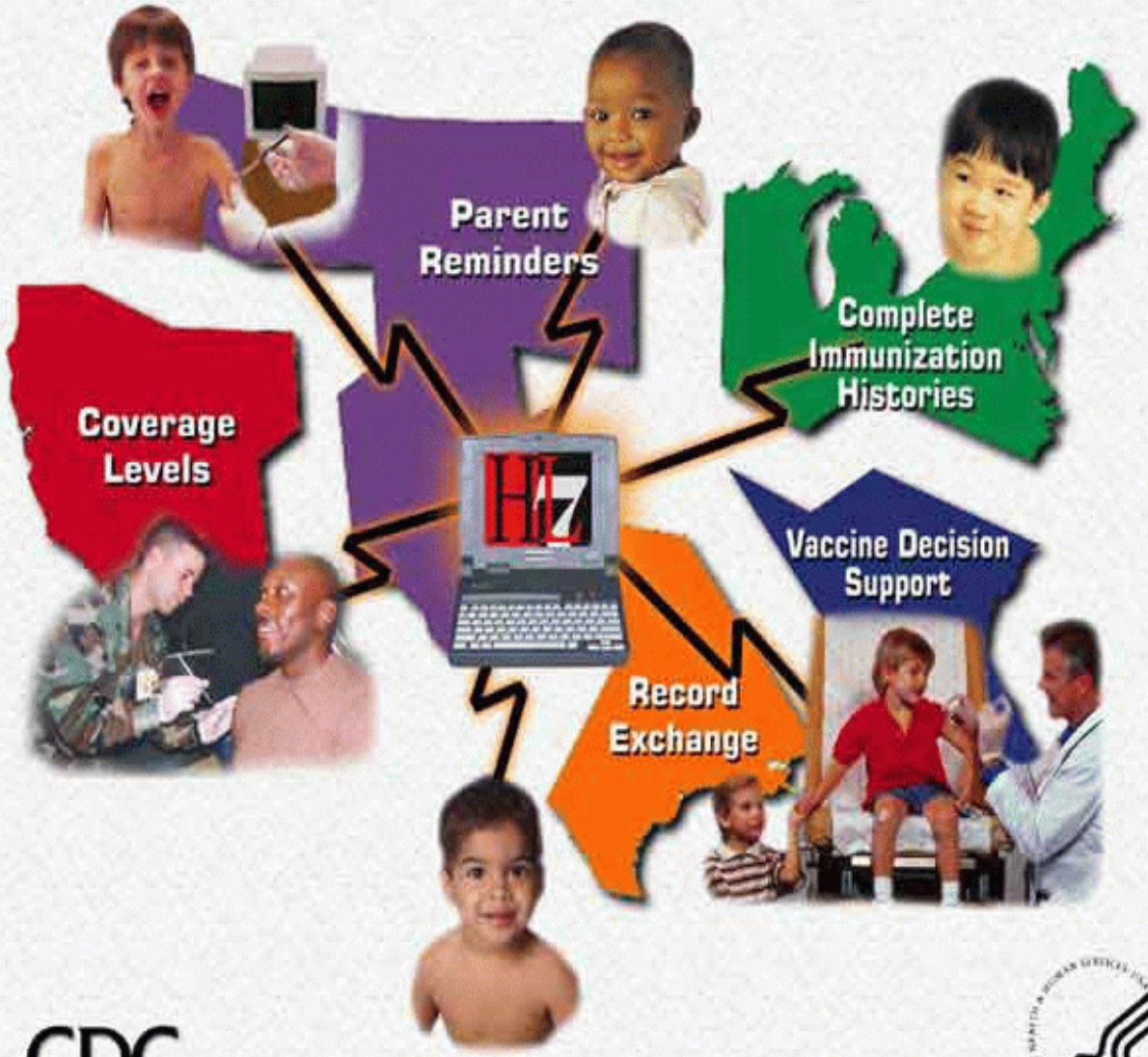
Implementation Guide for Immunization Data Transactions using Version 2.3.1 of the Health Level Seven (HL7) Standard Protocol

Implementation Guide Version 2.0
June 1999



CDC

Implementation Guide for Immunization Data Transactions using Version 2.3.1 of the Health Level Seven (HL7) Standard Protocol

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Centers for Disease Control and Prevention
National Immunization Program
Data Management Division
Systems Development Branch

CDC
Centers for Disease Control and Prevention

This document replaces previous *National Immunization Program* (*NIP) Guidelines for Immunization Data Transactions* versions dated May 1997 and earlier. The earlier versions were intended to help familiarize developers of immunization information systems with Health Level Seven (HL7) immunization message definitions and encoding rules. As immunization registries developed HL7 implementations, they discovered that the coding flexibility built into Versions 2.x of HL7 resulted in transactions that were not "plug and play" among the developers. That is, before testing could be successful, site-specific negotiations had to be conducted to harmonize different variations. Some implementers added Z segments and developed code sets to represent needed data within the rules allowed by HL7, but these were not done consistently. When State-based public health registries approached commercial vendors, they were encouraged to develop one nationally consistent implementation. To explore this possibility, a small workgroup of six registries met in September 1998 to review each registry's implementation plan. The group reached consensus on an implementation that would ensure that all needs were met in one common way.

This *Implementation Guide* represents the agreed-upon implementation. It has been reviewed by the six original participants and several other interested users. The participants are listed below. They have indicated their intention to implement this version as written and to resist adding Z segments or otherwise changing the implementation to one that is not consistent with this document. CDC representatives have agreed to continue working with HL7 and the coding committees to meet the group's ongoing needs as they develop.

Note: This *Implementation Guide* is intended for use by immunization registries that want to participate in a strictly-defined record exchange agreement that limits the amount of optionality normally expected when using the HL7 standard. The *Guide* describes the most frequently used segments in their entirety, while giving a minimum description of segments containing only a few useful fields for registries. Within the segments, it fully describes the fields used frequently by immunization registries, while the others are omitted in this document. With this limited scope, this *Guide* can in no way serve as a substitute for a thorough study of the entire set of HL7 specifications for electronic data interchange in health care environments. For more complete information about HL7, visit the website at <www.hl7.org>.

Acknowledgments

Representatives from immunization registries in the following areas participated in the development of this *Guide*:

California	**Georgia**	**Michigan**
San Bernardino County, CA	**Illinois**	**New York State**

We would like to thank those participants as well as others who contributed to discussions around this *Guide*'s contents and use, including representatives from Northern California Kaiser Permanente and the Indian Health Service. We also want to express our appreciation for the contribution of Suzy Feikema, Public Health Informatics Fellow with NIP, for her substantial help in revising this *Implementation Guide* and preparing it for publication.

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HL7 Definitions

Message: A message is the entire unit of data transferred between systems in a single transmission. It is a series of segments in a defined sequence, with a message type and a trigger event.

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.

Field: A field is a string of characters. Each field is identified by the segment it is in and the position within the segment; e.g., PID-5 is the fifth field of the PID segment. Optional data fields may be omitted. Whether a field is required, optional, or conditional in a segment is specified in the segment attribute tables. The designations are: R=Required, O=Optional, C=Conditional on the trigger event or on some other field(s). The field definition should define any conditionality for the field: X=Not used with this trigger event, B=Left in for backward compatibility with previous versions of HL7. A maximum length of the field is stated as normative information. Exceeding the listed length should not be considered an error.

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.

Item number: Each field is assigned a unique item number. Fields that are used in more than one segment will retain their unique item number across segments.

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. The null value means that any previous value in this field should be overwritten.

Data type: A data type restricts the contents and format of the data field. Data types are given a 2- or 3-letter code. Some data types are coded or composite types with several components. The applicable data type is listed and defined in each field definition. Appendix 2 provides a complete listing of data types used in this document and their definitions.

Delimiters: The delimiter values are given in MSH-2 and used throughout the message. Applications must use agreed upon delimiters to parse the message. The recommended delimiters for immunization messages are <CR> = Segment Terminator; | = Field Separator; ^ = Component Separator; & = Sub-Component Separator; ~ = Repetition Separator; and \ = 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.

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. CDC has agreed to work with the HL7 organization to add codes or fields needed by registries that otherwise would need to be reported in Z segments.

Basic Message Construction Rules

Encoding Rules for Sending

- Encode each segment in the order specified in the abstract message format.

- Place the Segment ID first in the segment.

- Precede each data field with the field separator.

- Encode the data fields in the order and data type specified in the segment definition table.

- End each segment with the segment terminator.

- 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|

Encoding Rules for Receiving

- If a data segment that is expected is not included, treat it as if all data fields within were not present.

- If a data segment is included that is not expected, ignore it; this is not an error.

- If data fields are found at the end of a data segment that are not expected, ignore them; this is not an error.

IMMUNIZATION DATA TRANSACTION MESSAGES

Information systems that maintain immunization records need to be able to transmit patient-specific immunization histories electronically to other systems to allow healthcare providers to have access to these records at the time health care is given. Electronic tracking of immunization records also allows providers to track their own progress in reaching age-appropriate immunization coverage levels easily and efficiently. The data transmissions will occur as the result of four activities: (1) a query from one system for a patient's vaccination record that is held in another system; (2) a response to a query containing multiple patient "matches" to the query, but not returning vaccination records; (3) a response to a query containing the vaccination record; and (4) an unsolicited update to a vaccination record. Some registries will use Admission/Discharge/Transfer (ADT) transactions to add or update patient information. Registries will need to determine how they will add new patients or update patient information when no immunization activity is involved. ADT messages can provide these functions and are described in this document.

The query will use trigger event V01 to initiate the Query for Vaccination Record (VXQ) message. Two responses are possible: (1) event type V02–Response to Vaccination Query Returning Multiple PID Matches (VXX), or (2) event type V03–Response to Query Returning Vaccination Record (VXR). Trigger event type V04 will initiate the Unsolicited Update to Vaccination Record (VXU) message. Addition of new patients can be accomplished by using either VXU (V04) or ADT (A28).

Each message is defined in special notation, called message syntax, that lists the allowed segments by their three-letter identifiers in the order they will appear in the message. Braces, {}, indicate that the enclosed segment(s) may repeat one or more times, and brackets, [ ], indicate that the enclosed segment(s) is optional. The syntax and an example of each of the defined messages follow. In HL7 transmissions, messages are transmitted as a single string of ASCII characters. In the examples in this document, the three-letter segment identifiers are bolded, each segment begins on a new line, and carriage return segment endings are shown as <CR> to allow human reading. In a message transmission, an HL7 parser “reads” the characters that are transmitted, using the delimiters to divide fields and components. The notation of message and event type in MSH-9 informs the parser which segments will follow, which segments are required, and which can repeat. Similarly, each segment begins with its three-letter identifier, alerting the parser to which fields will follow, which fields are required, and which can repeat. Each segment is defined in the standard, with each field defined. Required fields and allowed field or component repetitions are so noted. The segment is terminated with the carriage return symbol, the ASCII Hex0D.

4.14.1 Query for Vaccination Record (VXQ)

Definition: When a health care provider participating in an immunization registry needs to obtain a complete patient vaccination record, he will send a query (using a V01 trigger event) to the immunization registry for the definitive (last updated) immunization record.

The query will follow this format:

VXQ	Vaccination Query	HL7 Chapter
MSH	Message Header Segment	2
QRD	Query Definition Segment	2
[QRF]	Query Filter Segment	2

VXQ Example #1 (Query with many identifiers)

MSH|^~\&||GA0000||MA0000|199705221605||VXQ^V01|19970522GA40|T|2.3.1|||AL<CR>
QRD|199705221605|R|I|19970522GA05|||25^RD|^KENNEDY^JOHN^FITZGERALD^JR|VXI^VACCINE INFORMATION^HL70048|^SIIS<CR>
QRF|MA0000||||256946789~19900607~MA~MA99999999~88888888~KENNEDY^JACQUELINE^LEE~BOUVIER~898666725~KENNEDY^JOHN^FITZGERALD~822546618<CR>

In this query, the Georgia state registry (GA0000) is sending a request to the Massachusetts state registry (MA0000) for the immunization record of John Fitzgerald Kennedy, Jr., who was born on June 7, 1990. The request is being sent on May 22, 1997, at 4:05 p.m. All known patient identifiers are included in the sample query for use in matching records. These identifiers are defined by their position in the QRF segment. The responding system is expected to return all query items in its response. If the requestor knew only the patient's Social Security number and birth date, this is how the QRF-5 would appear:

|256946789~19900607|

If in addition to the Social Security number and birth date, the patient's birth state and mother's current and maiden name were known, this is how the QRF-5 would appear:

|256946789~19900607~MA~~~KENNEDY^JACQUELINE^LEE~BOUVIER|

Note: Responses when some information has been found in the receiving system are outlined below. If there are processing errors or no data are found to match the query, the response message would be a general acknowledgment message with errors noted or explanatory information provided. A full discussion of error responses follows in item 5 below.

VXQ Example #2 (Query with only a name identifier)

MSH|^~\&||GA0000||MA0000|199705221605||VXQ^V01|19970522GA40|T|2.3.1|||AL<CR>
QRD|199705221605|R|I|19970522GA05|||25^RD|^KENNEDY^JOHN|VXI^VACCINE INFORMATION^HL70048|^SIIS<CR>

This query shows a request for the immunization record using only the patient's name. A limited number of identifiers may result in the receiving registry's matching multiple records.

4.14.2 Response to Vaccination Query Returning Multiple PID Matches (VXX)

Definition: In response to a query for the definitive patient vaccination record, the system holding the record will return it to the system originating the query. If the query results in multiple "matches," i.e., more than one patient record matches the identifiers in the query so that there is no unique identification, the response to the query (using a V02 trigger event) will follow this format:

VXX	Vaccination Response	HL7 Chapter
MSH	Message Header Segment	2
MSA	Message Acknowledgment Segment	2
QRD	Query Definition Segment	2
[QRF]	Query Filter Segment	2
{ PID	Patient Identification Segment	3
[{NK1}]	Next of Kin Segment	3
}		

VXX Example (Response with many matches)

MSH|^~\&||MAVACREC||GAVACREC|199705221610||VXX^V02|19970522MA53|T|2.3.1|||AL<CR>
MSA|AA|19970522GA40|<CR>
QRD|199705221605|R|I|19950522GA05|||25^RD|^KENNEDY^JOHN|VXI|^SIIS<CR>
PID|1||||KENNEDY^JOHN<CR>
NK1|1|KENNEDY^JANET^MARIE|32^MOTHER^HL70063|||||||||||||||||||||||||||||265909900^^^^SS<CR>
PID|2||||KENNEDY^JOHN<CR>
NK1|1|KENNEDY^JACQUELINE|32^MOTHER^HL70063|||||||||||||||||||||||||||||898666725^^^^SS<CR>
NK1|2|KENNEDY^JOHN^FITZGERALD|33^FATHER^HL70063|||||||||||||||||||||||||||||822546618^^^^SS<CR
>
PID|3||||KENNEDY^JOHN<CR>
NK1|1|KENNEDY^JACKIE^ANN|32^MOTHER^HL70063|||||||||||||||||||||||||||||288763102^^^^SS<CR>
PID|4||||KENNEDY^JOHN<CR>
NK1|1|KENNEDY^J^CILENE|32^MOTHER^HL70063|||||||||||||||||||||||||||||190966725^^^^SS<CR>
NK1|2|KENNEDY^JACK|33^FATHER^HL70063|||||||||||||||||||||||||||||786118768^^^^SS<CR>

In this VXX example, each Patient Identification Segment (PID) returns, along with its associated Next of Kin/Associated Parties Segment(s) (NK1). In this message, the query contained only the patient name of John Kennedy. The responding system, Massachusetts state registry, found four patient matches to the query, as reflected in the PID segments. Their associated NK1 segments provide information about the patient's associated parties that will allow the querying system, Georgia state registry, to send a more precise query.

Note: To protect confidentiality some registries will not allow this function to return values in any field that was not valued in the query. Each registry will implement its own policies with regard to this. We recommend that registries consult the guidelines for privacy, confidentiality, and security of data on the NIP website at <www.cdc.gov/nip/registry>.

4.14.3 Response to Vaccination Query Returning the Vaccination Record (VXR)

Definition: When the patient has been uniquely identified (there is only one "match" to the query), the response to the query (using a V03 trigger event) will follow this format:

VXR	Vaccination Response	HL7 Chapter
MSH	Message Header Segment	2
MSA	Message Acknowledgment Segment	2
QRD	Query Definition Segment	2
[QRF]	Query Filter Segment	2
PID	Patient Identification Segment	3
[PD1]	Additional Demographics	3
[{NK1}]	Next of Kin/Associated Parties	3
[PV1	Patient Visit	3
[PV2]]	Patient Visit Additional Information	3
[{IN1	Insurance	6
[IN2]	Insurance Additional Information	6
[IN3]	Insurance Additional Information-Cert.	6
}]		
[{ [ORC]	Common Order Segment	4
RXA	Pharmacy Administration	4
[RXR]	Pharmacy Route	4
[{ OBX	Observation/Result	7
[{NTE}]	Notes (Regarding Immunization)	2
}]		
}]		

VXR Example (Response to VXQ Example #1)

The example below reflects a vaccination record return as might be expected by a public health agency reporting from an immunization registry in one state to another state registry.

MSH|^~\&||MA0000||GA0000|199705221610||VXR^V03^V03|19970522MA53|T|2.3.1|||AL<CR>
MSA|AA|19970522GA40|<CR>
QRD|199705221605|R|I|19970522GA05|||25^RD|^KENNEDY^JOHN^FITZGERALD^JR|VXI|^SIIS<CR>
QRF|MA0000||||256946789~19900607~MA~MA99999999~88888888~KENNEDY^JACQUELINE^LEE~BOUVIER~898666725~KENNEDY^JOHN^FITZGERALD~822546618<CR>
PID|||1234^^^^SR^~1234-12^^^^LR^~3872^^^^MR~221345671^^^^SS^~430078856^^^^MA^||KENNEDY^JOHN^FITZGERALD^JR^^^L|BOUVIER^^^^^^M|19900607|M|KENNEDY^BABY BOY^^^^^^B|W^WHITE^NY8 RACE CODES^W^WHITE^HL70005|123 MAIN ST^APT 3B^LEXINGTON^MA^00210^ ^M^MSA CODE^MA034~345 ELM ST^^BOSTON^MA^00314^^BLD~^^^^^^BR^^MA002| |(617) 555-1212 ^PRN^PH^^^617^5551212^^||EN^ENGLISH^HL70296^^^|||||||WN^NOT HISPANIC^LOCAL CODE SET^NH^NOT OF HISPANIC ORIGIN^HL70189|CHILDREN'S HOSPITAL<CR>
PD1|||CHILDREN'S HOSPITAL^L^1234^^^^XX~LEXINGTON CLINIC^^1234A^^^^FI |12345^CARE^PRIMARY^^^DR^MD^^^L^^^DN|||||||03^REMINDER/RECALL - NO CALLS^HL70215|Y|A|19900607<CR>
NK1|1|KENNEDY^JACQUELINE^LEE|32^MOTHER^HL70063|||||||||||||||||||||||||||||||898666725^^^^SS<CR>
NK1|2|KENNEDY^JOHN^FITZGERALD|33^FATHER^HL70063|||||||||||||||||||||||||||||||822546618^^^^SS<CR>
PV1||R|||||||||||||||||V02^19900607~H02^19900607<CR>
RXA|0|1|19900607|19900607|08^HEPB-PEDIATRIC/ADOLESCENT^CVX^90744^HEPB-PEDATRIC/ADOLESCENT^CPT|.5|ML^^ISO+||03^HISTORICAL INFORMATION - FROM PARENT'S WRITTEN RECORD^NIP0001|^JONES^LISA|^^^CHILDREN'S HOSPITAL||5|MCG^^ISO+|MRK12345|199206|MSD^MERCK^MVX<CR>
RXA|0|0|19901207|19901207|20^DTAP^CVX|.5|ML^^ISO+|||1234567891^O'BRIAN^ROBERT^A^^DR^MD|^^^CHILD HEALTHCARE CLINIC^^^^^101 MAIN STREET^^BOSTON^MA||||W22532806| 19901230|PMC^ PASTEUR MERIEUX CONNAUGHT^MVX|00^PARENTAL DECISION^NIP002||RE<CR>
RXA|0|1|19910907|19910907|50^DTAP-HIB^CVX^90721^DTAP-HIB^CPT|.5|ML^^ISO+||00^NEW IMMUNIZATION RECORD^NIP001|1234567890^SMITH^SALLY^S^^^^^^^^^VEI~1234567891^O'BRIAN^ROBERT^A^^DR^MD^^^^^^OEI|^^^CHILD HEALTHCARE CLINIC^^^^^101 MAIN STREET^^BOSTON^MA ||||W46932777| 199208|PMC^PASTEUR MERIEUX CONNAUGHT^MVX|||CP|A| 19910907120030<CR>
RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163<CR>
OBX|1|NM|60000-7^DTAP DOSE COUNT IN COMBINATION VACCINE^LN||4||||||F<CR>
OBX|2|NM|60002-3^HIB DOSE COUNT IN COMBINATION VACCINE^LN||4||||||F<CR>
RXA|0|1|19910907|19910907|03^MMR^CVX|.5|ML^^ISO+|||1234567890^SMITH^SALLY^S^^^^^^^^^VEI~1234567891^O'BRIAN^ROBERT^A^^DR^MD^^^^^^OEI|^^^CHILD HEALTHCARE CLINIC^^^^^101 MAIN STREET^^BOSTON^MA||||W2348796456|19920731|MSD^MERCK^MVX<CR>
RXR|SC^SUBCUTANEOUS^HL70162|LA^LEFT ARM^HL70163<CR>
RXA|0|5|19950520|19950520|20^DTAP^CVX|.5|ML^^ISO+|||1234567891^O'BRIAN^ROBERT^A^^DR^MD|^^^CHILD HEALTHCARE CLINIC^^^^^101 MAIN STREET^^BOSTON^MA||||W22532806|19950705|PMC^PASTEUR MERIEUX CONNAUGHT^MVX<CR>
RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163<CR>
RXA|0|2|19950520|19950520|03^MMR^CVX|.5|ML^^ISO+|||1234567891^O'BRIAN^ROBERT^A^^DR^MD|^^^CHILD HEALTHCARE CLINIC^^^^^101 MAIN STREET^^BOSTON^MA||||W2341234567|19950630|MSD^ MERCK^MVX<CR>
RXR|SC^SUBCUTANEOUS^HL70162|LA^LEFT ARM^HL70163<CR>
OBX||ST|60011-4^VACCINATION ADVERSE EVENT^LN||ANAPHYLAXIS|||||F<CR>
NTE|||VAERS FORM SUBMITTED BY PROVIDER<CR>
RXA|0|1|19960415|19960415|96^TST-PPD INTRADERMAL^CVX|5|TU<CR>
OBX||NM|1648-5^TUBERCULOSIS REACTION WHEAL 3D POST 5 TU ID^LN||1|MM||N|||F|||19960418<CR>

4.14.4 **Unsolicited Vaccination Record Update (VXU)**

Definition: When a provider using one system wishes to update the patient's vaccination record being held in another system, he will transmit an unsolicited update of the record (using a V04 trigger event).

An unsolicited update will follow this format:

VXU	Unsolicited Vaccination Update	HL7 Chapter
MSH	Message Header Segment	2
PID	Patient Identification Segment	3
[PD1]	Additional Demographics	3
[{NK1}]	Next of Kin/Associated Parties	3
[PV1	Patient Visit	3
[PV2]]	Patient Visit Additional Information	3
[{IN1	Insurance	6
[IN2]	Insurance Additional Information	6
[IN3]	Insurance Additional Information-Cert.	6
}]		
[{ [ORC]	Common Order Segment	4
RXA	Pharmacy Administration	4
[RXR]	Pharmacy Route	4
[{ OBX	Observation/Result	7
[{NTE}]	Notes (Regarding Immunization)	2
}]		
}]		

VXU Example #1 (Message with only required fields valued)

The example below of an unsolicited update of a vaccination record demonstrates a message with only the minimum number of fields valued. This message conforms to all the NIP required core data elements (see Appendix 3 for the complete core data set) and the fields required by HL7 for correct messaging. **In the body of this *Implementation Guide* these required items are represented in boldface type.** Some software vendors have expressed an interest in attaching a "patch" to an existing system, possibly a billing system that does not otherwise use HL7, that would automatically generate this message from data in an existing application.

MSH|^~\&|||||||VXU^V04|19970522MA53|P|2.3.1<CR>
PID|||221345671^^^^SS||KENNEDY^JOHN^FITZGERALD^JR|BOUVIER^^^^^^M|19900607|M|||^^^^MA^^^BLD<CR>
NK1|1|KENNEDY^JACQUELINE^LEE|32^MOTHER^HL70063<CR>
RXA|0|1|19900607|19900607|08^HEPB-PEDIATRIC/ADOLESCENT^CVX|.5|ML^^ISO+|||||||| MRK12345||MSD^ MERCK^ MVX<CR>

VXU Example #2 (Unsolicited update showing use of optional segments)

The example below of an unsolicited update of a vaccination record demonstrates possible uses for some of the optional segments in the message. For the purposes of this document, the optional segments in the messages (PD1, PV1, PV2, IN1, IN2, IN3, RXR, OBX, and NTE) are described only to the extent that segments and fields are either required or have been identified by the workgroup as needed for these messages.

