Oregon ALERT
Immunization Information System

HL7 Implementation Guide

Local specifications for HL7 2.3.1 data exchange with ALERT IIS

Version 1.7

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Table of Contents:

For Information about Oregon ALERT IIS,

visit us on the web @ www.alertiis.org

or contact us here: 800-980-9431

For Information about Health Level Seven, visit: www.hl7.org

Oregon ALERT IIS

Thank you for your interest in Health Level Seven (HL7) electronic data exchange with ALERT IIS. Getting timely and accurate immunization data into ALERT is important for your clinic and for the individuals you serve. ALERT is interested in finding the least burdensome method for your clinic to submit data to ALERT and to receive back meaningful data on patient histories and forecasts for upcoming immunizations.

Timely data submission to ALERT IIS benefits providers and the patients they serve by making complete immunization records accessible through the system as soon as possible. ALERT staff will work with your team to identify the data exchange method, format, and frequency that makes most sense for your practice. ALERT IIS is designed to send and receive real-time or batch data submission. If you are a public clinic, keep in mind that you are required to submit data within 14 days of vaccine administration.

Standardized HL7 messaging is the preferred format for exchanging data with ALERT IIS. ALERT IIS is designed to accept HL7 messages through a variety of methods. The preferred data exchange method is real-time messaging through the web service. HL7 batch messages uploaded through the ALERT IIS User Interface or via SFTP are also considered valid data exchange methods. SFTP is an option for batch files only.

PHIN-MS will be supported beginning in the fall 2011. ALERT IIS will have the capability to receive and send HL7 2.5.1 messages by Spring 2012.

Note: Throughout this document HL7 2.4 refers to the local (Oregon) implementation of the CDC HL7 2.3.1 (June 2006) Guide.

Scope of This Document

This HL7 Implementation Guide covers the format and content requirements for sending HL7 messages to Oregon ALERT IIS and receiving back HL7 messages with patient history and forecast information. The guide represents the local (Oregon) implementation of the CDC's HL7 2.3.1 Implementation Guide (June 2006).

This document specifies how HL7 file messages are constructed for the purposes of ALERT IIS. It covers only a small subset of the very extensive HL7 standard. Messages constructed from the guidelines in this document will fall within the HL7 standard for immunization specific messages. Construction and submission of other HL7 messages are beyond the scope of this document.

References

- The National Immunization Program within the Center for Disease Control (http://www.cdc.gov/vaccines/) has published an Implementation Guide for Immunization Data Transactions using Version 2.3.1 of the HL7 Protocol (Implementation Guide 2.2, June 2006) with the purpose of keeping the use of HL7 (www.hl7.org) for immunization data as uniform as possible. This document is HL7 2.3.1 version 2.2 (June 2006) compliant which can be found at http://www.cdc.gov/vaccines/programs/iis/stds/standards.htm.

Health Level Seven (HL7) Standard

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

- The basic unit transmitted in an HL7 implementation is the **message**.
- Messages are made up of several **segments**, each of which is one line of text, beginning with a three-letter code identifying the segment type.
- Segments are in turn made up of several **fields** separated by a delimiter character. Delimiters can be defined by the user in MSH-2, which is the second field of the MSH segment. The required delimiters for immunization messages are:

Delimiter:	Definition/Meaning:
<CR> (Carriage Return)	Segment terminator
| ("Pipe")	Field separator
^	Component separator
&	Sub-component separator
~	Repetition separator
\	Escape character

The details of how HL7 messages are constructed, for ALERT IIS purposes, will be explained later in this document.

The example below shows the essentials of what a VXU message might look like. In this example, a message is being sent on behalf of Valley Clinic with a provider organization id of AL9999 to ALERT IIS. The message consists of three segments.

```
MSH|^~\&||VALCLIN^AL9999||ALERTIIS^^^|20110201||VXU^V04|682299|P^|2.3.1^^|||AL
PID|||79928^^^^PI|A5SMIT0071^^^^^|SMITH^MARY^T^^^^^|JOHNSON^^^^^^^|20101212|F||||
RXA|0|999|20110201|20110101|^^^90701^DTP^CPT|0.5
```

- The Message Header segment (**MSH**) identifies the owner (**VALLEY CLINIC**) of the information being sent and the receiver (**ALERT IIS**). It also identifies the message as being of type **VXU^V04.** The VXU^V04 is an Unsolicited Vaccination Record Update, which is one of the message types defined by HL7.
- The Patient Identification segment (**PID**) gives the patient's name (MARY T SMITH), birth date (20101212, in YYYYMMDD format), and other identifying fields.
- The Pharmacy Administration segment (**RXA**) tells that a DTP vaccine, with CPT code 90701, was administered on February 1, 2011 (formatted as 20110201). Many fields are optional and this example may have more information included in it. Some segments can be repeated within a single message. In this example, the message could have included a second RXA segment to record another immunization given.

Valley Clinic (shown here as AL9999) may or may not be the actual transmitter of the message. HL7 does not specify how messages are transmitted. It is flexible enough to be used for both real-time interaction and batches (150MB max file size). The standard defines file header and file trailer segments, as well as batch header and batch trailer segments that are used when a number of messages are gathered into a batch for transmission as a file.

HL7 Message Types

ALERT IIS uses seven message types for sending and receiving immunization data to/from ALERT IIS: VXU, ADT, VXQ, VXR, VXX, QCK and ACK. The segments that are used to construct each message type are defined below.

[ ] Optional segment
{ } Repeating segment

VXU - Unsolicited Vaccination Record Update

For sending new and/or updated patient demographic information and immunizations. VXU may also be used to delete immunizations and may be sent with only patient demographic information.

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

NOTE: For real time data exchange, a VXU message must contain |2.4^^| in MSH-12.

Immunization deletions can be submitted for both batch and real-time submissions.

ADT - Update Patient Information

For sending patient demographic information inserts and updates without immunizations.

MSH	Message Header
PID	Patient Identification
[{NK1}]	Next of Kin / Associated Parties
[{OBX}]	Observation/Result*

Note: ADT messages may only be submitted through the batch process and are not acceptable for real-time submission at this time.

*The only OBX segment that is valid within an ADT message is one that specifies a CONTRAINDICATION in the OBX-03 Value Type field. (i.e., 30945-0^Contraindication^LN)

VXQ - Query for Vaccination Record

For querying the IIS for a complete patient vaccination record and forecast.

MSH	Message Header Segment
QRD	Query Definition Segment
QRF	Query Filter Segment (ALERT IIS has made this segment REQUIRED)

Notes: For real time data exchange, a VXQ message must contain |2.4^^| in MSH-12. For a VXQ message, the MSH-09 field must contain |VXQ^V01| and the segments must be in the following sequence order:

```
MSH|^~\&||VALCLIN^AL9999||ALERTIIS|20110701||VXQ^V01|0000001|P^|2.4||||AL
QRD|20110701|R|I|000000001|||25^RD|^SMITH^MARY^T |VXI^VACCINE INFORMATION^HL700048|ALERTIIS|
QRF|ALERTIIS||||~20101212~~~~Johnson~~~~|
```

VXR - Response TO Vaccination Query Returning the Vaccination Record

MSH	Message Header Segment (One per message)
MSA	Message Acknowledgment Segment (One per message)
QRD	Query Definition Segment (One per message)
QRF	Query Filter Segment (One per message—required by ALERT IIS)
PID	Patient Identification Segment (One per matching patient)
[PD1]	Additional Demographics
[{NK1}]	Next of Kin Segment (Optional, zero or more per matching patient)
[{	
RXA	Pharmacy Administration
[RXR]	Pharmacy Route
[{OBX}]	Observation/Result Contraindications or Reactions
}]	
[{OBX}]	Observation/Result Vaccines Due Next

When a patient has been uniquely identified (there is only one "match" to the query), the response to the query is a VXR^V03 message that is generated and sent back to the querying organization.

ALERT IIS will only return eligible vaccines. ALERT IIS will not report vaccines that are ineligible due to age restrictions, contraindications or other such rules. ALERT IIS will evaluate vaccines according to CDC/ACIP schedule.

VXR Message Detail

In addition to supplying the querying organization with patient specific demographic and immunization data (contained in the above segments), the VXR message also specifies immunization forecasting information, "Observation/Result Vaccines Due Next." This information is supplied by generating five OBX segments per 1 vaccine recommendation. The set ID (OBX-01) for each OBX triplet, will be the sequential set number uniquely identifying the OBX set for an individual recommended vaccine. ALERT IIS will report the Vaccination Schedule in the OBX segments through the specification of the LOINC code 30979-9 (Vaccines Due Next) and its sub-components in OBX-03. ALERT IIS requires specification of OBX-05 when OBX-03 is specified and valid. Furthermore, ALERT IIS has superimposed a CE data type on the OBX-05 field. The corresponding observation values will be specified in OBX-05. Combinations are as follows:

OBX-03	**OBX-05**
30979-9	HL70292 (Codes for vaccines administered CVX)
30979-9&30980-7	Date Vaccine Due (ALERT IIS provides date recommended)
30979-9&30973-2	Next dose of vaccine due
30979-9&30981-5	Earliest date to give (ALERT IIS provides)
30979-9&30982-3	Reason applied

Below you'll find an example of what a recommendation might look like in a VXR message response (see **bolded** OBX segments below).

```
MSH|^~\&|ALERT IIS^^|ALERT IIS^^||VALCLIN^AL9999|20110701||VXR^V03|0000001|P^|2.4^^|||AL
MSA|AA|0000001||0||0^Message Accepted^HL70357^^^
QRD|20110701|R|I|000000001|||25^RD^^^^^|^SMITH^MARY^T^^^^^^^^^^|VXI^VACCINE
INFORMATION^HL700048^^^|ALERTIIS^^^^^||1
QRF|ALERTIIS||||~20101212~~~~~~~~
PID|||^^^^SR^~7065570^^^^PI^~^^^^MA^||SMITH^MARY^T^^^^^||20101212|F|||^^^OR^^^^^^^|||||||||||
||||||
PD1||||||||||02^^^^^|||||A
PV1||R|||||||||||||||||
```

```
RXA|0|999|20110201|20110201|01^DTP^CVX^90701^DTP^CPT|1.0|||01^^^^^~145934957^ALERT IIS
immunization id^IMM_ID^^^||||||||||||
OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|01^DTP^CVX^90701^DTP^CPT||||||F|
OBX|2|NM|38890-0&30973-2^Dose number in series^LN|1|1||||||F|
RXA|0|0|20101212|20101212|998^No Vaccine Administered^CVX|999|
OBX|1|CE|30979-9^Vaccines Due Next^LN^^^|1|107^DTaP, NOS^CVX^^DTaP, NOS^CPT||||||F|
OBX|2|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|1|20110412||||||F|
OBX|3|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|1|2||||||F|
OBX|4|TS|30979-9&30981-5^Earliest date to give^LN^^^|1|20110301||||||F|
OBX|5|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|1|^ACIP schedule||||||F|
OBX|6|CE|30979-9^Vaccines Due Next^LN^^^|2|85^HepA, NOS^CVX^90634^HepA, NOS^CPT||||||F|
OBX|7|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|2|20111212||||||F|
OBX|8|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|2|1||||||F|
OBX|9|TS|30979-9&30981-5^Earliest date to give^LN^^^|2|20111212||||||F|
OBX|10|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|2|^ACIP schedule||||||F|
OBX|11|CE|30979-9^Vaccines Due Next^LN^^^|3|45^HepB, NOS^CVX^^^||||||F|
OBX|12|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|3|20101212||||||F|
OBX|13|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|3|1||||||F|
OBX|14|TS|30979-9&30981-5^Earliest date to give^LN^^^|3|20101212||||||F|
OBX|15|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|3|^ACIP schedule||||||F|
OBX|16|CE|30979-9^Vaccines Due Next^LN^^^|4|17^Hib, NOS^CVX^90645^Hib, NOS^CPT||||||F|
OBX|17|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|4|20110212||||||F|
OBX|18|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|4|1||||||F|
OBX|19|TS|30979-9&30981-5^Earliest date to give^LN^^^|4|20110123||||||F|
OBX|20|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|4|^ACIP schedule||||||F|
OBX|21|CE|30979-9^Vaccines Due Next^LN^^^|5|88^Influenza, NOS^CVX^90730^Influenza,
NOS^CPT||||||F|
OBX|22|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|5|20110901||||||F|
OBX|23|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|5|1||||||F|
OBX|24|TS|30979-9&30981-5^Earliest date to give^LN^^^|5|20110612||||||F|
OBX|25|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|5|^ACIP schedule||||||F|
OBX|26|CE|30979-9^Vaccines Due Next^LN^^^|6|03^MMR^CVX^90704^MMR^CPT||||||F|
OBX|27|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|6|20111212||||||F|
OBX|28|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|6|1||||||F|
OBX|29|TS|30979-9&30981-5^Earliest date to give^LN^^^|6|20111212||||||F|
OBX|30|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|6|^ACIP schedule||||||F|
OBX|31|CE|30979-9^Vaccines Due Next^LN^^^|7|133^PCV13^CVX^^PCV13^CPT||||||F|
OBX|32|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|7|20110212||||||F|
OBX|33|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|7|1||||||F|
OBX|34|TS|30979-9&30981-5^Earliest date to give^LN^^^|7|20110123||||||F|
OBX|35|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|7|^ACIP schedule||||||F|
OBX|36|CE|30979-9^Vaccines Due Next^LN^^^|8|89^Polio, NOS^CVX^^^||||||F|
OBX|37|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|8|20110212||||||F|
OBX|38|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|8|1||||||F|
OBX|39|TS|30979-9&30981-5^Earliest date to give^LN^^^|8|20110123||||||F|
OBX|40|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|8|^ACIP schedule||||||F|
OBX|41|CE|30979-9^Vaccines Due Next^LN^^^|9|21^Varicella^CVX^90745^Varicella^CPT||||||F|
OBX|42|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|9|20111212||||||F|
OBX|43|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|9|1||||||F|
OBX|44|TS|30979-9&30981-5^Earliest date to give^LN^^^|9|20111212||||||F|
OBX|45|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|9|^ACIP schedule||||||F|
```

