IMMUNIZATION DATA TRANSACTIONS USING THE HEALTH LEVEL SEVEN (Version 2.3) STANDARD PROTOCOL

National Immunization Program
Data Management Division
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This document is intended to help familiarize developers of immunization information systems with Health Level Seven (HL7) immunization message definitions and encoding rules. Developers will use these to convert data from the original format into a string of characters that comprise a nationally accredited standard message for transmitting immunization data. The samples and definitions herein are intended to demonstrate the structure of immunization data after translation to HL7 standard messages, but in no way can serve as a substitute for a thorough study of the entire set of HL7 specifications for electronic data interchange in health care environments.

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CONTENTS

IMMUNIZATION DATA TRANSACTIONS

Information systems that maintain immunization records need to be able to transmit patient-specific immunization histories electronically to other systems in order to allow healthcare providers to have access to these records at the time health care is given. Electronic tracking of vaccines given 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.

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.

Each message is defined in special notation, called message syntax, that lists the segments by their three-letter identifiers in the order they will appear in the message. Braces, {}, indicate one or more repetitions of the enclosed segment(s), and brackets, [ ], indicate that the enclosed segment(s) is optional. The syntax and an example of each of the four immunization messages follows to demonstrate the structure of immunization data after translation to the HL7 standard.

1. Query for Vaccination Record (VXQ)

Definition: When a health care provider participating in an immunization registry does not have the complete patient vaccination record, he will send a query (using a V01 trigger event) for the definitive (last updated) record.

The query will follow this format:

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

Example

MSH|^~\&||GAVACREC||MAVACREC|199705221605||VXQ^V01|19970522GA40|T|2.3|||AL<CR>
QRD|199705221605|R|I|19970522GA40|||1000^RD|^KENNEDY^JOHN^FITZGERALD^JR|VXI|^SIIS<CR>
QRF|MAVACREC||||256946789~19900607~MA~MA99999999~88888888~KENNEDY^JACQUELINE^LEE~BOUVIER~898666725~KENNEDY^JOHN^FITZGERALD~822546618<CR>

In this query, Georgia Vaccine Records (GAVACREC) is sending a request to Massachusetts Vaccine Records (MAVACRED) 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 their response. If the requestor knew only the patient's Social Security number and birth date, this is what would be sent in the fifth field of the QRF segment:

|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 QRF-5 would be sent:

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

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	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
}		

Example

MSH|^~\&||MAVACREC||GAVACREC|199705221610||VXX^V02|19970522MA53|T|2.3|||AL<CR>
MSA|AA|19970522GA40|<CR>
QRD|199705221605|R|I|19950522GA40|||1000^RD|^KENNEDY^JOHN^FITZGERALD^JR|VXI|^SIIS<CR>
QRF|MAVACREC||||256946789~19900607~MA~MA99999999~88888888~KENNEDY^JACQUELINE^LEE~BOUVIER~898666725~KENNEDY^JOHN^FITZGERALD~822546618<CR>
PID|1||8285||KENNEDY^JOHN<CR>
NK1|1|KENNEDY^JANET^MARIE|M^MOTHER^HL70063|||||||||||||||||||||||||||265909900^^^^SS<CR>
PID|2||7862||KENNEDY^JOHN<CR>
NK1|1|KENNEDY^JACQUELINE|M^MOTHER^HL70063|||||||||||||||||||||||||||898666725^^^^SS<CR>
NK1|2|KENNEDY^JOHN^FITZGERALD|F^FATHER^HL70063|||||||||||||||||||||||||||822546618^^^^SS<CR>
PID|3||9883||KENNEDY^JOHN<CR>
NK1|1|KENNEDY^JACKIE^ANN|M^MOTHER^HL70063|||||||||||||||||||||||||||288763102^^^^SS<CR>
PID|4||4878||KENNEDY^JOHN<CR>
NK1|1|KENNEDY^J^CILENE|M^MOTHER^HL70063|||||||||||||||||||||||||||190966725^^^^SS<CR>
NK1|2|KENNEDY^JACK|F^FATHER^HL70063|||||||||||||||||||||||||||786118768^^^^SS<CR>

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 Vaccine Records, 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 Vaccine Records, to send a more precise query.

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	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
}]		
}]		

Example

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. It shows repeating RXA segments reporting the first and second doses of MMR and the fourth and fifth doses of DTP, and includes the manufacturer, lot number, and expiration date.

MSH|^~\&||MAVACREC||GAVACREC|199705221610||VXR^V03|19970522MA53|T|2.3|||AL<CR>
MSA|AA|19970522GA40|<CR>
QRD|199705221605|R|I|19970522GA40|||1000^RD|^KENNEDY^JOHN^FITZGERALD^JR|VXI|^SIIS<CR>
QRF|MAVACREC||||256946789~19900607~MA~MA99999999~88888888~KENNEDY^JACQUELINE^LEE~BOUVIER~898666725~KENNEDY^JOHN^FITZGERALD~822546618<CR>
PID|||430078856^^^MA^|MA99999999|KENNEDY^JOHN^FITZGERALD^JR^^^L|BOUVIER|19900607|M|||||||||256946789||||MA<CR>
NK1|1|KENNEDY^JACQUELINE|M^MOTHER^HL70063|||||||||||||||||||||||||||898666725^^^^SS<CR>
NK1|2|KENNEDY^JOHN^FITZGERALD|F^FATHER^HL70063|||||||||||||||||||||||||||822546618^^^^SS<CR>
ORC|RE||V53^MAVACREC<CR>
RXA|0|4|19910607|19910607|01^DTP^CVX|.5|MG^^ISO+|||1234567891^O'BRIAN^ROBERT^A^^DR|^^^CHILD HEALTHCARE CLINIC^^^^^101 MAIN STREET^^BOSTON^MA||||W46932777|19910813|SKB^SMITHKLINE^MVX<CR>
ORC|RE||V54^MAVACREC<CR>
RXA|0|1|19910607|19910607|03^MMR^CVX|.5|MG^^ISO+|||1234567891^O'BRIAN^ROBERT^A^^DR|^^^CHILD HEALTHCARE CLINIC^^^^^101 MAIN STREET^^BOSTON^MA||||W2348796456|19910725|MSD^MERCK^MVX<CR>
ORC|RE||V102^MAVACREC<CR>
RXA|0|5|19950520|9950520|01^DTP^CVX|.5|MG^^ISO+|||1234567891^O'BRIAN^ROBERT^A^^DR|^^^CHILD HEALTHCARE CLINIC^^^^^101 MAIN STREET^^BOSTON^MA||||W22532806|19950705|SKB^SMITHKLINE^MVX<CR>
ORC|RE||V103^MAVACREC<CR>
RXA|0|2|19950520|19950520|03^MMR^CVX|.5|MG^^ISO+|||1234567891^O'BRIAN^ROBERT^A^^DR|^^^CHILD HEALTHCARE CLINIC^^^^^101 MAIN STREET^^BOSTON^MA||||W2341234567|19950630|MSD^MERCK^MVX<CR>

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	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
}]		
}]		

Example

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, only the following broad explanation of the optional segments is provided. PV1 and PV2 report details about patient visits, IN2 reports Medicaid and other regulatory information, RXR reports route of administration, OBX reports physician observations, and NTE allows for notes.