MSH|^~\&||MA0000||GA0000|19970901||VXU^V04|19970522MA53|T|2.3.1|||AL<CR>
PID|||1234^^^^SR^~1234-12^^^^LR^~3872^^^^MR~221345671^^^^SS^~430078856^^^^MA^
||KENNEDY^JOHN^FITZGERALD^JR^^^L|BOUVIER^^^^^^M|19900607|M|KENNEDY^BABY BOY^^^^^^
B|W^WHITE^NY8 RACE CODES^W^WHITE^HL70005|123 MAIN ST^APT
3B^LEXINGTON^MA^00210^ ^M^MSA CODE^MA034~345 ELM
ST^^BOSTON^MA^00314^^BLD~^^^^^^BR^^MA002| |(617) 555-1212
^PRN^PH^^^617^5551212^^||EN^ENGLISH^HL70296^^^|||||||WN^NOT HISPANIC^LOCAL CODE
SET^NH^NOT OF HISPANIC ORIGIN^HL70189|CHILDREN'S HOSPITAL<CR>
PD1|||CHILDREN'S HOSPITAL^^1234^^^^XX~LEXINGTON CLINIC^^1234A^^^^FI|12345^CARE^
PRIMARY^^^DR^MD^^^L^^^DN|||||||03^REMINDER/RECALL - NO CALLS^HL70215|Y<CR>
NK1|1|KENNEDY^JACQUELINE^LEE|32^MOTHER^HL70063|||||||||||||||||||||||||||||898666725^^^^SS<CR>
NK1|2|KENNEDY^JOHN^FITZGERALD|33^FATHER^HL70063|||||||||||||||||||||||||||||822546618^^^^SS<CR
>
PV1||R|||||||||||||||A|||V02^19900607~H02^19900607<CR>
RXA|0|1|19900607|19900607|08^HEPB-PEDIATRIC/ADOLESCENT^CVX^90744^HEPB-
PEDATRIC/ADOLESCENT^CPT|.5|ML^^ISO+||03^HISTORICAL INFORMATION - FROM PARENT'S
WRITTEN RECORD^NIP0001|^JONES^LISA|^^^CHILDREN'S HOSPITAL||5|MCG^^ISO+|MRK12345|
199206|MSD^MERCK^MVX<CR>
RXA|0|4|19910907|19910907|50^DTAP-HIB^CVX^90721^DTAP-HIB^CPT|.5|ML^^ISO+||00^NEW
IMMUNIZATION RECORD^NIP0001|1234567890^SMITH^SALLY^S^^^^^^^^^VEI~1234567891
^O'BRIAN^ROBERT^A^^DR^MD^^^^^^OEI|^^^CHILD HEALTHCARE CLINIC^^^^^101 MAIN STREET^^
BOSTON^MA||||W46932777|199208|PMC^PASTEUR MERIEUX CONNAUGHT^MVX|||CP|A|
19910907120030<CR>
RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163<CR>
RXA|0|1|19910907|19910907|03^MMR^CVX|.5|ML^^ISO+|||1234567890^SMITH^SALLY^S^^^^^^^^^VEI~
1234567891^O'BRIAN^ROBERT^A^^DR^MD^^^^^^OEI|^^^CHILD HEALTHCARE CLINIC^^^^^101 MAIN
STREET^^BOSTON^MA||||W2348796456|19920731|MSD^MERCK^MVX<CR>
RXR|SC^SUBCUTANEOUS^HL70162|LA^LEFT ARM^HL70163<CR>
RXA|0|5|19950520|19950520|20^DTAP^CVX|.5|ML^^ISO+|||1234567891^O'BRIAN^ROBERT^A^^DR|^^^
CHILD HEALTHCARE CLINIC^^^^^101 MAIN STREET^^BOSTON^MA||||W22532806|19950705|PMC^
PASTEUR MERIEUX CONNAUGHT^MVX<CR>
RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163<CR>
NTE|PATIENT DEVELOPED HIGH FEVER APPROX 3 HRS AFTER VACCINE INJECTION<CR>
RXA|0|2|19950520|19950520|03^MMR^CVX|.5|ML^^ISO+|||1234567891^O'BRIAN^ROBERT^A^^DR|^^^
CHILD HEALTHCARE CLINIC^^^^^101 MAIN STREET^^BOSTON^MA||||W2341234567|19950630|
MSD^MERCK^MVX<CR>
RXR|SC^SUBCUTANEOUS^HL70162|LA^LEFT ARM^HL70163<CR>

2.13 **Acknowledgment Messages** (With errors or finding no match to query parameters)

Definition: The general default acknowledgment message returning error conditions has the following syntax.

2.13.1	ACK	General Acknowledgment	HL7 Chapter
	MSH	Message Header	2
	MSA	Message Acknowledgment	2
	[ERR]	Error	2

Definition: The query general default acknowledgment message returning error conditions or explaining why the requested data are not being returned has the following syntax.

2.18.1	QCK	Query General Acknowledgment	HL7 Chapter
	MSH	Message Header	2
	MSA	Message Acknowledgment	2
	[ERR]	Error	2
	[QAK]	Query Acknowledgment Segment	2

Acknowledgment Example #1 (ACK with error)

Acknowledgment Example #1 shows an unsolicited update being rejected by Massachusetts Vaccine Records because a required field was empty. The error was located in the PID segment, where the patient internal ID (PID-3) was missing.

MSH|^~\&||MA0000||GA0000|199705221305||ACK^|19970522GA40|T|2.3.1<CR>
MSA|AE|19970522GA40|NO PATIENT INTERNAL ID NUM<CR>
ERR|PID^^3^ID<CR>

Acknowledgment Example #2 (QCK with no matching records found)

Acknowledgment Example #2 below shows the query message being accepted by Massachusetts Vaccine Records, but the receiving system found no match to the query criteria in its records.

MSH|^~\&||MA0000||GA0000|199705221730||QCK^|19970522MA75|T|2.3.1<CR>
MSA|0|19970522GA40<CR>
ERR|0^MESSAGE ACCEPTED^HL70357<CR>
QAK|19970522GA05|NF<CR>

SEGMENTS

Each message is composed of a series of segments. Each segment is identified by its unique three-letter code. The segments used in the immunization messages are defined below. The segments are listed in the most logical order for immunization messages and do not strictly adhere to the order in which they are presented in the HL7 Standard. However, for ease of reference, the number preceding each segment and field name indicates its reference place in the HL7 Standard, Version 2.3.1. Because the segments here are re-ordered, these reference numbers are not always in sequential order.

The following format is used in this document for listing and defining message segments and fields. First, the message segment's use is defined, and a segment attribute table listing all fields defined in the segment is shown. In the segment attribute table, the following attributes are given for each field: sequence number within the segment, length of field, data type, whether required (R), optional (O), conditional (C), or for backwards compatibility (B), whether repeating (Y), the applicable table number for values, the field item number, and the field name.

Following the table, select fields are listed and defined. For each field, the HL7 segment code and reference number are listed, followed by the field name. Items in parentheses after the field name show respectively data type and length of field, whether the field is required or optional, and lists "repeating" if the field is allowed to repeat. The HL7 item number follows the parenthesis and is given for reference convenience. As part of the definitions, usage notes for immunization registries are provided, a description of the data type is given in small font, and a statement about how the field is valued in the example is given. Fields that we do not anticipate immunization registries using are not defined. Users interested in learning more about fields not discussed here should refer to the full text of the latest HL7 standard.

SEGMENT DEFINITIONS

2.24 MESSAGE CONTROL SEGMENTS

These segments are necessary to support the functionality described in the Control/Query chapter of the HL7 standard.

2.24.1 Message Header (MSH) Segment

Used to define the intent, source, destination, and some specifics of the syntax of a message.

MSH Attributes

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM#	ELEMENT NAME
1	**1**	**ST**	**R**			**00001**	**Field separator**
2	**4**	**ST**	**R**			**00002**	**Encoding characters**
3	180	EI	O			00003	Sending application
4	180	EI	O			00004	Sending facility
5	180	EI	O			00005	Receiving application
6	180	EI	O			00006	Receiving facility
7	26	TS	O			00007	Date/Time of message
8	40	ST	O			00008	Security
9	**7**	**CM**	**R**		**0076** **0003**	**00009**	**Message type**
10	**20**	**ST**	**R**			**00010**	**Message control ID**
11	**3**	**PT**	**R**			**00011**	**Processing ID**
12	**60**	**VID**	**R**		**0104**	**00012**	**Version ID**
13	15	NM	O			00013	Sequence number
14	180	ST	O			00014	Continuation pointer
15	2	ID	O		0155	00015	Accept acknowledgment type
16	2	ID	O		0155	00016	Application acknowledgment type
17	2	ID	O			00017	Country code
18	10	ID	O	Y	0211	00692	Character set
19	60	CE	O			00693	Principal language of message
20	20	ID	O		0356	01317	Alternate character set handling scheme

2.24.1.0 MSH field definitions

MSH 2.24.1.1 Field separator (ST-1, Required) 00001

Definition: The character to be used as the field separator for the rest of the message.

The recommended value is |, as shown in our examples.

MSH 2.24.1.2 Encoding characters (ST-4, Required) 00002

Definition: Four characters in the following order: the component separator, repetition separator, escape character, and subcomponent separator.

The recommended values are ^~\&, as shown in our examples.

MSH 2.24.1.3 Sending application (EI-180, Optional) 00003

Definition: Uniquely identifies the sending application among all other applications within the network enterprise. The network enterprise consists of all the applications that participate in the exchange

of HL7 messages within the enterprise. Immunization programs may use this field to identify the software name and version. We do not define it further in this document.

> Data type EI: The entity identifier defines a given entity within a specified series of identifiers.
> Components:
> <entity identifier (ST)>^<namespace ID (IS)>^<universal ID (ST)>^<universal ID type (ID)>
>
> (1) Entity identifier (ST). The entity identifier component is usually defined to be unique within the series of identifiers created by the assigning authority, defined by a hierarchic designator, represented by components (2) through (4). (These are as defined in Appendix 2, Section 2.8.20, "HD-hierarchic designator").

In our examples, we have not valued this field.

MSH 2.24.1.4 Sending facility (EI-180, Optional) 00004

Definition: This field contains the address of one of several occurrences of the same application within the sending system. Site-defined. Immunization programs may use this field to identify the state system sending the query. The address consists of the two-letter postal code plus digits. The digits of the state central registry will be all 0's; e.g., GA0000. Facilities and registries within the state will be assigned numeric codes by the state; e.g., GA0322.

> Data type EI: The entity identifier defines a given entity within a specified series of identifiers.
> Components:
> <entity identifier (ST)>^<namespace ID (IS)>^<universal ID (ST)>^<universal ID type (ID)>
>
> (1) Entity identifier (ST). The entity identifier component is usually defined to be unique within the series of identifiers created by the assigning authority, defined by a hierarchic designator, represented by components (2) through (4). (These are as defined in Appendix 2, Section 2.8.20, "HD-hierarchic designator").

In our query examples, we show the Georgia state registry as the sending system.

MSH 2.24.1.5 Receiving application (EI-180, Optional) 00005

Definition: Uniquely identifies the receiving application among all other applications with the network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages. Immunization programs may use this field to identify the software name and version. We do not define it further in this document.

> Data type EI: The entity identifier defines a given entity within a specified series of identifiers.
> Components:
> <entity identifier (ST)>^<namespace ID (IS)>^<universal ID (ST)>^<universal ID type (ID)>
>
> (1) Entity identifier (ST). The entity identifier component is usually defined to be unique within the series of identifiers created by the assigning authority, defined by a hierarchic designator, represented by components (2) through (4). (These are as defined in Appendix 2, Section 2.8.20, "HD-hierarchic designator").

In our examples, we have not valued this field.

MSH 2.24.1.6 Receiving facility (EI-180, Optional) 00006

Definition: This field identifies the receiving application among multiple identical applications running on behalf of different organizations. Site-defined. Immunization programs may use this to identify the state system receiving the query. The address consists of the two-letter postal code plus digits. The digits of the state central registry will be all 0's; e.g., MA0000. Facilities and registries within the state will be assigned numeric codes by the state; e.g., MA0322.

> Data type EI: The entity identifier defines a given entity within a specified series of identifiers.
> Components:
> <entity identifier (ST)>^<namespace ID (IS)>^<universal ID (ST)>^<universal ID type (ID)>

(1) Entity identifier (ST). The entity identifier component is usually defined to be unique within the series of identifiers created by the assigning authority, defined by a hierarchic designator, represented by components (2) through (4). (These are as defined in Appendix 2, Section 2.8.20, "HD-hierarchic designator").

In our query examples, we show Massachusetts state registry as the receiving system.

MSH 2.24.1.7 Date/time of message (TS-26, Optional) 00007

Definition: Date/time the sending system created the message.

Time stamp (TS) data type must be in the format:
YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

The user values the field only as far as needed. When a system has only a partial date, e.g., month and year, but not day, the missing values may be interpreted as zeros. The time zone is assumed to be that of the sender. In the query examples, a message is being sent on May 22, 1995, at 4:05 p.m.

MSH 2.24.1.8 Security (ST-40, Optional) 00008

Definition: This field may be used to implement security features, but its use is not further specified. Within HL7, a workgroup is further specifying this field. Immunization registries will not use it until specifications have been developed.

In our examples, we have not valued this field.

MSH 2.24.1.9 Message type (CM-7, Required) 00009

Definition: The receiving system uses this field to know the data segments to recognize and, possibly, the application to which to route this message. The second component is not required on acknowledgment messages. The third component is not required for immunization registries, since in the VXQ, VXR, VXX, and VXU messages, the message structure is the same designation as the trigger event type shown in component two.

The specific components of fields using the CM data type are defined within the field descriptions.
The components for this field are: <message type (ID)>^<trigger event (ID)>^<message structure (ID)>
Refer to *HL7 Table 0076 - Message type*, *HL7 Table 0003 - Event type*, and *HL7 Table 0354 - Message structure* for values.

In the VXR example, the third component is valued for illustration although we do not anticipate immunization registries using this component.

MSH 2.24.1.10 Message control ID (ST-20, Required) 00010

Definition: Number or other identifier that uniquely identifies the message. The receiving system echoes this ID back to the sending system in the message acknowledgment segment (MSA). Each immunization registry will design its own method for assigning control IDs.

VXQ Example #1 shows a potential identification method consisting of date (YYYYMMDD)+state 2-letter code+sequential number indicating the number of queries from the Georgia registry for this date. In the example, this is the 40th query from the Georgia registry on May 22, 1997.

MSH 2.24.1.11 Processing ID (PT-3, Required) 00011

Definition: Used to decide how to process the message as defined in HL7 processing rules.

PT data type components: <processing ID (ID)>^<processing mode (ID)>

(1) Processing ID (ID). A value that defines whether the message is part of a production, training, or debugging system. Refer to *HL7 Table 0103-Processing ID* for valid values.
(2) Processing mode (ID). A value that defines whether the message is part of an archival process or an initial load. Refer to *HL7 Table 0207-Processing mode* for valid values. The default (blank) means current processing.

In our VXU #2 example, the use is production. In the other examples, the use is training. The second component is not specified, indicating current processing as the default.

MSH 2.24.1.12 Version ID (VID-60, Required) 00012

Definition: Matched by the receiving system to its own HL7 version to be sure the message will be interpreted correctly.

VID data type components: <version ID (ID)>^<internationalization code (CE)>^<international version ID (CE)>

(1) Version ID (ID). Used to identify the HL7 version. Refer to *HL7 Table 0104 - Version ID* for valid values
(2) Internationalization code (CE). Used to identify the international affiliate country code. ISO 3166 provides a list of country codes that may be used (see *User-defined Table 0212 - Nationality*).
(3) International version ID (CE). Used when the international affiliate has more than a single local version associated with a single U.S. version.

In our examples, the version is 2.3.1.

MSH 2.24.1.13 Sequence number (NM-15, Optional) 00013

Definition: Non-null value in this field implies that the sequence number protocol is in use. This numeric field is incremented by one for each subsequent value.

In our examples, we have not valued this field.

MSH 2.24.1.14 Continuation pointer (ST-180, Optional) 00014

Definition: Used to define continuations in application-specific ways.

In our examples, we have not valued this field.

MSH 2.24.1.15 Accept acknowledgment type (ID-2, Optional) 00015

Definition: Identifies the conditions under which accept acknowledgments are required to be returned in response to this message. *HL7 Table 0155 - Accept/Application acknowledgment conditions* gives valid values. Required for enhanced acknowledgment mode. (Note: If MSH-15 and MSH-16 are omitted or null, the original acknowledgment mode rules are used.)

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In most of our examples, we have specified that acknowledgment is always required.

MSH 2.24.1.16 Application acknowledgment type (ID-2, Optional) 00016

Definition: Identifies the conditions under which application acknowledgments are required to be returned in response to this message. Required for enhanced acknowledgment mode. See *HL7 Table 0155 - Accept/Application acknowledgment conditions* for values.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our examples, we have not valued this field.

MSH 2.24.1.17 Country code (ID-2, Optional) 00017

Definition: Defines the country of origin for the message. It is used primarily to specify default elements, such as currency denominations. ISO 3166 provides a list of country codes that may be used (see *User-defined Table 0212 - Nationality*).

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our examples, we have not specified a country. When left blank, we assume this field to be the USA.

MSH 2.24.1.18 Character set (ID-10, Optional, Repeating) 00692

Definition: Contains the character set for the entire message. Refer to *HL7 Table 0211 - Alternate character sets* for valid values of alternate character sets. The default set (if the field is left blank) is the printable 7-bit ASCII character set.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our examples, we have not valued this field.

MSH 2.24.1.19 Principal language of message (CE-60, Optional) 00693

Definition: Contains the principal language of the message. HL7 recommends ISO 639 codes. See *User-defined Table 0296 - Language*.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
(2) Text (ST). Name or description of the item in question.
(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our examples, we have not valued this field.

MSH 2.24.1.20 Alternate character set handling (ID-20, Optional) 01317

Definition: When any alternative character sets are used, (as specified in the second or later components of *MSH-18 - Character Sets*), and if any special handling scheme is needed, this component is to specify the scheme used, according to *HL7 Table 0356 - Alternative character set handling scheme*.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our examples, we have not valued this field.

2.24.2 **Message Acknowledgment (MSA) Segment**

Used to send information while acknowledging another message.

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MSA Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	2	ID	R		0008	00018	Acknowledgment code
2	20	ST	R			00010	Message control ID
3	80	ST	O			00020	Text message
4	15	NM	O			00021	Expected sequence number
5	1	ID	B		0102	00022	Delayed acknowledgment type
6	100	CE	O			00023	Error condition

2.24.2.0 MSA field definitions

MSA 2.24.2.1 Acknowledgment code (ID-2, Required) 00018

Definition: Valid codes are given in *HL7 Table 0008 - Acknowledgment code* to indicate accept, reject, error, etc.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our VXX and VXR examples, the code is AA = Application Accept. Our Acknowledgment Message #1 example shows AE = Application Error.

MSA 2.24.2.2 Message control ID (ST-20, Required) 00010

Definition: 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.

In our VXX example, the message control ID of 19970522GA40 sent from the Georgia state registry in the query is echoed. This ID should be the same ID as sent by the sending system in MSH-10.

MSA 2.24.2.3 Text message (ST-80, Optional) 00020

Definition: Optional text field that further describes an error condition. This text may be printed in error logs or presented to an end user.

In our Acknowledgment message with error example, we have valued this field to show that the sending system failed to value a required field. The text reads, “No patient internal ID number.”

MSA 2.24.2.4 Expected sequence number (NM-15, Optional) 00021

Definition: Optional numeric field used in the sequence number protocol.

In our examples, we have not valued this field.

MSA 2.24.2.5 Delayed acknowledgment type (ID-1, Backwards Compatibility) 00022

Definition: Valid codes given in *HL7 Table 0102 - Delayed acknowledgment type*. Used only as described in the HL7 Standard Section 2.5.2. Otherwise this field is not used.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our examples, we have not valued this field.

MSA 2.24.2.6 Error condition (CE-100, Optional) 00023

Definition: CE data type field allowing the acknowledging system to use *HL7 Table 0357-Message error status codes* to further specify AR (application reject) or AE (application error) type acknowledgments. This field allows a coded replacement for MSA-3-text message.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.

(2) Text (ST). Name or description of the item in question.

(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.

(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our examples, we have not valued this field. Immunization registries may wish to develop codes to represent various types of errors from their participants.

2.24.3 **Error (ERR) Segment**

Used to add error comments to acknowledgment messages. If the message was rejected for functional reasons, this segment will locate the error and describe it using locally established codes.

ERR Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	80	CM	R	Y	0357	00024	Error code and location

2.24.3.0 ERR field definitions

ERR 2.24.3.1 Error code and location (CM-80, Required, Repeating) (00024)

Definition: Identifies an erroneous segment in another message. The second component is an index if more than one segment of a specific type repeats. For systems that do not use the HL7 Encoding Rules, the data item number may be used for the third component. The fourth component (which references *HL7 Table 0357 - Message error status codes*) is restricted from having any subcomponents, since it is a CE data type and the subcomponent separator is now the CE's component separator.

The specific components of fields using the CM data type are defined within the field descriptions.
The components for this field are: <segment ID (ST)>^<sequence (NM)>^<field position (NM)>^<code identifying error (CE)>

In our Acknowledgment Message example with error, we show an error in the PID segment, field 3.

2.24.22 **Query Acknowledgment (QAK) Segment**

Used to send information with responses to a query.

QAK Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	32	ST	C			00696	Query tag
2	2	ID	O		0208	00708	Query response status

2.24.22.0 QAK field definitions

QAK 2.24.22.1 Query tag (ST-32, Conditional) 00696

Definition: This field may be valued by the initiating system to identify the query, and may be used to match response messages to the originating query. If it is valued, the responding system is required to echo it back as the first field in the QAK. This field differs from *MSA-2-message control ID* in that its value remains constant for each message associated with the query (i.e., all continuation messages), whereas *MSA-2-message control ID* may vary with each continuation message, since it is associated with each individual message, not the query as a whole.

In our Acknowledgment Message (with no records found) example, we show the Massachusetts registry reflecting the Message control number (MSH-10) sent in the query from the Georgia registry.

QAK 2.24.22.2 Query response status (ID-2, Optional) 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.*

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our Acknowledgment Message (with no records found) example, we show the Massachusetts registry advising the Georgia registry that it processed the query, but found no matches to the query parameters. Note that some registries plan to use this acknowledgment when they do not have consent to exchange the record. (See discussion at PD1-12.)

2.24.4 **Query Definition (QRD) Segment**

Used to define a query.

QRD Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	26	TS	R			00025	Query date/time
2	1	ID	R		0106	00026	Query format code
3	1	ID	R		0091	00027	Query priority
4	10	ST	R			00028	Query ID
5	1	ID	O		0107	00029	Deferred response type
6	26	TS	O			00030	Deferred response date/time
7	10	CQ	R		0126	00031	Quantity limited request
8	60	XCN	R	Y		00032	Who subject filter
9	60	CE	R	Y	0048	00033	What subject filter
10	60	CE	R	Y		00034	What department data code
11	20	CM	O	Y		00035	What data code value qualifier
12	1	ID	O		0108	00036	Query results level

2.24.4.0 QRD field definitions

QRD 2.24.4.1 Query date/time (TS-26, Required) 00025

Definition: Date the query was generated by the application program.

Time stamp (TS) data type must be in the format:
YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

In both query examples, the query was generated at the same time as the MSH–May 22, 1997, at 4:05 p.m.

QRD 2.24.4.2 Query format code (ID-1, Required) 00026

Definition: Valid format codes are given in *HL7 Table 0106 - Query/response format code*.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In both query examples, we use the record-oriented format (R).

QRD 2.24.4.3 Query priority (ID-1, Required) 00027

Definition: Time frame in which the response is expected. Table values and subsequent fields specify time frames for response. *HL7 Table 0091 - Query priority* gives valid codes.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In both query examples, we expect an immediate response (I).

QRD 2.24.4.4 Query ID (ST-10, Required) 00028

Definition: Unique identifier for the query. Assigned by the querying application. Returned intact by the responding application.

VXQ Example #1 follows the same formula as in MSH-10. While MSH-10 demonstrates the 40th message of the day, the QRD-4 field reveals that this is the 5th query of the day from the Georgia system.

QRD 2.24.4.5 Deferred response type (ID-1, Optional) 00029

Definition: Valid entries are from *HL7 Table 0107 - Deferred response type*, to indicate before or later than the date/time specified.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our examples, we have not specified a date/time of response, because we expect an immediate response (see 2.24.4.3 above).

QRD 2.24.4.6 Deferred response date/time (TS-26, Optional) 00030

Definition: Date/time before or after which to send a deferred response. If not present, the response can be sent when it is available.

Time stamp (TS) data type must be in the format:
YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

In our examples, we have not specified a response date/time.

QRD 2.24.4.7 Quantity limited request (CQ-10, Required) 00031

Definition: Maximum length of the response that can be accepted by the requesting system. Valid responses are numerical values given in units specified in the second component. *HL7 Table 0126 - Quantity limited request* gives valid entries, with codes for characters, lines, pages, records, or locally defined. The default value is lines.

CQ data type components: <quantity (NM)>^<units (CE)>

Our query examples specify a maximum length of 25 records.

QRD 2.24.4.8 Who subject filter (XCN-60, Required, Repeating) 00032

Definition: Identifies the subject of the query or who the inquiry is about. The field is allowed to repeat.

XCN data type components: <ID number (ST)>^<family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., Jr. or III) (ST)>^<prefix (e.g., Dr.) (ST)>^<degree (e.g., MD) (IS)>^<source table (IS)>^<assigning authority (HD)>^<name type code (ID)>^<identifier check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<identifier type code (IS)>^<assigning facility ID (HD)>^<name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)>

In our VXQ example #1, we are sending a query for the record of John Fitzgerald Kennedy, Jr. Our VXQ example #2 demonstrates giving only the name of John Kennedy as the subject of the query.

QRD 2.24.4.9 What subject filter (CE-60, Required, Repeating) 00033

Definition: Describes the kind of information required to satisfy the request. Valid codes are given in *HL7 Table 0048 - What subject filter* and may be extended locally during implementation.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
(2) Text (ST). Name or description of the item in question.
(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our query examples, we specify Vaccine Information (VXI).