VXX - Response TO Vaccination Query (Returning Multiple PID Matches)

MSH	Message Header Segment (One per message)
MSA	Message Acknowledgment Segment (One per message)
QRD	Query Definition Segment (One per message)
QRF	Query Filter Segment (One per message—required by ALERT IIS)
{ PID	Patient Identification Segment (One per matching patient)
[{NK1}]	Next of Kin Segment (Optional, zero or more per matching patient)
}	

When a health care provider participating in an immunization information system needs to obtain a complete patient vaccination record, a query (VXQ message) is sent to the immunization information system for the definitive (last updated) immunization record. When a query results in multiple patient matches, the VXX message response is generated. The VXX contains multiple patients and their demographic information but does not contain their vaccination information.

The number of matches that ALERT IIS generates will depend on the value specified in the first component of the incoming QRD-07 Quantity Limited request field. ALERT IIS will interpret the quantity specified in this field as the maximum number of patient matches that the requester desires.

Example: The value 5 would indicate the provider organization wants at most 5 patient matches to be sent back.

ALERT IIS limits the number of patient matches sent back to a maximum of 10. The value 0 (zero) indicates the provider organization wants the maximum number of patient matches sent back, which will be the ALERT IIS maximum of 10. A value of 10 or more in QRD-7 will again return at most the ALERT IIS maximum of 10 patient matches.

If a query results in 100 matches and the original quantity specified in QRD-7 was 10, then ALERT IIS generates 10 PID segments (and if applicable, associated NK1 segments) in the VXX response message.

The following scenarios outline when a VXX message will be sent back when multiple patient matches are found, but some of the patient records have been locked.

Scenario 1:
The following paragraph holds true, assuming that the VXQ has 0 in QRD-7 (meaning that the provider organization wants the maximum number of patients sent back).

If ALERT IIS matches 10 patients and 8 of those patients have locked records, then only 2 patients will be sent back in the VXX message; the remaining 8 patients (having locked records) will not be sent back. The QRD-12 field (in the VXX) will reflect the total number of matches found in ALERT IIS (10 in our example) and the querying organization will need to assume that the 8 patients that were not returned had locked records.

Example:

VXQ

```
MSH|^~\&||VALCLIN^AL9999||ALERTIIS|20040101101||VXQ^V01|001|P^|2.4|||AL
QRD|20040120|R|I|01|||0^RD|01^SALAMI^STUART^S^^|VXI^VACCINE
INFORMATION^HL700048|^ALERTIIS||0|
QRF|ALERTIIS||||~19900607~|
```

VXX

```
MSH|^~\&||ALERTIIS||QUERYINGORG|20040101101||VXX^V02|001|P^|2.4|||AL
MSA|AA|001||0||0^Message Accepted^HL70357^^^
QRD|20040120|R|I|01|||0^RD|01^SALAMI^STUART^S^^|VXI^VACCINE
INFORMATION^HL700048|^ALERTIIS||10|
QRF|ALERTIIS||||~19900607~|
PID||123^^^^SR~^^^^PI^||SALAMI^BRAD^S^^|^^^^^|19900607|M||^^^^^|||
PID||456^^^^SR~^^^^PI^||SALAMI^CHARLES^^^^|^^^^^|19900706|M||^^^^^|||
NK1|1|SALAMI^CHARLES^^|SEL^SELF^HL70063|123 STREET
ADDRESS^^CITY^WI^55555^USA^^^^|(608)555-6666^^^^^^^^|
```

Scenario 2:
If ALERT IIS matches one or more patients who have locked records, then a QCK is generated. The QCK message will be comprised of the MSH, MSA and QAK segments. The MSA-01 field will have a value of "AE" (Application Error). The MSA-3 field will display a message similar to "Patient has an 'Record Lock Indicator' indicator = Yes." MSA-6 text will display, "Record not released".

Example:

VXQ

```
MSH|^~\&||VALCLIN^AL9999||ALERTIIS|20110701||VXQ^V01|0000001|P^|2.4|||AL
QRD|20110701|R|I|000000001|||0^RD|^SMITH^MARY^T |VXI^VACCINE
INFORMATION^HL700048|ALERTIIS|
QRF|ALERTIIS||||~20101212~~~~Johnson~~~~|
```

QCK

```
MSH|^~\& |ALERT IIS^^|ALERT IIS^^||VALCLIN^AL9999|20110701||QCK^|0000001|P^|2.4^^|||AL
MSA|AE|0000001|Patient has an 'Record Lock Indicator' indicator = Yes.|0||500^Record
not released^HL70357^^^
QAK|000000001|NF|
```

QCK - Query General Acknowledgment

MSH	Message Header Segment
MSA	Message Acknowledgment Segment
[ERR]	Error
[QAK]	Query Acknowledgment Segment

A QCK message is generated when ALERT IIS has processed the query message, but no match was found to the query parameters in the database. ALERT IIS does NOT generate this response message for anything other than no match found (for successful VXQ processing). Remember, error messages are reported through the use of the ACK response message; therefore, the optional [ERR] segment will never be generated for the QCK response message.

ACK - General Acknowledgment

To acknowledge to the sender that a message has been received

MSH	Message Header
MSA	Message Acknowledgment
[ERR]	Error

Errors Reported in ACK

ACK messages are generated for message rejections and for informational error messages. Three conditions that result in message rejection are:

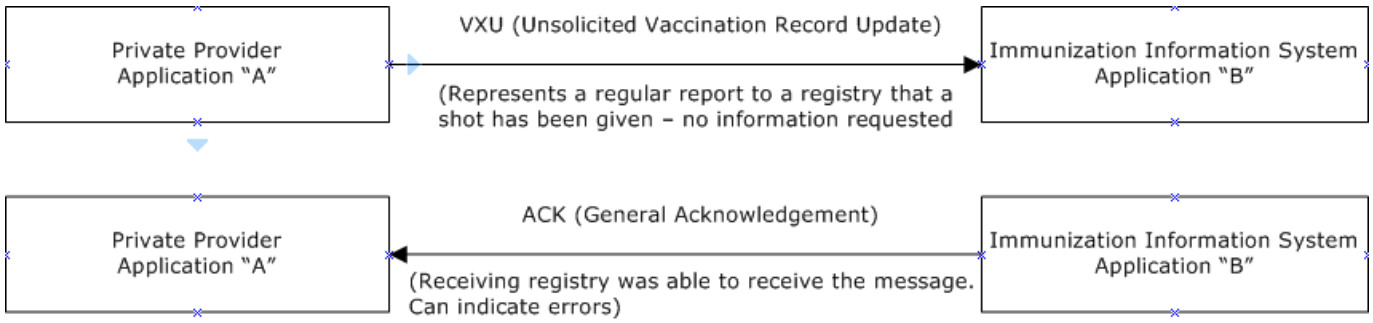
1. Sequencing (i.e. a PID segment must follow an MSH segment.)
2. Segment required fields contain no data.
3. Segment required fields contain invalid data.

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

Recommendation:

It is preferred that demographic information be sent in a VXU message whenever possible, as this message type accommodates BOTH immunization information and demographic update information. ALERT IIS will accept through batch processing only; ADT^A28 (New Patient), ADT^A31 (Update Patient), ADT^A24 (Link Patient), and A37 (Unlink Patient) if necessary.

When a VXU^V04 (Unsolicited Vaccination Record Update) message type is sent with an RXA segment (immunization information) or an ADT, a check is done to verify if the patient exists in ALERT IIS or not. If the patient already exists in ALERT IIS, then the demographic update will occur (if all other update business rules apply). If the patient is new to ALERT IIS, then the patient will be added to the database.



Message Segments: Field Specifications and Usage

Notes:

- Each segment is one line of text ending with the carriage return/line feed (CR/LF) character. The CR/LF character is needed so that the HL7 messages are readable and printable. The messages may appear somewhat cryptic due to the scarcity of white space. (The standard has provisions for inclusion of binary data, but ALERT IIS will not use these features.)
- Square brackets [ ] enclose optional segments and curly braces {} enclose segments that can be repeated; thus, an ADT message type could be composed of just MSH and PID segments.
- Any number of NK1 segments could be included in the message.
- The full HL7 standard allows additional segments within these message types, but they are not used by ALERT IIS. In order to remain compliant with the HL7 standard, their use will not result in an error, but the recipient can ignore the content of the message. The segments that are documented here are sufficient to support the principal ALERT IIS functions of storing data about patients and immunizations.

HL7 Segment Structure

Each segment consists of several fields that are separated by "|", which is the field separator character. The tables below define how each segment is structured and contain the following columns:

1. **SEQ** The ordinal position of the field in the segment. Since ALERT IIS does not use all possible fields in the HL7 standard, these are not always consecutive.
2. **LEN** Maximum length of the field
3. **DT** HL7 data type of the field. See below for definition of HL7 data types.
4. **R/SE** R means required by HL7, and SE means strongly encouraged for ALERT IIS. Blank indicates an optional field.
5. **RP/#** Y means the field may be repeated any number of times, an integer gives the maximum number of repetitions, and a blank means no repetition is permitted.
6. **TBL#** Number of the table giving valid values for the field.
7. **ELEMENT NAME** HL7 name for the field.

HL7 data types

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

Delimiter characters

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

```
MSH|^~\&| …..
XXX|field1|component1^component2^subcomponent3.1&subcomponent3.2^component4|  …..
YYY|repetition1~repetition2| …..
ZZZ|data includes escaped \|\~ special characters| …..
```

In the example above, the Message Header segment uses the field separator, "|", immediately after the "MSH" code that identifies the segment. This establishes what character serves as the field

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

In ALERT IIS, sub-components, repetition and text values requiring the escape character will be rare. Components within fields are common, since names and addresses are represented this way. HL7 permits the use of other delimiters besides the recommended ones and the delimiters used in each message are given in the Message Header segment. **ALERT IIS will always use the recommended delimiters when sending files and requires their use for files received**.