MSH|^~\&||MAVACREC||GAVACREC|19970901||VXU^V04|19970522MA53|T|2.3|||AL<CR>
PID|||430078856^^^MA^|MA99999999|KENNEDY^JOHN^FITZGERALD^JR^^^L|BOUVIER|19900607|
M||||||||||256946789||||MA<CR>
NK1|1|KENNEDY^JACQUELINE|M^MOTHER^HL70063|||||||||||||||||||||||||||||898666725^^^^SS<CR>
NK1|2|KENNEDY^JOHN^FITZGERALD|F^FATHER^HL70063|||||||||||||||||||||||||||||822546618^^^^SS<CR>
PV1|...
PV2|...
IN2|||||||LEE^STEPHANIE^P|909686637A<CR>
ORC|...
RXA|0|1|19910607|19910607|03^MMR^CVX|.5|MG^^ISO+|||1234567891^O'BRIAN^ROBERT^A^^DR|
^^^CHILD HEALTHCARE CLINIC^^^^^101 MAIN STREET^^BOSTON^MA||||W23487909876456|
19910725|MSD^MERCK^MVX<CR>
RXR|IM^INTRAMUSCULAR^0162|LG^LEFT GLUTEUS MEDIUS^0163<CR>
OBX||CE|ADVI^ADVERSE IMMUNIZATION REACTION^ABC CODING SYSTEM||PATIENT
DEVELOPED HIGH FEVER|||||||F<CR>
NTE|PATIENT REACTED APPROX 3 HRS AFTER VACCINE INJECTION<CR>

SEGMENTS

Each message is a series of segments identified by their unique three-letter codes. Following are definitions of the segments used in the immunization messages. A segment attribute table is shown for each segment, followed by a sequential list of the fields and their definitions. The number preceding each field name indicates its reference place in the HL7 Standard Version 2.3. Items in parenthesis after the field name show respectively data type and length of field, whether the field is required or optional, and whether the field may repeat. The HL7 item number follows the parenthesis and is given for reference convenience.

SEGMENT DEFINITIONS

2.24 MESSAGE CONTROL SEGMENTS

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

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	HD	O			00003	Sending Application
4	180	HD	O			00004	Sending Facility
5	180	HD	O			00005	Receiving Application
6	180	HD	O			00006	Receiving Facility
7	26	TS	O			00007	Date/Time of Message
8	40	ST	O			00008	Security
9	7	CM	R			00009	Message Type
10	20	ST	R			00010	Message Control ID
11	3	PT	R			00011	Processing ID
12	8	ID	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	6	ID	O	y/3	0211	00692	Character Set
19	60	CE	O			00693	Principal Language of Message

2.24.1.0 MSH field definitions

MSH 2.24.1.1 Field separator (ST-1,Req,N) 00001

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

The recommended value is |.

MSH 2.24.1.2 Encoding characters (ST-4,Req,N) 00002

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

The recommended values are ^~\&.

MSH 2.24.1.3 Sending application (HD-180,Opt,N) 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 in combination with MSH-4 to identify the hub or provider within a state system sending the query.

In our example, we have not used this field.

MSH 2.24.1.4 Sending facility (HD-180,Opt,N) 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 in combination with MSH-3 to identify the state system sending the query.

In our query example, we show Georgia Vaccine Records (GAVACREC) as the sending system.

MSH 2.24.1.5 Receiving application (HD-180,Opt,N) 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 in combination with MSH-6 to identify the hub or provider within a state system receiving the query.

In our example, we have not used this field.

MSH 2.24.1.6 Receiving facility (HD-180,Opt,N) 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. Immunization programs may use this field in combination with MSH-5 to identify the state system receiving the query.

In our query example, we show Massachusetts Vaccine Records (MAVACREC) as the receiving system.

MSH 2.24.1.7 Date/time of message (TS-26,Opt,N) 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[.SSSS]]]]][+/-ZZZZ].

In the query example, a message is being sent on May 22, 1995, at 4:05 p.m. 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.

MSH 2.24.1.8 Security (ST-40,Opt,N) 00008

Definition: This field may be used in to implement security features, but its use is not further specified.
In our example, we have not used this field.

MSH 2.24.1.9 Message type (CM-7,Req,N) 00009

Definition: The first component in this field is from HL7 table 0076 - message type; second is the trigger event code edited by HL7 table 0003 - event type. 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.

Components: <message type>^<trigger event>

In our query example, the message type (VXQ) indicates that this message is a query for vaccination record, and the trigger event type (V01) further indicates a query for vaccination record.

MSH 2.24.1.10 Message control ID (ST-20,Req,N) 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).

The query example shows a potential identification method consisting of date (YYMMDD)+state 2-letter code+sequential number indicating the number of queries from the Georgia system for this date. In the example, this is the 40th query from Georgia Vaccine Records on May 22, 1997.

MSH 2.24.1.11 Processing ID (PT-3,Req,N) 00011

Definition: used to decide how to process the message as defined in HL7 processing rules. The first component contains the following values from Table 0103: D=debugging, P=production, or T=training. The second component allows different priorities to be given to different processing modes and defines the modes in HL7 Table 0207 as a=archive, r=restore from archive, i=initial load, not present=the default, meaning current processing.

Components: <processing ID (ID)>^<processing mode (ID)>

In our example, the use is training, and the second component is not specified, indicating current processing.