QRD 2.24.4.10 What department data code (CE-60, Required, Repeating) 00034

Definition: Can include drug code, item number, etc., consistent with the subject in 2.10.4.9. Can contain multiple occurrences separated by repetition delimiters.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
(2) Text (ST). Name or description of the item in question.
(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our VXQ #1, VXQ #2, VXX, and VXR examples, we have specified State Immunization Information Systems (SIIS) in this field.

QRD 2.24.4.11 What data code value qualifier (CM-20, Optional, Repeating) 00035

Definition: Further refines the inquiry by data code qualifiers by providing a window or range to further refine the inquiry. This field contains components giving start and stop code values.

The specific components of fields using the CM data type are defined within the field descriptions.
The components for this field are: <first data code value (ST)>^<last data code value (ST)>

In our examples, we have not valued this field.

QRD 2.24.4.12 Query results level (ID-1, Optional) 00036

Definition: Used to control level of detail in results. *HL7 Table 0108 - Query results level* gives valid values.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our examples, we have not valued this field.

2.24.5 **Query Filter (QRF) Segment**

Used with the QRD segment to further refine the content of a query.

QRF Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	20	ST	R	Y		00037	Where subject filter
2	26	TS	O			00038	When data start date/time
3	26	TS	O			00039	When data end date/time
4	60	ST	O	Y		00040	What user qualifier
5	60	ST	O	Y		00041	Other query subject filter
6	12	ID	O	Y	0156	00042	Which date/time qualifier
7	12	ID	O	Y	0157	00043	Which date/time status qualifier
8	12	ID	O	Y	0158	00044	Date/time selection qualifier
9	60	TQ	O			00694	When quantity/timing qualifier

2.24.5.0 QRF field definitions

Usage notes: QRF-6 through 9, optional fields, have not been valued in our examples and are not defined here.

QRF 2.24.5.1 Where subject filter (ST-20, Required, Repeating) 00037

Definition: Identifies the department, system, or subsystem to which the query pertains. This field may repeat.

In our VXQ example #1, the query pertains to the Massachusetts immunization registry.

QRF 2.24.5.2 When data start date/time (TS-26, Optional) 00038

Definition: Data representing dates and times the same as or after this value should be included.

Time stamp (TS) data type must be in the format:
YYYY[MM[DD[HHMM[SS[.S[S[S]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

In our VXQ example #1, we have not specified a date for record inclusion, because we want the entire vaccine record.

QRF 2.24.5.3 When data end date/time (TS-26, Optional) 00039

Definition: Data representing dates and times the same as or before this value should be included.

Time stamp (TS) data type must be in the format:
YYYY[MM[DD[HHMM[SS[.S[S[S]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

In our VXQ example #1, we have not specified an end date for record inclusion, because we want the entire vaccine record.

QRF 2.24.5.4 What user qualifier (ST-60, Optional, Repeating) 00040

Definition: An identifier to further define characteristics of the data of interest. The field is allowed to repeat.

In our query examples, we have not valued this field.

QRF 2.24.5.5 Other query subject filter (ST-60, Optional, Repeating) 00041

Definition: A filter defined locally for use between two systems. This filter uses codes and field definitions which have specific meaning only to the applications and/or sites involved. The field is allowed to repeat. If one of the fields has no value, it is left empty in the repeating field. The requestor may send values for all the components that are known or may limit the items according to a search formula.

For vaccination data, QRF-5 should be structured as shown in the table below to transmit up to ten separate search "keys." These search keys are used to identify one patient's immunization record and include a wide variety of possible identifiers. The format of each possible search key is given below. These keys are transmitted as strings separated by repeat delimiters. The position of the components within QRF-5 is significant, as the position of an occurrence in this field defines the characteristic. Data items will be given in this order: <patient Social Security number>~<patient birth date>~<patient birth state>~<patient birth registration number>~<patient Medicaid number>~<mother's name>~<mother's maiden name>~<mother's Social Security number>~<father's name>~<father's Social Security number>. If one of the fields has no value, it is left empty in the repeating field.

Pos	Component	Data Type	Description/Examples
1	Patient Social Security Number~	ST	In U.S., use SSN without hyphens between 3rd and 4th digits and 5th and 6th digits, e.g., 123456789. In other countries, universal patient ID such as National Health Service number may be used.
2	Patient Birth Date~	DT	July 4, 1976 = 19760704
3	Patient Birth State~	ID	In U.S., use 2-letter postal code, e.g., IN, NY, CA. In other countries, locally applicable postal table may be used.
4	Patient Birth Registration Number~	ST	State birth certificate number
5	Patient Medicaid Number~	ST	When relevant
6	Mother's Name Last^First^Middle~	PN	<family name>^<given name>^<middle name or initial>^<suffix>^<prefix>^<degree>. E.g., Smith^Mary^Elizabeth
7	Mother's Maiden Name~	ST	Family name of mother before marriage. E.g., Jones
8	Mother's Social Security Number~	ST	In U.S., use SSN without hyphens between 3rd and 4th digits and 5th and 6th digits, e.g., 123456789. In other countries, universal patient ID such as National Health Service number may be used.

Pos	Component	Data Type	Description/Examples
9	Father’s Name Last^First^Middle~	PN	<family name>^<given name>^<middle name or initial>^<suffix>^<prefix>^<degree>. E.g.,Smith^Thomas^A^Jr
10	Father’s Social Security Number	ST	In U.S., use SSN without hyphens between 3rd and 4th digits and 5th and 6th digits, e.g., 123456789. In other countries, universal patient ID such as National Health Service number may be used.

In our VXQ #1 example, we are sending a query for the record of John Fitzgerald Kennedy, Jr. The patient's Social Security number is 256-94-6789; his birth date is June 7, 1990; his birth state is MA; his birth registration number is MA99999999; his Medicaid number is 88888888; his mother is Jacqueline Lee Kennedy, whose maiden name is Bouvier; his mother's Social Security number is 898666725; his father is John Fitzgerald Kennedy; and his father's Social Security number is 822546618.

2.23.3 **HL7 BATCH PROTOCOL**

Use of the File/Batch Header (BHS) and Trailer (BTS) Segments

A batch of HL7 messages (likely VXU) may be sent online using a common file transfer protocol or offline via tape or diskette. If needed, a group of batches may be sent using the file header and trailer segments. The FHS and FTS are optional and need not be sent if the transaction is one batch of records. The file/batch syntax follows.

```
[FHS]          (file header segment)
{  [BHS]       (batch header segment)
    {[MSH      (zero or more HL7 messages)
    ....
    ....
    ....
     ]}
   [BTS]              (batch trailer segment)
}
[FTS]          (file trailer segment)
```

Batch Protocol Example

BHS|^~\&||GA0000||MA0000|199505221605||VAXBAX950522G||11254|<CR>
MSH|...(1)
MSH|...(2)
MSH|...(3)
BTS|3<CR>

2.24.11 **File Header (FHS) Segment**

Used to head a file (group of batches).

FHS Attributes

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM#	ELEMENT NAME
1	1	ST	R			00067	File field separator
2	4	ST	R			00068	File encoding characters
3	15	ST	O			00069	File sending application
4	20	ST	O			00070	File sending facility
5	15	ST	O			00071	File receiving application
6	20	ST	O			00072	File receiving facility
7	26	TS	O			00073	File creation date/time
8	40	ST	O			00074	File security
9	20	ST	O			00075	File name/ID/type
10	80	ST	O			00076	File comment
11	20	ST	O			00077	File control ID
12	20	ST	O			00078	Reference file control ID

2.24.11.0 FHS field definitions

Usage notes: FHS fields 1-8 have the same definitions as the corresponding fields in the MSH segment and are not repeated here. We did not use the FHS segment in our examples, but provide the field definitions below for reference.

FHS 2.24.11.9 File name/ID/type (ST-20, Optional) 00075

Definition: This field can be used by the application processing the batch. It can have extra components if needed.

FHS 2.24.11.10 File header comment (ST-80, Optional) 00076

Definition: This is a free text comment field that is not further defined in the HL7 protocol.

FHS 2.24.11.11 File control ID (ST-20, Optional) 00077

Definition: This field is used to uniquely identify a particular file. It can be echoed back in FHS-12-reference file control ID.

FHS 2.24.11.12 Reference file control ID (ST-20, Optional) 00078

Definition: This field contains the value of FHS-11-file control ID when this file was originally transmitted. This field is not valued if this file is being sent for the first time.

2.24.12 **File Trailer (FTS) Segment**

Used to define the end of a file.

FTS Attributes

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM#	ELEMENT NAME
1	10	NM	O			00079	File batch count
2	80	ST	O			00080	File trailer comment

2.24.12.0 FTS field definitions

Usage notes: We did not use the FTS segment in our examples, but provide the field definitions below for reference.

FTS 2.24.12.1 File batch count (NM-10, Optional) 00079

Definition: This field contains the number of batches contained in the file.

FTS 2.24.12.2 File trailer comment (ST-80, Optional) 00080

Definition: The use of this free text field is not further defined in the HL7 protocol.

2.24.13 **Batch Header (BHS) Segment**

Used to define the start of a batch.

BHS Attributes

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM#	ELEMENT NAME
1	1	ST	R			00081	Batch field separator
2	3	ST	R			00082	Batch encoding characters
3	15	ST	O			00083	Batch sending application
4	20	ST	O			00084	Batch sending facility
5	15	ST	O			00085	Batch receiving application
6	20	ST	O			00086	Batch receiving facility
7	26	TS	O			00087	Batch creation date/time
8	40	ST	O			00088	Batch security
9	20	ST	O			00089	Batch name/ID/type
10	80	ST	O			00090	Batch comment
11	20	ST	O			00091	Batch control ID
12	20	ST	O			00092	Reference batch control ID

2.24.13.0 BHS field definitions

Usage notes: BHS fields 1-8 have the same definitions as the corresponding fields in the MSH segment and are not repeated here. We did not use the BHS segment in our examples, but provide the field definitions below for reference.

BHS 2.24.13.9 Batch name/ID/type (ST-20, Optional) 00089

Definition: This field can be used by the application processing the batch. It can have extra components if needed.

BHS 2.24.13.10 Batch comment (ST-80, Optional) 00090

Definition: This field is a comment field that is not further defined in the HL7 protocol.

BHS 2.24.13.11 Batch control ID (ST-20, Optional) 00091

Definition: This field is used to uniquely identify a particular batch. It can be echoed back in BHS-12-reference batch control ID if an answering batch is needed.

BHS 2.24.13.12 Batch reference batch control ID (ST-20, Optional) 00092

Definition: This field contains the value of BHS-11-batch control ID when this batch was originally transmitted. This field is not valued if this batch is being sent for the first time.

2.24.14 **Batch Trailer (BTS) Segment**

Used to define the end of a batch.

BTS Attributes

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM#	ELEMENT NAME
1	10	ST	O			00093	Batch message count
2	80	ST	O			00094	Batch comment
3	100	NM	O	Y		00095	Batch totals

2.24.14.0 BTS field definitions

Usage notes: We did not use the BTS segment in our examples, but provide the field definitions below for reference.

BHS 2.24.14.1 Batch message count (ST-10, Optional) 00093

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

BHS 2.24.14.2 Batch comment (ST-80, Optional) 00094

Definition: This field is a comment field that is not further defined in the HL7 protocol.

BHS 2.24.14.3 Batch totals (NM-100, Optional, Repeating) 00095

Definition: This field may carry, as separate repeating components, as many types of totals as needed for the batch. Each component is an NM data type. This field may be defined as a CM data type for backwards compatibility with HL7 2.2 and 2.1. New users of the field should use the HL7 2.3 data type of NM and define it as “repeating” as illustrated below.

Components: <total 1 (NM)>~<total 2 (NM)>~....

3.3 PATIENT ADMINISTRATION MESSAGE SEGMENTS

3.3.2 Patient Identification (PID) Segment

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.

PID Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00104	Set ID - PID
2	20	CX	B			00105	Patient ID
3	**20**	**CX**	**R**	**Y**		**00106**	**Patient identifier list**
4	20	CX	B	Y		00107	Alternate patient ID - PID
5	**48**	**XPN**	**R**	**Y**		**00108**	**Patient name**
6	**48**	**XPN**	**O**	**Y**		**00109**	**Mother's maiden name**
7	**26**	**TS**	**O**			**00110**	**Date/time of birth**
8	**1**	**IS**	**O**		**0001**	**00111**	**Sex**
9	48	XPN	O	Y		00112	Patient alias
10	80	CE	O	Y	0005	00113	Race
11	**106**	**XAD**	**O**	**Y**		**00114**	**Patient address**
12	4	IS	B		0289	00115	County code
13	40	XTN	O	Y		00116	Phone number - home
14	40	XTN	O	Y		00117	Phone number - business
15	60	CE	O		0296	00118	Primary language
16	80	CE	O		0002	00119	Marital status
17	80	CE	O		0006	00120	Religion
18	20	CX	O			00121	Patient account number
19	16	ST	B			00122	SSN number - patient
20	25	DLN CX	O			00123	Driver's license number - patient
21	20	CE	O	Y		00124	Mother's identifier
22	80	ST	O	Y	0189	00125	Ethnic group
23	60	ID	O			00126	Birth place
24	1	NM	O		0136	00127	Multiple birth indicator
25	2	CE	O			00128	Birth order
26	80	CE	O	Y	0171	00129	Citizenship
27	60	CE	O		0172	00130	Veterans military status
28	80	TS	O		0212	00739	Nationality
29	26	ID	O			00740	Patient death date and time
30	1		O		0136	00741	Patient death indicator

3.3.2.0 PID field definitions

Usage notes: There are several PID fields that we do not anticipate that immunization registries will need to use, so we do not provide definitions for them here. These are PID-2,4,12,16-20,26-28. Several of these fields refer to types of patient identifiers. Previous versions of these guidelines based on HL7 Version 2.3 recommended that immunization registries use *PID-4 - Alternate patient ID-PID* to record the patient's birth certificate or birth registration number assigned by the state at birth. In addition, it was formerly recommended that the patient's Social Security number be recorded in *PID-19 - SSN - patient*. With Version 2.3.1, **HL7 recommends using *PID-3-patient identifier list* for all patient identifiers.** NIP encourages immunization registries to conform to the HL7 Version 2.3.1 recommendation by repeating PID-3 to report these identifiers along with the appropriate identifier type code (*User-defined Table 0203 - Identifier type*).

PID 3.3.2.1 Set ID - PID (SI-4, Optional) 00104

Definition: The Set ID field numbers the repetitions of the segment. For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

> SI data type is a non-negative integer in the form of an NM field. The uses of this data type are defined in the chapters defining the segments and messages in which it is used.

The VXX example shows the use of this field to number the four PID segments.

PID 3.3.2.3 Patient identifier list (CX-20, Required, Repeating) 00106

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

> CX data type components: <ID (ST)>^<check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)>^<identifier type code (IS)>^<assigning facility (HD)>
>
> Components are defined as follows:
> (1) ID number (ST).
> (2) Check digit (ST). Defined as in the CK data type except as a ST. The check digit used in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null.
> (3) Code identifying check digit scheme employed (ID). Refer to *HL7 Table 0061 - Check digit scheme* for valid values.
> (4) Assigning authority (HD).
> Subcomponents of (4): <application identifier 1 (ID)> & <application identifier 2 (ID)> & <application identifier 3 (ID)> & <application identifier 4 (ID)> & <application identifier 5 (ID)> & <application identifier 6 (ID)>
> (5) Identifier type code (IS). A code corresponding to the type of identifier. This code may be used as a qualifier to the "Assigning authority" component. Refer to *User-defined Table 0203 - Identifier type* for suggested values.
> (6) Assigning facility (HD). The place or location identifier where the identifier was first assigned to the patient–part of the history of the identifier.
> Subcomponents of (6): <namespace ID (IS)>&<universal ID (ST)>&<universal ID type (ID)>

HL7 recommends that this field be used to record all patient identifiers. For that reason, the type code should always be used to identify what type of identifier is being listed. Values for the type code are found in *User-defined Table 0203 - Identifier type*.

In our VXR example, we have listed a state registry ID, a local registry ID, the provider's medical record number, the patient's Social Security number, and the patient's Medicaid number. Other identifiers, such as WIC client number, birth certificate number, etc. may also be listed in this field.

PID 3.3.2.5 Patient name (XPN-48, Required, Repeating) 00108

Definition: The current, assumed legal name of the patient should be sent in this field. The name type code in this field should always be "L - Legal." All other names for the patient should be sent in *PID-9-patient alias*. Repetition of this field is allowed only for representing the same name in different character sets, a situation that will rarely arise. Therefore, for practical purposes this field should be considered not repeating.

> XPN data type components: <family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., JR or III) (ST)>^<prefix (e.g., DR) (ST)>^<degree (e.g., MD) (IS)>^<name type code (ID)>^<name representation code (ID)>
>
> For valid values, refer to *User-defined Table 0360 - Degree* for the degree component, to *HL7 Table 0200 - Name type* for the name type code, and to *HL7 Table 4000 - Name/address representation* for the name representation code.

In our VXU #1, VXU #2, and VXR examples, the patient is John Fitzgerald Kennedy, Jr., and the name type code is “L” for “Legal.” In all of our example fields that use the XPN data type, we do not value the last component because all of our messages use an alphabetic name representation.

PID 3.3.2.6 Mother's maiden name (XPN-48, Optional) 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. The name type code should be valued “M” for “Maiden Name.” If a system needs additional information about the mother, the NK1 segment should be used.

> XPN data type components: <family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., JR or III) (ST)>^<prefix (e.g., DR) (ST)>^<degree (e.g., MD) (IS)>^<name type code (ID)>^<name representation code (ID)>
>
> For valid values, refer to *User-defined Table 0360 - Degree* for the degree component, to *HL7 Table 0200 - Name type* for the name type code, and to *HL7 Table 4000 - Name/address representation* for the name representation code.

In our VXU #1, VXU #2, and VXR examples, the mother's maiden name is Bouvier, and the name type code is “M.”

PID 3.3.2.7 Date of birth (TS-26, Optional) 00110

Definition: This field contains the patient's date and (if applicable) time of birth. If not present, the HHMM portion will default to 0000.

> Time stamp (TS) data type must be in the format:
> YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>
>
> Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

In our examples that value this field, the patient's date of birth is June 7, 1990.

PID 3.3.2.8 Sex (IS-1, Optional) 00111

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

> The IS data type follows the formatting rules for an ST field except that it is drawn from a site-defined (or user-defined) table of legal values.

In our examples that value this field, the patient's sex is male.

PID 3.3.2.9 Patient alias (XPN-48, Optional, Repeating) 00112

Definition: This field contains names by which the patient has been known at some time.

> XPN data type components: <family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., JR or III) (ST)>^<prefix (e.g., DR) (ST)>^<degree (e.g., MD) (IS)>^<name type code (ID)>^<name representation code (ID)>
>
> For valid values, refer to *User-defined Table 0360 - Degree* for the degree component, to *HL7 Table 0200 - Name type* for the name type code, and to *HL7 Table 4000 - Name/address representation* for the name representation code.

In our VXU #2 and VXR examples, we have used this field to indicate a different birth name, Baby Boy Kennedy. The name type code is valued “B.”

PID 3.3.2.10 Race (CE-80, Optional, Repeating) 00113

Definition: This field identifies the patient's race. Refer to *User-defined Table 0005 - Race* for suggested values. State- or locally-defined codes may be listed in the first triplet. According to HL7, the second triplet of the CE data type for race (alternate identifier, alternate text, and name of alternate coding system) is reserved for codes consistent with the categories established by the U.S. Office of Management and Budget (OMB). When both triplets are used, the local codes must map to the OMB-compliant codes. This *Guide* provides temporary values in *User-defined Table 0005 - Race* to be used in the second triplet until OMB-compliant codes are available. When the OMB-compliant codes become available, they will be made available on our website at <www.cdc.gov/nip/registry> and incorporated into future revisions of this *Guide*.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.

(2) Text (ST). Name or description of the item in question.

(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.

(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our VXU #2 and VXR examples, the patient's race is "white" and we have used this field to indicate a state's race code and the temporary code to which it maps. When the OMB-compliant codes are available, the example will be revised to map to the permanent OMB-compliant code.

PID 3.3.2.11 Patient address (XAD-106, Optional, Repeating) 00114

Definition: This field lists the mailing address of the patient. Multiple addresses for the same person may be sent in the following sequence: the primary mailing address must be sent first in the sequence; if the mailing address is not sent, then a repeat delimiter must be sent in the first sequence. If there is only one repetition of this field and an address type is not given, it is assumed to be the primary mailing address.

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

For valid values in these components, refer to *User-defined Table 0212 - Nationality* for country codes, HL7 *Table 0190 - Address type* for address type codes, *User-defined Table 0289 - County/parish* for county/parish codes, *User-defined Table 0288 - Census Tract* for census tract codes, and *HL7 Table 4000 - Name/address representation* for address representation codes.

We recommend using the USPS format for recording street address, other designation, city, state, and zip or postal code (available at <www.usps.gov>). When sending multiple addresses, the appropriate type code must be indicated. The address order is by local convention, however, we recommend that immunization registries send in the following order: 1) primary (current) mailing address (required to be first); 2) **place of birth (may be used to indicate facility address and county; see *PID-23-Birth place* for indicating the name of the birth facility)**; and 3) residence at birth (registries may choose to indicate county and state alone). Note that county should not be duplicated in the "other geographic designation" component. Items to include here might be metropolitan statistical area (MSA) codes (available at <www.census.gov>) or school district number, for example.

In our VXU #2 and VXR examples, we have listed the current mailing address, birth facility address, and residence county at birth. The birth facility address is recorded here, but the birth facility name is recorded in PID-23.

PID 3.3.2.13 Phone number - home (XTN-40, Optional, Repeating) 00116

Definition: The patient's personal phone numbers. All personal phone numbers for the patient are sent in this sequence. The first sequence is considered the primary number. If the primary number is not sent, then a repeat delimiter is sent in the first sequence.

XTN data type format and components: [NNN] [(999)]999-9999[X99999][B99999][C any text]^<telecommunication use code (ID)>^<telecommunication equipment type (ID)>^<email address (ST)>^<country code (NM)>^<area/city code (NM)>^<phone number (NM)>^<extension (NM)>^<any text (ST)>

Refer to *HL7 Table 0201 - Telecommunication use code* and *HL7 Table 0202 - Telecommunication equipment type* for valid values.

In our VXU #2 and VXR examples, we have listed the primary home phone number for the patient.

PID 3.3.2.14 Phone number - business (XTN-40, Optional, Repeating) 00117

Definition: Patient's business phone number. Repetitions are permitted, with the first one the primary number. If the primary number is not sent, then a repeat delimiter is sent in the first sequence.

XTN data type format and components: [NNN] [(999)]999-9999[X99999][B99999][C any text]^<telecommunication use code (ID)>^<telecommunication equipment type (ID)>^<email address (ST)>^<country code (NM)>^<area/city code (NM)>^<phone number (NM)>^<extension (NM)>^<any text (ST)>

Refer to *HL7 Table 0201 - Telecommunication use code* and *HL7 Table 0202 - Telecommunication equipment type* for valid values.

In our examples, we have not valued this field.

PID 3.3.2.15 Primary language (CE-60, Optional) 00118

Definition: Patient's primary language. Refer to *User-defined Table 0296 - Language* (ISO 639) for suggested values.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
(2) Text (ST). Name or description of the item in question.
(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our VXU #2 and VXR examples, the patient's primary language is English.

PID 3.3.2.21 Mother's identifier (CX-20, Optional, Repeating) 00124

Definition: This field is used as a link field for newborns, for example. Typically a patient ID or account number may be used. This field can contain multiple identifiers for the same mother. Immunization registries will typically carry the majority of information about the mother in the NK1 segment.

CX data type components: <ID (ST)>^<check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)>^<identifier type code (IS)>^<assigning facility (HD)>

Components are defined as follows:

(1) ID number (ST)

(2) Check digit (ST) (The check digit used in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null.)

(3) Code identifying check digit scheme employed (ID) Refer to *HL7 Table 0061 - Check digit scheme* for valid values**.**

(4) Assigning authority (HD)
Subcomponents of (4): <application identifier 1 (ID)> & <application identifier 2 (ID)> & <application identifier 3 (ID)> & <application identifier 4 (ID)> & <application identifier 5 (ID)> & <application identifier 6 (ID)>

(5) Identifier type code (IS)
A code corresponding to the type of identifier. This code may be used as a qualifier to the "Assigning authority" component. Refer to *User-defined Table 0203 - Identifier type* for suggested values.

(6) Assigning facility (HD)
Definition: The place or location identifier where the identifier was first assigned to the patient–part of the history of the identifier.
Subcomponents of (6): <namespace ID (IS)>&<universal ID (ST)>&<universal ID type (ID)>

In our examples, we have not valued this field. However, immunization registries may value this field with any number of identifiers for the patient's mother using type codes as described in PID-3 above and shown in *User-defined Table 0203 - Identifier type*.

PID 3.3.2.22 Ethnic group (CE-80, Optional, Repeating) 00125

Definition: This field further defines patient ancestry. Suggested values are listed in *User-defined Table 0189 - Ethnic group*. State- or locally-defined codes may be listed in the first triplet. According to HL7, the second triplet of the CE data type for Ethnic group (alternate identifier, alternate text, and name of alternate coding system) is reserved for codes consistent with the categories established by the U.S. Office of Management and Budget (OMB). When both triplets are used, the other codes must map to the OMB-compliant codes. *User-defined Table 0189 - Ethnic group* of this *Guide* provides temporary values to be used in the second triplet until OMB-compliant codes are available. When the OMB-compliant codes become available, they will be made available on our website at <www.cdc.gov/nip/registry> and incorporated into future revisions of this *Guide*.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.