Rules for Sending Systems

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

- Encode each segment in the order specified in the message format.
- Begin the segment with the 3-letter segment ID (for example RXA).
- Precede each field with the data field separator ("|").
- Use HL7 recommended encoding characters ("^~\&").
- Encode the data fields in the order given in the table defining segment structure.
- Encode the data field according to its HL7 data type format.
- Since later fields in the segment are encoded by ordinal position, fields that are not present do not reduce the number of field separators in the segment. For example, when the second and third fields are not present, the field separators maintain the ordinal position of the fourth field: |field1|||field4
- Data fields that are present but explicitly null are represented by empty double quotes "". This is significant when updates are sent to existing records, because an empty field (shown as two field separators with nothing between them) will not alter the field in the IIS. Therefore, if you want to delete a value, put the "" pair in place of the field.
- Trailing separators may optionally be omitted. For example, |field1|field2||||| is equivalent to |field1|field2, when field3 and subsequent fields are not present.
- End each segment with the segment terminator (always the carriage return character, ASCII hex 0D).

Rules for Receiving Systems

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

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

The message segments below are needed to construct message types that are used by ALERT IIS. Each segment is given a brief description excerpted from the HL7 standard. The tables define what fields make up each segment. Since ALERT IIS does not use all the fields that HL7 defines, there

are sometimes gaps in the ordinal sequence of fields. Following HL7 rules, the gaps do not diminish the number of field separators within the segment. For example, if the second and third fields in a segment are not present, their field separators remain in order to indicate that the next field present is the fourth: field1|||field4.

Master Field List

The Master Field List is a single correlated table, listing every field accepted by ALERT IIS. For additional details on each field, please, refer to the documentation under the segment and field description.

Entity	Field	R/SE	HL7
Patient	Patient Identifier List (Internal ID)	R	PID-3
Patient	Patient Name	R	PID-5
Patient	Mother's Maiden Name	SE	PID-6
Patient	Date of Birth	R	PID-7
Patient	Sex (Gender)	R	PID-8
Patient	Patient Alias Name(s)		PID-9
Patient	Race		PID-10
Patient	Patient Address	SE	PID-11
Patient	Phone number – home	SE	PID-13
Patient	Ethnic Group		PID-22
Patient	Multiple Birth Indicator		PID-24
Patient	Birth Order		PID-25
Patient	Patient Death Date		PID-29
Patient	Publicity Code		PD1-11
Patient	Immunization registry status		PD1-16
Patient	Immunization registry status effective date		PD1-17
Patient	Publicity Code effective date		PD1-18
Next-of-Kin	Set ID – NK1	R	NK1-1
Next-of-Kin	Name		NK1-2
Next-of-Kin	Relationship		NK1-3
Next-of-Kin	Address		NK1-4
Next-of-Kin	Phone Number		NK1-5
Vaccination	Give Sub-ID Counter	R	RXA-1
Vaccination	Administration Sub-ID Counter	R	RXA-2
Vaccination	Date/Time Start of Administration	R	RXA-3
Vaccination	Date/Time End of Administration	R	RXA-4
Vaccination	Administered Code	R	RXA-5
Vaccination	Administered Amount	R	RXA-6
Vaccination	Administration Notes		RXA-9
Vaccination	Administering Provider		RXA-10
Vaccination	Administered-at location	R	RXA-11
Vaccination	Substance Lot Number	SE	RXA-15
Vaccination	Substance Manufacturer Name	SE	RXA-17
Vaccination	Substance Refusal Reason		RXA-18
Vaccination	Completion Status		RXA-20
Vaccination	Action code-RXA		RXA-21
Vaccination	Route	R	RXR-1
Vaccination	Site		RXR-2
Vaccination	Set ID – OBX		OBX-1
Vaccination	Value type		OBX-2
Vaccination	Observation Identifier	R	OBX-3

Vaccination	Observation sub-ID		OBX-4
Vaccination	Observation Value	SE	OBX-5
Vaccination	Observation Result Status	R	OBX-11
Vaccination	Date/Time of the Observation		OBX-14

Message Control Segments

MSH – Message Header Segment

The MSH segment defines the intent, source, destination, and some specifics about the syntax of a message.

```
MSH|^~\&||VALCLIN^AL9999||ALERTIIS^^^|19991005032342||VXU^V04|682299|P^|2.4^^|||AL
```

SEQ	LEN	DT	R/SE	RP/#	TBL#	ELEMENT NAME
1	1	ST	R			Field Separator
2	4	ST	R			Encoding Characters
3	180	HD				Sending Application
4	180	HD	SE			Sending Facility
5	180	HD				Receiving Application
6	180	HD				Receiving Facility
7	26	TS				Date/Time Of Message
9	7	CM	R			Message Type
10	20	ST	R			Message Control ID
11	3	PT	R		0103	Processing ID
12	60	VID	R		0104	Version ID
15	2	ID			0155	Accept Acknowledgment Type

Field Notes:

MSH-1 Determines the field separator in effect for the rest of this message. ALERT IIS requires the HL7 recommended field separator of "|".

MSH-2 This field contains the four characters in the following order: the component separator, repetition separator, escape characters and sub-component separator. **ALERT IIS requires ^~\& (ASCII 94, 126, 92 and 38 respectively).**

MSH-3 Name of the sending application. When receiving, ALERT IIS will ignore this field. When sending, ALERT IIS will use "ALERT IIS". See MSH-4 and MSH-6 for the fields principally used to identify sender and receiver of the message.

MSH-4 Identifies for whom the message is being sent (the owner of the immunization data being sent). When sending, ALERT IIS will use "ALERTIIS". When the message is being sent to ALERT IIS and the Provider Organization owning the information is different than the organization transmitting the message (as in a Data Source Parent/Child or Vendor/Client relationship), you must use the ALERT IIS Organization ID of the Provider Organization that **owns** the information (e.g., AL1111.) Contact the ALERT IIS Help Desk for the appropriate Organization Code.

Note: If the owner of the information and the transmitter of the information are the same Provider Organization, and the Provider Organization is not a member of a Data Source Parent/Child or Vendor/Client relationship, this field can be left blank. The data will be loaded with the transmitting organization as the owner of the immunization records. Since there is the potential for transmitting files under an incorrect Provider Organization, we strongly encourage all users to indicate the owning provider Organization Code in MSH-4. This will allow the system to verify

that you are transmitting from an organization that is the owner of the immunization records.

MSH-5 Identifies the name of the receiving application. When receiving, ALERT IIS will ignore this field. When sending, ALERT IIS does not populate this field.

MSH-6 Identifies the message receiver. When sending, ALERT IIS will use the Provider Organization Code assigned to the provider organization. (Referred to as your "AL Code".)

MSH-7 Date and time the message was created. ALERT IIS ignores any time component. See the TS data type.

MSH-9 This is a required field. Two components of this field give the HL7 message type (see Table 0076) and the HL7 triggering event (see Table 0003). Within HL7, the triggering event is considered to be the real-world circumstance causing the message to be sent. For ALERT IIS purposes, this field should have the value VXU^V04 for a message conveying patient and immunization information. Alternatively, one of four ADT values (ADT^A24, ADT^A28, ADT^A31, and ADT^A37) for a message conveying patient information is also acceptable via HL7 batch processing but not HL7 real-time processing. ALERT IIS does not differentiate between the ADT triggering event values; internal business processing rules determine if a patient is inserted or updated in the system. In acknowledgement messages the value ACK is sufficient and the second component may be omitted.

MSH-10 This is a required field. Message rejection will result if nothing is received in this field. The message control ID is a string (which may be a number) uniquely identifying the message among all those ever sent by the sending system. It is assigned by the sending system and echoed back in the ACK message sent in response to identify any errors in the record. It is important to have this be an ID that the provider can use to identify the submitted record.

MSH-11 See Table 0103. The processing ID to be used by ALERT IIS is **P** for production processing. If this field is null, an informational message is generated indicating that ALERT IIS is defaulting to **P**.

MSH-12 See Table 0104. This is a required field. For the parser, the version number that is read in the first MSH segment, of the file, will be the version assumed for the whole file. Indicate a value of "2.4" if sending HL7 real time. If there is no version number found in the first MSH segment, a hard error will occur and the file will not be processed.

MSH-15 See Table 0155. This field controls whether an enhanced acknowledgement (ACK) is generated for the message being sent. If the field is empty, ALERT IIS will assume a value of ER.

Example 1:
A message sent using the value "ER" (Error/Reject conditions only) in MSH-15 with a known issue will reject the file. In this instance you can see that the ACK is returned with the error message stated in the MSA segment.

```
MSH|^~\&|ALERT IIS1.0.0|ALERT IIS|| AL9999|20110215125421||ACK|MSG00002|P|2.4|||
MSA|ER|MSG00002|Record Rejected - Invalid first name (FNAME001).
```

Example 2:
In this example we used the same file as used for example 1 above. The only change to the file was that we are now using a value of "NE" (Never) in MSH-15. You will notice the system generates an ACK, but does not return the MSA segment indicating that the file was rejected.

```
MSH|^~\&|ALERT IIS1.0.0|ALERT IIS|| AL9999|20110216092143||ACK|MSG00002|P|2.4|||
```

MSA – Message Acknowledgment Segment

The MSA segment contains information sent by the ALERT IIS to acknowledge an incoming message.

SEQ	LEN	DT	R/SE	RP/#	TBL#	ELEMENT NAME
1	**2**	**ID**	**R**		**0008**	**Acknowledgment code**
2	**20**	**ST**	**R**			**Message control ID**
3	80	ST				Text message
4	15	NM				Expected sequence number
5	1	ID				Delayed acknowledgment type
6	100	CE				Error condition

Field Notes:

MSA-1 See Table 0008. The acknowledgment code indicates the disposition of the message. This is a required field. ALERT IIS generates an AA (Application Accept) meaning the message was processed and accepted normally. AE (Application Error) means an error prevented normal processing. An AR is generated if a match is found, but the "Record Lock" indicator is checked. An error message will be put in MSA-3, and for ACK messages the optional ERR segment will be included.

MSA-2 The message control ID is the unique ID that is sent by the sending system. This is a required field. It allows the sending system to associate each message with a response. In a response, this will be the same as the control ID that was sent in MSH-10 by the sending system.

MSA-3 This optional field further describes an error condition. When a message has been rejected, ALERT IIS generates "Message Rejection" as the first portion of the text describing the error message. Informational messages will not contain "Message Rejection".

MSA-4 This optional numeric field is used in the sequence number protocol. ALERT IIS does not generate this field.

MSA-5 Delayed Acknowledgement type. ALERT IIS does not generate this field.

MSA-6 Error Condition. ALERT IIS does not generate this field.

QAK – Query Acknowledgment Segment

SEQ	LEN	DT	R/O	RP/#	TBL#	ELEMENT NAME
1	32	ST				Query Tag
2	2	ID	O		0208	Query response status

Field Notes:

QAK-1 This field is valued by the initiating system to identify the query and can be used to match response messages to the originating query. If it is valued, the responding system is required to echo it back as the first field in the QAK. ALERT IIS uses the value specified in the QRD-04 (of the VXQ) for the QAK-01 query tag value.

QAK-2 This field allows the responding system to return a precise response status. Refer to HL7 table 0208 for values. ALERT IIS only generates NF (no data found, no errors) for this field.

Example:

QCK
MSH|^~\& |ALERT IIS^^|ALERT IIS^^||VALCLIN^AL9999|20110701||QCK^|0000001|P^|2.4^^|||AL
MSA|AA|0000001||0||0^Message Accepted^HL70357^^^
QAK|000000001|NF|

ERR – Error Segment
The Error segment (ERR) 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.

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

Field Notes:
ERR-1 See Table 0357. A composite field with four components.