MSH 2.24.1.12 Version ID (ID-8,Req,N) 00012

Definition: Matched by the receiving system to its own HL7 version to be sure the message will be interpreted correctly. Values are given in HL7 Table 0104, showing 2.3 as the value for Release 2.3.

In our example, the version is 2.3.

MSH 2.24.1.13 Sequence number (NM-15,Opt,N) 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 example, we have not used this option.

MSH 2.24.1.14 Continuation pointer (ST-180,Opt,N) 00014

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

In our example, we have not used this option.

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

Definition: Identifies the conditions under which accept acknowledgments are required to be returned in response to this message. Table 0155 gives valid values as AL=Always, NE=Never, ER=Error/reject conditions only, SU=Successful completion only. Required for enhanced acknowledgment mode. (Note: If MSH-15 and MSH-16 are omitted or null, the original Acknowledgment Mode rules are used.)

In our example, we have specified that acknowledgement is always required.

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

Definition: Identifies the conditions under which application acknowledgments are required to be returned in response to this message. Required for enhanced acknowledgment mode. The values are the same as those in 2.10.1.15 from Table 0155, given above.

In our example, we have not specified this.

MSH 2.24.1.17 Country code (ID-2,Opt,N) 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.

In our example, we have not specified a country. When left blank, we assume this field to be the USA, as in an AD address data type (see Section 2.4.5.1).

MSH 2.24.1.18 Character set (ID-6,Opt,Y/3) 00692

Definition: Contains the character set for the entire message. Refer to HL7 table 0211 for valid values of alternate character sets. The default set is the printable 7-bit ASCII character set.

MSH 2.24.1.19 Principal Language of Message (CE-60,Opt,N) 00693

Definition: Contains the principal language of the message. Codes come from ISO 639.

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

2.24.2 **Message Acknowledgment (MSA) Segment**
Used to send information while acknowledging another message.

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,Req,N) 00018

Definition: Valid codes are given in Table 0008 to indicate accept, reject, error, etc.

In our example, the code is AA = Application Accept.

MSA 2.24.2.2 Message control ID (ST-80,Req,N) 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 example, the message control ID of 19970522GA40 sent from Georgia Vaccine Records in the query is echoed.

MSA 2.24.2.3 Text message (ST-80,Opt,N) 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 example, we have not used this field.

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

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

In our example, we have not used this field.

MSA 2.24.2.5 Delayed acknowledgement type (ID-1,B,N) 00022

Definition: Valid codes given in Table 0102. Used only as described in section 2.5.2. Otherwise this field is not used.

In our example, we have not used this field.

MSA 2.24.2.6 Error condition (CE-100,Opt,N) 00023

Definition: CE data type field allowing the acknowledging system to use a user-defined error code to further specify AR (application reject) or AE (application error) type acknowledgments. This field is a generalized replacement for MSA-3-text message.

Components: <identifier>^<text>^<name of coding system>^<alternate identifier>^<alternate text>^<name of alternate coding system>.

In our example, we have not used this field.

2.24.3 **Error (ERR) Segment**

Used to add error comments to acknowledgment messages.

The message below shows the query message 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|^~\&||MAVACREC||GAVACREC|199705221305||ACK^|19970522GA40|T|2.3<CR>
MSA|MA|19970522GA40|NO PATIENT INTERNAL ID NUM<CR>
ERR|PID^^3^ID<CR>

The MSH and MSA segments were defined at MSH 2.24.1 and MSA 2.24.2. The ERR segment, comprised of only one field, is 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 2.24.3.1 Error code and location (CM-80,Req,Y) (00024)

Components: <segment ID (ST)>^<sequence (NM)>^<field position (NM)>^<code identifying error (CE)>

Definition: identifies an erroneous segment in another message. The second component is an index if there are more than one segment of type <segment ID>. For systems that do not use the HL7 Encoding Rules, the data item number may be used for the third component. The fourth component references a user-defined error table and is restricted from having any subcomponents, as the subcomponent separator is now the CE's component separator.

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	ST	O	Y		00035	What Data Code Value Qual.
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,Req,N) 00025

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

In our example, 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,Req,N) 00026

Definition: Valid format codes are given in HL7 Table 0106, where D=Response is in display format, R=Response is in record-oriented format, T=Response is in tabular format.

In our example, we use the record-oriented format.

QRD 2.24.4.3 Query priority (ID-1,Req,N) 00027

Definition: Time frame in which the response is expected. Table values and subsequent fields specify time frames for response. HL7 Table 0091 gives valid codes, where D=Deferred, I=Immediate.

In our example, we expect an immediate response.

QRD 2.24.4.4 Query ID (ST-10,Req,N) 00028

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

In our example, we have followed the same formula as in MSH-10 and show the 40th query of the day from the Georgia system. (Note: MSH-10 allows a length of 20 for the field, but QRD-4 was not similarly lengthened. We believe this was an oversight by the editors of Version 2.3 and have assumed an allowable length of 20.)

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

Definition: Valid entries are from Table 0107, giving B=Before the date/time specified, and L=Later than the date/time specified.

In our example, 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,Opt,N) 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.

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

QRD 2.24.4.7 Quantity limited request (CQ-10,Req,N) 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 gives valid entries, giving codes for characters, lines, pages, records, or locally defined. The default value is lines.

Components: <quantity>^<units>

Our example specifies a maximum length of 1000 records.

QRD 2.24.4.8 Who subject filter (XCN-60,Req,Y) 00032

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

Components: <ID number (ST)>^<family name (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., JR or III) (ST)>^<prefix (e.g., DR) (ST)>^<degree (e.g., MD) (ST)>^<source table (ST)>^<name type (ID)>^<identifier check digit (NM)>^<check digit scheme (ID)>^<identifier type code (ID)>^<assigning facility ID (HD)>

In our example, we are sending a query for the record of John Fitzgerald Kennedy, Jr.

QRD 2.24.4.9 What subject filter (CE-60,Req,Y) 00033

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

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

In our example, we specify VXI--Vaccination Information.

QRD 2.24.4.10 What Department Data Code (CE-60,Req,Y) 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.

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

In our example, we have specified SIIS in this field.

QRD 2.24.4.11 What data code value qual (CM-20,Opt,Y) 00035

Definition: Further refines the inquiry by data code qualifiers, providing a window or range to further refine the inquiry. This field would contain start/stop separated by component separators.

Components: <first data code value (ST)>^<last data code value (ST>

In our example, we have not used this field.