(2) Text (ST). Name or description of the item in question.

(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.

(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our VXU #2 and VXR examples, the patient's ethnic ancestry is "not of Hispanic origin," and we have used this field to indicate a state's ethnicity code and the temporary code to which it maps. When the OMB-compliant codes are available, the example will be revised to map to the permanent OMB-compliant code.

PID 3.3.2.23 Birth place (ST-60, Optional) 00126

Definition: This field gives the location of the patient's birth. Immunization registries may use this field for the facility where the patient was born. This information may be used in conjunction with *PID-11-Patient address* with address type as "location of birthing facility."

In our VXU #2 and VXR examples, we have specified “Children’s Hospital” as the birth facility. The birth facility address may be transmitted in PID-11.

PID 3.3.2.24 Multiple birth indicator (ID-1, Optional) 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.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our examples, we have not valued this field.

PID 3.3.2.25 Birth order (NM-2, Optional) 00128

Definition: If the patient was part of a multiple birth, a number indicating the patient's birth order is entered in this field. This field should only be used if *PID-24-Multiple birth indicator* is valued as “yes.”

In our examples, we have not valued this field.

PID 3.3.2.29 Patient death date and time (TS-26, Optional) 00740

Definition: This field contains the date and time at which the patient death occurred. This field should only be valued if PID-30 is valued “yes.”

Time stamp (TS) data type must be in the format:
YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

In our examples, we have not valued this field.

PID 3.3.2.30 Patient death indicator (ID-1, Optional) 00741

Definition: This field indicates whether or not the patient is deceased. Refer to *HL7 Table 0136 - Yes/No indicator* for valid values.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our examples, we have not valued this field.

3.3.9 **Patient Additional Demographic (PD1) Segment**

The patient additional demographic segment contains demographic information that is likely to change about the patient.

PD1 Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	2	IS	O	Y	0223	00755	Living dependency
2	2	IS	O		0220	00742	Living arrangement
3	90	XON	O	Y		00756	Patient primary facility
4	90	XCN	O	Y		00757	Patient primary care provider name & ID number
5	2	IS	O		0231	00745	Student indicator
6	2	IS	O		0295	00753	Handicap
7	2	IS	O		0315	00759	Living will
8	2	IS	O		0316	00760	Organ donor
9	1	ID	O		0136	00761	Separate bill
10	20	CX	O	Y		00762	Duplicate patient
11	80	CE	O		0215	00763	Publicity code
12	1	ID	O		0136	00744	Protection indicator
13							Reserved for 2.3.2
14	40	IS	O		NIP006	xxxxx	Patient registry status
15	8	DT	O			xxxxx	Registry status effective date

3.3.9.0 PD1 field definitions

Usage notes: We do not anticipate that immunization registries will use several PD1 fields (PD1-1,2,5-9; therefore, we do not provide definitions for them here. PD1-14 and 15 have been requested for HL7's Version 2.3.2, but are not yet a part of the standard. Even so, immunization registries may use the fields as described since encoding rules allow addition of unexpected fields at the end of segments.

PD1 3.3.9.3 Patient primary facility (XON-90, Optional, Repeating) 00756

Definition: This field contains the name and identifier that specifies the primary care facility for the patient. Multiple names and identifiers are allowed for the same facility. The legal name of the facility must be sent in the first sequence. If the legal name of the facility is not sent, then the repeat delimiter must be sent in the first sequence. Immunization registries may use this field to indicate a patient's medical home. Hierarchical organizational structures may be reflected here. For example, after the legal organization name is sent in the first sequence, a medical home facility name may also be sent, with the appropriate identifier type indicated.

> XON data type components: <organization name (ST)>^ <organization name type code (IS)>^<ID Number (NM)>^<check digit (NM)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)>^<identifier type code (IS)>^<assigning facility ID (HD)>^<name representation code (ID)>
>
> Subcomponents of assigning authority: <namespace ID (IS)>&<universal ID (ST)>&<universal ID type (ID)>
>
> Subcomponents of assigning facility: <namespace ID (IS)>&<universal ID (ST)>&<universal ID type (ID)>
>
> Refer to *User-defined Table 0204 - Organizational Name Type* for the second component, to *HL7 Table 0061 - Check Digit Scheme* for the fifth component, to *User-defined Table 0203 - Identifier Type* for the seventh component, and to *HL7 Table 4000 - Name/address representation* for the last component.

In our VXU #2 and VXR examples, we have listed a medical home organization and a corresponding facility.

PD1 3.3.9.4 Patient primary care provider name & ID no. (XCN-90, Optional, Repeating) 00757

Definition: This field contains the provider name and ID of the identified primary care provider. This information is usually selected by the patient at the time of enrollment. This field repeats to allow multiple names for the same person. The legal name must be sent in the first sequence. If the legal name is not sent, then the repeat delimiter must be sent in the first sequence. Immunization registries may use this field to indicate a patient's primary care provider or medical home provider.

Components of the XCN data type: <ID number (ST)>^<family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., Jr. or III) (ST)>^<prefix (e.g., Dr.) (ST)>^<degree (e.g., MD) (IS)>^<source table (IS)>^<assigning authority (HD)>^<name type code (ID)>^<identifier check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<identifier type code (IS)>^<assigning facility ID (HD)>^<name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)>

In our VXU #2 and VXR examples, we have listed Dr. Primary Care as the primary care physician.

PD1 3.3.9.10 Duplicate patient (CX-20, Optional, Repeating) 00762

Definition: This field indicates that a patient is the same as, or a duplicate of, another patient found on the sending system. The intent is to be informational only–no action is required by the receiver. Include the patient identifier if the sender knows an identifier for the patient. The assigning authority and identifier type code are strongly recommended for all CX data types. Refer to *User-defined Table 0203 - Identifier type* for suggested values for the identifier type code.

CX data type components: <ID (ST)>^<check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)>^<identifier type code (IS)>^<assigning facility (HD)>

Components are defined as follows:

(1) ID number (ST)

(2) Check digit (ST) (The check digit used in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null.)

(3) Code identifying check digit scheme employed (ID) Refer to *HL7 Table 0061 - Check digit scheme* for valid values.

(4) Assigning authority (HD)
Subcomponents of (4): <application identifier 1 (ID)> & <application identifier 2 (ID)> & <application identifier 3 (ID)> & <application identifier 4 (ID)> & <application identifier 5 (ID)> & <application identifier 6 (ID)>

(5) Identifier type code (IS)
A code corresponding to the type of identifier. This code may be used as a qualifier to the "Assigning authority" component. Refer to *User-defined Table 0203 - Identifier type* for suggested values.

(6) Assigning facility (HD)
Definition: The place or location identifier where the identifier was first assigned to the patient–part of the history of the identifier.
Subcomponents of (6): <namespace ID (IS)>&<universal ID (ST)>&<universal ID type (ID)>

In our examples, we have not valued this field.

PD1 3.3.9.11 Publicity code (CE-80, Optional) 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. This field will be used by immunization registries to indicate whether reminder/recall notices may be sent to a patient. Refer to *User-defined Table 0215 - Publicity code* for valid values.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.

(2) Text (ST). Name or description of the item in question.

(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.

(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our VXU #2 and VXR examples, the patient may be sent both reminder and recall notices by mail.

PD1 3.3.9.12 Protection indicator (ID-1, Optional) 00744

Definition: This field identifies whether access to information about this person should be kept from users who do not have adequate authority for the patient. Refer to *HL7 Table 0136 - Yes/No indicator* for valid values.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

This field will be used by immunization registries to indicate whether or not consent has been given (or assumed) for record sharing. It can have 3 values with the following meanings: 1) null, designated by “” (see section 2.6 of HL7 Version 2.3.1 for discussion of null value). Null will indicate that patient/guardian has not yet been asked to give consent to share or has not responded; 2) Y - sharing is allowed (patient has given consent or consent is implied); 3) N - sharing is not allowed (patient has refused consent).

For registries with required consent (e.g., California), the suggested default value for this field is null (“”) to indicate that consent has not yet been requested or received. For registries with implied consent (e.g., Georgia), the suggested default value is "Y" to allow sharing unless the patient specifically refuses consent.

When a registry receives a request for a record for which record sharing is not permitted (value is N), that application should return a QAK query acknowledgment with the query response status field valued as "NF," meaning "no data found, no errors." No other information should be provided. When PD1-12 is valued as "N," that record should never be shared outside the scope outlined by the consent agreement. In the mistaken case that a sending application sends or updates a record for which PD1-12 is "N," the receiving application should not process the message. A QAK segment should be returned to the sending application indicating "AE" for "application error" in the query response status field. MSA-3, Text message, should be valued to indicate that PD1-12 was “N” so the record was not processed and should not be re-sent.

In our VXU #2 and VXR examples, the patient has consented to sharing, so the value indicated is “Y.”

PD1 3.3.9.13 To be included in Version 2.3.2.

PD1 3.3.9.14 Patient registry status (IS-40, Optional) xxxxx

Note: This field has been requested as an addition to HL7's Version 2.3.2, but may be used by immunization registries now.

Definition: This field identifies the registry status of the patient. Examples include active, inactive, lost to follow-up, moved or gone elsewhere (MOGE). Refer to *User-defined Table NIP006 - Patient*

registry status for suggested values. A deceased patient should be recorded in PID-30, with date and time of death recorded in PID-29.

> The IS data type follows the formatting rules for an ST field except that it is drawn from a site-defined (or user-defined) table of legal values.

In our VXR example, this is an active patient.

PD1 3.3.9.15 Patient registry status effective date (DT-8, Optional) xxxxx

Note: This field has been requested as an addition to HL7's Version 2.3.2, but may be used by immunization registries now.

Definition: Effective date for registry status reported in PD1-14. A deceased patient should be recorded in PID-30, with date and time of death recorded in PID-29.

DT data type format: YYYY[MM[DD]]

In our VXR example, the birth date of June 7, 1990, is the effective date of active status shown in PD1-14.

3.3.3 **Patient Visit (PV1) Segment**

The PV1 segment is used to send visit-specific information.

PV1 Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00131	Set ID - PV1
2	1	IS	R		0004	00132	Patient class
3	80	PL	O			00133	Assigned patient location
4	2	IS	O		0007	00134	Admission type
5	20	CX	O			00135	Preadmit number
6	80	PL	O			00136	Prior patient location
7	60	XCN	O	Y	0010	00137	Attending doctor
8	60	XCN	O	Y	0010	00138	Referring doctor
9	60	XCN	O	Y	0010	00139	Consulting doctor
10	3	IS	O		0069	00140	Hospital service
11	80	PL	O			00141	Temporary location
12	2	IS	O		0087	00142	Preadmit test indicator
13	2	IS	O		0092	00143	Re-admission indicator
14	3	IS	O		0023	00144	Admit source
15	2	IS	O	Y	0009	00145	Ambulatory status
16	2	IS	O		0099	00146	VIP indicator
17	60	XCN	O	Y	0010	00147	Admitting doctor
18	2	IS	O		0018	00148	Patient type
19	20	CX	O			00149	Visit number
20	50	FC	O	Y	0064	00150	Financial class
21	2	IS	O		0032	00151	Charge price indicator
22	2	IS	O		0045	00152	Courtesy code
23	2	IS	O		0046	00153	Credit rating
24	2	IS	O	Y	0044	00154	Contract code
25	8	DT	O	Y		00155	Contract effective date
26	12	NM	O	Y		00156	Contract amount
27	3	NM	O	Y		00157	Contract period
28	2	IS	O		0073	00158	Interest code
29	1	IS	O		0110	00159	Transfer to bad debt code
30	8	DT	O			00160	Transfer to bad debt date
31	10	IS	O		0021	00161	Bad debt agency code
32	12	NM	O			00162	Bad debt transfer amount
33	12	NM	O			00163	Bad debt recovery amount
34	1	IS	O		0111	00164	Delete account indicator
35	8	DT	O			00165	Delete account date
36	3	IS	O		0112	00166	Discharge disposition
37	25	CM	O		0113	00167	Discharged to location
38	80	CE	O		0114	00168	Diet type
39	2	IS	O		0115	00169	Servicing facility
40	1	IS	B		0116	00170	Bed status
41	2	IS	O		0117	00171	Account status
42	80	PL	O			00172	Pending location
43	80	PL	O			00173	Prior temporary location
44	26	TS	O			00174	Admit date/time
45	26	TS	O			00175	Discharge date/time
46	12	NM	O			00176	Current patient balance
48	12	NM	O			00178	Total adjustments
47	12	NM	O			00177	Total charges
49	12	NM	O			00179	Total payments

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
50	20	CX	O		0203	00180	Alternate visit ID
51	1	IS	O		0326	01226	Visit indicator
52	60	XCN	O	Y	0010	01274	Other healthcare provider

3.3.3.0 PV1 field definitions

Usage notes: We do not anticipate that immunization registries will need to use several PV1 fields (PV1-3-19,21-52); therefore, we do not provide definitions for them here.

PV1 3.3.3.1 Set ID - PV1 (SI-4, Optional) 00131

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.

> SI data type is a non-negative integer in the form of an NM field. The uses of this data type are defined in the chapters defining the segments and messages in which it is used.

In our examples, we have not valued this field.

PV1 3.3.3.2 Patient class (IS-1, Required) 00132

Definition: This field is used by systems to categorize patients by site. It does not have a consistent industry-wide definition. We recommend that immunization registries record all patients as recurring. Refer to *User-defined Table 0004 - Patient class* for suggested values.

> The IS data type follows the formatting rules for an ST field except that it is drawn from a site-defined (or user-defined) table of legal values.

In our VXU #2 and VXR examples, this is a recurring patient.

PV1 3.3.3.20 Financial class (FC-50, Optional, Repeating) 00150

Definition: This field contains the financial class(es) assigned to the patient for the purpose of identifying sources of reimbursement. Immunization registries may use this field to indicate several items: 1) eligibility for the Vaccines For Children (VFC) program; 2) eligibility for state or local reimbursement programs; and 3) type of insurance plan (e.g., Medicaid, HMO, selfpay, etc.) Refer to *User-defined Table 0064 - Financial class* for suggested values.

> FC data type components: <financial class (IS)>^<effective date (TS)>
>
> (1) Financial class (IS). The financial class assigned to a person. Refer to *User defined Table 0064 - Financial class* for suggested values.
> (2) Effective date (TS). The effective date/time of the person's assignment to the financial class specified in the first component.

In our VXU #2 and VXR examples, the patient is VFC-eligible because he is a Medicaid patient.

3.3.4 **Patient Visit - Additional Information (PV2) Segment**

The PV2 segment is a continuation of the PV1 segment visit-specific information.

PV2 Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	80	PL	C			00181	Prior pending location
2	60	CE	O		0129	00182	Accommodation code
3	60	CE	O			00183	Admit reason
4	60	CE	O			00184	Transfer reason
5	25	ST	O	Y		00185	Patient valuables
6	25	ST	O			00186	Patient valuables location
7	2	IS	O		0130	00187	Visit user code
8	26	TS	O			00188	Expected admit date/time
9	26	TS	O			00189	Expected discharge date/time
10	3	NM	O			00711	Estimated length of inpatient stay
11	3	NM	O			00712	Actual length of inpatient stay
12	50	ST	O			00713	Visit description
13	90	XCN	O	Y		00714	Referral source code
14	8	DT	O			00715	Previous service date
15	1	ID	O		0136	00716	Employment illness related indicator
16	1	IS	O		0213	00717	Purge status code
17	8	DT	O			00718	Purge status date
18	2	IS	O		0214	00719	Special program code
19	1	ID	O		0136	00720	Retention indicator
20	1	NM	O			00721	Expected number of insurance plans
21	1	IS	O	Y	0215	00722	Visit publicity code
22	1	ID	O		0136	00723	Visit protection indicator
23	90	XON	O	Y		00724	Clinic organization name
24	2	IS	O		0216	00725	Patient status code
25	1	IS	O		0217	00726	Visit priority code
26	8	DT	O			00727	Previous treatment date
27	2	IS	O		0112	00728	Expected discharge disposition
28	8	DT	O			00729	Signature on file date
29	8	DT	O			00730	First similar illness date
30	80	CE	O		0218	00731	Patient charge adjustment code
31	2	IS	O		0219	00732	Recurring service code
32	1	ID	O		0136	00733	Billing media code
33	26	TS	O			00734	Expected surgery date & time
34	1	ID	O		0136	00735	Military partnership code
35	1	ID	O		0136	00736	Military non-availability code
36	1	ID	O		0136	00737	Newborn baby indicator
37	1	ID	O		0136	00738	Baby detained indicator

3.3.4.0 PV2 field definitions

Usage notes: We do not anticipate that immunization registries will need to use any of the fields in the PV2 message segment; therefore, we do not define any of these fields further.

3.3.5 **Next of Kin (NK1) Segment**

Contains information about the patient's next of kin and other associated or related parties. This is a repeating segment, allowing for multiple related parties.

NK1 Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	**4**	**SI**	**R**			**00190**	**Set ID - NK1**
2	**48**	**XPN**	**O**	**Y**		**00191**	**Name**
3	**60**	**CE**	**O**		**0063**	**00192**	**Relationship**
4	106	XAD	O	Y		00193	Address
5	40	XTN	O	Y		00194	Phone number
6	40	XTN	O	Y		00195	Business phone number
7	60	CE	O		0131	00196	Contact role
8	8	DT	O			00197	Start date
9	8	DT	O			00198	End date
10	60	ST	O			00199	Next of kin/AP job title
11	20	JCC	O		0327/ 0328	00200	Next of kin/AP job code/class
12	20	CX	O			00201	Next of kin/AP employee number
13	90	XON	O	Y		00202	Organization name - NK1
14	80	CE	O		0002	00119	Marital status
15	1	IS	O		0001	00111	Sex
16	26	TS	O			00110	Date/time of birth
17	2	IS	O	Y	0223	00755	Living dependency
18	2	IS	O	Y	0009	00145	Ambulatory status
19	80	CE	O	Y	0171	00129	Citizenship
20	60	CE	O		0296	00118	Primary language
21	2	IS	O		0220	00742	Living arrangement
22	80	CE	O		0215	00743	Publicity code
23	1	ID	O		0136	00744	Protection indicator
24	2	IS	O		0231	00745	Student indicator
25	80	CE	O		0006	00120	Religion
26	48	XPN	O	Y		00746	Mother’s maiden name
27	80	CE	O		0212	00739	Nationality
28	80	CE	O	Y	0189	00125	Ethnic group
29	80	CE	O	Y	0222	00747	Contact reason
30	48	XPN	O	Y		00748	Contact person’s name
31	40	XTN	O	Y		00749	Contact person’s telephone number
32	106	XAD	O	Y		00750	Contact person’s address
33	32	CX	O	Y		00751	Next of kin/AP’s identifiers
34	2	IS	O		0311	00752	Job status
35	80	CE	O	Y	0005	00113	Race
36	2	IS	O		0295	00753	Handicap
37	16	ST	O			00754	Contact person social security #

3.3.5.0 NK1 field definitions

Usage notes: We do not anticipate immunization registries using several NK1 fields (NK1-7-15,17-20,22-28,30-31,33-37); therefore, we do not provide definitions for them here. The NK1 segment should be used to send the mother’s full name (a core data element). *NK1-2 - Name* may be repeated to also send the mother’s maiden name. If the mother’s maiden name is sent in the NK1, it should also be mapped to *PID-6 - Mother’s maiden name*.

NK1 3.3.5.1 Set ID - NK1 (SI-4, Required) 00190

Definition: The Set ID field numbers the repetitions of the segment within its association with the PID. For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

> SI data type is a non-negative integer in the form of an NM field. The uses of this data type are defined in the chapters defining the segments and messages in which it is used.

In our VXX, VXU #2 and VXR examples, 1 indicates that this segment is the first set of next of kin data, in this case the mother's information, and 2 indicates that this is the second next of kin data, the father's.

NK1 3.3.5.2 Name (XPN-48, Optional, Repeating) 00191

Definition: This field gives 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. If the legal name is not sent, then the repeat delimiter must be sent in the first sequence.

> XPN data type components: <family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., JR or III) (ST)>^<prefix (e.g., DR) (ST)>^<degree (e.g., MD) (IS)>^<name type code (ID)>^<name representation code (ID)>
>
> For valid values, refer to *User-defined Table 0360 - Degree* for the degree component, to *HL7 Table 0200 - Name type* for the name type code, and to *HL7 Table 4000 - Name/address representation* for the name representation code.

In our VXU #1, VXU #2, and VXR examples, we have shown the **mother** as Jacqueline Lee Kennedy. In our VXU #2 and VXR examples, we have also shown the father as John Fitzgerald Kennedy.

NK1 3.3.5.3 Relationship (CE-60, Optional) 00192

Definition: This field defines the personal relationship of the next of kin. *User-defined Table 0063 -Relationship* gives suggested values from the X12N data transmission standard.

> The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:
>
> <identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
> <alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>
>
> CE data type components are defined as follows:
> (1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
> (2) Text (ST). Name or description of the item in question.
> (3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
> (4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our VXU #1, VXU #2, and VXR examples, we have used *User-defined Table 0063 - Relationship* code 32=**mother**. In our VXU #2 and VXR examples, we have also used code 33=father.

NK1 3.3.5.4 Address (XAD-106, Optional, Repeating) 00193

Definition: This field lists the mailing address of the next of kin/associated party. Multiple addresses for the same person may be sent in the following sequence: the primary mailing address must be sent first in the sequence; if the mailing address is not sent, then a repeat delimiter must be sent in the first sequence. If there is only one repetition of this field and an address type is not given, it is assumed to be the primary mailing address.

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

For valid values in these components, refer to *User-defined Table 0212 - Nationality* for country codes, HL7 *Table 0190 - Address type* for address type codes, *User-defined Table 0289 - County/parish* for county/parish codes, *User-defined Table 0288 - Census Tract* for census tract codes, and *HL7 Table 4000 - Name/address representation* for address representation codes.

We recommend using the USPS format for recording street address, other designation, city, state, and zip or postal code (available at <www.usps.gov>). When sending multiple addresses, the appropriate type code must be indicated.

In our examples, we have not valued this field.

NK1 3.3.5.5 Phone number (XTN-40, Optional, Repeating) 00194

Definition: The next of kin/associated party's personal phone numbers. All personal phone numbers for the next of kin/associated party are sent in this sequence. The first sequence is considered the primary number. If the primary number is not sent, then a repeat delimiter is sent in the first sequence.

XTN data type format and components: [NNN] [(999)]999-9999[X99999][B99999][C any text]^<telecommunication use code (ID)>^<telecommunication equipment type (ID)>^<email address (ST)>^<country code (NM)>^<area/city code (NM)>^<phone number (NM)>^<extension (NM)>^<any text (ST)>

Refer to *HL7 Table 0201 - Telecommunication use code* and *HL7 Table 0202 - Telecommunication equipment type* for valid values.

In our examples, we have not valued this field.

NK1 3.3.5.6 Business phone number (XTN-40, Optional, Repeating) 00195

Definition: Next of kin/associated party's business phone numbers. The first sequence is the primary number. If the primary number is not sent, then a repeat delimiter is sent in the first sequence.

XTN data type format and components: [NNN] [(999)]999-9999[X99999][B99999][C any text]^<telecommunication use code (ID)>^<telecommunication equipment type (ID)>^<email address (ST)>^<country code (NM)>^<area/city code (NM)>^<phone number (NM)>^<extension (NM)>^<any text (ST)>

Refer to *HL7 Table 0201 - Telecommunication use code* and *HL7 Table 0202 - Telecommunication equipment type* for valid values.

In our examples, we have not valued this field.

NK1 3.3.5.16 Date/time of birth (TS-26, Optional) 00110

Definition: This field contains the next of kin/associated party's date of birth.

Time stamp (TS) data type must be in the format:
YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

In our examples, we have not valued this field.

NK1 3.3.5.21 Living arrangement (IS-2, Optional) 00742

Definition: This field identifies the situation that the associated party lives in at his or her residential address. Refer to *User-defined Table 0220 - Living arrangement* for suggested values.

Immunization registries may use this field to record whether this associated party lives with the patient.

The IS data type follows the formatting rules for an ST field except that it is drawn from a site-defined (or user-defined) table of legal values.

In our examples, we have not valued this field.

NK1 3.3.5.29 Contact reason (CE-80, Optional, Repeating) 00747

Definition: This field identifies the role the next of kin/associated party plays with respect to the patient. Immunization registries may use this field to indicate the next of kin/associated party who is designated to receive reminder/recall notices, if applicable. This field may also be used to indicate the next of kin/associated party who is responsible for the patient's care. Refer to *User-defined Table 0222 - Contact reason* for suggested values.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
(2) Text (ST). Name or description of the item in question.
(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our examples, we have not valued this field.

NK1 3.3.5.33 Next of kin/associated party's identifiers (CX-32, Optional, Repeating) 00751

Definition: This field contains identifiers for the next of kin/associated party. Examples include Social Security number, driver's license number, Medicaid number, WIC client number, etc. This field, not *NK1-37 - Contact Person Social Security #*, should be used to record all identifiers, including SSN.

CX data type components: <ID (ST)>^<check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)>^<identifier type code (IS)>^<assigning facility (HD)>

Components are defined as follows:

(1) ID number (ST)
(2) Check digit (ST) (The check digit used in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null.)
(3) Code identifying check digit scheme employed (ID) Refer to *HL7 Table 0061 - Check digit scheme* for valid values.
(4) Assigning authority (HD)
Subcomponents of (4): <application identifier 1 (ID)> & <application identifier 2 (ID)> & <application identifier 3 (ID)> & <application identifier 4 (ID)> & <application identifier 5 (ID)> & <application identifier 6 (ID)>
(5) Identifier type code (IS)
A code corresponding to the type of identifier. This code may be used as a qualifier to the "Assigning authority" component. Refer to *User-defined Table 0203 - Identifier type* for suggested values.
(6) Assigning facility (HD)
Definition: The place or location identifier where the identifier was first assigned to the patient–part of the history of the identifier.
Subcomponents of (6): <namespace ID (IS)>&<universal ID (ST)>&<universal ID type (ID)>

In our VXU #2 and VXR examples, we show 898-66-6725 as the mother's SSN and 822-54-6618 as the father's.