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

The first component identifies the segment ID containing the error. The second component identifies the input file line number of the segment containing the error. The third component identifies by ordinal number the field containing the error. The fourth component identifies, by ordinal number, the field component containing the error (0 is used if not applicable) The remaining five components of the CE data type are not valued and their '^' separators are not generated. Note that error text is transmitted in field MSA-3.

Example:

The NK1 segment is missing a mandatory field:

ACK
MSH|^~\&||ALERIIS||QUERYINGORG|20040101101||VXQ^V01|001|P^|2.4|||AL
MSA|AE|001|Invalid relationship code. Defaulting to Guardian|3||102^Invalid data value^HL70357^^^
ERR|NK1^16^3^0

Patient Administration Message Segments

PID – Patient Identification Segment

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

```
PID|||79928^^^^PI|A5SMIT0071^^^^^|SMITH^MARY^T^^^^|JOHNSON^^^^^^^|20101212|F||||
```

SEQ	LEN	DT	R/SE	RP/#	TBL#	ELEMENT NAME
3	**20**	**CX**	**R**	**Y**	**0203**	**Patient Identifier List (Internal ID)**
5	**48**	**XPN**	**R**			**Patient Name**
6	**48**	**XPN**	**SE**	**Y**		**Mother's Maiden Name**
7	**26**	**TS**	**R**			**Date of Birth**
8	**1**	**IS**	**R**		**0001**	**Sex (Gender)**
9	48	XPN		Y		Patient Alias Name(s)
10	80	CE		Y	0005	Race
11	**106**	**XAD**	**SE**			**Patient Address**
13	**40**	**XTN**	**SE**			**Phone number – home**
22	80	CE		Y	0189	Ethnic Group
24	1	ID			0136	Multiple Birth Indicator
25	2	NM				Birth Order
29	26	TS				Patient Death Date

Field Notes:

PID-3 See Table 0203. Sub-components 1 (ID) and 5 (identifier type code) are required. ALERT IIS supports repetition of this field. A Provider Organization is required to send a Patient Internal ID using one of the following identifier type codes (PI, PN, PRN, or PT). Additional patient identifiers may be sent using repetition of the PID-3 field, including Social Security Number (SS) or Medicaid ID (MA). When ALERT IIS sends to an outside system, the Primary State ID will be sent as the State Registry ID (SR), and the outside system's Primary Patient ID will be sent as the Patient Internal ID (PI) if it is stored in the ALERT IIS.

PID-5 See the XPN data type. Last name and first name are required in the first two components. If the Name Type Code component is included, use L which means Legal ***NOTE: If patient does not have a first name, the value* NO FIRST NAME *must be entered.*** ALERT IIS does not support repetition of this field.

PID-6 See the XPN data type. In this context, where the mother's maiden name is used for patient identification, ALERT IIS uses only last name and first name. A mother's legal name might also appear in the context of an NK1 segment. ALERT IIS does not send this data in outgoing data exchange. ALERT IIS does not support repetition of this field. This element is strongly encouraged for assisting in the ALERT IIS run-match process.

PID-7 Give the year, month, and day of birth (YYYYMMDD). ALERT IIS ignores any time component.

PID-8 See Table 0001. **Element: Sex (Gender).** Use F (Female), M (Male), or U (Unknown).

PID-9 See the XPN data type. ALERT IIS will store Family Name, Given Name, and Middle Name for each Patient Alias name sent - other XPN components will be ignored. If the Patient Alias name is an exact match of the patient's primary name or an existing alias name, it will not be loaded. ALERT IIS supports repetition of this field.

PID-10 See Table 0005. ALERT IIS stores and writes "Unknown" values as null. ALERT IIS supports repetition of this field.

PID-11 See the XAD data type. ALERT IIS does not support repetition of this field.

PID-13 See the XTN data type. Version 2.3.1 includes the support of the N, X, B and C sequences. ALERT IIS does not support repetition of this field. If PRN is specified in component 2 (telecommunication use code (ID) from Table 0201) ALERT IIS will use the 6th 7th 8th and 9th components for specification of area code, phone number, extension and text, respectively. Otherwise, ALERT IIS will assume that the phone number is specified in the first component in the [NNN] [(999)]999-9999[X99999][B99999][C any text] format.

PID-22 See Table 0189. ALERT IIS stores and writes "Unknown" values as null. ALERT IIS supports repetition of this field.

PID-24 See Table 0136. Use **Y** to indicate that the patient was born in a multiple birth.

PID-25 Relevant when patient was born in a multiple birth. Use 1 for the first born, 2 for the second, etc. This field is useful in matching patient data to existing records. *Note: You must include Y in PID-24 and indicate the birth order in PID-25 for the birth order to be loaded.*

PID-29 The date of death, if patient is deceased. Give the year, month, and day (YYYYMMDD). ALERT IIS ignores any time component. If a death date is sent, then the Patient Registry Status in PD1-16 must indicate a value of "P" for permanently inactive/deceased.

PD1 – Patient Additional Demographic Segment

The PD1 carries patient additional demographic information that is likely to change.

SEQ	LEN	DT	R/SE	RP/#	TBL#	ELEMENT NAME
11	80	CE			0215	Publicity Code
16	1	IS			0441	Immunization registry status
17	8	DT				Immunization registry status effective date
18	8	DT				Publicity Code effective date

Field Notes:

PD1-11 See Table 0215. Controls whether recall/reminder notices are sent. ALERT IIS will recognize "01" to indicate no recall/reminder notices or "02" recall/reminder notices are allowed to be sent for this patient.

PD1-16 See Table 0441. Identifies the registry status of the patient. If a code of P is specified, the PID-29 segment must be filled in with Patient Death Date or record will be rejected.

PD1-17 Effective date for registry status reported in PD1-16. Format is YYYYMMDD.

PD1-18 Effective date for publicity code reported in PD1-11. Format is YYYYMMDD.

NK1 – Next of Kin/Associated Parties Segment

The NK1 segment contains information about the patient's other related parties. Any associated parties may be identified. Multiple NK1 segments can be sent for a patient account by incrementing the value in NK1-1.

SEQ	LEN	DT	R/SE	RP/#	TBL#	ELEMENT NAME
1	**4**	**SI**	**R**			**Set ID - NK1**
2	48	XPN		Y		Name
3	60	CE			0063	Relationship
4	106	XAD		Y		Address
5	40	XTN		Y		Phone Number

Field Notes:

NK1-1 Sequential numbers. Use "1" for the first NK1 within the message, "2" for the second, and so forth. Although this field is required by HL7, ALERT IIS will ignore its value, and there is no requirement that the record for the same responsible person keep the same sequence number across multiple messages, in the case that information from the same record is transmitted more than once.

NK1-2 See the XPN data type. Name of the responsible person who cares for the patient. ALERT IIS does not support repetition of this field.

NK1-3 See CE data type and Table 0063. Relationship of the responsible person to the patient. Use the first three components of the CE data type, for example |MTH^Mother^HL70063|.

NK1-4 See the XAD data type. Responsible person's mailing address. ALERT IIS does not support repetition of this field. If relationship (NK1-3) is MTH (Mother), the Address in this field will become the patient's address.

NK1-5 Responsible person's phone number. ALERT IIS does not support repetition of this field. If PRN is specified in component 2 (telecommunication use code (ID) from Table 0201) ALERT IIS will use the 6th 7th 8th and 9th components for specification of area code, phone number, extension and text, respectively. Otherwise, ALERT IIS will assume that the phone number is specified in the first component in the [NNN] [(999)]999-9999[X99999][B99999][C any text] format.

RXA – Pharmacy/Treatment Administration Segment

The RXA carries pharmacy/immunization administration data. It is a repeating segment and can record unlimited numbers of vaccinations. ALERT IIS supports deduction of new immunizations from ALERT IIS inventory as well as the deletion of immunizations from the immunization information system that were added incorrectly.

SEQ	LEN	DT	R/SE	RP/#	TBL#	ELEMENT NAME
1	**4**	**NM**	**R**			**Give Sub-ID Counter**
2	**4**	**NM**	**R**			**Administration Sub-ID Counter**
3	**26**	**TS**	**R**			**Date/Time Start of Administration**
4	**26**	**TS**	**R**			**Date/Time End of Administration**
5	**100**	**CE**	**R**			**Administered Code**
6	**20**	**NM**	**R**			**Administered Amount**
9	200	CE		Y	NIP001	Administration Notes
10	200	XCN		Y		Administering Provider
11	200	CM	**R**			Administered-at location
15	20	ST	S/E	Y		Substance Lot Number
17	60	CE	S/E	Y	0227	Substance Manufacturer Name
18	200	CE		Y	NIP002	Substance Refusal Reason
20	2	ID			0322	Completion Status
21	2	ID			0323	Action code-RXA

Field Notes:

RXA-1 Required by HL7. Use "0" for ALERT IIS.

RXA-2 Required by HL7. Use "999" for ALERT IIS. Other numeric values are ignored.

ALERT IIS sends out series information in this field, provided the system is configured to do so. For example, if a dose evaluates to (3 of 4) in the Immunization Evaluator, then the system sends the number 3 in RXA-2. If the dose violates a specific Immunization Evaluator rule, then the system sends 777 in RXA-2. In all other cases, the number 999 is sent in RXA-2. For combination vaccines, 999 is always sent in RXA-2, and the series count for each component antigen in the combination vaccine is sent in grouped OBX segments, which follow the RXA segment. Please see the field notes on OBX-3, OBX-4 and OBX-5.

The ability to send series information in RXA-2 only applies to the local Oregon implementation of HL7 Version 2.3.1, as described in this Specification Document.

The Send Series/Recommend option also displays on the Organization Extract Screen when the user chooses the HL7 2.4 Transaction Format.

If the user configures the system so that it will **not** send series information, then the system always sends 999 in RXA-2.

In the following example, the dose of Encephalitis is the 3rd dose in the series.

```
RXA|0|3|20010207|20010207|39^Japanese encephalitis^CVX^90735^Japanese
encephalitis^CPT|1.0|||01^^^^^~32851911^ALERT IIS immunization id^IMM_ID^^^||||||||||
```

RXA-3 Date the vaccine was given. ALERT IIS ignores any time component.

RXA-4 Required by HL7. Ignored by ALERT IIS, which will use the date value in RXA-3.

RXA-5 See the CE data type. Identifies the vaccine administered. ALERT IIS accepts the following vaccine code sets: CVX (CVX Codes), CPT (CPT Codes), WTVN (Vaccine Trade Names), NDC (NDC Codes), and WVGC (Vaccine Group Codes). See ALERT IIS Vaccine Codes PDF or Spreadsheet.

For the CVX code set, provide information in the first triplet (components 1 – 3) of the RXA-5 segment. Provide the identifier (CVX Code) in the first component, text description in the second component (optional), and the name of the coding system "CVX" in the third component.

CVX example: `|09^Td/Tdap^CVX^^^|`

For all other codes sets, provide information in the second triplet (components 4 – 6) of the RXA-5 segment. Provide the identifier in the fourth component, text description in the fifth component (optional), and the name of coding system in the sixth component.

NDC Code example:	`|^^^11793-2101-*0^Td/Tdap^NDC|`
Trade Name (WVTN) example:	`|^^^Td^Td/Tdap^WVTN|`
CPT Code example:	`|^^^90718^Td/Tdap^CPT|`
Vaccine Group (WVGC) example:	`|^^^Td/Tdap^Td/Tdap^WVGC|`

If sending multiple code sets, provide the CVX Code in the first triplet and the alternate code set in the second triplet.

CVX and CPT example:

```
|09^Td/Tdap^CVX^90718^Td/Tdap^CPT|
```

For outgoing data exchange, the ALERT IIS sends CVX Code in the first triplet (components 1 – 3); if it is not available, the first triplet is left empty. In the second triplet (components 4 – 6), the ALERT IIS sends NDC Code if it is stored for the immunization. If NDC Code is not present, the CPT Code is sent, and if CPT Code is not present, vaccine group is sent.