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

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

In our example, we have not used this field.

2.24.5 **Query Filter (QRF) Segment**
Used with the QRD segment to refine the content of a query further.

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 QRY 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

QRF 2.24.5.1 Where subject filter (ST-20,Req,Y) 00037

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

In our example, the query pertains to Massachusetts Vaccine Records.

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

Definition: Data representing dates and times equal or after this value should be included.

In our example, we have not specified a date to start including, because we want the entire vaccine record.

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

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

In our example, 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,Opt,Y) 00040

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

QRF 2.24.5.5 Other QRY subject filter (ST-60,Opt,Y) 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

includes a wide variety of possible identifiers. The format of each of the possible search keys 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.
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 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 898-66-6725; his father is John Fitzgerald Kennedy, and his father's Social Security number is 822-54-6618.

QRF-6 thru 9, optional fields, have not been used in our examples and are not defined here.

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

QAK 2.24.22.0 QAK field definitions

QAK 2.24.22.1 Query tag (ST-32,Con,N) 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 this segment. This field differs from MSA-2-message control ID in that its value remains constant for each message (all continuation messages) associated with the query, whereas the message control ID may vary with each continuation message, since it is associated with each individual message, not the query as a whole.

QAK 2.24.22.2 Query response status (ID-2,Opt,N) 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, where OK = data found, no errors (this is the default); NF = No data found, no errors; AE = Applications error.