6.4 FINANCIAL MANAGEMENT MESSAGE SEGMENTS

6.4.6 Insurance (IN1) Segment

The IN1 segment contains insurance policy coverage information necessary to produce properly pro-rated patient and insurance bills.

IN1 Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			00426	Set ID - IN1
2	60	CE	R		0072	00368	Insurance plan ID
3	59	CX	R	Y		00428	Insurance company ID
4	130	XON	O	Y		00429	Insurance company name
5	106	XAD	O	Y		00430	Insurance company address
6	48	XPN	O	Y		00431	Insurance co contact person
7	40	XTN	O	Y		00432	Insurance co phone number
8	12	ST	O			00433	Group number
9	130	XON	O	Y		00434	Group name
10	12	CX	O	Y		00435	Insured's group emp ID
11	130	XON	O	Y		00436	Insured's group emp name
12	8	DT	O			00437	Plan effective date
13	8	DT	O			00438	Plan expiration date
14	55	CM	O			00439	Authorization information
15	3	IS	O		0086	00440	Plan type
16	48	XPN	O	Y		00441	Name of insured
17	80	CE	O		0063	00442	Insured's relationship to patient
18	26	TS	O			00443	Insured's date of birth
19	106	XAD	O	Y		00444	Insured's address
20	2	IS	O		0135	00445	Assignment of benefits
21	2	IS	O	Y	0173	00446	Coordination of benefits
22	2	ST	O			00447	Coord of ben. Priority
23	1	ID	O		0136	00448	Notice of admission flag
24	8	DT	O			00449	Notice of admission date
25	1	ID	O		0136	00450	Report of eligibility flag
26	8	DT	O			00451	Report of eligibility date
27	2	IS	O		0093	00452	Release information code
28	15	ST	O			00453	Pre-admit cert (PAC)
29	26	TS	O			00454	Verification date/time
30	60	XCN	O	Y		00455	Verification by
31	2	IS	O		0098	00456	Type of agreement code
32	2	IS	O		0022	00457	Billing status
33	4	NM	O			00458	Lifetime reserve days
34	4	NM	O			00459	Delay before L.R. day
35	8	IS	O		0042	00460	Company plan code
36	15	ST	O			00461	Policy number
37	12	CP	O			00462	Policy deductible
38	12	CP	B			00463	Policy limit - amount
39	4	NM	O			00464	Policy limit - days
40	12	CP	B			00465	Room rate - semi-private
41	12	CP	B			00466	Room rate - private
42	60	CE	O		0066	00467	Insured's employment status
43	1	IS	O		0001	00468	Insured's sex
44	106	XAD	O	Y		00469	Insured's employer's address
45	2	ST	O			00470	Verification status
46	8	IS	O		0072	00471	Prior insurance plan ID
47	3	IS	O		0309	01227	Coverage type
48	2	IS	O		0295	00753	Handicap

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
49	12	CX	O	Y		01230	Insured's ID number

6.4.6.0 IN1 field definitions

Usage notes: This is an optional segment in the message syntax for VXR and VXU. We do not anticipate immunization registries using this segment and do not provide field definitions or examples here.

6.4.7 **Insurance Additional Information (IN2) Segment**

The IN2 segment contains additional insurance policy coverage and benefit information necessary for proper billing and reimbursement. Fields used by this segment are defined by HCFA or other regulatory agencies.

IN2 Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	59	CX	O	Y		00472	Insured's employee ID
2	11	ST	O			00473	Insured's social security number
3	130	XCN	O	Y		00474	Insured's employer name
4	1	IS	O		0139	00475	Employer information data
5	1	IS	O	Y	0137	00476	Mail claim party
6	15	ST	O			00477	Medicare health ins card number
7	48	XPN	O	Y		00478	Medicaid case name
8	45	ST	O			00479	Medicaid case number
9	48	XPN	O	Y		00480	Military sponsor name
10	20	ST	O			00481	Military ID number
11	80	CE	O		0342	00482	Dependent of military recipient
12	25	ST	O			00483	Military organization
13	25	ST	O			00484	Military station
14	14	IS	O		0140	00485	Military service
15	2	IS	O		0141	00486	Military rank/grade
16	3	IS	O		0142	00487	Military status
17	8	DT	O			00488	Military retire date
18	1	ID	O		0136	00489	Military non-avail cert on file
19	1	ID	O		0136	00490	Baby coverage
20	1	ID	O		0136	00491	Combine baby bill
21	1	ST	O			00492	Blood deductible
22	48	XPN	O	Y		00493	Special coverage approval name
23	30	ST	O			00494	Special coverage approval title
24	8	IS	O	Y	0143	00495	Non-covered insurance code
25	59	CX	O	Y		00496	Payor ID
26	59	CX	O	Y		00497	Payor subscriber ID
27	1	IS	O		0144	00498	Eligibility source
28	25	CM	O	Y	0145/ 0146	00499	Room coverage type/amount
29	25	CM	O	Y	0147/ 0193	00500	Policy type/amount
30	25	CM	O			00501	Daily deductible
31	2	IS	O		0223	00755	Living dependency
32	2	IS	O		0009	00145	Ambulatory status
33	80	CE	O		0171	00129	Citizenship
34	60	CE	O		0296	00118	Primary language
35	2	IS	O		0220	00742	Living arrangement
36	80	CE	O		0215	00743	Publicity code
37	1	ID	O		0136	00744	Protection indicator

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
38	2	IS	O		0231	00745	Student indicator
39	80	IS	O		0006	00120	Religion
40	48	XPN	O	Y		00746	Mother's maiden name
41	80	CE	O		0212	00739	Nationality
42	80	CE	O	Y	0189	00125	Ethnic group
43	80	CE	O	Y	0002	00119	Marital status
44	8	DT	O			00787	Insured's employment start date
45	8	DT	O			00783	Insured's employment stop date
46	20	ST	O			00785	Job title
47	20	JCC	O		0327/ 0328	00786	Job code/class
48	2	IS	O		0311	00752	Job status
49	48	XPN	O	Y		00789	Employer contact person name
50	40	XTN	O	Y		00790	Employer contact person phone number
51	2	IS	O		0222	00791	Employer contact reason
52	48	XPN	O	Y		00792	Insured's contact person's name
53	40	XTN	O	Y		00793	Insured's contact person phone number
54	2	IS	O	Y	0222	00794	Insured's contact person reason
55	8	DT	O			00795	Relationship to the patient start date
56	8	DT	O	Y		00796	Relationship to the patient stop date
57	2	IS	O		0232	00797	Insurance co. contact reason
58	40	XTN	O			00798	Insurance co. contact phone number
59	2	IS	O		0312	00799	Policy scope
60	2	IS	O		0313	00800	Policy source
61	60	CX	O			00801	Patient member number
62	80	CE	O		0063	00802	Guarantor's relationship to insured
63	40	XTN	O	Y		00803	Insured's phone number - home
64	40	XTN	O	Y		00804	Insured's employer phone number
65	60	CE	O		0343	00805	Military handicapped program
66	1	ID	O		0136	00806	Suspend flag
67	1	ID	O		0136	00807	Copay limit flag
68	1	ID	O		0136	00808	Stoploss limit flag
69	130	XON	O	Y		00809	Insured organization name and ID
70	130	XON	O	Y		00810	Insured employer organization name and ID
71	80	CE	O	Y	0005	00113	Race
72	60	CE	O		0344	00811	HCFA patient's relationship to insured

6.4.7.0 IN2 field definitions

Usage notes: This is an optional segment in the message syntax for VXR and VXU. We do not anticipate immunization registries using this segment and do not provide field definitions or examples here.

6.4.8 **Insurance Additional Information, Certification (IN3) Segment**

The IN3 segment contains additional insurance information for certifying the need for patient care. Fields used by this segment are defined by HCFA or other regulatory agencies.

IN3 Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			00502	Set ID - IN3

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
2	59	CX	O			00503	Certification number
3	60	XCN	O	Y		00504	Certified by
4	1	ID	O		0136	00505	Certification required
5	10	CM	O		0148	00506	Penalty
6	26	TS	O			00507	Certification date/time
7	26	TS	O			00508	Certification modify date/time
8	60	XCN	O	Y		00509	Operator
9	8	DT	O			00510	Certification begin date
10	8	DT	O			00511	Certification end date
11	3	CM	O		0149	00512	Days
12	60	CE	O		0233	00513	Non-concur code/description
13	26	TS	O			00514	Non-concur effective date/time
14	60	XCN	O	Y	0010	00515	Physician reviewer
15	48	ST	O			00516	Certification contact
16	40	XTN	O	Y		00517	Certification contact phone number
17	60	CE	O		0345	00518	Appeal reason
18	60	CE	O		0346	00519	Certification agency
19	40	XTN	O	Y		00520	Certification agency phone number
20	40	CM	O	Y	0150/ 0136	00521	Pre-certification req/window
21	48	ST	O			00522	Case manager
22	8	DT	O			00523	Second opinion date
23	1	IS	O		0151	00524	Second opinion status
24	1	IS	O	Y	0152	00525	Second opinion documentation received
25	60	XCN	O	Y	0010	00526	Second opinion physician

6.4.8.0 IN3 field definitions

Usage notes: This is an optional segment in the message syntax for VXR and VXU. We do not anticipate immunization registries using this segment and do not provide field definitions or examples here.

4.8 **PHARMACY/TREATMENT ORDERS**

4.3.1 **Common Order (ORC) Segment**

Used to transmit fields that are common to all orders (all types of services that are requested).

ORC Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	2	ID	R		0119	00215	Order control
2	22	EI	C			00216	Placer order number
3	22	EI	C			00217	Filler order number
4	22	EI	O			00218	Placer group number
5	2	ID	O		0038	00219	Order status
6	1	ID	O		0121	00220	Response flag
7	200	TQ	O			00221	Quantity/timing
8	200	CM	O			00222	Parent
9	26	TS	O			00223	Date/time of transaction
10	120	XCN	O			00224	Entered by
11	120	XCN	O			00225	Verified by
12	120	XCN	O			00226	Ordering provider
13	80	PL	O			00227	Enterer's location
14	40	XTN	O	Y/2		00228	Call back phone number
15	26	TS	O			00229	Order effective date/time
16	200	CE	O			00230	Order control code reason
17	60	CE	O			00231	Entering organization
18	60	CE	O			00232	Entering device
19	120	XCN	O			00233	Action by
20	40	CE	O		0339	01310	Advanced beneficiary notice code

4.3.1.0 ORC field definitions

Usage notes: This is an optional segment in the message syntax for VXR and VXU. We do not anticipate immunization registries using this segment and do not provide field definitions or examples here. If it is used, the following string indicates a minimum response:

ORC|OK|<placer order number>|<filler order number>|<CR>

4.8.3 **Pharmacy/Treatment Route (RXR) Segment**

The Pharmacy/Treatment Route Segment contains the alternative combination of route, site, administration device, and administration method that are prescribed. For immunization registries, the actual route and site used should be recorded.

RXR Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	60	CE	R		0162	00309	Route
2	60	CE	O		0163	00310	Site
3	60	CE	O		0164	00311	Administration Device
4	60	CE	O		0165	00312	Administration Method
5	60	CE	O			01315	Routing Instruction

4.8.3.0 RXR field definitions

Usage notes: We have not valued RXR fields 3 through 5 in our examples and do not provide definitions for them here.

RXR 4.8.3.1 Route (CE-60, Required) 00309

Definition: This field is the route of administration (e.g., intramuscular, oral, etc.). Refer to *HL7 Table 0162 - Route of administration* for valid values.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
(2) Text (ST). Name or description of the item in question.
(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our VXU #2 and VXR examples, DTaP-Hib and DTaP vaccines were administered intramuscularly and MMR was administered subcutaneously.

RXR 4.8.3.2 Site (CE-60, Optional) 00310

Definition: This field contains the site of the administration route (e.g., left arm, right leg). Refer to *HL7 Table 0163 - Administrative site* for valid values.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
(2) Text (ST). Name or description of the item in question.
(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our examples, all of the vaccines for which route is indicated were given in the left arm.

4.8.14 **Pharmacy/Treatment Administration (RXA) Segment**

The RXA carries pharmacy administration data. It is a repeating field and can record unlimited numbers of vaccinations.

RXA Attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	**4**	**NM**	**R**			**00342**	**Give sub-ID counter**
2	**4**	**NM**	**R**			**00344**	**Administration sub-ID counter**
3	**26**	**TS**	**R**			**00345**	**Date/time start of administration**
4	**26**	**TS**	**R**			**00346**	**Date/time end of administration**
5	**100**	**CE**	**R**		**0292**	**00347**	**Administered code**
6	**20**	**NM**	**R**			**00348**	**Administered amount**
7	60	CE	C			00349	Administered units
8	60	CE	O			00350	Administered dosage form
9	200	CE	O	Y		00351	Administration notes
10	200	XCN	O	Y		00352	Administering provider
11	200	CM	C			00353	Administered-at location
12	20	ST	C			00354	Administered per (time unit)
13	20	NM	O			01134	Administered strength
14	60	CE	O			01135	Administered strength units
15	**20**	**ST**	**O**	**Y**		**01129**	**Substance lot number**
16	26	TS	O	Y		01130	Substance expiration date
17	**60**	**CE**	**O**	**Y**	**0227**	**01131**	**Substance manufacturer name**
18	200	CE	O	Y		01136	Substance refusal reason
19	200	CE	O	Y		01123	Indication
20	2	ID	O		0322	01223	Completion status
21	2	ID	O		0323	01224	Action code-RXA
22	26	TS	O			01225	System entry date/time

4.8.14.0 RXA field definitions

RXA 4.8.14.1 Give sub-ID counter (NM-4, Required) 00342

Definition: Use this field if matching this RXA segment to a corresponding RXG segment. If not matching, this field's value is zero. For immunization registries, this field's value should always be zero.

In our examples, the value is 0.

RXA 4.8.14.2 Administration sub-ID counter (NM-4, Required) 00344

Definition: Starts with one the first time this medication is administered for this order and increases by increments of one with each additional administration of medication. This field can be used to record dose number for a particular vaccine series and product, if applicable. When the vaccine product administered is part of only one vaccine series (e.g., DTaP, MMR, etc.), a single digit number representing the series dose number should be entered. When a combination vaccine covering more than one series is administered, use the OBX segment to record dose numbers of various components as demonstrated at Section 7.3 of this document. If a vaccine is offered to the patient and refused, the number 0 should be recorded for the dose number in RXA-2 (see RXA-18 for recording refusal reason). Since RXA-2 is a required field in HL7, registries who choose not to record dose number should enter "999" in this field.

In our VXU #1, VXU #2, and VXR examples, we show the first dose of Hepatitis B vaccine. In our VXU #2 and VXR examples, we also show the fourth dose of DTaP and Hib vaccines (given in the first dose of a combination DTaP-Hib vaccine), the fifth dose of DTaP, and the first and second doses of MMR. Our VXR example also illustrates the administration of a tuberculosis test.

RXA 4.8.14.3 Date/time start of administration (TS-26, Required) 00345

Definition: This field records when the administration is started. We use this field to show the vaccination date.

Time stamp (TS) data type must be in the format:

YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

In our VXU #1, VXU #2, and VXR examples, we show Hepatitis B given on June 7, 1990. In our VXU #2 and VXR examples, we also show MMR given on September 7, 1991, and May 20, 1995, DTaP-Hib on September 7, 1991, and DTaP on May 20, 1995.

RXA 4.8.14.4 Date/time end of administration (if applies) (TS-26, Required) 00346

Definition: Where administration continues over some time, the end date/time may be recorded. For typical vaccines, the end of administration is generally assumed to be the same as the date/time of *RXA-3 date/time start of administration* and need not be valued.

Time stamp (TS) data type must be in the format:

YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

In our examples, the values for end of administration are the same as for start of administration.

RXA 4.8.14.5 Administered code (CE-100, Required) 00347

Definition: This field identifies the medical substance administered. If the substance administered is a vaccine, CVX codes should be used in the first triplet to code this field (see *HL7 Table 0292 - Codes for vaccines administered*). The second set of three components could be used to represent the same vaccine using a different coding system, such as Current Procedural Terminology (CPT) (mapping between the CVX and CPT codes is available at <www.cdc.gov/nip/registry>).

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
(2) Text (ST). Name or description of the item in question.
(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our VXU #1, VXU #2, and VXR examples, we show administration of Hepatitis B vaccine. In our VXU #2 and VXR examples, we also show administration of MMR, DTaP-Hib, and DTaP vaccines. The first triplet of the CE data type gives the CVX vaccine codes as defined in *HL7 Table 0292 - Codes for vaccines administered*. The second triplet gives the CPT codes for the same vaccine. The VXR example also shows administration of a tuberculosis test.

RXA 4.8.14.6 Administered amount (NM-20, Required) 00348

Definition: This field records the amount of pharmaceutical administered. The units are expressed in the next field, RXA-7.

In our examples, the amount of each vaccine administered was .5 mL.

RXA 4.8.14.7 Administered units (CE-60, Conditional) 00349

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

> The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:
>
> <identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
> <alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>
>
> CE data type components are defined as follows:
> (1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
> (2) Text (ST). Name or description of the item in question.
> (3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
> (4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our examples, we show ML to designate milliliter and ISO+ as the coding system. If no coding system is listed, ISO+ is the default system.

RXA 4.8.14.8 Administered dosage form (CE-60, Optional) 00350

Definition: The dosage form indicates the manner in which the medication is aggregated for dispensing, e.g., tablets, capsules, suppositories. In some cases, this information is implied by the dispense/give code in RXA-5. Use this field when the administered code does not specify the dosage form. Generally, immunization registries will not need to use this field.

> The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:
>
> <identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
> <alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>
>
> CE data type components are defined in Appendix 2, 2.8.3.

In our examples, we have not valued this field.

RXA 4.8.14.9 Administration notes (CE-200, Optional, Repeating) 00351

Definition: Free text notes from the provider administering the medication. If coded, requires a user-defined table. If free text, place a null in the first component and the text in the second, e.g., |^this is a free text administration note|. Immunization registries may use this field to record information that is not found elsewhere in the message; e.g., indicate the source of information for this immunization record or, more generically, whether the immunization being reported has just been administered (new) or came from other records (historical). Refer to *NIP-defined Table 0001 - Immunization Information Source* for these codes. Since this field is repeating, another possible use is to record information about Vaccine Information Statements. For example, the first time the field is valued, the date on the VIS is shown; when the field is repeated, the date the VIS was given to the patient/parent is recorded. |^date on VIS: 199803~^ date VIS given to parent: 19990318|

> The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:
>
> <identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
> <alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>
>
> CE data type components are defined as follows:
> (1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
> (2) Text (ST). Name or description of the item in question.
> (3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
> (4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our VXU #2 and VXR examples, the Hepatitis B vaccine came from a parent's immunization history; the DTaP-Hib was new; and the information sources for the remaining immunizations (MMR and DTaP) are not stated.

RXA 4.8.14.10 Administering provider (XCN-200, Optional, Repeating) 00352

Definition: This field is intended to contain the name and provider ID of the person physically administering the pharmaceutical. This person (the "vaccinator") should be listed first. In addition, immunization registries may desire to record the provider who ordered the immunization (the "orderer") and/or the person who recorded the immunization into the registry (the "recorder"). These persons may also be listed. In order to distinguish between these persons, the following identifier type codes should be used: VEI - for vaccinator employee number; OEI - for orderer employee number; and REI - for recorder employee number.

Components of the XCN data type: <ID number (ST)>^<family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., Jr. or III) (ST)>^<prefix (e.g., Dr.) (ST)>^<degree (e.g., MD) (IS)>^<source table (IS)>^<assigning authority (HD)>^<name type code (ID)>^<identifier check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<identifier type code (IS)>^<assigning facility ID (HD)>^<name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)>

In our VXU #2 and VXR examples, the new vaccines were administered by Nurse Sally S. Smith, with ID number 1234567890 and ID type VEI. Dr. Robert A. O'Brian, ID number 1234567891, ordered the vaccinations and was listed as OEI ID type. The historical vaccination was administered by Lisa Jones, with no ID number listed.

RXA 4.8.14.11 Administered at location (CM-200, Conditional) 00353

Definition: Name and address of facility where medical substance was administered.

The specific components of fields using the CM data type are defined within the field descriptions.
The components for this field are: <point of care (IS)>^< room (IS)>^<bed (IS)>^< facility (HD)>^<location status (IS)>^<patient location type (IS)>^<building (IS)>^<floor (IS)>^<street address (ST)>^< other designation (ST)>^<city (ST)>^<state or province (ST)>^<zip or postal code (ST)>^<country (ID)>^<address type (ID)>^<other geographic designation (ST)>

Subcomponents of facility (HD): <namespace ID (IS)>&<universal ID (ST)>&< universal ID type (ID)>

In our VXU #2 and VXR examples, we used Child Healthcare Clinic at 101 Main Street, Boston, MA as the facility location for the new vaccinations. The historical vaccination was administered at Children's Hospital, with no further address.

RXA 4.8.14.12 Administer per (time unit) (ST-20, Conditional) 00354

Definition: This field records the rate at which this medication was administered. Except for intravenous administrations, this field is not likely to be used by immunization registries.

In our examples, we have not valued this field.

RXA 4.8.14.13 Administered strength (NM-20, Optional) 01134

Definition: Use when RXA-5-administered code does not specify the strength. This is the numeric part of the strength, used in combination with RXA-14 Administered Strength Unit.

In our VXU #2 and VXR examples, we used this field only for Hepatitis B vaccine where we indicated 5 mcg for the pediatric/adolescent formulation.

RXA 4.8.14.14 Administered strength unit (CE-60, Optional) 01135

Definition: Use when RXA-5-administered code does not specify the strength. This is the unit of the strength, used in combination with Administered Strength.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
(2) Text (ST). Name or description of the item in question.
(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
(4-6) Three components analogous to 1-3 for the alternate or local coding system.

Note: These units can be a “compound quantity; i.e., the units may express a quantity per unit of time. For example, micrograms per hour (ug/h) is an acceptable value.

In our VXU #2 and VXR examples, we used MCG for micrograms and ISO+ for the coding system for the Hepatitis B vaccine only.

RXA 4.8.14.15 Substance lot number (ST-20, Optional, Repeating) 01129

Definition: This field records the lot number of the medical substance administered.

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 the substance is a vaccine and a diluent is required, a lot number may appear on the vial containing the diluent; however, any such identifier associated with a diluent is not the identifier of interest. The substance lot number should be reported, not that of the diluent.

In our examples, the lot numbers (e.g., W2341234567 for second dose MMR) are listed for each of the newly administered vaccines.

RXA 4.8.14.16 Substance expiration date (TS-26, Optional, Repeating) 01130

Definition: This field identifies the expiration date of the medical substance administered.

Time stamp (TS) data type must be in the format:

YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

Note: Vaccine expiration date does not always have a "day" component. Such a date may be transmitted as YYYYMM.

In our VXU #2 and VXR examples, the expiration date (e.g., June 30, 1995 for the second dose MMR) is listed for each of the newly administered vaccines.

RXA 4.8.14.17 Substance manufacturer (CE-60, Optional, Repeating) 01131

Definition: This field records the manufacturer of the medical substance administered. For purposes of transmission of immunization data in immunization registries, the MVX codes from the *HL7 Table 0227 - Manufacturers of vaccines* should be used.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:
(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
(2) Text (ST). Name or description of the item in question.
(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our examples, the manufacturer (e.g., MSD^Merck) is listed for each vaccine using the MVX codes.

RXA 4.8.14.18 Substance refusal reason (CE-200, Optional, Repeating) 01136

Definition: When applicable, this field records the reason the patient refused the medical substance. Any entry in the field indicates that the patient did not take the substance. The vaccine that was offered should be recorded in RXA-5, with the number 0 recorded for the dose number in RXA-2. Do not record contraindications and immunities in this field. See discussion at RXA 4.8.14.20 below.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined in Appendix 2, 2.8.3.

If the vaccination is refused by the patient or guardian, this field will record the vaccine refusal reason. See *NIP-defined Table 002 - Substance refusal reason* for valid values.

In our VXR example, we show the DTaP vaccine being refused by parental decision.

RXA 4.8.14.19 Indication (CE-200, Optional) 01123

Definition: This field contains the identifier of the condition or problem for which the drug/treatment was prescribed.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:
(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
(2) Text (ST). Name or description of the item in question.
(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our examples, we have not valued this field.

RXA 4.8.14.20 Completion status (ID-2, Optional) 01223

Definition: This field indicates the status of the treatment administration event. Refer to *HL7 Table 0322 - Completion status* for valid values. If the substance is refused, *RXA-18 - Substance refusal reason* should be valued as well. The vaccine that was offered should be recorded in RXA-5, with the number 0 recorded for the dose number in RXA-2. If the substance is not administered because it was contraindicated, an OBX segment may be provided to record the specific contraindication.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our VXR example, we show “RE” to indicate that the DTaP was offered and was refused. The DTaP-Hib vaccine administration is shown as “CP” for complete.

RXA 4.8.14.21 Action code (ID-2, Optional) 01224

Definition: Status of record. This field provides a method of correcting vaccination information previously transmitted with incorrect patient identifying information. Refer to *HL7 Table 0323 - Action code* for valid values.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our VXU #2 and VXR examples, we showed the use of this field in the DTaP-Hib vaccine administration as “A” for add.