RXA-6 Dose Magnitude is the number of age appropriate doses administered. For example, a dose magnitude of 2 of a pediatric formulation would be adequate for an adult. **ALERT IIS and HL7 require this field to contain a value. Currently a value of 1.0 is stored in the IIS regardless of the value sent in the message.**

RXA-9 Use "00" to indicate New Immunization Administered ***owned by the sending organization*** or "01" to indicate Historical Record – Source Unspecified. If the source for a historical record is known, please use values 02 through 07 or OU as described in Table NIP001. For provider organizations set up to deduct from ALERT IIS inventory via data exchange, "00" is mandatory in this field for the dose to be deducted. For outgoing ALERT IIS to Provider Organization processing, data exchange will write out the corresponding immunization id in the second repeating segment.

```
|01^^^^^~9999999^ALERT IIS immunization id^IMM_ID^^^|
```

RXA-10 Identifies the name of the administering clinician (VEI), ordering authority (OEI), and recorder (REI) of the immunization in ALERT IIS. The recorder is not supported on incoming data transfers and only returns if the immunization is owned by the provider requesting the data. ALERT IIS will use components 2 – 7 to record the names.

For incoming loads, it is recommended that license information (LPN, RN, MD) be put in the 5th component so that it processes as the clinician suffix in ALERT IIS, as in the following example:

```
|^GROBBERTS^DELIA^S^RN^MS^^^^^^^VEI^^~^SHAFFER^TERRENCE^P^MD^DR^^^^^^^OEI^^|
```

For incoming loads, the system automatically creates clinician records in ALERT IIS if a match is not found.

RXA-11 If your clinic receives state supplied vaccine and/or participates in the Vaccines For Children program, RXA-11 is required in order for the Inventory Module to deduct from inventory appropriately. If you use the Inventory Module (or plan to) you will need to send this field. Administered-at location will be the provider organization code (AL code) for the clinic that **owns** the data. This will be the same AL code you send in MSH-4.

RXA-15 Manufacturer's lot number for the vaccine. For provider organizations set up to deduct from ALERT IIS inventory via data exchange, when sending a deduction transaction this is a mandatory field. ALERT IIS does not support repetition of this field.

RXA-17 See Table 0227, for example |AB^Abbott Laboratories^MVX^^^|. Use of the external code set MVX is recommended. "When using this code system to identify vaccines, the coding system component of the CE field should be valued as "MVX" not as "HL70227." ALERT IIS does not support repetition of this field.

RXA-18 See Table NIP002. When applicable, this field records the reason the patient refused the vaccine. Any entry in this field indicates that the patient did not take the substance. The vaccine that was offered should be recorded in RXA-5, with the number 0 recorded for the dose number in RXA-2. Do not record contraindications, immunities or reactions in this field. ALERT IIS does not support repetition of this field.

RXA-20 See Table 0322. This field records the value PA for sub potent or partially administered doses. For example, a sub potent dose would be a dose of a vaccine which had been stored improperly, rendering the vaccine ineffective. A partially administered dose refers to the scenario where the patient jumps and the needle breaks or any action that results in an unknown quantity of vaccine entering the patient's system.

RXA-21 See Table 0323. Provides a method for correcting vaccination information previously transmitted incorrectly. To delete an immunization from ALERT IIS, this field must be populated with "D" and the other fields in the RXA should match the original message. Immunizations deducted from ALERT IIS inventory cannot be deleted. An add/update occurs when this field is populated with anything other than "D". If the number of deletions received through batch exceeds 5% of the total number of immunizations or more than 50 immunizations are marked for deletion, ALERT IIS will reject the file.

```
RXA|0|999|19860715|19860715|^^^90718^Td^CPT|0|||05^^^^^||^^^208^^^^^^^^^^^^|||||||
|D|
```

Notes on Refusals:

a) ALERT IIS only stores the fact that a refusal of a vaccine occurred, not a specific type of refusal, so all outgoing refusals will be designated as "PARENTAL DECISION." Please see the example below.

b) ALERT IIS will not write out refusals which do not have an applies-to date. It will write out multiple refusals for the same vaccine on different dates for those patients who have them.

c) The ALERT IIS system will accept incoming refusals of the same vaccine on different dates and file them both. However, if they both have the same applies-to date, only one will be stored.

d) The sending organization will become the refusal owner. In general, only the organization who owns the refusal is permitted to edit it. However, in the case of parent and child organizations, the parent may edit the child's refusals and vice versa.

Here is a sample RXA segment for an MMR refusal on the date 01/01/2007:

```
RXA|0|0|20070101|20070101|^^^MMR^MMR^WVGC|1.0||||||||||||00^PARENTAL REFUSAL^NIP002^^^
```

RXR – Pharmacy/Treatment Route Segment

The RXR Segment contains the alternative combination of route and site.

SEQ	LEN	DT	R/SE	RP/#	TBL#	ELEMENT NAME
1	60	CE	R		0162	Route
2	60	CE			0163	Site

Field Notes:

RXR-1 See Table 0162. This is the route of administration.

RXR-2 See Table 0163. This is the site of administration.

OBX – Observation/Result Segment

The OBX Segment is used to transmit an observation.

Examples below

SEQ	LEN	DT	R/SE	RP/#	TBL#	ELEMENT NAME
1	4	SI				Set ID-OBX
2	3	ID				Value type
3	80	CE	R			Observation Identifier
4	20	ST				Observation sub-ID
5	65536	-	S/E	Y		Observation Value
11	1	ID	R		0085	Observation Result Status
14	26	TS				Date/Time of the observation

Field Notes:

OBX-1 Sequential numbers. Use "1" for the first OBX within the message, "2" for the second, and so forth.

OBX-2 This field contains the data type which defines the format of the observation value in OBX-5. For Provider to ALERT IIS data transfer, use **CE** for Coded Entry. For ALERT IIS to Provider data transfer, ALERT IIS will send values of CE, TS, NM for Coded Entry, Timestamp, and Number respectively, depending on what is sent in OBX-5.

OBX-3 See Table NIP003. Identifies the general category of an observation. See OBX Examples listed after the OBX Field Notes for how the OBX segment is utilized in ALERT IIS.

OBX-4 For sending out Series Information and Recommendations, the number in this field groups together related OBX segments. For example, a single recommendation for DTP/aP is sent in a grouped set of five OBX segments, all with the same sub-identifier in OBX-4. The sub-identifier increments sequentially.

For example, ALERT IIS sends out five grouped OBX segments for each recommendation. The following is a single MMR recommendation, the second for this message, and so all share the same Observation sub-ID of 2 in OBX-4.

```
OBX|6|CE|30979-9^Vaccines Due Next^LN^^^|2|03^MMR^CVX^90707^MMR^CPT||||||F|
OBX|7|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|2|20050407||||||F|
OBX|8|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|2|2||||||F|
OBX|9|TS|30979-9&30981-5^Earliest date to give^LN^^^|2|20021105||||||F|
OBX|10|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|2|^ACIP schedule||||||F|
```

OBX-5 The field identifies the specific value observed. ALERT IIS has imposed a CE data type upon this field; the first component of which is required. The value corresponds to the LOINC code identified in OBX-3.

Example:

```
OBX|6|CE|30979-9^Vaccines Due Next^LN^^^|2|85^HepA, NOS^CVX^90634^HepA,
NOS^CPT|||||F|
OBX|7|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|2|20111212||||||F|
OBX|8|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|2|1||||||F|
OBX|9|TS|30979-9&30981-5^Earliest date to give^LN^^^|2|20111212||||||F|
OBX|10|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|2|^ACIP schedule||||||F|
```

Reading this example tells the provider that the next dose of HepA is due on December 12, 2011 and the dose is the first dose in the series. We can also see that the earliest date that this can be administered is December 12, 2011.

OBX-11 See Table 0085. Required for HL7. Use "F" for ALERT IIS.
OBX-14 Records the time of the observation. ALERT IIS ignores any time component.

OBX Examples:

Example 1: Vaccination Contraindication/Precaution

When indicating a **Vaccination Contraindication/Precaution**, enter LOINC code 30945-0 (Table NIP003) in the OBX-3 field, and enter a Contraindication, Precaution, or Immunity code (Table NIP004) in the OBX-5 field.

```
OBX|1|CE|30945-0^Contraindication^LN||40^Thrombocytopenia^NIP^^^|||||F|
```

NOTE 1: The only valid OBX Observation Identifier (OBX-03) for an ADT message is Contraindication/Precaution (30945-0), as they are not specific to an immunization event.

NOTE 2: All OBX messages with an observation identifier of Vaccination Contraindication/Precaution will be returned in an outgoing file in a separate ADT^A31 message for the patient. *

* Current exception is that a VXQ returns only a VXR and therefore the ADT message which contains the contraindication/precautions is not returned.

Example 2: Reaction to Immunization

When indicating a **Reaction to Immunization**, enter LOINC code 31044-1 (Table NIP003) in the OBX-3 field, and enter a Reaction code (Table OR001) in the OBX-5 field.

```
OBX|1|CE|31044-1^Reaction^LN||SEIZURE^Seizure occurring within 3 days^ALERTIIS^^^|||||F|
```

Example 3: Vaccination Adverse Event Outcome

When indicating a **Vaccination Adverse Event Outcome**, enter LOINC code 30949-2 (Table NIP003) in the OBX-3 field, and enter an Event Consequence code (NIP005) in the OBX-5 field.

```
OBX|1|CE|30949-2^Adverse Outcome^LN||L^Life threatening illness^NIP^^^|||||F|
```

Example 4: Vaccine Eligibility Code

When indicating a **Vaccine Eligibility Code**, enter LOINC code 30963-3 (Table NIP003) in the OBX-3 field, and enter a Vaccine Eligibility Code (OR002) in the OBX-5 field.

```
OBX|1|CE|30963-3^Vaccine purchased with^LN^^^||V03^No Insurance^ALERTIIS|||||F
```

NOTE 1: Vaccine Eligibility Code is required for Vaccines for Children (VFC) participating clinics. The ALERT IIS collects vaccine eligibility code by dose in the OBX segment; this varies from the CDC 2.3.1 implementation guide where data are gathered both at the patient and funding source level. The ALERT IIS requires this information at the dose level to support both billable projects and future accountability and interface requirements for vaccine ordering, distribution and inventory.

Example 5: Use of OBX to send Series information for vaccines

ALERT IIS uses the OBX segment to send **Series information** for vaccines. For each vaccine, the system sends out a grouped set of two OBX segments.

The OBX-3 field is used to send LOINC Codes, which identify the component antigen and the series dose number respectively. The LOINC itself is sent in OBX-3 in order to identify what the value in OBX-5 represents. The following table displays the LOINC Codes that the system sends in OBX-3 for Series information.

LOINC Code	Description
38890-0	Component Vaccine Type. This term is used to distinguish separate vaccine components of a multiple antigen vaccine. Included in LOINC 1/2005.
38890-0&30973-2	Dose Number in Series

In the following example, the LOINC Codes are displayed in OBX-3. These two OBX segments together express that the dose number is the 1st dose of the DTaP series.

```
OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|20^DTaP^CVX^90700^DTaP^CPT||||||F|
OBX|2|NM|38890-0&30973-2^Dose number in series^LN|1|1||||||F|
```

For each component of a combination vaccine, the system sends out a grouped set of two OBX segments because each component may have a different series dose number. For example, a single dose of DTaP-Hib is sent as below. The first and second OBX segments express the dose number of 1 for DTaP. The third and fourth OBX segments express the dose number of 3 for Hib. Field OBX-4 is the sub-id which ties each grouping of two OBX segments into one entry.

```
RXA|0|999|19810807|19810807|50^DtaP-Hib^CVX^90721^DtaP-
Hib^CPT|1.0|||01^^^^^~32851914^ALERT IIS immunization id^IMM_ID^^^||||||||||||
OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|20^DTaP^CVX^90700^DTaP^CPT||||||F|
OBX|2|NM|38890-0&30973-2^Dose number in series^LN|1|1||||||F|
OBX|3|CE|38890-0^COMPONENT VACCINE TYPE^LN|2|17^Hib^CVX^90737^Hib^CPT||||||F|
OBX|4|NM|38890-0&30973-2^Dose number in series^LN|2|3||||||F|
```

Example 6: Use of OBX to send Recommendation information for a vaccine series

ALERT IIS uses the OBX segment to send **Recommendation information** for a vaccine series. For each recommendation, the system sends a grouped set of five OBX segments, which follow a place-holder RXA segment that does not represent an actual immunization administered to the patient. The five OBX segments in order express the recommended vaccine, the recommended date, the dose of the next vaccine due, the earliest date to give, and the reason for the recommendation, which is always the ACIP schedule.