HL7 BATCH PROTOCOL

A batch of HL7 messages may be sent online using a common file transfer protocol, or offline via tape or diskette. The 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)
```

Example

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

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

BHS 2.24.13.1 Batch field separator (ST-1,Req,N) 00081

Definition: This field has the same definition as the corresponding field in the MSH segment.

BHS 2.24.13.2 Batch encoding characters (ST-3,Req,N) 00082

Definition: This field has the same definition as the corresponding field in the MSH segment.

BHS 2.24.13.3 Batch sending application (ST-15,Opt,N) 00083

Definition: This field has the same definition as the corresponding field in the MSH segment.

BHS 2.24.13.4 Batch sending facility (ST-20,Opt,N) 00084

Definition: This field has the same definition as the corresponding field in the MSH segment.

BHS 2.24.13.5 Batch receiving application (ST-15, Opt,N) 00085

Definition: This field has the same definition as the corresponding field in the MSH segment.

BHS 2.24.13.6 Batch receiving facility (ST-20,Opt,N) 00086

Definition: This field has the same definition as the corresponding field in the MSH segment.

BHS 2.24.13.7 Batch creation date/time (TS-26,Opt,N) 00087

Definition: This field has the same definition as the corresponding field in the MSH segment.

BHS 2.24.13.8 Batch security (ST-40,Opt,N) 00088

Definition: This field has the same definition as the corresponding field in the MSH segment.

BHS 2.24.13.9 Batch name/ID/type (ST-20,Opt,N) 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,Opt,N) 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,Opt,N) 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,Opt,N) 00092

Definition: This field contains the value of BHS-11-batch control ID when this batch was originally transmitted. Not present 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

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

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

BHS 2.24.14.2 Batch comment (ST-80,Opt,N) 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,Opt,Y) 00095

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

Definition: As many types of totals as needed for the batch may be carried by this field as separate components. 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."

3.3 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				00104	Set ID - Patient ID
2	20	CX				00105	Patient ID (External ID)
3	20	CX	R	Y		00106	Patient ID (Internal ID)
4	12	CX		Y		00107	Alternate Patient ID-PID
5	48	XP	R	Y		00108	Patient Name
6	48	N				00109	Mother's Maiden Name
7	26	XP				00110	Date/Time of Birth
8	1	N			0001	00111	Sex
9	48	TS		Y		00112	Patient Alias
10	1	IS			0005	00113	Race
11	106	XP		Y		00114	Patient Address
12	4	N	B			00115	County Code
13	40	IS		Y		00116	Phone Number - Home
14	40	XA		Y		00117	Phone Number - Business
15	60	D			0296	00118	Primary Language
16	1	IS			0002	00119	Marital Status
17	3	XTN			0006	00120	Religion
18	20	XTN				00121	Patient Account Number
19	16	CE				00122	SSN Number - Patient
20	25	IS				00123	Driver's License Number - Patient
21	20	IS		Y		00124	Mother's Identifier
22	3	CX			0189	00125	Ethnic Group
23	60	ST				00126	Birth Place
24	2	DLN			0136	00127	Multiple Birth Indicator
25	2	CX				00128	Birth Order
26	4	IS		Y	0171	00129	Citizenship
27	60	ST			0172	00130	Veterans Military Status
28	80	ID				00739	Nationality
29	26	NM				00740	Patient Death Date and Time
30	1	IS			0136	00741	Patient Death Indicator
		CE					
		CE					
		TS					
		ID					

3.3.2.0 PID field definitions

Usage notes: The assigning facility ID, the fourth component of the patient identifiers, is a string of up to 6 characters that is uniquely associated with the facility that originally assigned the number. An institution, or group of intercommunicating institutions, should establish a list of facilities that may be potential assigners of patient identification (and other important identification) numbers. The list will be one of the institution's master dictionary lists. Since third parties (other than the assigners of patient identification numbers) may send or receive HL7 messages containing patient identification numbers,

the assigning facility ID in the patient identification numbers may not be the same as the sending and receiving systems identified in the MSH. The assigning facility ID 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.

PID 3.3.2.1 Set ID - patient ID (SI-4,Opt,N) 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.

The VXX message is designed to provide a response to a query by giving repetitions of the matching PID and NK1 segments when a query results in more than one "match" to the search criteria. This option may not be useful where immunization information systems do not allow browsing of records that contain identifiable information about patients. Instead, the response would be to return a QAK segment giving the message, "Search resulted in more than one match," or some similar user-defined response.

PID 3.3.2.2 Patient ID (external ID) (CX-20,Opt,N) 00105

Definition: If the patient is from another institution, the identifier used by that institution can be shown here.

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

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 example, we have not used this field.

PID 3.3.2.3 Patient ID (internal ID) (CX-20,Req,Y) 00106

Definition: (Required field) Primary identifier used by the facility to uniquely identify a patient; e.g., medical record number, billing number, etc. When merging patient ID's (A34 and A36), the Patient ID contained in the PID segment cannot repeat.

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

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 example, we have assumed that each system will have an assignment formula which makes this identifier unique. Our example shows the number 430078856^^^MA^ (430078856 is patient ID number, next 2 fields are not used, assigning authority is Massachusetts, and type code and assigning facility are not valued. We have not used the option to repeat this field to record other identifiers such as Medicaid number, WIC client number, birth certificate number, etc.

PID 3.3.2.4 Alternate patient ID (CX-20,Opt,Y) 00107

Definition: Third number may be required to identify a patient. Immunization systems will use this item to record the patient's birth certificate or birth registration number assigned by the state at birth. In order for this number to be unique across all states regardless of numbering system, each state will add, as the first two places in the number, its two-letter code assigned by the U.S. Postal Service.

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

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 example, this number was assigned by Massachusetts and is shown as MA99999999.

PID 3.3.2.5 Patient name (XPN-48,Req,Y) 00108

Definition: Legal name of patient.

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

In our example, the patient is John Fitzgerald Kennedy, Jr. All other names for the patient should be sent in PID-9--patient alias. Therefore, the name type code in this field should be "L" for "Legal." Repetition of this field is allowed for representing the same name in different character sets.

PID 3.3.2.6 Mother's maiden name (XPN-48,Opt,N) 00109

Definition: family name under which the mother was born (i.e., before marriage).

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

In our example, the mother's maiden name is Bouvier.

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

Definition: patient's date and time of birth. In our example, the patient's date of birth is June 7, 1990.

PID 3.3.2.8 Sex (IS-1,Opt,N) 00111

Definition: patient's sex. (M=male, F=female).

In our example, the patient's sex is male.

PID 3.3.2.9 Patient alias (XPN-48,Opt,Y) 00112

Definition: Names by which the patient has been known at some time. Refer to HL7 table 0200 for valid name type codes.

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

In our example, we have not used this field.

PID 3.3.2.10 Race (IS-1,Opt,N) 00113

Definition: Refer to user-defined Table 0005-race.

In our example, we have not used this field.

PID 3.3.2.11 Patient address (XAD-106,Opt,Y) 00114

Definition: The mailing address of the patient. Address type codes are user defined. 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.

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)>

In our example, we have not used this field.

PID 3.3.2.12 County code (IS-4,B,N) 00115

Definition: Patient's county code. This field was left in for backwards compatibility. Can now be supported in the XAD data type of 3.3.2.11.

In our example, we have not used this field.

PID 3.3.2.13 Phone number - home (XTN-40,Opt,Y) 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. Refer to HL7 tables 0201 and 0202 for valid code values.

Components: [NNN] [(999)] 999-9999 [X99999] [B99999] [C any text]^<telecommunication use code (ID)>^<telecommunication equipment type (ID)>^<E-mail address (ST)>^<country code (NM)>^<area/city code (NM)>^<phone number (NM)>^<extension (NM)>^<any text (STI)>