RXA 4.8.14.22 System entry date/time (TS-26, Optional) 01225

Definition: This field records the date/time the administration information was entered into the source system. This field is used to detect instances where treatment administration information is inadvertently entered multiple times by providing a unique identification field. Under usual circumstances, this field would be provided automatically by the computer system rather than being entered by a person.

Time stamp (TS) data type must be in the format:
YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

In our VXR and VXU #2 examples, we showed the use of this field in the DTaP-Hib vaccine administration as the computer-generated time of September 7, 1991 at 12:00:30.

7.3 OBSERVATION REPORTING SEGMENTS

Use of the Optional OBX Segments

OBX segments have great flexibility to report information. When properly coded, OBX segments report a large amount of information in a small amount of space. OBX is widely used to report laboratory and other clinical information. For immunization registries, these segments can be configured to code adverse events, allergies related to vaccines, and many other kinds of data. For information that is commonly reported among registries, nationally standardized code sets such as Logical Observation Identifier, Names and Codes (LOINC®) are preferred over local user-defined code sets to facilitate a common vocabulary among registries. Code sets that under HL7 rules are user-defined will be agreed upon by the participants in the development of this document so that registries can efficiently exchange information. Registries are discouraged from establishing their own code sets, and instead are asked to coordinate their data needs through CDC's National Immunization Program so that all users will have a common vocabulary. CDC will maintain the latest version of these tables on its web site at <www.cdc.gov/nip/registry>.

The optional, repeating OBX segment in the VXR and VXU messages provides information about a single vaccine event. It includes a field that identifies what kind of observation will be recorded in this segment (e.g., contraindication–can be used to indicate what condition the patient had that contraindicated receipt of the vaccine when RXA-18 indicates that the vaccine was not given and the RXA dose number is valued as zero). The optional, repeating Notes and Comments (NTE) segment may be inserted after any of the OBX segments. The note segment applies to the information in the segment that immediately precedes it, i.e., the observation reported in the preceding OBX segment. The NTE segment can carry any text relevant to the vaccine event or the observation and can give its source; however, without further standardization human intervention will be required to make the information useful. The NTE segment is not further defined by HL7.

HL7 does not require the use of a particular coding system to identify either the observation or the result. In the past, users tended to invent their own unique code systems for identifying tests and other clinical observations because standard codes were not available. Such local code systems suffice for transmitting information within single institutions, but present high barriers to aggregating data from many sources for research or for public health record systems. Standard code systems such as LOINC® and Systematized Nomenclature of Human and Veterinary Medicine (SNOMED) now exist for many of these purposes, and we strongly encourage their use in immunization registry reporting. Standard codes can be sent as the only code, or they can be sent along with the local historic code as the second code system represented in the field (a CE data type allows for two coded representations of the same concept in a single field). When two different codes for the same information are sent this way in OBX segments of immunization registries, the nationally standardized code should be sent in the first triplet of the CE data type. Information on how to obtain various nationally- and internationally-used code sets can be found at <www.mcis.duke.edu/standards/guide.htm>.

For immunization registries, several categories of information have been identified that may be reported using the OBX segment in immunization messages. LOINC® codes for values in OBX-3 are provided in *NIP-defined Table NIP003 - Observation identifiers*. NIP has defined other tables in this document (see *NIP-defined Tables NIP001*, *NIP002*, *NIP004*, *NIP005*, and *NIP006*) that reflect concepts particularly relevant to immunization registry reporting where no standardized code set has been identified.

Examples of the following uses of OBX are given in the VXR example:

1. Dose number for component antigens in combination vaccines when individual component dose numbers are different from the dose number of the combination vaccine
2. Contraindications, Precautions, and Immunities
3. Vaccine Adverse Events Reporting (VAERS)

The data type for the results shown in OBX-5 will be designated in OBX-2. Suggested data types for these results are provided in *NIP-defined Table NIP003 - Observation Identifiers*. Code tables for use in OBX-5 are also provided in *NIP-defined Table NIP003 - Observation Identifiers*.

7.3.2 **Observation/Result (OBX) Segment**

Used to transmit an observation or observation fragment.

OBX Attributes

SEQ	LEN	DT	OPT	PR/#	TBL#	ITEM#	ELEMENT NAME
1	10	SI	O			00569	Set ID-OBX
2	3	ID	C		0125	00570	Value type
3	590	CE	R			00571	Observation identifier
4	20	ST	C			00572	Observation sub-ID
5	65536[2]	-	C	Y[3]		00573	Observation value
6	60	CE	O			00574	Units
7	60	ST	O			00575	Reference ranges
8	5	ID	O	Y/5	0078	00576	Abnormal flags
9	5	NM	O			00577	Probability
10	2	ID	O	Y	0080	00578	Nature of abnormal test
11	1	ID	R		0085	00579	Observ result status
12	26	TS	O			00580	Date last obs normal values
13	20	ST	O			00581	User defined access checks
14	26	TS	O			00582	Date/time of the observation
15	60	CE	O			00583	Producer's ID
16	80	XCN	O	Y		00584	Responsible observer
17	60	CE	O	Y		00936	Observation method

7.3.2.0 OBX field definitions

Usage notes: There are two OBX fields that we do not anticipate that immunization registries will need to use, so we do not provide definitions for them here. These are OBX-12-13.

OBX 7.3.2.1 Set ID - observation simple (SI-4, Optional) 00569

Definition: This field contains the sequence number. Since OBX is a repeating segment in immunization messages, the number in this field will increase by one for each OBX used for a single RXA.

> SI data type is a non-negative integer in the form of an NM field. The uses of this data type are defined in the chapters defining the segments and messages in which it is used.

In our VXR example, for the DTaP-Hib vaccine, we show the first and second sequence number for the two OBX segments.

OBX 7.3.2.2 Value type (ID-3, Conditional) 00570

Definition: This field contains the data type which defines the format of the observation value in OBX-5. A full explanation of possible data types is given below so that users will have complete information. However, for immunization registries, this field will usually be CE, NM, ST, DT, or TS.

> The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

Data types in OBX-2. This field must be a standard HL7-defined data type. It must be valued if *OBX-11-Observ result status* is not valued with an X, meaning no results can be obtained for this observation. If the value is CE then the result must be a coded entry. When the value type is TX or FT then the results are bulk text.

Although NM is a valid type, observations which are usually reported as numbers will sometimes have the string (ST) data type because non-numeric characters are often reported as part of the result, e.g., >300 to indicate the result was off-scale for the instrument. In the example, ">300", ">" is a symbol and the digits are considered a numeric value. However, this usage of the ST type should be discouraged since the SN (structured numeric) data type now accommodates such reporting and, in addition, permits

the receiving system to interpret the magnitude. All HL7 data types are valid, except CM, CQ, SI, and ID. This is because, for a CM definition to have meaning, the specifics about the CM must be included in the field definition. *OBX-5-observation value* is a general field definition that is influenced by the data type *OBX-3*, so CMs are undefined in this context. CQ is invalid because units for *OBX-5-observation value* are always specified explicitly in an OBX segment with *OBX-6 units*. SI is invalid because it only applies to HL7 message segments, and ID because it requires a constant field definition. We allow the FT data type in the OBX segment but its use is discouraged. Formatted text usually implies a meaningful structure e.g., a list of three independent diagnoses reported on different lines. But ideally, the structure in three independent diagnostic statements would be reported as three separate OBX segments. TX should **not** be used except to send large amounts of text. In the TX data type, the repeat delimiter can only be used to identify paragraph breaks. Use ST to send short, and possibly encodable, text strings.

In our VXR example, each OBX occurrence of this field is valued appropriately to represent the data type of the expected value in OBX-5.

OBX 7.3.2.3 Observation identifier (CE-590, Required) 00571

Definition: This field contains a unique identifier for the observation, or the thing being reported. The format is that of the Coded Element (CE). Example: OBX|1|CE|6023^football field length^SCS||..., where 6023 is a code for the observation "football field length" contained in Susan's Coding System (SCS).

> The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:
>
> <identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
> <alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>
>
> CE data type components are defined as follows:
> (1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
> (2) Text (ST). Name or description of the item in question.
> (3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
> (4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our VXR example, we have valued this field to show what observation will be reported in OBX-5. For example, in the RXA segment showing the DTaP-Hib, the OBX-3 and 5 indicates the individual dose numbers of each component. For the second MMR, the OBX-3 and 5 show the reporting of an adverse event. For the results of the tuberculosis test, we show a measurement of the reaction.

OBX 7.3.2.4 Observation sub-ID (ST-20, Conditional) 00572

Definition: This field is used to distinguish between multiple OBX segments with the same observation ID. For example, a chest X-ray report might include three separate diagnostic impressions. The standard requires three OBX segments, one for each impression. By putting a 1 in the Sub-ID of the first of these OBX segments, 2 in the second, and 3 in the third, we can uniquely identify each OBX segment for editing or replacement. The sub-identifier can be further extended by adding decimals (e.g., 2.1, 2.2).

The use of the sub ID to distinguish repeating OBXs for the same observation ID is really a special case of using the sub ID to group related subdivisions of information within the overall observation category. Its use must be carefully structured to avoid introducing ambiguities.

In our examples, we have not valued this field.

OBX 7.3.2.5 Observation value (User-assigned, Conditional, Repeating) 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 how the observation value is formatted. It is not a

required field because some systems will report only the normalcy/abnormalcy (*OBX-8*), especially in product experience reporting. This field contains the value of, or amount reported, or response to *OBX-3-observation identifier* of the same segment. Depending upon the observation, the data type may be a number (e.g., a respiratory rate), a coded answer (e.g., a pathology impression recorded as a SNOMED code), or a date/time (the date/time that a unit of blood is sent to the ward). An observation value is always represented as the data type specified in *OBX-2-value type* of the same segment.

Example: OBX|1|ST|6023^football field length^SCS||100 yards|
(OBX-2 shows the ST data type used to record the result value in OBX-5,"100 yards.")

In our VXR example, we have valued this field to report that this is the fourth dose of DTaP and the fourth dose of Hib in the combination vaccine. For the second MMR, this field shows anaphylaxis as the adverse event. For the results of the tuberculosis test, we show a measurement of 1 mm.

OBX 7.3.2.6 Units (CE-60, Optional) 00574

Definition: This field contains the units for the observation value in OBX-5. The default value is ISO+abbreviation, as defined.

> The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:
>
> <identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
> <alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>
>
> CE data type components are defined as follows:
> (1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
> (2) Text (ST). Name or description of the item in question.
> (3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
> (4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our VXR example, we show the units to be millimeters.

OBX 7.3.2.7 References range (ST-60, Optional) 00575

Definition: When the observation quantifies the amount of a toxic substance, then the upper limit of the range identifies the toxic limit. If the observation quantifies a drug, the lower limits identify the lower therapeutic bounds and the upper limits represent the upper therapeutic bounds above which toxic side effects are common.

If numeric, the values of this field may report several values in one of the following three formats:

a) lower limit-upper limit (when both lower and upper limits are defined, e.g., for potassium 3.5 - 4.5)
b) > lower limit (if no upper limit, e.g., >10)
c) < upper limit (if no lower limit, e.g., <15)

If alphabetical, the normal value may be reported in this location

In our examples, we have not valued this field.

OBX 7.3.2.8 Abnormal flags (ID-5, Optional, Repeating) 00576

Definition: This field contains a table lookup indicating the normalcy status of the result. Refer to *HL7 Table 0078 - Abnormal flags* for valid entries.

> The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our VXR example, we show the reaction to the tuberculosis test to be normal.

OBX 7.3.2.9 Probability (NM-5, Optional) 00577

Definition: This field contains the probability of a result being true for results with categorical values. It mainly applies to discrete coded results. It is a decimal number represented as an ASCII string that must be between 0 and 1, inclusive.

In our examples, we have not valued this field.

OBX 7.3.2.10 Nature of abnormal test (ID-2, Optional, Repeating) 00578

Definition: This field contains the nature of the abnormal test.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our examples, we have not valued this field.

OBX 7.3.2.11 Observation result status (ID-1, Required) 00579

Definition: This field contains the observation result status. Refer to *HL7 Table 0085 - Observation result status codes interpretation* for valid values. This field reflects the current completion status of the results for data contained in the *OBX-5-observation value* field. It is a required field. Previous versions of HL7 stated this implicitly by defining a default value of "F."

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our VXR example, we have valued All OBX-11 fields as F for final.

OBX 7.3.2.14 Date-time of the observation (TS-26, Optional) 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.

Time stamp (TS) data type must be in the format:

YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

In our VXR example of results of the tuberculosis test, we show the date of observation as April 18, 1990.

OBX 7.3.2.15 Producer's ID (CE-60, Optional) 00583

Definition: Contains a unique identifier of the responsible producing service.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
(2) Text (ST). Name or description of the item in question.
(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our examples, we have not valued this field.

OBX 7.3.2.16 Responsible observer (XCN-80, Optional, Repeating) 00584

Definition: This field contains the identifier of the individual directly responsible for the observation (the person who either performed or verified it).

Components of the XCN data type: <ID number (ST)>^<family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., Jr. or III) (ST)>^<prefix (e.g., Dr.) (ST)>^<degree (e.g., MD) (IS)>^<source table (IS)>^<assigning authority (HD)>^<name type code (ID)>^<identifier check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<identifier type code (IS)>^<assigning facility ID (HD)>^<name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)>

In our examples, we have not valued this field.

OBX 7.3.2.17 Observation method (CE-60, Optional, Repeating) 00936

Definition: Used to transmit the method or procedure by which an observation was obtained.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:

(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
(2) Text (ST). Name or description of the item in question.
(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
(4-6) Three components analogous to 1-3 for the alternate or local coding system.

In our examples, we have not valued this field.

2.24.15 **Notes and Comments (NTE) Segment**

The NTE segment is defined as a common format for sending notes and comments.

NTE Attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00096	Set ID-NTE
2	8	ID	O		0105	00097	Source of comment
3	64k	FT	O	Y		00098	Comment
4	60	CE	O			01318	Comment type

2.24.15.0 NTE field definitions

NTE 2.24.15.1 Set ID - NTE (SI-4, Optional) 00096

Definition: This field may be used when multiple NTE segments are included in a message.

SI data type is a non-negative integer in the form of an NM field. The uses of this data type are defined in the chapters defining the segments and messages in which it is used.

In our examples, we have not valued this field.

NTE 2.24.15.2 Source of comment (ID-8, Optional) 00097

Definition: This field is used to identify source of comment. *HL7 Table 0105 - Source of Comment* is used, but may be extended locally during implementation.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

In our examples, we have not valued this field.

NTE 2.24.15.3 Comment (FT-64k, Optional, Repeating) 00098

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

Note: The FT data type without embedded formatting commands is compatible with the previous TX data type.

In our VXR example, this comment field shows that the VAERS form was submitted by the provider.

NTE 2.24.15.4 Comment type (CE-60, Optional) 01318

Definition: This field identifies the type of comment text. Allowable values are user-defined, but may include the following: PI - Patient Instruction, HS - Historical Record Comment. A separate NTE segment can be used for each type of comment (e.g., instructions on one NTE and remarks on another NTE).

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:

<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^
<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined in Appendix 2, 2.8.3.

In our examples, we have not valued this field.

3.2 PATIENT ADMINISTRATION MESSAGE DEFINITIONS

Use of the Optional Admission/Discharge, Transfer (ADT) Segments

Note: The HL7 standard defines many specialized ADT messages for administrative events dealing with patients; e.g., admit, discharge, transfer, merge record. Some ADT messages are for use with admitted patients only. These include A01 (admit/visit notification), A08 (update patient information), A18 (merge patient information), and A23 (delete a patient record). We will not define those in this document, because their utility to immunization registries is limited. The A28, A29, and A31 events do not duplicate the A01 (admit/visit notification), A03 (discharge/end visit), A08 (update patient information), etc., events. They are not intended to be used for notification of real-time admitted patient administration events.

The VXU message can be used for adding a person or additional information about the person, but intercommunicating immunization registries may want to use the ADT/A28 message to add or update data from a different data system to a registry. The data would be kept in both places. The purpose of the ADT A28, A29, A30, and A31 messages is to allow sites with multiple systems and respective master patient databases to communicate activity related to a person regardless of whether that person is currently a patient on each system. Each system has an interest in the database activity of the others in order to maintain data integrity across an institution. Though they are defined within the ADT message set, these messages differ in that they are not patient-specific. To a certain registry, the person may be a person of interest, a potential future patient, a parent or guardian, or a potential guarantor. For example, these events can be used to maintain an MPI (master patient index), a cancer or immunization registry, members of a managed care plan, an HIV database, etc. Visit information may be included but is not required. These events are primarily for demographic data, but optional historical non-demographic data may be sent as well.

The A28 event can be used to send everything that is known about a person. An A28 (add person information) or A31 (update person information) can also be used for back loading MPI information for the person, or for back loading all personal and historical information from one system to another. In addition to adding (A28) a person to a database, the delete (A29), update (A31), and merge (A30) messages work in a similar manner to maintain concurrent person information. It is left up to site-specific negotiations to decide how much data must be transmitted or re-transmitted when a person becomes a patient. For immunization registries, only items listed in the CDC core data set should be required for entry to a registry. These items can be found at <www.cdc.gov/nip/registry>.

Note that all segments are optional except the MSH, EVN, and PID. The segments that are useful for immunization registries have been defined above, except for the EVN, which is given below. The syntax for the ADT^A28 and ADT^A31 are identical. These messages are distinguished by the second component of *MSH-9-Message type*, a CM data type formatted as <message type (ID)>^<trigger event (ID)>^<message structure (ID)>.

3.2.28 **Admission/Discharge/Transfer and Acknowledgment (ADT/ACK) - add person information (event A28)**

Definition: The A28 event can be used to send everything that is known about a person. An A28 (add person information) or A31 (update person information) can also be used for back loading MPI information for the person, or for back loading all person and historical information from one system to another.

ADT^A28	ADT Message	HL7 Chapter
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{ NK1 }]	Next of Kin /Associated Parties	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ AL1 }]	Allergy Information	3
[{ DG1 }]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6
[{ PR1	Procedures	6
[{ROL}]	Role	12
}]		
[{ GT1 }]	Guarantor	6
[		
{ IN1	Insurance	6
[IN2]	Insurance Additional Info.	6
[{IN3}]	Insurance Add'l Info - Cert.	6
}		
]		
[ACC]	Accident Information	6
[UB1]	Universal Bill Information	6
[UB2]	Universal Bill 92 Information	6

ACK	General Acknowledgment	HL7 Chapter
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.29 **Admission/Discharge/Transfer and Acknowledgment (ADT/ACK) -delete person information (event A29)**

Definition: An A29 event can be used to delete all demographic information related to a given person. This event "undoes" an A28 (add person information) event. The information from the A28 event is deleted. This event is used, for example, when adding the information was performed in error, or when another record already exists for the person, or when one wants to purge the person from the database. When this event occurs, all visit and account level data for this person is also purged.

ADT^A29	ADT Message	HL7 Chapter
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7

3.2.30 **Admission/Discharge/Transfer and Acknowledgment (ADT/ACK) -merge person information (event A30)**

Definition: An A30 event can be used to merge person information in an MPI. An A30 (merge person information) is intended for merging person records without merging patient identifiers.

ADT^A30	ADT Message	HL7 Chapter
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3

3.2.31 **Admission/Discharge/Transfer and Acknowledgment (ADT/ACK) -update person information (event A31)**

Definition: An A31 event can be used to update person information in an MPI. An A31 (update person information) or A28 (add person information) can also be used for back loading MPI information for the person, or for back loading all person and historical information from one system to another.

The syntax for this message is identical to the ADT^A28 and is not repeated here.

3.3.1 **Event Type (EVN) Segment**

Used to communicate necessary trigger event information to receiving applications.

EVN Attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	3	ID	B		0003	00099	Event type code
2	26	TS	R			00100	Recorded date/time
3	26	TS	O			00101	Date/time planned event
4	3	IS	O		0062	00102	Event reason code
5	60	XCN	O	Y	0188	00103	Operator ID
6	26	TS	O			01278	Event occurred

3.3.1.0 EVN field definitions

Usage notes: We did not use the EVN segment in our examples, but do provide field definitions here for reference.

EVN 3.3.1.1 Event type code (ID-3, Backwards Compatibility) 0 0099

Definition: This field has been retained for backward compatibility only. Immunization registries will use the second component (trigger event) of MSH-9 to transmit event type code.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

EVN 3.3.1.2 Recorded date/time (TS-26, Required) 00100

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

Time stamp (TS) data type must be in the format:
YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

EVN 3.3.1.3 Date/time planned event (TS-26, Optional) 00101

Definition: The date/time the event is planned.

Time stamp (TS) data type must be in the format:
YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

EVN 3.3.1.4 Event reason code (IS-3, Optional) 00102

Definition: The reason for this event . Refer to *User-defined Table 0062 - Event reason* for suggested values.

The IS data type follows the formatting rules for an ST field except that it is drawn from a site-defined (or user-defined) table of legal values.

EVN 3.3.1.5 Operator ID (XCN-60, Optional, Repeating) 00103

Definition: The individual responsible for triggering the event. Refer to *User-defined Table 0188 - Operator ID* for suggested values. Each immunization registry will maintain its own reference table for these values.

Components of the XCN data type: <ID number (ST)>^<family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., Jr. or III) (ST)>^<prefix (e.g., Dr.) (ST)>^<degree (e.g., MD) (IS)>^<source table (IS)>^<assigning authority (HD)>^<name type code (ID)>^<identifier check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<identifier type code (IS)>^<assigning facility ID (HD)>^<name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)>

EVN 3.3.1.6 Event occurred (TS-26, Optional) 01278

Definition: The date/time that the event actually occurred.

Time stamp (TS) data type must be in the format:
YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>

Note: The optional degree of precision component is retained for backward compatibility only. Immunization registries will not value this component.

3.3.8 **Merge Patient Information (MRG) Segment**

The MRG segment provides receiving applications with information necessary to initiate the merging of patient data as well as groups of records.

MRG Attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	20	CX	R	Y		00211	Prior patient identifier list
2	20	CX	O	Y		00212	Prior alternate patient ID
3	20	CX	O			00213	Prior patient account number
4	20	CX	O			00214	Prior patient ID
5	20	CX	O			01279	Prior visit number
6	20	CX	O			01280	Prior alternate visit ID
7	48	XPN	O	Y		01281	Prior patient name

3.3.8.0 MRG field definitions

Usage notes: The assigning authority, the fourth component of the patient identifiers, is an HD data type that is uniquely associated with the assigning authority that originally assigned the number. A group of intercommunicating institutions, such as immunization registries, may establish a list of assigning authorities to serve as a master dictionary list. The assigning authority must be unique across applications at a given site. This field is required in HL7 implementations that have more than a single Patient Administration application assigning such numbers.

We did not use the MRG segment in our examples, but do provide field definitions here for reference.

MRG 3.3.8.1 Prior patient identifier list (CX-20, Required, Repeating) 00211

Definition: This field contains the internal prior patient identifier. This field contains a list of potential “old” numbers to match. Only one old number can be merged with one new number in a transaction.

CX data typ components: <ID (ST)>^<check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)>^<identifier type code (IS)>^<assigning facility (HD)>

Components are defined as follows:
(1) ID number (ST)

(2) Check digit (ST) (The check digit used in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null.)

(3) Code identifying check digit scheme employed (ID) Refer to *HL7 Table 0061 - Check digit scheme* for valid values**.**

(4) Assigning authority (HD)
Subcomponents of (4): <application identifier 1 (ID)> & <application identifier 2 (ID)> & <application identifier 3 (ID)> & <application identifier 4 (ID)> & <application identifier 5 (ID)> & <application identifier 6 (ID)>

(5) Identifier type code (IS)
A code corresponding to the type of identifier. This code may be used as a qualifier to the "Assigning authority" component. Refer to *User-defined Table 0203 - Identifier type* for suggested values.

(6) Assigning facility (HD)
Definition: The place or location identifier where the identifier was first assigned to the patient–part of the history of the identifier.
Subcomponents of (6): <namespace ID (IS)>&<universal ID (ST)>&<universal ID type (ID)>

MRG 3.3.8.2 Prior alternate patient ID (CX-20, Optional, Repeating) 00212

Definition: This field contains the prior alternate patient identifier.

MRG 3.3.8.3 Prior patient account number (CX-20, Optional) 00213

Definition: This field contains the prior patient account number.

MRG 3.3.8.4 Prior patient ID (CX-20, Optional) 00214

Definition: This field contains the prior patient identifier.

MRG 3.3.8.5 Prior visit number (CX-20, Optional) 01279

Definition: This field contains the internal prior visit number.

MRG 3.3.8.6 Prior alternate visit number (CX-20, Optional) 01280

Definition: This field contains the prior alternate visit number.

MRG 3.3.8.7 Prior patient name (XPN-48, Optional, Repeating) 01281

Definition: This field contains the prior name of the patient. This field is not used to change a patient name.

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

For valid values, refer to *User-defined Table 0360 - Degree* for the degree component, to *HL7 Table 0200 - Name type* for the name type code, and to *HL7 Table 4000 - Name/address representation* for the name representation code.

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APPENDIX 1: Code Tables

NOTE: Where only selected values are listed for HL7 tables, please refer to the HL7 Standard for complete listings. In this appendix, values are selected from standard codes where available. Values that are assigned by NIP are italicized.