The OBX-3 field is used to send LOINC Codes, which identify the five components of the Recommendation. The LOINC itself is sent in OBX-3 in order to identify what the value in OBX-5 represents. The following table displays the LOINC Codes that the system sends in OBX-3 for Recommendations.

LOINC Code	Description
30979-9	Vaccines Due Next
30979-9&30980-7	Date Vaccine Due
30979-9&30973-2	Vaccine due next dose number
30979-9&30981-5	Earliest date to give
30979-9&30982-3	Reason applied by forecast logic to project this vaccine

In the following example, the LOINC Codes are displayed in OBX-3 for a recommendation of DTaP/aP, HepA, and HepB.

```
RXA|0|0|20010407|20010407|998^No Vaccine Administered^CVX|999|0
OBX|1|CE|30979-9^Vaccines Due Next^LN^^^|1|20^DTP/aP^CVX^90700^DTP/aP^CPT||||||F|
OBX|2|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|1|20010607||||||F|
OBX|3|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|1|1||||||F|
OBX|4|TS|30979-9&30981-5^Earliest date to give^LN^^^|1|20010519||||||F|
OBX|5|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|1|^ACIP schedule||||||F|
OBX|6|CE|30979-9^Vaccines Due Next^LN^^^|2|85^HepA^CVX^90730^HepA^CPT||||||F|
OBX|7|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|2|20030407||||||F|
OBX|8|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|2|1||||||F|
OBX|9|TS|30979-9&30981-5^Earliest date to give^LN^^^|2|20020407||||||F|
OBX|10|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|2|^ACIP schedule||||||F|
OBX|11|CE|30979-9^Vaccines Due Next^LN^^^|3|45^HepB^CVX^90731^HepB^CPT||||||F|
OBX|12|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|3|20010407||||||F|
OBX|13|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|3|1||||||F|
OBX|14|TS|30979-9&30981-5^Earliest date to give^LN^^^|3|20010407||||||F|
OBX|15|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|3|^ACIP schedule||||||F|
```

The ability to receive recommendation information in these grouped OBX segments applies to bi-directional data exchange.

For batch processing, if the user configures the system so that it will **not** send recommendations, the system will omit sending the grouped set of five OBX segments entirely. When sending a VXQ (Vaccination Query) message the system will return a VXR response with the recommendations, regardless of how data exchange is configured.

QRD – Query Definition Segment

Used to define a query.

SEQ	LEN	DT	R/SE	RP/#	TBL#	ELEMENT NAME
1	**26**	**TS**	**R**			**Query date/time**
2	**1**	**ID**	**R**		**0106**	**Query Format Code**
3	**1**	**ID**	**R**		**0091**	**Query Priority**
4	**10**	**ST**	**R**			**Query ID**
5	1	ID			0107	Deferred response type
6	26	TS				Deferred response date/time
7	**10**	**CQ**	**R**		**0126**	**Quantity limited request**
8	**60**	**XCN**	**R**	**Y**		**Who subject filter**
9	**60**	**CE**	**R**	**Y**	**0048**	**What subject filter**
10	**60**	**CE**	**R**	**Y**		**What department data code**
11	20	CM		Y		What data code value qualifier
12	1	ID			0108	Query results level

Field Notes:

QRD-1 Date the query was generated by the application program. ALERT IIS requires this field and verifies that a valid date is received. The minimum format of YYYYMMDD is required. A null/invalid value results in message rejection.

QRD-2 Query/response format code. ALERT IIS requires this field and only accepts a value of "R". A null/invalid value results in message rejection.

QRD-3 Time frame in which the response is expected. ALERT IIS requires this field and only accepts a value of "I". A null/invalid value results in message rejection.

QRD-4 Unique identifier for the query assigned by the querying application. ALERT IIS requires this field and null/invalid values result in message rejection. This field is returned intact by ALERT IIS in a response (VXR or VXX).

QRD-5 Used to indicate a deferred response. This is an optional field. ALERT IIS does not support a deferred response.

QRD-6 Used to indicate the date/time of the deferred response. This is an optional field. ALERT IIS does not support a deferred response.

QRD-7 Maximum length of the response that can be accepted by the requesting system. The 1st component is a numerical value, and the 2nd component accepts only the value "RD" (i.e. |5^RD|). A null/invalid value in either sub-component results in message rejection. ALERT IIS will interpret the units as the maximum number of patient matching records to be returned via a VXX response message.

*Note: ALERT IIS will return a maximum of 10 records per query message submitted. The value 0 (zero) or any number 10 or greater will result in the maximum of 10 matches returned by ALERT IIS.

QRD-8 Identifies the subject of the query or whom the inquiry is about. The 2nd component (last name) is required by ALERT IIS. If the first or last name OR both names are missing (regardless if there are repeating full names after the first) it results in message rejection. ALERT IIS supports repetition of this field.

QRD-9 Describes the kind of information required to satisfy the request. ALERT IIS requires this field and a value of "VXI" must populate the 1st component. ALERT IIS supports repetition of this field. Null/invalid values result in message rejection if the field does not repeat. If the field repeats there must be at least one value of "VXI" to be valid.

QRD-10 Identifies the "what" department data code. ALERT IIS requires this field and supports repetition of it. Null/invalid values will result in message rejection.

QRD-11 Further refines the inquiry by data code qualifiers by providing a window or range. This is an optional and repeatable field.

QRD-12 Used to control level of detail in results. This field is optional and will be populated by ALERT IIS with the total count of PID matches found in ALERT IIS when Query results in a VXX Response Message.

Example:
QRD|19970522|R|I|000000001|||25^RD|01^KENNEDY^JOHN^FITZGERALD^JR|VXI^VACCINE INFORMATION^HL700048|^ALERTIIS||20

QRF – Query Filter Segment – (REQUIRED by ALERT IIS)

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

SEQ	LEN	DT	R/SE	RP/#	TBL#	ELEMENT NAME
1	**20**	**ST**	**R**	**Y**		**Where subject filter**
2	26	TS				When data start date/time
3	26	TS				When data end date/time
4	60	ST		Y		What user qualifier
5	**60**	**ST**	**R**	**Y**		**Other query subject filter**
6	12	ID		Y	0156	Which data/time qualifier
7	12	ID		Y	0157	Which date/time status qualifier
8	12	ID		Y	0158	Date/time selection qualifier
9	60	TQ		Y		When quantity/timing qualifier

Field Notes:

QRF-1 Identifies the department, system or subsystem to which the query pertains. ALERT IIS requires this field. A null/invalid value results in message rejection.

QRF-2 Data representing dates and times (registries do not value this component). This is an optional field.

QRF-3 Data representing dates and times (registries do not value this component). This is an optional field.

QRF-4 An Identifier to further define characteristics of the data of interest. This is an optional field.

QRF-5 This field is used by registries to transmit up to ten separate search "keys". ALERT IIS requires this field and does NOT support repetition. The 2nd component (patient birth date) is required by ALERT IIS. A null/invalid format results in message rejection. Format is YYYYMMDD.

The "keys" within QRF-5 are ordered and separated by the repeat delimiter "~". If a "key" has no value, it is left empty with the repeat delimiter holding its place. Order of data "keys" is as follows:

<patient Social Security Number>**~<patient birth date>**~<patient birth state>~<patient birth registration number>~<patient Medicaid number>~<mother's name last^**first**^middle>~<**mother's maiden name**>~<mother's Social Security Number>~<father's name>~<father's Social Security Number>.

Example:
QRF|ALERTIIS||||234567890~**19900607**~OR~OR9999~MA8888~SMITH^**JANE**^LEE~**DOE**~234567891~SMITH^JOHN^JO~234567892|

HL7 Message Examples

To illustrate how a ALERT IIS HL7 file is put together we will document how the fictional organization, Valley Clinic, formats patient and immunization records to be transmitted to ALERT IIS. The following table displays the information to be transmitted and it is organized into HL7 segments and fields. For example, PID-3 refers to the third field in the Patient Identification segment.

Patient #1 (George Miller)		
Information Type	**Value to Transmit**	**HL7 Field**
PID segment		
Chart Number (ID on Valley Clinic's system)	45LR999	PID-3
Name	GEORGE M MILLER JR	PID-5
Mother's maiden name	MARTHA OLSON	PID-6
Birth date	February 27, 1995 (send as 19950227)	PID-7
Sex	M	PID-8
Address	123 MAIN ST PORTLAND, OR 50000, 1843	PID-11
Birth Place	OR025, OR	PID-23
Multiple Birth Indicator	Y (patient was born as part of a multiple birth)	PID-24
Birth Order	2 (second birth of a multiple birth)	PID-25
PD1 segment		
Publicity Code	02 (reminder/recall – any method)	PD1-11
Patient Registry Status	A (patient is active in the immunization information system)	PD1-14
NK1 segment		
Responsible Person Name #1	MARTHA MILLER	NK1-2
Relationship to patient	MTH	NK1-3
Address	123 MAIN ST PORTLAND, OR 50000, 1843	NK1-4
Phone	608 123 4567	NK1-5
Responsible Person Name #1	GEORGE MILLER	NK1-2
Relationship to patient	FTH	NK1-3
Patient #2 (Maria Califano)		
Information Type	**Value to Transmit**	**HL7 Field**
PID segment		
Chart Number	23LK729	PID-3
Name	MARIA CALIFANO	PID-5
Mother's maiden name	ANGELICA DISTEFANO	PID-6
Birth date	April 13, 1998 (send as 19980413)	PID-7
Sex	F	PID-8
RXA segment #1		
Date administered	July 23, 1999 (send as 19990723)	RXA-3
CPT Code	90700 (DTaP)	RXA-5
Dose size	0.5	RXA-6
Administering Provider Organization	Valley Clinic (send provider org code: AL9999)	RXA-11
Patient #3 (Joseph Fisher)		

Information Type	Value to Transmit	HL7 Field
RXA segment #2		
Date administered	July 23,1999 (send as 19990723)	RXA-3
CPT Code	90707 (MMR)	RXA-5
Dose size	0.5	RXA-6
Administering Provider Organization	Valley Clinic (send provider org code AL####)	RXA-11
PID segment		
Chart Number	92HG9257	PID-3
Name	JOSEPH FISHER	PID-5
Mother's maiden name	MARY LASOWSKI	PID-6
Birth date	May 28, 1998 (send as YYYYMMDD)	PID-7
Sex	M	PID-8
RXA segment #1		
Date administered	July 29, 1999 (send as YYYYMMDD)	RXA-3
CPT Code	90707 (MMR)	RXA-5
Dose	0.5	RXA-6
Administering Provider Organization	Valley Clinic (send provider org code AL####)	RXA-11
Lot number	AD19487	RXA-15
Lot expiration date	December 12, 1999 (send as YYYYMMDD)	RXA-16
Lot manufacturer	FLYBYNIGHT LABORATORIES (this manufacturer is not found in the valid list in HL7 Table 0227. The message will still be accepted in ALERT IIS, with the manufacturer set to unknown.)	RXA-17

In an HL7 message, each segment is a single text line, ending with the carriage return character. In the examples, long lines are broken artificially for display purposes and the carriage return character is denoted by <CR>.

```
MSH|^~\&||VALCLIN^AL9999||ALERT IIS|19990802091524||VXU^V04|00000123|P|2.4|||AL<CR>
PID|||45LR999^^^^PI||MILLER^GEORGE^M^JR|OLSON^MARTHA|19950227|M|||123 MAIN
ST^^PORTLAND^OR^50000^US^^^FULTON|||||||000111222||||US^OR^1843|Y|2<CR>
PD1 ||||||||||||02^REMINDER/RECALL - ANY MENTOD^HL70215‖A<CR>
NK1|1|MILLER^MARTHA|MTH^Mother^HL70063|123 MAIN ST^^PORTLAND^OR^50000^US^^^1843
|(608)123-4567<CR>
NK1|2|MILLER^GEORGE|FTH^Father^HL70063<CR>


MSH|^~\&||VALCLIN^036||ALERT IIS|19990802091524||VXU^04|00000124|P|2.4|||ER<CR>
PID|||66782^^^SR^~23LK729^^^^PI|CALIFANO^MARIA|DISTEFANO^ANGELICA|19980413|F<CR>
RXA|0|999|19990723|19990723|^^^90700^DTaP^CPT|0.5||||AL9999<CR>
RXA|0|999|19990723|19990723|^^^90707^MMR^CPT|0.5||||AL9999<CR>


MSH|^~\&||VALCLIN^036||ALERT IIS|19990802091526||VXU^04|00000125|P|2.4|||ER<CR>
PID|||927389^^^^SR^~92HG9257^^^^PI|FISHER^JOSEPH|LASOWSKI^MARY|19980528|M<CR>
RXA|0|999|19990729|19990729|^^^90707^MMR^CPT|0.5||||VALCLIN|||||AD19487|19991212|ZZ^FLYBYNIGHT
LABORATORIES^MVX|||||A<CR>
```

Note: Sending ADT and VXU messages for the same patient is redundant, since the VXU message is capable of reporting all information that is also found in the ADT.