In our example, we have not used this field.

PID 3.3.2.14 Phone number - business (XTN-40,Opt,Y) 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. Refer to HL7 tables 0201 and 0202 for valid code values.

Components: [NNN] [(999)] 999-9999 [X99999] [B99999] [C any text]^<telecommunication use code (ID)>^<telecommunication equipment type (ID)>^<E-mail address (ST)>^<country code (NM)>^<area/city code (NM)>^<phone number (NM)>^<extension (NM)>^<any text (STI)>

In our example, we have not used this field.

PID 3.3.2.15 Primary Language - patient (CE-60,Opt,N) 00118

Definition: Patient's primary language. HL7 recommends using suggested values in ISO table 639.

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

In our example, we have not used this field.

PID 3.3.2.16 Marital status (IS-1,Opt,N) 00119

Definition: Patient's marital status. Values listed in User-defined Table 0002-Marital status.

In our example, we have not used this field.

PID 3.3.2.17 Religion (IS-3,Opt,N) 00120

Definition: Patient's religion. Values listed in User-defined Table 0006-religion.

In our example, we have not used this field.

PID 3.3.2.18 Patient account number (CX-20,Opt,N) 00121

Definition: Patient account number to which all charges, payments, etc., are recorded.

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

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 example, we have not used this field.

PID 3.3.2.19 SSN - patient (ST-16,Opt,N) 00122

Definition: patient's Social Security number. May also be a RR retirement number.

In our example, the patient's SSN is 256-94-6789.

PID 3.3.2.20 Driver's license number-patient (DLN-25,Opt,N) 00123

Definition: Patient's driver's license number.

Components: <license number (ST)>^<issuing state, province, country (IS)>^<expiration date (DT)>

In our example, we have not used this field.

PID 3.3.2.21 Mother's identifier (CX-20,Opt,Y) 00124

Definition: 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.

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

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 example, we have not used this field.

PID 3.3.2.22 Ethnic group (IS-3,Opt,N) 00125

Definition: Further defines patient ancestry. Values suggested in User-defined Table 0189-ethnic group.

In our example, we have not used this field.

PID 3.3.2.23 Birth place (ST-60,Opt,N) 00126

Definition: Location of patient's birth. Immunization systems may use this field for the state where the patient was born. It can be cross-referenced to first two letters of 3.3.2.4, patient's birth registration number.
In our example, we have specified MA, for Massachusetts.

PID 3.3.2.24 Multiple birth indicator (ID-2,Opt,N) 00127

Definition: Indicates whether patient was part of a multiple birth. Y=yes, N=no.

In our example, we have not used this field.

PID 3.3.2.25 Birth order (NM-2,Opt,N) 00128

Definition: If the patient was part of a multiple birth, a number indicating the patient's birth order is entered in this field.

In our example, we have not used this field.

PID 3.3.2.26 Citizenship (IS-4,Opt,Y) 00129

Definition: Indicates patient's country of citizenship. Values suggested in User-defined table 0171.

In our example, we have not used this field.

PID 3.3.2.27 Veterans military status (CE-60,Opt,N) 00130

Definition: Indicates military status assigned to a veteran.

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

In our example, we have not used this field.

PID 3.3.2.28 Nationality (CE-80,Opt,N) 00739

Definition: This field contains a code that identifies the nation or national grouping to which the patient belongs. This may be different from a person's citizenship in countries in which multiple nationalities are recognized (e.g., Spain: Basque, Catalan, etc.) Refer to user-defined table 0212 - Nationality, or ISO Table 3166 for suggested values.

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

In our example, we have not used this field.

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

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

In our example, we have not used this field.

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

Definition: This field indicates whether or not the patient is deceased. Valid values are Y = yes, N = no.

In our example, we have not used this field.

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 Next of Kin/Assoc Parties
2	48	XPN		Y		00191	Name
3	60	CE			0063	00192	Relationship
4	106	XAD		Y		00193	Address
5	40	XTN		Y		00194	Phone Number
6	40	XTN		Y		00195	Business Phone Number
7	60	CE			0131	00196	Contact Role
8	8	DT				00197	Start Date
9	8	DT				00198	End Date
10	60	ST				00199	Next of Kin/AP Job Title
11	20	JCC				00200	Next of Kin/AP Job Code/Class
12	20	CX				00201	Next of Kin/AP Employee Number
13	60	XON		Y		00202	Organization Name
14	2	IS			0002	00119	Marital Status
15	1	IS			0001	00111	Sex
16	26	TS				00110	Date/Time of Birth
17	2	IS		Y	0223	00755	Living Dependency
18	2	IS		Y	0009	00145	Ambulatory Status
19	4	IS		Y	0171	00129	Citizenship
20	60	CE			0296	00118	Primary Language
21	2	IS			0220	00742	Living Arrangement
22	1	CE			0215	00743	Publicity Indicator
23	1	ID			0136	00744	Protection Indicator
24	2	IS			0231	00745	Student Indicator
25	3	IS			0006	00120	Religion
26	48	XPN				00746	Mother's Maiden Name
27	80	CE			0212	00739	Nationality
28	3	IS			0189	00125	Ethnic Group
29	80	CE		Y	0222	00747	Contact Reason
30	48	XPN		Y		00748	Contact Person's Name
31	40	XTN		Y		00749	Contact Person's Telephone Number
32	106	XAD		Y		00750	Contact Person's Address
33	32	CX		Y		00751	Next of Kin/AP's Identifiers
34	2	IS			0311	00752	Job Status
35	1	IS			0005	00113	Race
36	2	IS			0295	00753	Handicap
37	16	ST				00754	Contact Person's Social Security #

3.3.5.0 NK1 field definitions

NK1 3.3.5.1 Set ID-next of kin/associated parties (SI-4,Req,N) 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.

In our example, 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,Opt,Y) 00191

Definition: 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. HL7 Table 0200 - Name type gives valid type codes as: A = Alias Name, L = Legal Name, D = Display Name, M = Maiden Name, and C = Adopted Name.

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

In our example, we have shown the mother as Kennedy, Jacqueline Lee, and the father as Kennedy, John Fitzgerald.

NK1 3.3.5.3 Relationship (CE-60,Opt,N) 00192

Definition: Defines the personal relationship of the next of kin. User-defined Table 0063-relationship gives suggested values.

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

In our example, we have used M=Mother, and F=Father.

NK1 3.3.5. 4 through 32 We have not used these defined NK1 data items and do not include definitions for them here.

NK1 3.3.5.33 SSN - Next of Kin/Associated Party's Identifiers (CX-32,Opt,Y) 00751

Definition: This field contains identifiers for the next of kin/associated party. Examples include Social Security number, driver's license number, RR Retirement number, Medicaid number, WIC client number, etc

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

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 example, we have used 898-66-6725 as the mother's SSN and 822-54-6618 as the father's.

NK1 3.3.5.34-36 We have not used these defined NK1 identifiers and do not include definitions for them here. 4.3.1.0 **Common Order (ORC) Segment**
Used to transmit fields that are common to all orders (all types of services that are requested). This is an optional segment in the message syntax for VXR--Response to Vaccination Query Returning the Vaccination Record. If it is used, the following string indicates a minimum response.

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

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				00218	Placer Group Number
5	2	ID			0038	00219	Order Status
6	1	ID			0121	00220	Response Flag
7	200	TQ				00221	Quantity/Timing
8	200	CM				00222	Parent
9	26	TS				00223	Date/Time of Transaction
10	120	XCN				00224	Entered By
11	120	XCN				00225	Verified By
12	120	XCN				00226	Ordering Provider
13	80	PL				00227	Enterer's Location
14	40	XTN		Y/2		00228	Call Back Phone Number
15	26	TS				00229	Order Effective Date/Time
16	200	CE				00230	Order Control Code Reason
17	60	CE				00231	Entering Organization
18	60	CE				00232	Entering Device
19	120	XCN				00233	Action By

ORC 4.3.1.0 ORC field definitions

ORC 4.3.1.1 Order control (ID-2,Req,N) 00215

Definition: determines the function of the order segment. It may be considered the "trigger event" identifier for orders. Order control codes and their meanings are given in HL7 Table 0119. The code OK means order accepted and OK. The code RE means observations to follow.

ORC 4.3.1.2 Placer order number (EI-22,C,N) 00216

Components: <entity ID (ST)>^<namespace ID (IS)>^<universal ID (ST)>^<universal ID type (ID)>

Definition: This field is the placer application's order number. The first component is a string of up to 15 characters that identifies an individual order. It is assigned by the placer (ordering application). It identifies an order uniquely among all orders from a particular ordering application. The second component contains the application ID of the placing application. The application ID is a string of up to 6 characters that will be uniquely associated with an application. A given institution or group of intercommunicating institutions should establish a unique list of applications that may be potential placers and fillers and assign unique application ID's. The two components are separated by a component delimiter.