User-defined Table 0001 - Sex [values suggested by HL7] (use in PID-8, NK1-15)

Value	Description
F	Female
M	Male
O	Other
U	Unknown

HL7-defined Table 0003 - Event type [only selected values listed] (use in MSH-9, second component)

Value	Description
A28	ADT/ACK - Add person information
A29	ADT/ACK - Delete person information
A30	ADT/ACK - Merge person information
A31	ADT/ACK - Update person information
V01	VXQ - Query for vaccination record
V02	VXX - Response to vaccination query returning multiple PID matches
V03	VXR - Vaccination record response
V04	VXU - Unsolicited vaccination record update

User-defined Table 0004 - Patient class [values suggested by HL7] (use in PV1-2)

Value	Description
E	Emergency
I	Inpatient
O	Outpatient
P	Preadmit
R	Recurring Patient
B	Obstetrics

User-defined Table 0005 - Race [values compliant with OMB directive will be added when available] (use in PID-10, NK1-35)

Temporary Value	OMB-compliant Code	Description
I		American Indian or Alaska Native
A		Asian or Pacific Islander
B		Black or African-American
W		White
H		Hispanic
O		Other
U		Unknown

HL7-defined Table 0008 - Acknowledgment code (use in MSA-1)

Value	Description
AA	Original mode: Application Accept Enhanced mode: Application acknowledgment: Accept
AE	Original mode: Application Error Enhanced mode: Application acknowledgment: Error
AR	Original mode: Application Reject Enhanced mode: Application acknowledgment: Reject

Value	Description
CA	Enhanced mode: Application acknowledgment: Commit Accept
CE	Enhanced mode: Application acknowledgment: Commit Error
CR	Enhanced mode: Application acknowledgment: Commit Reject

User-defined Table 0010 - Physician ID (use in all XCN data types; including PV1-7,8,9,17, RXA-10) [locally-defined] Each registry should establish a system of coding its reporting physicians. The National Provider Identifier (NPI) may be used for this purpose when it becomes available.

HL7-defined Table 0048 - What subject filter [only selected values listed] (use in QRD-9)

Value	Description
VXI	Vaccine Information

HL7-defined Table 0061 - Check digit scheme (use in all CX data types; including PID-2,3,4,18,21)

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

User-defined Table 0062 - Event reason [values suggested by HL7; *with NIP-suggested additions*] (use in EVN-4)

Value	Description
01	Patient request
02	Physician order
03	Census management
04	*Add person data to immunization registry*
05	*Delete person data from immunization registry*
06	*Update person data in immunization registry*
07	*Merge person data in immunization registry*

User-defined Table 0063 - Relationship [X12 1069 Individual Relationship Code; only selected values listed] (use in NK1-3, NK1-31, IN1-17, IN2-62)

Value	Description
18	Self
21	Unknown
26	Guardian
31	Court Appointed Guardian
32	Mother
33	Father
36	Emancipated Minor
48	Stepfather
49	Stepmother
51	Emergency Contact
57	Adoptive Father
58	Adoptive Mother
61	Aunt
62	Brother
87	Foster Father
88	Foster Mother
97	Grandfather
98	Grandmother
A4	Half Brother

Value	Description
A5	Half Sister
B7	Sister
C3	Step Brother
C8	Step Sister
D3	Uncle
G7	Neighbor
G8	Other Relationship
G9	Other Relative

User-defined Table 0064 - Financial class [*NIP suggested values*] (use in PV1-20)

Value	Description
VFC eligibility codes	
V00	*VFC eligibility not determined/unknown*
V01	*not VFC eligible*
V02	*VFC eligible - Medicaid/Medicaid Managed Care*
V03	*VFC eligible - Uninsured*
V04	*VFC eligible - American Indian/Alaskan Native*
V05	*VFC eligible - Federally Qualified Health Center Patient (under-insured)*
V06	*VFC eligible - State-specific eligibility (e.g., S-CHIP plan)*
V07	*VFC eligible - Local-specific eligibility*
Health Plan Type codes	
H01	*self pay*
H02	*Medicaid (may be called by state-specific name, e.g., Medi-Cal)*
H03	*third party or private insurance*
State Program codes *- state specific; use state 2-letter abbreviation plus a number for the value; see example below*	
e.g., NY01	*e.g., IHAP eligible*

HL7-defined Table 0076 - Message type [only selected values listed] (use in MSH-9, first component)

Value	Description
ACK	General Acknowledgment
ADR	ADT response
ADT	ADT message
QCK	Query General Acknowledgment
VXQ	Query for vaccination record
VXX	Vaccination query response with multiple PID matches
VXR	Vaccination query record response
VXU	Unsolicited vaccination record update

HL7-defined Table 0078 - Abnormal flags [only selected values listed] (use in OBX-8)

Value	Description
L	Below low normal
H	Above high normal
LL	Below lower panic limits
HH	Above upper panic limits
N	Normal (applies to non-numeric results)
A	Abnormal (applies to non-numeric results)
AA	Very abnormal (applies to non-numeric units, analogous to panic limits for numeric units)

HL7-defined Table 0085 - Observation result status codes interpretation (use in OBX-11)

Value	Description

C	Record coming over is a correction and thus replaces a final result
D	Deletes the OBX record
F	Final results; Can only be changed with a corrected result
I	Specimen in lab; results pending
N	Not asked; used to affirmatively document that the observation identified in the OBX was not sought when the universal service ID in OBR-4 implies that it would be sought
O	Order detail description only (no result)
P	Preliminary results
R	Results entered - not verified
S	Partial results
X	Results cannot be obtained for this observation
U	Results status change to Final without retransmitting results already sent as 'preliminary.' e.g., radiology changes status from preliminary to final
W	Post original as wrong; e.g., transmitted for wrong patient

HL7-defined Table 0091 - Query priority (use in QRD-3)

Value	Description
D	Deferred
I	Immediate

HL7-defined Table 0102 - Delayed acknowledgment type (use in MSA-5)

Value	Description
D	Message received, stored for later processing
F	Acknowledgment after processing

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)

Value	Description	
2.0	Release 2.0	September 1988
2.0D	Demo 2.0	October 1988
2.1	Release 2.1	March 1990
2.2	Release 2.2	December 1994
2.3	Release 2.3	March 1997
2.3.1	Release 2.3.1	May 1999

HL7-defined Table 0105 - Source of comment (use in NTE-2)

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

HL7-defined Table 0106 - Query/Response format code (use in QRD-2)

Value	Description
D	Response is in display format
R	Response is in record-oriented format
T	Response is in tabular format

HL7-defined Table 0107 - Deferred response type (use in QRD-5)

Value	Description
B	Before the date/time specified
L	Later than the date/time specified

HL7-defined Table 0108 - Query results level (use in QRD-12)

Value	Description
O	Order plus order status
R	Results without bulk text
S	Status only
T	Full results

HL7-defined Table 0126 - Quantity limited request (use in QRD-7)

Value	Description
CH	Characters
LI	Lines
PG	Pages
RD	Records
ZO	Locally defined

HL7-defined Table 0136 - Yes/No indicator (use in PID-24,30; PD1-12)

Value	Description
Y	Yes
N	No
“” <null>	*Not obtained (when used by immunization registries as defined in PD1-12)*

HL7-defined Table 0155 - Accept/Application acknowledgment conditions (use in MSH-16)

Value	Description
AL	Always
NE	Never
ER	Error/Reject conditions only
SU	Successful completion only

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

Value	Description
ID	Intradermal
IM	Intramuscular
IN	Intranasal
IV	Intravenous
PO	Oral
SC	Subcutaneous
TD	Transdermal

HL7-defined Table 0163 - Administrative Site [only selected values listed] (use in RXR-2)

Value	Description
LT	Left Thigh
LA	Left Arm
LD	Left Deltoid
LG	Left Gluteous Medius
LVL	Left Vastus Lateralis
LLFA	Left Lower Forearm
RA	Right Arm

RT	Right Thigh
RVL	Right Vastus Lateralis
RG	Right Gluteous Medius
RD	Right Deltoid
RLFA	Right Lower Forearm

User-defined Table 0188 - Operator ID (use in EVN-5)
[locally-defined]

User-defined Table 0189 - Ethnic Group [Values compliant with OMB directive will be added when available] (use in PID-22)

Temporary value	OMB-compliant code	Description
H		of Hispanic origin
NH		not of Hispanic origin

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
BLD	Birth delivery location [*use for birth facility*]
BR	Residence at birth [*use for residence at birth*]
RH	Registry home
BA	Bad address

HL7-defined Table 0200 - Name type (use in all XCN, XPN data types; including PID-5,6,9)

Value	Description
A	Alias Name
L	Legal Name
D	Display Name
M	Maiden Name
C	Adopted Name
B	Name at Birth
P	Name of Partner/Spouse
U	Unspecified

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
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

User-defined Table 0203 - Identifier type [values suggested by HL7; *with NIP-suggested additions*] (use in all CX, XCN type codes; including PID-2,3,4,18,21)

Value	Description
AM	American Express
AN	Account Number
BR	Birth Registry Number
DI	Diner's Club Card
DL	Driver's License Number
DN	Doctor Number
DS	Discover Card
EI	Employee Number
EN	Employer Number
FI	Facility Identifier
GI	Guarantor Internal Identifier
GN	Guarantor External Identifier
LN	License Number
LR	Local Registry ID
MS	MasterCard
MA	Medicaid Number
MC	Medicare Number
MR	Medical Record Number
NE	National Employer Identifier
NH	National Health Plan Identifier
NI	National Unique Individual Identifier
NPI	National Provider Identifier
PI	Patient Internal Identifier
PN	Person Number
PRN	Provider Number
PT	Patient External Identifier
RRI	Regional Registry ID
RR	Railroad Retirement Number
SL	State License
SR	State Registry ID
SS	Social Security Number
U	Unspecified
UPIN	Medicare/HCFA's Universal Physician ID Numbers
VS	VISA
VN	Visit Number
WC	WIC Identifier
XX	Organization Identifier
VEI	*Vaccinator Employee Number*
OEI	*Orderer Employee Number*
REI	*Recorder Employee Number*

User-defined Table 0204 - Organizational name type [values suggested by HL7] (use in all XON data types)

Value	Description
A	Alias Name
L	Legal Name
D	Display Name
SL	Stock Exchange Listing Name

HL7-defined Table 0207 - Processing mode (use in MSH-11)

Value	Description
A	Archive
R	Restore from archive
I	Initial load
<blank>	Not present (the default, meaning *current* processing)

User-defined Table 0208 - Query response status [values suggested by HL7] (use in QAK-2)

Value	Description
OK	Data found, no errors (this is the default)
NF	No data found, no errors
AE	Application error
AR	Application reject

HL7-defined Table 0211 - Alternate character sets [only selected values listed] (use in MSH-18)

Value	Description
ASCII	The printable 7-bit ASCII character set (This is the default if this field is omitted)

User-defined Table 0212 - Nationality [ISO 3166 suggested by HL7; this table shows selected values only. Note that the table reflects only 3-letter codes. Two-letter and numeric codes are also available.] Full ISO 3166 country codes set available at: <ftp://ftp.ripe.net/iso3166-countrycodes> (use in PID-28; also use for country code in all XAD data types)

Value	Description
CAN	Canada
MEX	Mexico
USA	United States
UMI	United States Minor Outlying Islands

User-defined Table 0215 - Publicity code [*values suggested by NIP*] (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 [values suggested by HL7; *with NIP-suggested additions*] (use in NK1-21)

Value	Description
A	Alone
F	Family
I	Institution
R	Relative
U	Unknown
S	Spouse only
W	*With patient*
N	*Not with patient*

User-defined Table 0222 - Contact reason [*values suggested by NIP*] (use in NK1-29)

Value	Description
RR	*NK1 is reminder/recall contact for immunization registry*
PC	*NK1 is responsible for patient care*

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

Value	Vaccine Manufacturer/Distributor
AB	Abbott Laboratories
AD	Adams Laboratories
ALP	Alpha Therapeutic Corporation
AR	Armour [**Inactive**–use CEN]
AVI	Aviron
BA	Baxter Healthcare Corporation
BAY	Bayer Corporation *(includes Miles, Inc. and Cutter Laboratories)*
BP	Berna Products [**Inactive**–use BPC]
BPC	Berna Products Corporation *(includes Swiss Serum and Vaccine Institute Berne)*
CEN	Centeon L.L.C. *(includes Armour Pharmaceutical Company)*
CHI	Chiron Corporation
CON	Connaught [**Inactive**–use PMC]
EVN	Evans Medical Limited
GRE	Greer Laboratories, Inc.
IAG	Immuno International AG
IM	Merieux [**Inactive**–use PMC]
IUS	Immuno-U.S., Inc.
JPN	The Research Foundation for Microbial Diseases of Osaka University (BIKEN)
KGC	Korea Green Cross Corporation
LED	Lederle [**Inactive**–use WAL]
MA	Massachusetts Public Health Biologic Laboratories
MED	MedImmune, Inc.
MIL	Miles [**Inactive**–use BAY]
MIP	BioPort (formerly Michigan Biologic Products Institute)
MSD	Merck & Co., Inc.
NAB	NABI (formerly North American Biologicals, Inc.)
NYB	New York Blood Center
NAV	North American Vaccine, Inc.
NOV	Novartis Pharmaceutical Corporation
OTC	Organon Teknika Corporation
ORT	Ortho Diagnostic Systems, Inc.
PD	Parkedale Pharmaceuticals (formerly Parke-Davis)
PMC	Pasteur Merieux Connaught *(includes Connaught Laboratories and Pasteur Merieux)*
PRX	Praxis Biologics [**Inactive**–use WAL]
SCL	Sclavo, Inc.
SI	Swiss Serum and Vaccine Inst. [**Inactive**–use BPC]
SKB	SmithKline Beecham
USA	United States Army Medical Research and Materiel Command
WA	Wyeth-Ayerst [**Inactive**–use WAL]
WAL	Wyeth-Ayerst *(includes Wyeth-Lederle Vaccines and Pediatrics, Wyeth Laboratories, Lederle Laboratories, and Praxis Biologics)*
OTH	Other
UNK	Unknown manufacturer

User-defined Table 0288 - Census tract (use in all XAD; including PID-11)
For information about identifying census tracts, see <www.census.gov/geo/www/tractez.html>.

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 <www.itl.nist.gov/div897/pubs/fip6-4.htm>. According to the FIPS guidance, the 2-letter state code (available at <www.itl.nist.gov/div897/pubs/fip5-2.htm>) plus the numeric county code should be used (e.g., AZ001 represents Apache County, Arizona and AL001 represents Autauga County, Alabama).

HL7-defined Table 0292 - Codes for vaccines administered (code=CVX) (use in RXA-5)
NOTE: parenteral unless otherwise specified

Value	Short Description	Full Vaccine Name
54	adenovirus, type 4	adenovirus vaccine, type 4, live, oral
55	adenovirus, type 7	adenovirus vaccine, type 7, live, oral
82	adenovirus, NOS	adenovirus vaccine, NOS
24	anthrax	anthrax vaccine
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
50	DTaP-Hib	DTaP-*Haemophilus influenzae* type b conjugate vaccine
01	DTP	diphtheria, tetanus toxoids and pertussis vaccine
22	DTP-Hib	DTP-*Haemophilus influenzae* type b conjugate vaccine
57	hantavirus	hantavirus vaccine
52	Hep A, adult	hepatitis A vaccine, adult dosage
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
31	Hep A, pediatric, NOS	hepatitis A vaccine, pediatric dosage, NOS
85	Hep A, NOS	hepatitis A vaccine, NOS
30	HBIG	hepatitis B immune globulin
08	Hep B, adolescent or pediatric	hepatitis B vaccine, pediatric or pediatric/adolescent dosage
42	Hep B, adolescent/high risk infant	hepatitis B vaccine, adolescent/high risk infant dosage
43	Hep B, adult	hepatitis B vaccine, adult dosage
44	Hep B, dialysis	hepatitis B vaccine, dialysis patient dosage
45	Hep B, NOS	hepatitis B vaccine, NOS
58	Hep C	hepatitis C vaccine
59	Hep E	hepatitis E vaccine
60	herpes simplex 2	herpes simplex virus, type 2 vaccine
46	Hib (PRP-D)	*Haemophilus influenzae* type b vaccine, PRP-D conjugate
47	Hib (HbOC)	*Haemophilus influenzae* type b vaccine, HbOC conjugate
48	Hib (PRP-T)	*Haemophilus influenzae* type b vaccine, PRP-T conjugate
49	Hib (PRP-OMP)	*Haemophilus influenzae* type b vaccine, PRP-OMP conjugate

Value	Short Description	Full Vaccine Name
17	Hib, NOS	*Haemophilus influenzae* type b vaccine, conjugate NOS
51	Hib-Hep B	*Haemophilus influenzae* type b conjugate and Hepatitis B vaccine
61	HIV	human immunodeficiency virus vaccine
62	HPV	human papilloma virus vaccine
86	IG	immune globulin, intramuscular
87	IGIV	immune globulin, intravenous
14	IG, NOS	immune globulin, NOS
15	influenza, split (incl. purified surface antigen)	influenza virus vaccine, split virus (incl. purified surface antigen)
16	influenza, whole	influenza virus vaccine, whole virus
88	influenza, NOS	influenza virus vaccine, NOS
10	IPV	poliovirus vaccine, inactivated
02	OPV	poliovirus vaccine, live, oral
89	polio, NOS	poliovirus vaccine, NOS
39	Japanese encephalitis	Japanese encephalitis vaccine
63	Junin virus	Junin virus vaccine
64	leishmaniasis	leishmaniasis vaccine
65	leprosy	leprosy vaccine
66	Lyme disease	Lyme disease vaccine
03	MMR	measles, mumps and rubella virus vaccine
04	M/R	measles and rubella virus vaccine
94	MMRV	measles, mumps, rubella, and varicella virus vaccine
67	malaria	malaria vaccine
05	measles	measles virus vaccine
68	melanoma	melanoma vaccine
32	meningococcal	meningococcal polysaccharide vaccine
07	mumps	mumps virus vaccine
69	parainfluenza-3	parainfluenza-3 virus vaccine
11	pertussis	pertussis vaccine
23	plague	plague vaccine
33	pneumococcal	pneumococcal vaccine
70	Q fever	Q fever vaccine
18	rabies, intramuscular injection	rabies vaccine, for intramuscular injection
40	rabies, intradermal injection	rabies vaccine, for intradermal injection
90	rabies, NOS	rabies vaccine, NOS
72	rheumatic fever	rheumatic fever vaccine
73	Rift Valley fever	Rift Valley fever vaccine
34	RIG	rabies immune globulin
74	rotavirus	rotavirus vaccine, tetravalent, live, oral
71	RSV-IGIV	respiratory syncytial virus immune globulin, intravenous
93	RSV-MAb	respiratory syncytial virus monoclonal antibody (palivizumab), intramuscular
06	rubella	rubella virus vaccine
38	rubella/mumps	rubella and mumps virus vaccine
75	smallpox	smallpox vaccine
76	*Staphylococcus* bacterio lysate	*Staphylococcus* bacteriophage lysate
09	Td (adult)	tetanus and diphtheria toxoids, adsorbed for adult use
35	tetanus toxoid	tetanus toxoid
77	tick-borne encephalitis	tick-borne encephalitis vaccine
13	TIG	tetanus immune globulin
95	TST-OT tine test	tuberculin skin test; old tuberculin, multipuncture device

Value	Short Description	Full Vaccine Name
96	TST-PPD intradermal	tuberculin skin test; purified protein derivative solution, intradermal
97	TST-PPD tine test	tuberculin skin test; purified protein derivative, multipuncture device
98	TST, NOS	tuberculin skin test; NOS
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, NOS	typhoid vaccine, NOS
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, NOS	Venezuelan equine encephalitis vaccine, NOS
36	VZIG	varicella zoster immune globulin
37	yellow fever	yellow fever vaccine
999	unknown	unknown vaccine or immune globulin
99	RESERVED - do not use	RESERVED - do not use

User-defined Table 0296 - Language [ISO 639 suggested by HL7; selected 2-letter values listed from ISO 639:1988; The full set of ISO 639 Language Codes is available for purchase from <www.ansi.org>. Where ISO 2-letter codes are not available, 3-letter codes are given from the *Ethnologue*, available at <www.sil.org/ethnologue/>.] (use in PID-15)

Value	Description
ASE	American Sign Language
ar	Arabic
hy	Armenian
bn	Bengali
km	Cambodian (Khmer)
CJD	Chamorro
YUH	Chinese, Cantonese
zh	Chinese, Mandarin
hr	Croatian
cs	Czech
nl	Dutch
en	English
fa	Farsi (Persian)
fr	French
de	German
el	Greek
hi	Hindi
BLU	Hmong
hu	Hungarian
ILO	Ilocano
id	Indonesian
it	Italian
ja	Japanese
ko	Korean
lo	Laotian
pl	Polish
pt	Portuguese
ro	Romanian

Value	Description
ru	Russian
sm	Samoan
sr	Serbian
sk	Slovak
so	Somali
es	Spanish
tl	Tagalog
th	Thai
to	Tongan
uk	Ukranian
ur	Urdu
vi	Vietnamese
yi	Yiddish
OTH	*Other (must add text component of the CE field with description)*

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]

HL7-defined Table 0301 - Universal ID type (use in all HD data types)

Value	Description
DNS	An Internet dotted name. Either in ASCII or as integers.
GUID	Same as UUID.
HCD	The CEN Healthcare Coding Scheme Designator. (Identifiers used in DICOM follow this assignment scheme.)
HL7	Reserved for future HL7 registration schemes.
ISO	An International Standards Organization Object Identifier.
L,M,N	These are reserved for locally defined coding schemes.
Random	Usually a base64 encoded string of random bits. The uniqueness depends on the length of the bits. Mail systems often generate ASCII string “unique names,” from a combination of random bits and system names. Obviously, such identifiers will not be constrained to the base64 character set.
UUID	The DCE Universal Unique Identifier.
x400	An X.400 MHS format identifier.
x500	An X.500 directory name.

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 [only selected values listed] (use in MSH-9, third component)

Value	Events
ADT A01	A01, A04, A05, A08, A13, A14, A28, A31
ADT A02	A02, A21, A22, A23, A25, A26, A27, A29, A32, A33
ADT A30	A30, A34, A35, A36, A46, A47, A48, A49
VXQ V01	V01
VXR V03	V03
VXU V04	V04
VXX V02	V02

HL7-defined Table 0356 - Alternate character set handling scheme (use in MSH-20)

Value	Description
ISO 2022-1994	This standard is titled "Information Technology - Character Code Structure and Extension Technique." This standard specifies an escape sequence from basic one byte character set to specified other character set, and vice versa. The escape sequence explicitly specifies what alternate character set is to be evoked...This value is allowed only for HL7 v. 2.3.1.
2.3	The character set switching mode specified in HL7 2.3, sections 2.8.28.6.1 and 2.9.2. Note that the escape sequences used in this mode are "HL7 escape sequences" as defined in HL7 2.3, sec. 2.9, and do not use the ASCII "esc" character, as defined in ISO 2022-1994.
<null>	This is the default, indicating that there is no character set switching occurring in this message.

HL7-defined Table 0357 - Message error status codes (use in ERR-1)

Status code	Status text	Description/Comment
Success		
0	Message accepted	Success. Optional, as the AA conveys this. Used for systems that must always return a status code.
Error status codes		
100	Segment sequence error	The message segments were not in the proper order or required segments are missing.
101	Required field missing	A required field is missing from the segment.
102	Data type error	The field contained data of the wrong data type, e.g., an NM field contained "FOO."
103	Table value not found	A field of data type ID or IS was compared against the corresponding table, and no match was found.
Rejection status codes		
200	Unsupported 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 *other* than additions, e.g., transfer of a non-existent patient.
205	Duplicate key identifier	The ID of the patient, order, etc. already exists. Used in response to addition transactions (Admit, New Order, etc.).
206	Application record locked	The transaction could not be performed at the application storage level, e.g., database locked.
207	Application internal error	A catchall for internal errors not explicitly covered by other codes.

User-defined Table 0360 - Degree [selected values suggested by HL7; *with NIP-suggested additions*] (use in all XPN data types, including PID-5,6,9)

Value	Description
AA	Associate of Arts
AS	Associate of Science
BA	Bachelor of Arts
BN	Bachelor of Nursing
BS	Bachelor of Science
CER	Certificate
CNA	*Certified Nurse's Assistant*
DIP	Diploma
PHD	Doctor of Philosophy
MD	Doctor of Medicine
DO	Doctor of Osteopathy
HS	High School Graduate
JD	Juris Doctor
LPN	*Licensed Practical Nurse*
MA	Master of Arts
MBA	Master of Business Administration
MPH	*Master of Public Health*
MS	Master of Science
MSN	*Master of Science - Nursing*
NG	Non-Graduate
PHN	*Public Health Nurse*
RN	*Registered Nurse*
SEC	Secretarial Certificate
TS	Trade School Graduate

HL7-defined Table 4000 - Name/address representation (use in all XPN, XAD data types) (PID-5,6,9,11)

Value	Description
I	Ideographic (e.g., Kanji)
A	Alphabetic (e.g., Default or some single-byte)
P	Phonetic (e.g., ASCII, Katakana, Hirigana, etc.)