In the example above, Valley Clinic sends three HL7 messages to ALERT IIS.

Patient George M Miller Jr. is identified by Valley Clinic's Patient ID, 45LR999, in his PID segment. The message could have included George's ALERT IIS ID number in field PID-3, but does not have to, if it is not recorded in Valley Clinic's system. George's mother's maiden name, birth date, sex, and address also serve to identify him. Some other optional fields are not present, including some fields from the full HL7 standard not defined in this document because they are not used by ALERT IIS. Fields not present do not diminish the number of "|" delimiters, so later fields can be identified by ordinal position in the segment. Two NK1 segments give some information for George's mother and father, just the minimum required for his father, with address and telephone fields for his mother.
The next two PID segments in the second and third messages give an ALERT IIS patient ID in field PID-3. This must have been transmitted earlier from ALERT IIS to Valley Clinic's system. In this case it is legitimate to omit more of the optional PID fields, since ALERT IIS must have at least the minimum required information for these patients even to create a record. However, if there is a possibility that Valley Clinic has new or changed information to send to ALERT IIS, these fields should be present, and it does no harm to repeat fields even if they have been transmitted previously.

```
ACK for Patient #1
MSH|^~\&|ALERT IIS|ALERT IIS||AL9999|19990803200117||ACK|00000456|P|2.4<CR>
MSA|AA|00000123<CR>

No ACK returned for Patient #2

ACK for Patient #3
MSH|^~\&|ALERT IIS|ALERT IIS||AL9999|19990803200119||ACK|00000458|P|2.4<CR>
MSA|AE|00000125|INVALID MANUFACTURER CODE<CR>
ERR|RXA^152^17^1<CR>
```

ALERT IIS answers the messages from the above example with ACK messages. Valley Clinic's message 00000123 had the value AL in field MSH-15, asking for acknowledgements of all messages. The value AA in MSA-1 indicates that this message was processed without error. The next message, 00000124, uses the value ER to ask for acknowledgement only in case of errors, so this message is acknowledged implicitly by the absence of an ACK message for it. This example while legitimate is for purposes of illustration as some providers may prefer to receive error acknowledgements only. The last message, 00000125, did contain an error, and the ERR segment in its acknowledgement indicates the segment ID (RXA) of the segment, the line number (152) where it appears in the input file, the errant field (17)and the field component (1). The MSA segment contains the error message. Errors will be generated for missing required data, invalid data or any other deviance from the form and content of messages as specified in this document.

In the sample file exchange above, the outside system initiated the exchange with a series of VXU messages and ALERT IIS responded with ACK segments. ALERT IIS always sends its own patient identifier in the required field PID-03 and includes the outside system's identifier in PID-03 if known. Outside systems are encouraged to store ALERT IIS's patient ID, and use it in PID-03 when sending to ALERT IIS. This provides a firm basis for patient identification makes processing easier for the ALERT IIS system and avoids errors in storing patient information, such as creation of duplicate records when an insufficiently identified patient record cannot be matched with a record already in the ALERT IIS database. Though ALERT IIS makes a great effort to match patient records effectively, use of the ALERT IIS patient ID is the best guarantee of clean and useful data.

Data Exchange Specifications for ALERT IIS

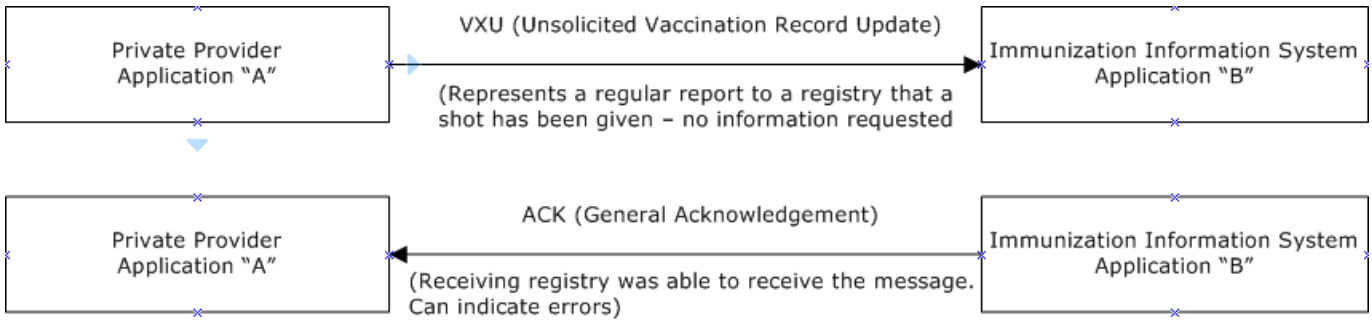
The central repository of ALERT IIS contains records of patients from around the state. Patient and immunization records flow both ways between ALERT IIS and outside systems. Data, for a particular patient, is transmitted by ALERT IIS to an outside system (Provider Organization) only if the patient is identified as having an Active relationship with that Organization AND the relationship was created by transmitting the patient's record to ALERT IIS or by creating the relationship via the ALERT IIS-Web interface. So, an exchange of information about a given patient is always initiated by the outside system.

There are three options for exchanging data with ALERT IIS:

(1) The Provider Organization can send data to ALERT IIS and request that no data is returned from ALERT IIS, which is a Provider Organization to ALERT IIS data transfer.
(2) The Provider Organization can request data from ALERT IIS while not providing data to ALERT IIS, which is a ALERT IIS to Provider Organization data transfer.
(3) The Provider Organization can send data to ALERT IIS and ALERT IIS will return any updated information regarding any patients that have an Active relationship with that Provider Organization, which is a Bi-directional data transfer.

HL7 messages are always part of a two-way exchange between an initiating system and a responder. Sometimes the initial message implies specific data to be sent in a response. Other times, as is the case with ALERT IIS patient and immunization data, the principal response of the responder is to process the message and post whatever it contains to its own database. For these cases, the responder provides the ACK message type in an HL7 format, which contains no new application data, but allows the receiver to inform the initiator that the message has been received and processed successfully. If an error prevents successful processing, optional parts of the ACK message will allow this to be communicated as well.

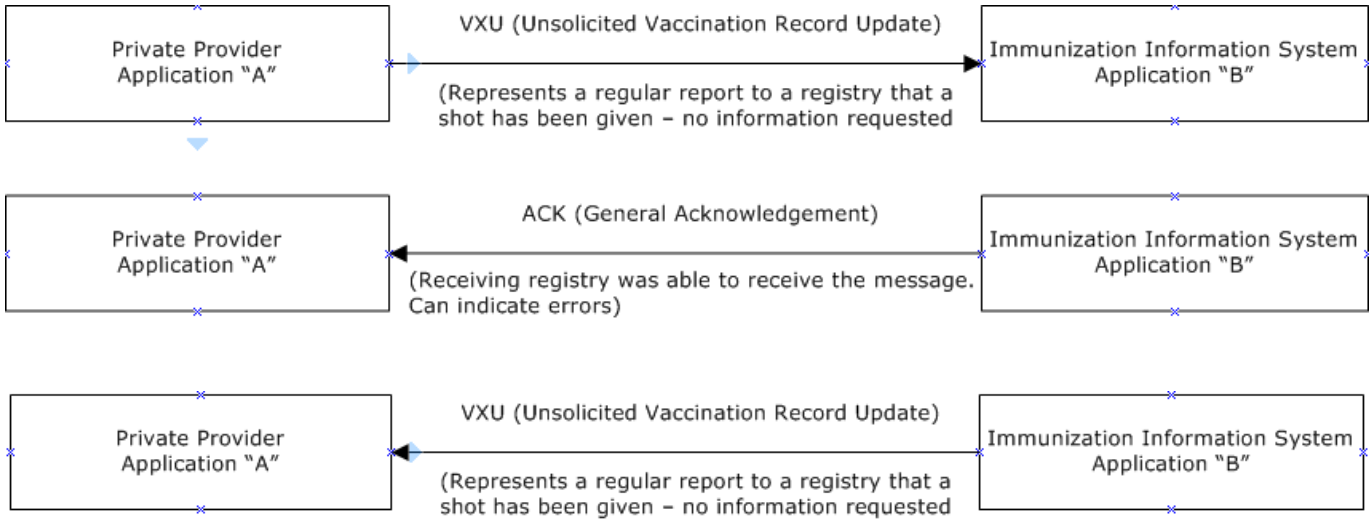
For exchanges between ALERT IIS and outside systems, which is a Provider Organization to ALERT IIS data transfer, it is the responsibility of the outside system to initiate the transfer of the first file, containing ADT(only for updating demographic information) and/or VXU messages with patient and immunization data for adding or updating patient and immunization data. After processing those messages, ALERT IIS responds with a response file of ACK messages.



	Provider Organization	ALERT IIS
1.	Creates a file of patient and immunization records that are new or have changed since they were last transmitted to ALERT IIS.	
2.	Transmits the file to ALERT IIS.	
3.		Processes the file received, creates

		a file of ACK messages.
4.		Posts the ACK file for the initiator to pick up via the web-interface.
5.	Processes the ACK file to confirm success of the file transmission.	

For exchanges between ALERT IIS and outside systems, which is a Bi-directional data transfer, it is the responsibility of the outside system to initiate the transfer of the first file, containing ADT(only for updating demographic information) and/or VXU messages with patient and immunization date for adding or updating patient and immunization data. After processing those messages, ALERT IIS responds with a response file of ACK messages. At the same time or soon after, ALERT IIS also creates another file of ADT and VXU messages, containing the full patient record(if the patient was new), to send to the Provider Organization that initiated the first transfer. It is the responsibility of the Provider Organization as receiver to transmit back a file of ACK messages.



	Provider Organization	**ALERT IIS**
1.	Creates a file of patient and immunization records that are new or have changed since they were last transmitted to ALERT IIS.	
2.	Transmits the file to ALERT IIS.	
3.		Processes the file received, creates a file of ACK messages.
4.		Creates a file of any active patient and immunization records that have changed since they were last transmitted to this Provider Organization.
6.		Posts the file of patient and immunization records that have changed since they were last transmitted to this Provider Organization to pick up via the web-interface.

7.	Processes the ACK file to confirm success of the file transmission.	
8.	Processes the file of patient and immunization records that have changed since they were last transmitted to this Provider Organization.	