ORC 4.3.1.3. Filler order number (EI-22,C,N) 00217

Components: <entity ID (ST)>^<namespace ID (IS)>^<universal ID (ST)>^<universal ID type (ID)>

Definition: filler application's order number. The first component is a string of up to 15 characters that identifies an individual order. It is assigned by the filler (receiving) application. It identifies an order uniquely among all orders in a particular filling application. The second component contains the application ID of the filler. The application ID is a string of up to 6 characters that will uniquely define the

application from others on the network. A given institution or group of intercommunicating institutions should establish a unique list of applications that may be potential placers and fillers and assign unique application ID's. The application ID list becomes one of the institution's master dictionary lists. The second component of the filler order number always identifies the actual filler of an order.

ORC 4.3.1. 4 through 19 are not used in this document.

4.8 PHARMACY/TREATMENT ORDERS

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			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
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,Req,N) 00342

Definition: Use this field if matching this RXA segment to a corresponding RXG segment. If not matching, this field's value is zero.

In our example, the value is 0.

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

Definition: Starts with 1 the first time this medication is administered for this order and increments by one with each additional administration of medication. We will use this field to show dose number of a particular vaccine.

In our example, we show repeating RXA segments reporting the first and second doses of MMR and the fourth and fifth doses of DTP.

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

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

The time stamp (TS) fields are always in the format: YYYYMMDD[HHMM[SS[.SSSS]]][+/-ZZZZ]. The user need only extend the time field as far as useful. If not present, the HHMM portion will default to 0000.

Example: |198807050000| extends the time only to the day of July 5, 1988. If hour, minute, second, etc., were needed, the field would be extended to represent them. In our example, we show the first dose of MMR given on June 7, 1991, and the second dose given on May 20, 1995.

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

Definition: If null, the date/time of RXA-3 date/time start of administration is assumed.

In our example, we did not use this field.

RXA 4.8.14.5 Administered Code (CE-100,Req,N) 00347

Definition: Identifier of the medical substance administered. It is equivalent to OBR-4-universal service ID code in function. If the substance administered is a vaccine, CVX codes may be used to code this field (see HL7 table 0292--Codes for Vaccines Administered).

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

In our example, we show administration of the first and second doses of MMR and the fourth and fifth doses of DTP. The first set of three components gives the NIP/CDC vaccine codes as defined in HL7 Table 0292. 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).

RXA 4.13.1 HL7 table 0292--Codes for Vaccines Administered

The codes published in the HL7 Standard represent the January 14, 1998 revision of the initial content of the external MVX code set. The most recent updated table is available at http://www.cdc.gov/nip/registry.

Table 0292 CVX--Codes for Vaccines Administered
Updated January 14, 1998
(parenteral, unless oral is noted)

Code	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
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

Code	Short Description	Full Vaccine Name
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
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
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
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

NOS=not otherwise specified. Avoid using NOS codes except to record historical records that lack the indicated specificity.

RXA 4.8.14.6 Administered amount (NM-20,Req,N) 00348

Definition: Amount administered. In our example, the amount of MMR administered was .5.

RXA 4.8.14.7 Administered units (CE-60,C,N) 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.

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

In our example, we show mg to designate milligram 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,Opt,N) 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.

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

In our example, we did not use this field.

RXA 4.8.14.9 Administration notes (CE-200,Opt,Y) 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|.

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

In our example, we did not use this field.

RXA 4.8.14.10 Administering provider (XCN-200,Opt,N) 00352

Definition: Provider ID of the person administering the pharmaceutical.

Components: <ID number (ST)>^<family name (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., JR or III) (ST)>^<prefix (e.g., DR) (ST)>^<degree (e.g., MD) (ST)>^<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 (HD)>

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 example, the vaccine was administered by Dr. Robert A. O'Brian, where the ID number was 1234567891, and the source table was not given.

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

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

Components: <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 example, we used Child Healthcare Clinic at 101 Main Street, Boston, MA as the facility location.

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

Definition: Rate at which this medication was administered.

In our example, we did not use this field.

RXA 4.8.14.13 Administered strength (NM-20,Opt,N) 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.

RXA 4.8.14.14 Administered strength unit (CE-60,Opt,N) 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.

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

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.

RXA 4.8.14.15 Substance Lot Number (ST-20,Opt,Y) 01129

Definition: 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.

RXA 4.8.14.16 Substance Expiration Date (TS-26,Opt,Y) 01130

Definition: Expiration date of the medical substance administered.

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

RXA 4.8.14.17 Substance Manufacturer (CE-60,Opt,Y) 01131

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

Definition: Manufacturer of the medical substance administered. Designation of manufacturer will utilize a user-defined code. For purposes of transmission of immunization data in immunization registries, the following table is provided:

RXA 4.13.2 HL7 table 0227--Manufacturers of Vaccines

The codes published in the HL7 Standard represent the January 14, 1998 revision of the initial content of the external MVX code set. The most recent updated table is available at http://www.cdc.gov/nip/registry.

Table 0227 MVX--Manufacturers of Vaccines
Updated January 14, 1998

Code	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	Michigan Biologic Products Institute
MSD	Merck & Co., Inc.
NAB	NABI (formerly North American Biologicals, Inc.)

Code	Vaccine Manufacturer/Distributor
NYB	New York Blood Center
NAV	North American Vaccine, Inc.
NOV	Novartis Pharmaceutical Corporation
OTC	Organon Teknika Corporation
ORT	Ortho Diagnostic Systems, Inc.
PD	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

NOTE: The January 14, 1998 revision adds new codes to accommodate previously unlisted manufacturers and to reflect changes in corporate status for some companies. Where there have been company mergers, the affected old codes have been labeled "inactive" and one new code has been assigned.

RXA 4.8.14.18 Substance refusal reason (CE-200,Opt,Y) 01136

Definition: Reason the patient refused the medical substance. Any entry in the field indicates that the patient did not take the substance.

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

If the vaccination is refused by the patient or guardian, this field will record the vaccine refusal reason, utilizing a user-defined table.

RXA 4.8.14.19 Indication (CE-200,Opt,N) 01123

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

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

RXA 4.8.14.20 Completion Status (ID, 2, Opt, N) 01223

Definition: Status of treatment administration event. Refer to HL7 table 0322 - Completion status for valid values.

Note: Values in Table 0322 are CP=Complete, RE=Refused, NA=Not Administered, PA=Partially Administered.

RXA 4.8.14.21 Action Code (ID, 2, Opt, N) 01224