NIP-defined NIP001 - Immunization information source (use in RXA-9)

Value	Description
00	*new immunization record*
01	*historical information - source unspecified*
02	*historical information - from other provider*
03	*historical information - from parent's written record*
04	*historical information - from parent's recall*
05	*historical information - from other registry*
06	*historical information - from birth certificate*
07	*historical information - from school record*
08	*historical information - from public agency*

NIP-defined NIP002 - Substance refusal reason (use in RXA-18)

Value	Description
00	*parental decision*
01	*religious exemption*
02	*other (must add text component of the CE field with description)*

NIP-defined NIP003 - Observation identifiers (use in OBX-3)

LOINC® Code	Description	Corresponding data type (indicate in OBX-2)	Corresponding observation value code table to use (value in OBX-5)
Dose Number for Combination Vaccines *- Use in OBX-3 to indicate that OBX-5 value will be the dose number for a component of a combination vaccine. Used when dose numbers are different for the component antigens.*			
60000-7	*DTaP/DTP dose count in combination vaccine*	*(NM)*	
60001-5	*Hepatitis B dose count in combination vaccine*	*(NM)*	
60002-3	*Haemophilus influenzae type B (Hib) dose count in combination vaccine*	*(NM)*	
60003-1	*Measles dose count in combination vaccine*	*(NM)*	
60004-9	*MMR dose count in combination vaccine*	*(NM)*	
60005-6	*Mumps dose count in combination vaccine*	*(NM)*	
60006-4	*Rubella dose count in combination vaccine*	*(NM)*	
60007-2	*Varicella dose count in combination vaccine*	*(NM)*	
Contraindications, Precautions, and Immunities			
60010-6	*Vaccination contraindication/precaution effective date*	*(DT)*	
60008-0	*Vaccination temporary contraindication/precaution expiration date*	*(DT)*	
60009-8	*Vaccination contraindication/precaution*	*(CE)*	*NIP-defined Table NIP004*
Vaccine Adverse Events Reporting (VAERS) *- For additional information about VAERS, including a copy of the VAERS Form, see <www.cdc.gov/nip/vaers.htm> or <www.fda.gov/cber/vaers/vaers.htm>.*			
60011-4	*Vaccination adverse event (VAERS Form Item #7 - Description of adverse events(s) (symptoms, signs, time course) and treatment, if any)*	*(ST)*	
60012-2	*Vaccination adverse event outcome (VAERS Form Item #8)*	*(CE)*	*NIP-defined Table NIP005*
60013-0	*Number of days hospitalized due to vaccination adverse event (VAERS Form Item #8)*	*(NM)*	
60014-8	*Vaccination adverse event onset date and time (VAERS Form Item #11)*	*(TS)*	

NIP-defined NIP004 - Contraindications, Precautions, and Immunities [explanations are from 1998 *Guide to Contraindications to Childhood Vaccinations*] (use in OBX-5 when OBX-3 is valued as CON)

Value	Description	Explanation
01	*recipient condition - unspecified*	
02	*household condition - unspecified*	
03	*allergy to baker's yeast (anaphylactic)*	*contraindicates HBV*
04	*allergy to egg ingestion (anaphylactic)*	
05	*allergy to gelatin (anaphylactic)*	*extreme caution for MMR & VZV*
06	*allergy to neomycin (anaphylactic)*	*contraindicates IPV, MMR & VZV*
07	*allergy to streptomycin (anaphylactic)*	*contraindicates IPV*
08	*allergy to thimerosal (anaphylactic)*	

Value	Description	Explanation
09	*allergy to previous dose of this vaccine or to any of its unlisted vaccine components (anaphylactic)*	
10	*anaphylactic (life-threatening) reaction to previous dose of this vaccine*	*contraindicates that vaccine*
11	*collapse or shock like state within 48 hours of previous dose of DTP/DTaP*	*precaution for DTP/DTaP*
12	*convulsions (fits, seizures) within 3 days of previous dose of DTP/DTaP*	*precaution for DTP/DTaP*
13	*persistent, inconsolable crying lasting 3 hours within 48 hours of previous dose of DTP/DTaP*	*precaution for DTP/DTaP*
14	*current diarrhea, moderate to severe*	*contraindicates vaccination temporarily (until illness resolves)*
15	*encephalopathy within 7 days of previous dose of DTP*	*contraindicates DTP/DTaP permanently*
16	*current fever with moderate-to-severe illness*	*contraindicates vaccination temporarily (until illness resolves)*
17	*fever of 40.5 C (105 F) within 48 hours of previous dose of DTP/DTaP*	*precaution for DTP/DTaP*
18	*Guillain-Barré syndrome (GBS) within 6 weeks of previous dose of DTP/DTaP*	*precaution for DTP/DTaP*
19	*HIV infection (in household contact)*	*contraindicates OPV*
20	*HIV infection (in recipient)*	*contraindicates OPV & VZV*
21	*current acute illness, moderate to severe (with or without fever) (e.g., diarrhea, otitis media, vomiting)*	*contraindicates vaccination temporarily (until illness resolves)*
22	*chronic illness (e.g., chronic gastrointestinal disease)*	*decide to vaccinate on an individual basis*
23	*immune globulin (IG) administration, recent or simultaneous*	*precaution for MMR & VZV*
24	*immunity: diphtheria*	
25	*immunity: Haemophilus influenzae type B (Hib)*	
26	*immunity: hepatitis B*	
27	*immunity: measles*	
28	*immunity: mumps*	
29	*immunity: pertussis*	
30	*immunity: poliovirus*	
31	*immunity: rubella*	
32	*immunity: tetanus*	
33	*immunity: varicella (chicken pox)*	
34	*immunodeficiency (family history)*	*contraindicates OPV & VZV unless immune status of recipient and other children in the family is documented*
35	*immunodeficiency (household contact)*	*contraindicates OPV*
36	*immunodeficiency (hematologic and solid tumors, congenital immunodeficiency, long-term immunosuppresive therapy, including steroids) (in recipient)*	*contraindicates OPV, MMR & VZV*
37	*neurologic disorders, underlying (including seizure disorders, cerebral palsy, and developmental delay)*	*precaution for DTP/DTaP*
38	*otitis media (ear infection) moderate to severe (with or without fever)*	*contraindicates vaccination temporarily (until illness resolves)*
39	*pregnancy (in recipient)*	

Value	Description	Explanation
40	*thrombocytopenia*	*precaution for MMR*
41	*thrombocytopenic purpura (history)*	*precaution for MMR*
42	*other contraindication/precaution/immunity not listed (must add text component of the CE field with description)*	
43	*unknown (valid only for historical immunizations)*	

NIP-defined NIP005 - Event consequence [adapted from HL7-defined Table 0240] (use in OBX-5 when OBX-3 is valued as 60012-2 - Vaccination adverse event outcome)

Value	Description
D	*Patient died*
L	*Life threatening illness*
E	*Required emergency room/doctor visit*
H	*Required hospitalization (indicate # of days in another OBX segment)*
P	*Resulted in prolongation of hospitalization*
J	*Resulted in permanent disability*
O	*None of the above*

User-defined Table NIP006 - Patient registry status (use in PD1-14) [HL7 will assign table number in Version 2.3.2]

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

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APPENDIX 2: Data Types used in this *Implementation Guide*

HL7 Ref#	Data Type	Description	Notes
2.8.3	CE - coded element with formatted values	This data type transmits codes and the text associated with the code. To allow all six components of a CE data type to be valued, the suggested length of a field of this data type is at least 60. Components: <identifier (ST)>^<text (ST)>^<name of coding system (ST)>^ <alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)> Components are defined as follows: (1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here. (2) Text (ST). Name or description of the item in question. (3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item. (4-6) Three components analogous to 1-3 for the alternate or local coding system.	For HL7-defined tables, the third component, name of coding system, is constructed by appending the table number to the string "HL7." For example, the HL7 table number 0163 would be designated in the "name of coding system" component as "HL70163." The second set of codes must carry the same meaning as the first set. For example, for immunization data, a first set using CVX codes followed by a second set using CPT codes may be used to record the administration of a single vaccine. The presence of two sets of equivalent codes in this data type is semantically different from a repetition of a CE-type field. With repetition, several distinct codes (with distinct meanings) may be transmitted.
2.8.5	CK - composite ID with check digit	Components: <ID number (NM)>^<check digit (NM)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)> Components are defined as follows: (1) ID number (NM). (2) Check digit (NM). This is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null. (3) Code identifying the check digit scheme employed (ID). Check digit scheme codes are defined in *HL7 Table 0061 - Check digit scheme*. Note: Mod 10 and Mod 11 check digit algorithms are defined in the HL7 Standard Section 2.8.5.3.	This data type is used for certain fields that commonly contain check digits, e.g., *PID-3-Patient identifier list*. If a user is not using check digits for a CK field, the second and third components are not valued.
2.8.6	CM - composite	A field that is a combination of other meaningful data fields. Each portion is called a component. The specific components of CM fields are defined within the field descriptions.	The CM data type is maintained strictly for backward compatibility and may not be used for the definition of new fields.
2.8.9	CP - composite price	Components: <price (MO)>^<price type (ID)>^<from value (NM)>^<to value (NM)>^<range units (CE)>^<range type (ID)>	See HL7 Standard for component definitions.
2.8.10	CQ - composite quantity with units	Components: <quantity (NM)>^<units (CE)>	Future use of this data type will be avoided because the same information can be sent as a CE data type.

HL7 Ref#	Data Type	Description	Notes
2.8.12	CX - extended composite ID with check digit	Components: <ID (ST)>^<check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)>^<identifier type code (IS)>^<assigning facility (HD)> Components are defined as follows: (1) ID (ST). (2) Check digit (ST). Defined as in the CK data type except as a ST. The check digit used in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null. (3) Code identifying the check digit scheme employed (ID). (4) Assigning authority (HD). Subcomponents of (4): <application identifier 1 (ID)> & <application identifier 2 (ID)> & <application identifier 3 (ID)> & <application identifier 4 (ID)> & <application identifier 5 (ID)> & <application identifier 6 (ID)> (5) Identifier type code (IS). A code corresponding to the type of identifier. This code may be used as a qualifier to the "Assigning authority" component. Refer to *User-defined Table 0203 - Identifier type* for suggested values. (6) Assigning facility (HD). The place or location identifier where the identifier was first assigned to the patient–part of the history of the identifier. Subcomponents of (6): <namespace ID (IS)>&<universal ID (ST)>&<universal ID type (ID)>	Refer to *User-defined Table 0203 - Identifier type* for suggested values for component 5.
2.8.13	DLN - driver's license number	Components: <license number (ST)>^<issuing state, province, country (IS)>^<expiration date (DT)>	This data type gives the driver=s license information. See HL7 Standard for component definitions and tables to use.
2.8.15	DT - date	Format: YYYY[MM[DD]]	The precision of a date may be expressed by limiting the number of digits used with the format specification YYYY[MM[DD]].
2.8.17	EI - entity identifier	Components: <entity identifier (ST)>^<namespace ID (IS)>^<universal ID (ST)>^<universal ID type (ID)> Components are defined as follows: (1) Entity identifier (ST). This component is usually defined to be unique within the series of identifiers created by the assigning authority, defined by a hierarchic designator, represented by components (2) through (4). (These are as defined here at 2.8.20, "HD - hierarchic designator.")	The entity identifier defines a given entity within a specified series of identifiers.
2.8.18	FC - financial class	Components: <financial class (IS)>^<effective date (TS)> Components are defined as follows: (1) Financial class (IS). The financial class assigned to a person. Refer to *User-defined Table 0064 - Financial class* for suggested values. (2) Effective date (TS). The effective date/time of the person=s assignment to the financial class specified in the first component.	Used in immunization registries to classify VFC eligibility.
2.8.19	FT - formatted text data	This data type is derived from the string data type by allowing the addition of embedded formatting instructions. These instructions are limited to those that are intrinsic and independent of the circumstances under which the field is being used. The FT field is of arbitrary length (up to 64K) and may contain formatting commands enclosed in escape characters.	

HL7 Ref#	Data Type	Description	Notes
2.8.20	HD - hierarchic designator	A unique name that identifies the system which was the source of the data. The HD is designed to be used either as a local version of a site-defined application identifier or a publicly-assigned UID. Syntactically, the HD is a group of two application identifiers: one defined by the first component, and one defined by the second and third components. Components: <namespace ID (IS)>^ <universal ID (ST)>^<universal ID type (ID)> Components are defined as follows: (1) Namespace ID (IS). Refer to *User-defined Table 0300 - Namespace ID* for suggested values. (2) Universal ID (ST). The UID is a string formatted according to the scheme defined by the third component, UID type. The UID is intended to be unique over time within the UID type. It is rigorously defined by the scheme constructing it. The UID must follow the syntactic rules of the particular scheme defined in the third component. (3) Universal ID type (ID). Governs the interpretation of the second component of the HD. If it is a known UID, refer to *HL7 Table 0301 - Universal ID type* for valid values.	Used in fields that formerly used the IS data type. When only the first HD component is valued, it looks like a simple IS data type. Designed to be an application identifier, either as a local version of a site-defined application identifier or a publicly-assigned universal ID (UID). The HD is a group of two application identifiers: one defined by the first component, and one defined by the second and third components. If the first component is present, the second and third components are optional. The second and third components must either both be valued (both non-null), or both be not valued (both null).
2.8.21	ID - coded value for HL7-defined tables	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. Examples of ID fields include *MSH-12-Version ID* and *PD1-12-Protection indicator*.	This data type should be used only for HL7 tables. The reverse is not true, since in some circumstances, it is more appropriate to use the CE data type for HL7 tables.
2.8.22	IS - coded value for user-defined tables	The value of such a field follows the formatting rules for an ST field except that it is drawn from a site-defined (or user-defined) table of legal values. An example of an IS field is *PID-8-Sex*.	This data type should be used only for user-defined tables. The reverse is not true, since in some circumstances, it is more appropriate to use the CE data type for user-defined tables.
2.8.23	JCC - job code/class	Format: <job code (IS)>^<job class (IS)>	See HL7 Standard for component definitions and tables to use.
2.8.25	MO - money	Components: <quantity (NM)>^<denomination (ID)>	See HL7 Standard for component definitions and tables to use.
2.8.26	NM - numeric	A number represented as a series of ASCII numeric characters consisting of an optional leading sign (+ or -), the digits and an optional decimal point. In the absence of a sign, the number is assumed to be positive. If there is no decimal point, the number is assumed to be an integer. Leading zeros, or trailing zeros after a decimal point, are not significant.	
2.8.28	PL - person location	Components: <point of care (IS)>^<room (IS)>^<bed (IS)>^<facility (HD)>^<location status (IS)>^<person location type (IS)>^<building (IS)>^<floor (IS)>^<location description (ST)>	Used to specify a patient location within a healthcare institution. See HL7 Standard for component definitions and tables to use.
2.8.30	PN - person name	Components: <family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., Jr. or III) (ST)>^<prefix (e.g., Dr.) (ST)>^<degree (e.g., MD) (IS)> Components are defined as follows: (1) Family name (ST) & Last name prefix (ST). Surname/last name. Last name prefix is for use with Germanic languages (e.g., van in Ludwig van Beethoven). (2) Given name (ST). (3) Middle initial or name (ST). (4) Suffix (ST). Used to specify a name suffix (e.g., Jr. or III). (5) Prefix (ST). Used to specify a name prefix (e.g., Dr.). (6) Degree (IS). Used to specify an educational degree (e.g., MD). See *User-defined Table 0360 - Degree* for values.	Note: To "translate" the last name prefix and the family name, prepend the last name prefix to the family name component. If the last name prefix is not null, the last name prefix should not also be present as part of the family name component.

HL7 Ref#	Data Type	Description	Notes
2.8.31	PT - processing type	Components: <processing ID (ID)>^<processing mode (ID)> Components are defined as follows: (1) Processing ID (ID). A value that defines whether the message is part of a production, training, or debugging system. Refer to *HL7 Table 0103 - Processing ID* for valid values. (2) Processing mode (ID). A value that defines whether the message is part of an archival process or an initial load. Refer to *HL7 Table 0207 - Processing mode* for valid values. The default (blank) means current processing.	
2.8.38	SI - sequence ID	A non-negative integer in the form of an NM field.	The uses of this data type are defined in the chapters defining the segments and messages in which it is used.
2.8.40	ST - string data	Any printable ASCII characters except the defined delimiter characters. To include any HL7 delimiter character (except the segment terminator) within a string data field, use the appropriate HL7 escape sequence. String data is left justified with trailing blanks optional.	The ST data type is intended for short strings (less than 200 characters). For longer strings, the TX or FT data types should be used.
2.8.41	TM - time	Format: HH[MM[SS[.S[S[S[S]]]]]][+/-ZZZZ] Precision of a time is expressed by limiting the number of digits used within the format, using a 24 hour clock notation. Thus, HH is used to specify precision only to hour.	The time is understood to refer to the local time of the sender.
2.8.42	TN - telephone number	Format: [NN] [(999)]999-9999[X99999][B99999][C any text]	The optional first two digits are the country code. The optional X portion gives an extension. The optional B portion gives a beeper code. The optional C portion may be used for comments such as, "After 6:00 pm."
2.8.43	TQ - timing quantity	Components: <quantity (CQ)>^<interval (CM)>^<duration (ST)>^<start date/time (TS)>^<end date/time (TS)>^<priority (ST)>^<condition (ST)>^<text (TX)>^<conjunction (ST)>^<order sequencing (CM)>^<performance duration (CE)>^<total occurrences (NM)>	Describes when a service should be performed and how frequently. Complete description is in HL7 Standard Section 4.4.
2.8.44	TS - time stamp	Contains the exact time of an event, including the date and time. Format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision> The date portion of a time stamp follows the rules of a date field (DT) and the time portion follows the rules of a time field (TM). HL7 recommends, but does not require, that all systems routinely send the time zone offset.	The optional degree of precision component is retained only for backwards compatibility. Immunization registries will not value this component. Instead, the precision of the data may be indicated by limiting the number of digits valued.
2.8.45	TX - text data	String data meant for user display (on a terminal or printer). Not necessarily left justified. Leading spaces may contribute to clarity of the presentation to the user.	
2.8.47	VID - version identifier	Components: <version ID (ID)>^<internationalization code (CE)>^<international version ID (CE)> Components are defined as follows: (1) Version ID (ID). Used to identify the HL7 version. Refer to *HL7 Table 0104 - Version ID* for valid values. (2) Internationalization code (CE). Used to identify the international affiliate country code. ISO 3166 provides a list of country codes that may be used (see *User-defined Table 0212 - Nationality*). (3) International version ID (CE). Used when the international affiliate has more than a single local version associated with a single U.S. version.	

HL7 Ref#	Data Type	Description	Notes
2.8.48	XAD - extended address	Components: <street address (ST)>^ <other designation (ST)>^<city (ST)>^<state or province (ST)>^<zip or postal code (ST)>^<country (ID)>^<address type (ID)>^<other geographic designation (ST)>^<county/parish code (IS)>^<census tract (IS)>^<address representation code (ID)> Components are defined as follows: (1) Street address (ST). The street or mailing address of a person or institution. (2) Other designation (ST). Second line of address (e.g., Suite 555, or Fourth Floor). (3) City (ST). (4) State or province (ST). State or province should be represented by the official postal service codes for that country. (5) Zip or postal code (ST). Zip or postal codes should be represented by the official codes for that country. In the U.S., the zip code takes the form 99999[-9999], while the Canadian postal codes take the form A9A-9A9. (6) Country (ID). Defines the country of the address. ISO 3166 provides a list of country codes that may be used (see *User-defined Table 0212 - Nationality*). (7) Address type (ID). Type is optional and defined by *HL7 Table 0190 - Address type*. (8) Other geographic designation (ST). Other geographic designation includes county, bioregion, SMSA, etc. (9) County/Parish Code (IS). This component should not duplicate component 8. Refer to *User-defined Table 0289 - County/Parish* for values. (10) Census Tract (IS). Refer to *User-defined Table 0288 - Census tract* for values. (11) Address representation code (ID). See *HL7 Table 4000 - Name/address representation.*	*HL7 Table 0190 - Address type* allows user to designate the type of address (e.g., mailing, residence at birth, birth delivery location). When this field is allowed to repeat, several addresses can be recorded in the field, with each type noted.
2.8.49	XCN - extended composite ID number and name for persons	Components: <ID number (ST)>^<family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., Jr. or III) (ST)>^<prefix (e.g., Dr.) (ST)>^<degree (e.g., MD) (IS)>^<source table (IS)>^<assigning authority (HD)>^<name type code (ID)>^<identifier check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<identifier type code (IS)>^<assigning facility ID (HD)>^<name representation code (ID)> Components are defined as follows: (1) ID number. This string refers to the coded ID according to a user-defined table. If the first component is present, either the source table or the assigning authority must be valued. (2-7) These components are defined as in the PN data type(1-6). (8) Source table (IS). Refer to *user-defined table 0297 - CN ID source* for suggested values. Used to delineate the first component. (9) Assigning authority (HD). Subcomponents of (9): <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)> (10) Name type code (ID). Refer to *User-defined Table 0200 - Name type* for valid values. (11) Identifier check digit (ST). (12) Code identifying the check digit scheme employed (ID). (13) Identifier type code (IS). Refer to *user-defined table 0203 - Identifier type* for valid values. (14) Assigning facility (HD). Subcomponents of (14): <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)> (15) Name representation code (ID). See *HL7 Table 4000 - Name/address representation* for valid values.	See PN (1-6) for component definitions (2-7).

HL7 Ref#	Data Type	Description	Notes
2.8.50	XON - extended composite name and identification number for organizations	Components: <organization name (ST)>^<organization name type code (IS)>^<ID number (NM)>^<check digit (NM)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)>^<identifier type code (IS)>^<assigning facility ID (HD)>^<name representation code (ID)> Components are defined as follows: (1) Organization name (ST). The name of the specified organization. (2) Organization name type code (IS). Refer to *User-defined Table 0204 - Organizational name type*. (3-5) Defined as in CK (1-3). (6) Assigning authority (HD). Subcomponents of (9): <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)> (7) Identifier type code (IS). Refer to *user-defined table 0203 - Identifier type* for valid values. (8) Assigning facility (HD). Subcomponents of (8): <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)> (9) Name representation code (ID). See *HL7 Table 4000 - Name/address representation* for valid values.	See CK (1-3) for XON components (3-5).
2.8.51	XPN - extended person name	Components: <family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., Jr. or III) (ST)>^<prefix (e.g., Dr.) (ST)>^<degree (e.g., MD) (IS)>^<name type code (ID)>^<name representation code (ID)> Components are defined as follows: (1-6) These components are defined as in the PN data type. (7) Name type code (ID). Refer to *User-defined Table 0200 - Name type* for valid values. (8) Name representation code (ID). Refer to *Table 4000 - Name/address representation* for valid values.	
2.8.52	XTN - extended telecommunication number	Format and Components: [NNN] [(999)]999-9999[X99999][B99999][C any text]^<telecommunication use code (ID)>^<telecommunication equipment type (ID)>^<email address (ST)>^<country code (NM)>^<area/city code (NM)>^<phone number (NM)>^<extension (NM)>^<any text (ST)> For codes, refer to *HL7 Table 0201 - Telecommunication use code* and *HL7 Table 0202 - Telecommunication equipment type*.	Note: To interoperate with CEN=s Telecommunication data attribute group, HL7 allows use of the second component for email addresses. When used for an Internet address, the first component will be null; the second component will have the code NET, and the type of Internet address is specified with Internet or X.400 in the third component. When used for an Internet address, the first component of the XTN data type will be null. If the @-sign is being used as a subcomponent delimiter, the HL7 subcomponent escape sequence may be used (See Section 2.9 of the HL7 Standard).

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APPENDIX 3: Recommended Core Data Set for Immunization Registries

This core data set was prepared in 1995 by the National Immunization Program (NIP) in consultation with the Immunization Grantee Working Group. It was reviewed by the National Vaccine Advisory Committee (NVAC), and recommendations of NVAC were incorporated. Contributions were also made by public health representatives and private providers.

The core data elements fall into two categories: required and optional. In addition, two functions for future consideration are presented here. Required core data elements are listed in bold print. These elements represent fundamental attributes necessary for identifying individuals and for describing immunization events. Required elements are critical to the record exchange process. Optional core data elements are less important for record exchange. Some optional items (e.g., address) may be useful only at the local level.

The purpose of the core data set is to facilitate record exchange between immunization registries. It is imperative that, at a minimum, each registry include in its database schema a method to receive and store all of the required core data elements, even if the registry does not routinely collect the information. Thus, if a registry receives a record from one system and subsequently transfers it to another, no required core data elements will be lost in the process. It is strongly recommended that immunization registries also collect data on all of the required core data elements for their own patients.

Listing of Core Data Set

(Required data elements are listed in **bold** print.)

Patient/System/State Identifiers

(Until a unique personal identifier can be established on a national basis, multiple means of identification must be used.)

Patient name: first, middle, last

Patient alias name: first, middle, last
(former names for management of adoptions and name changes)

Patient address, phone number, birthing facility
(these variables should be locally defined)

Patient Social Security number (SSN)

Patient birth date

Patient sex

Patient race

Patient primary language

Patient birth order

Patient birth registration number

Patient birth State/country

Patient Medicaid number

Mother's name: first, middle, last, maiden

Mother's SSN

Father's name: first, middle, last

Father's SSN

Immunization Event Identifiers

Vaccine type

(Use *HL7-defined Table 0292 - Vaccines Administered (code=CVX)* found in Appendix 1. Note that up-to-date versions of this table will be maintained on the NIP website at <www.cdc.gov/nip/registry>.)

Vaccine Manufacturer

(Use *HL7-defined Table 0227 - Manufacturers of vaccines (code=MVX)* found in Appendix 1. Note that up-to-date versions of this table will be maintained on the NIP website at <www.cdc.gov/nip/registry>.)

Vaccine dose number

NOTE: With a fully operating system, this variable is not needed. However, in the real world, and particularly during the initial startup phase, many systems will be gathering partial histories; therefore, to evaluate histories properly, dose number becomes very important. The ultimate goal would be to remove this variable from the core data set, within the first 2 to 3 years of system operation.

Vaccine expiration date

Vaccine injection site

Vaccination date

Vaccine lot number

Vaccine provider

Functions for Future Consideration

Vaccine adverse events monitoring

[Such events must be linkable to the existing national adverse events surveillance system, with immunization information systems having ability to electronically report, without redundant keying of information to the Vaccine Adverse Events Reporting System (VAERS).]

Vaccine preventable disease reporting

[Such disease events must be linkable to existing local, state and national disease reporting systems, with the immunization information systems having ability to electronically report, without redundant keying of information to the appropriate disease reporting systems.]