Definition: Status of record. The information in this field enables the use of the RXA in the vaccine message, where a method of correcting vaccination information transmitted with incorrect patient identifying information is needed. Refer to HL7 table 0323 - Action code for valid value.

Note: Values in Table 0323 are A=Add, D=Delete, U=Update.

RXA 4.8.14.22 System entry date/time (TS, 26, Opt, N) 01225

Definition: 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.

DEFINITIONS

A few of the important definitions for references used in this document are listed below:

Message. A message is the unit of data transferred between systems. 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. A field may have a null value, signified by "". If a null value is entered in a field with a previous value, the old value is changed to null. Each field is identified by the segment it is in and the position within the 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 specify the algorithm that defines the conditionality for each field, X=Not used with this trigger event, B=Left in for backward compatibility with previous versions of HL7.

Data type. A data type restricts the contents of the data field. A maximum length of the field is also defined. Data types are given a 2- or 3-letter code. A data type beginning with C is usually a coded or composite type with several components.

Delimiters. The delimiter values are given in the MSH segment 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 IDs in the order they will appear in the message. Braces, {}, indicate one or more repetitions of the enclosed group of segments, and brackets, [ ], indicate that the enclosed group of segments is optional.

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 present 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.

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.

DATA TYPES USED IN IMMUNIZATION MESSAGES

HL7 Ref #	Data Type	Description	Notes
2.8.3	CE--coded element	This data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows: Components: <identifier (ST)>^<text (ST)>^<name of coding system (ST)>^ <alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)> To allow all six components of a CE data type to be valued, the allowed length of a field of this data type is at least 60. 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. Each coding system is assigned a unique identifier. (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."
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)> Note: Mod 10 and Mod 11 algorithms are defined in HL7 table 0061 (at Section 2.8.5.3)	
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	CQ--composite quantity with units	Components: <quantity (NM)>^<units (CE)>	Same information can be sent as a CE data type.

2.8.10	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 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) (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) Refer to user-defined table 0203--Identifier type for suggested values. Component 6 Assigning facility (HD) Subcomponents: <namespace ID (IS)>&<universal ID (ST)>&<universal ID type (ID)> Definition: The place or location identifier where the identifier was first assigned to the patient--part of the history of the identifier.	User-defined table 0203–Identifier type suggested values: Value Description AM American Express AN Account Number BR Birth Registry # DI Diner's Club Card DL Driver's License # DN Doctor Number DS Discover Card EI Employee Number EN Employer Number GI Guarantor Internal Identifier GN Guarantor External Identifier MS MasterCard MA Medicaid Number MC Medicare Number MR Medical Record # PI Patient Internal Identifier PN Person number PT Patient External Identifier RR Railroad Retirement # SS Social Security # UPIN Medicare-HCFA's Universal Physician ID # VS VISA VN Visit Number XX Organization ID
2.8.13	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..18	HD--hierarchic designator	A unique name that identifies the system which was the source of the data. Components: <namespace ID (IS)>^ <universal ID (ST)>^<universal ID type (ID)> 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. Components are defined as follows: Namespace ID (IS). Refer to user-defined table 0300-Namespace ID for suggested values. Universal ID type (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. 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.	Designed to be an application identifier, either as a local version of a site-defined application identifier or a publicly-assigned 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.
2.8.19	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 religion and sex.	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.
2.8.20	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. Examples of an IS field is Section 3.3.1.4, "Event reason code."	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.
2.8.25	NM--numeric	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.	

2.8.26	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)> Point of care (IS). Conditional on person location type (e.g., nursing unit or department or clinic). Room (IS). Patient room. Bed (IS) Patient bed. Facility (HD). Most general person location designation. Location status (IS). Location (e.g., bed) status. Person location type (IS). Usually includes such values as nursing unit, department, clinic. Building (IS). After facility, most general location. Floor (IS). After building, most general location. Location description (ST). A free text description of the location.	Used to specify a patient location within a healthcare institution.
2.8.28	PN person name	Components: <family name (ST>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., JR or III) (ST)>^<prefix (e.g., DR) (ST)>^<degree (e.g., MD) (ST)>	This data type includes multiple free text components. Each component is specified to be an HL7 ST data type. The maximum length of a PN field is 48 characters including component separators.
2.8.29	PT processing type	Components: <processing ID (ID)>^ <processing mode (ID)>	
2.8.36	SI sequence ID	A non-negative interger in the form of an NM field. The uses of this field are defined in the chapters defining the segments and messages in which it appears.	
2.8.38	ST String data	Any printable ACSII 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.	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.
2.8.39	TM time	The precision of a time may be expressed by limiting the number of digits used with the format specification: HH[MM[SS[.S[S[S[S]]]]]][+/-ZZZZ]. Precision of a time is expressed by limiting the number of digits used within the format. Thus, HH is used to specify precision only to hour.	The time is understood to refer to the local time of the sender.

2.8.40	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".
2.8.41	TQ timing quantity	Describes when a service should be performed and how frequently.	Complete description is in chapter 4.
2.8.42	TS time stamp	Contains the exact time of an event, including the date and time. Time stamp fields are always in the format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]][+/-ZZZZ]^<degree of precision>. HL7 recommends, but does not require, that all systems routinely send the time zone offset.	The date portion of a time stamp follows the rules of a date field and the time portion follows the rules of a time field. The optional second component is retained only for backwards compatibility.
2.8.45	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)>	Components 1-8 are defined as in the AD data type. The remaining components are defined as follows: (9) County/Parish Code (IS). This component should not duplicate component 8. (10) Census Tract (IS)
2.8.46	XCN extended composite ID number and name for persons	Components: <ID number (ST)>^ <family name (ST)>^ <given name (ST)>^ <middle initial or name (ST)>^ <suffix (e.g., JR or III) (ST)>^ <prefix (e.g., DR) (ST)>^ <degree (e.g., MD) (ST)>^ <source table (IS)>^ <assigning authority (HD)>^ <name type (ID)>^ <identifier check digit (ST)>^ <code identifying the check digit scheme employed (ID)>^ <identifier type code (IS)>^ <assigning facility ID (HD)>	Components 1-9 are defined as in the CN data type. (10) Defined as in the XPN data type. (11-13) Defined as in the CX data type.
2.8.47	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)>	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)>

2.8.48	XPN extended person name	Components: <family name (ST>^ <given name (ST)>^ <middle initial or name (ST)>^ <suffix (e.g., JR or III) (ST)>^ <prefix (e.g., DR) (ST)>^ <degree (e.g., MD) (ST)>^ <name type code (ID)>^<name representation code (ID)>	Components 1-6 are defined as in the PN data type. Component 7, name type code (ID), is a code that represents the type of name. Refer to HL7 table 0200 for valid values. Name representation code (ID) provides an indication of the representation provided by the data item; e.g., alphabetic, phonetic.
2.8.49	XTN extended telecommunication number	Format: [NN] [(999)]999-9999[X9999][B99999][C any text]^<telecommunication use code (ID)>^<telecommunication equipment type (ID)>^<E-mail address (ST)><^country code (NM)>^<area/city code (NM)>^<phone number (NM)>^<extension (NM)>^<any text (ST)>	For codes, refer to HL7 tables at Section 2.8.49.