The 15th field, in the MSH message header segment, allows the initiator to ask that the message be acknowledged only in the case of an error and ALERT IIS supports this in order to minimize the number of ACK messages transmitted. In this case, the ACK file contains only error messages (an optional form of the ACK message type). The original messages, with no answering error messages, are implicitly acknowledged as successfully processed. If all messages in a batch are successful, the answering ACK file will only contain file batch headers and footers, with no actual ACK messages. For Step 2, in the above table, it is permissible for a Provider Organization to send a file containing only file batch headers and footers as a way of triggering the file that ALERT IIS creates in Step 6. It is also possible that the file, ALERT IIS creates in Step 6, will contain only file batch headers and footers if there are no records to send.

Data Exchange Frequency: Real-time & Batch

Regardless of whether you send in real-time or batch, the format and content of your HL7 messages and what is returned to you from the IIS will be essentially the same. (See section 1 of this guide for information on HL7 messages.)

Real Time Transfer
ALERT IIS can accept and transmit the HL7 real time messaging for submitting patient and immunization information to ALERT IIS.

"Real time" processing with ALERT IIS refers to the ability to transmit an HL7 VXQ^V01 Message (Query for Vaccination Record) and a VXU^V04 Message (Unsolicited Vaccination Update) and receive from ALERT IIS the resulting HL7 Response Message. A provider organization will query the immunization information system to get information on a certain patient (i.e. send an HL7 2.4 VXQ^V01 message) and will receive an HL7 Message Response (i.e. VXR^V03, VXX^V02, ACK or QAK) to that query in real time.

If you are sending through SOAP Web Services, messages are processed one at a time.

Batch Transfer
The definitions above tell how to create messages containing patient and immunization data. Each message can logically stand on its own and HL7 is compatible with various methods of real-time and batch transmission. Sending files by batch permits many messages to be sent together. Batch header and footer segments are not part of any message, but serve to bracket the messages defined above. (NOTE: Batch Message Headers (i.e. FHS, BHS) and footers (i.e. FTS, BTS) are NOT allowed for real time processing.) The structure of a batch file is as follows.

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

FHS – File Header Segment

The FHS segment is used to head a file (group of batches).

SEQ	LEN	DT	R/SE	RP/#	TBL#	ELEMENT NAME
1	1	ST	R			File Field Separator
2	4	ST	R			File Encoding Characters
3	15	ST				File Sending Application
4	20	ST	SE			File Sending Facility
6	20	ST				File Receiving Facility
7	26	TS				File Creation Date/Time
9	20	ST				File Name/ID
10	80	ST				File Header Comment
11	20	ST				File Control ID
12	20	ST				Reference File Control ID

Field Notes:

FHS-1 Same definition as the corresponding field in the MSH segment.
FHS-2 Same definition as the corresponding field in the MSH segment.
FHS-3 Same definition as the corresponding field in the MSH segment.
FHS-4 Same definition as the corresponding field in the MSH segment.
FHS-6 Same definition as the corresponding field in the MSH segment.
FHS-7 Same definition as the corresponding field in the MSH segment.
FHS-9 Same definition as the corresponding field in the MSH segment.
FHS-10 Free text, which may be included for convenience, but has no effect on processing.
FHS-11 This field is used to identify a particular file uniquely among all files sent from the sending facility identified in FHS-4.
FHS-12 Contains the value of FHS-11-file control ID when this file was originally transmitted. Not present if this file is being transmitted for the first time.

FTS - File Trailer Segment

The FTS segment defines the end of a file.

SEQ	LEN	DT	R/SE	RP/#	TBL#	ELEMENT NAME
1	10	NM				File Batch Count
2	80	ST				File Trailer Comment

Field Notes:

FTS-1 The number of batches contained in this file. ALERT IIS normally sends one batch per file and discourages sending multiple batches per file.
FTS-2 Free text, which may be included for convenience, but has no effect on processing.

BHS – Batch Header Segment

The BHS segment defines the start of a batch.

SEQ	LEN	DT	R/SE	RP/#	TBL#	ELEMENT NAME
1	1	ST	R			Batch Field Separator
2	4	ST	R			Batch Encoding Characters
3	15	ST				Batch Sending Application
4	20	ST	SE			Batch Sending Facility
6	20	ST				Batch Receiving Facility
7	26	TS				Batch Creation Date/Time
10	80	ST				Batch Comment
11	20	ST				Batch Control ID
12	20	ST				Reference Batch Control ID

Field Notes:

BHS-1 This field contains the separator between the segment ID and the first real field*, BHS-2-batch encoding characters*. As such it serves as the separator and defines the character to be used as a separator for the rest of the segment. ALERT IIS requires | (ASCII 124).
BHS-2 Same definition as the corresponding field in the MSH segment.
BHS-3 Same definition as the corresponding field in the MSH segment.
BHS-4 Same definition as the corresponding field in the MSH segment.
BHS-6 Same definition as the corresponding field in the MSH segment.
BHS-7 Same definition as the corresponding field in the MSH segment.
BHS-10 Free text, which may be included for convenience, but has no effect on processing.
BHS-11 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. For ALERT IIS purposes, the answering batch will contain ACK messages.

BHS-12 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. See definition for *BHS-11-batch control ID*.

BTS – Batch Trailer Segment

The BTS segment defines the end of a batch.

SEQ	LEN	DT	R/SE	RP/#	TBL#	ELEMENT NAME
1	10	ST				Batch Message Count
2	80	ST				Batch Comment

Field Notes:

BTS-1 This field contains the count of the individual messages contained within the batch.

BTS-2 Free text, which can be included for convenience, has no effect on processing.

HL7 Message Transport Methods

The preferred method for sending immunization update and query messages is HL7 real-time via the **SOAP web service**. Other options are HL7 batch files which can be **uploaded to ALERT IIS User Interface** or by sending to the **ALERT SFTP site**.

Each of these methods is described in detail in the respective HL7 Transport Method Specifications. These guides, and all documentation on data exchange with ALERT IIS, can be found on the website at www.alertiis.org.

Please contact the ALERT Help Desk if you are interested in setting up electronic data exchange with ALERT IIS or if you are interested in enhancing the way you currently submit data to ALERT.

Appendix A -- HL7 Data Types

The following descriptions of HL7 data types are excerpted or adapted from the HL7 standard. See the field notes within each segment definition above on how to use data types in particular fields. Some data types have complex definitions much of which do not apply to ALERT IIS usage, and for these we omit much of the HL7 definition of the data type, referring instead to the field notes in the segment definitions.

CE - Coded Element

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

Example:

```
|F-11380^CREATININE^I9^2148-5^CREATININE^LN|
```

This data type transmits codes and the text associated with the code. To allow all six components of a CE data type to be valued, the maximum length of this data type must be at least 60.

Identifier (ST)

Sequence of characters (the code) that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.

Text (ST)

Name or description of the item in question. E.g., myocardial infarction or X-ray impression. Its data type is string (ST).

Name of coding system (ST)

Each coding system is assigned a unique identifier. This component will serve to identify the coding scheme being used in the identifier component. The combination of the **identifier** and **name of coding system** components will be a unique code for a data item. Each system has a unique identifier. ASTM E1238-94, Diagnostic, procedure, observation, drug ID, and health outcomes coding systems are identified in the tables in Section 7.1.4 [of the full HL7 standard], "Coding schemes." Others may be added as needed. When an HL7 table is used for a CE data type, the ***name of coding system*** component is defined as ***HL7nnnn*** where ***nnnn*** is the HL7 table number.

Alternate components

These three components are defined analogously to the above for the alternate or local coding system. If the Alternate Text component is absent, and the Alternate Identifier is present, the Alternate Text will be taken to be the same as the Text component. If the Alternate Coding System component is absent, it will be taken to mean the locally defined system.

Note:	The presence of two sets of equivalent codes in this data type is semantically different from a repetition of a CE-type field. With repetition, several distinct codes (with distinct meanings) may be transmitted.

Note:	For HL7-defined tables which have not been adopted from some existing standard, the third component, "name of coding system," is constructed by appending the table number to the string "HL7." Thus, the field *RXR-2-site*, is a CE data type which refers to HL7 table number 0163. Its "name of coding system" component is "HL70163".

CM - Composite

```
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)>
```

Example:

```
|^^^Valley Clinic|
```

Definition: The first component contains the inpatient or outpatient location at which the drug or treatment was administered (if applicable). The default (null) value is the current census location for the patient. Site-specific table. The first eight components have the same form as the first eight components of *PV1-3-assigned patient location.* The final eight components replace the ninth component of *PV1-3-assigned patient location* and represent the full address specification*.*

CX - Extended Composite ID with Check Digit

ALERT IIS uses this data type only for patient identification in Patient Identification (PID) segments. See the field notes for values used for ALERT IIS.

HD - Hierarchic Designator

ALERT IIS uses this data type only to identify sender and receiver in Message Header (MSH) segments. See the field notes for values used for ALERT IIS.

ID - Coded Value for HL7 Defined Tables

The value of such a field follows the formatting rules for a ST field except that it is drawn from a table of legal values. There shall be an HL7 table number associated with ID data types. Examples of ID fields include religion and 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.

IS - Coded Value for User Defined Tables

The value of such a field follows the formatting rules for a ST field except that it is drawn from a site-defined (or user-defined) table of legal values. There shall be an HL7 table number associated with IS data types. An example of an IS field is the *Event reason code* defined in Section 3.3.1.4 [of the full HL7 standard], "Event reason code." This data type 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.

NM - Numeric

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

```
|999|
|-123.792|
```

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

SI - Sequence ID

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

ST - String Data

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

```
|almost any data at all|
```

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

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

TS - Time Stamp

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

Contains the exact time of an event, including the date and time. 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 specific data representations used in the HL7 encoding rules are compatible with ISO 8824-1987(E).

In prior versions of HL7, an optional second component indicates the degree of precision of the time stamp (Y = year, L = month, D = day, H = hour, M = minute, S = second). This optional second component is retained only for purposes of backward compatibility.

By site-specific agreement, YYYYMMDD[HHMM[SS[.S[S[S[S]]]]]][+/-ZZZZ]^<degree of precision> may be used where backward compatibility must be maintained.

In the current and future versions of HL7, the precision is indicated by limiting the number of digits used, unless the optional second component is present. Thus, YYYY is used to specify a precision of "year," YYYYMM specifies a precision of "month," YYYYMMDD specifies a precision of "day," YYYYMMDDHH is used to specify a precision of "hour," YYYYMMDDHHMM is used to specify a precision of "minute," YYYYMMDDHHMMSS is used to specify a precision of seconds, and YYYYMMDDHHMMSS.SSSS is used to specify a precision of ten thousandths of a second. In each of these cases, the time zone is an optional component. Maximum length of the time stamp is 26. Examples:

```
|19760704010159-0600|  1:01:59 on July 4, 1976 in the Eastern
                        Standard Time zone.

|19760704010159-0500|  1:01:59 on July 4, 1976 in the Eastern
                       Daylight Saving Time zone.

|198807050000|         Midnight of the night extending from July 4 to
                       July 5, 1988 in the local time zone of the sender.

|19880705|             Same as prior example, but precision extends
                        only to the day.  Could be used for a
                        birth date, if the time of birth is unknown.
```

The HL7 Standard strongly recommends that all systems routinely send the time zone offset but does not require it. All HL7 systems are required to accept the time zone offset, but its implementation is application specific. For many applications the time of interest is the local time of the sender. For example, an application in the Eastern Standard Time zone receiving notification of an admission that takes place at 11:00 PM in San Francisco on December 11 would prefer to treat the admission as having occurred on December 11 rather than advancing the date to December 12.

One exception to this rule would be a clinical system that processed patient data collected in a clinic and a nearby hospital that happens to be in a different time zone. Such applications may choose to convert the data to a common representation. Similar concerns apply to the transitions to and from daylight saving time. HL7 supports such requirements by requiring that the time zone information be present when the information is sent. It does not, however, specify which of the treatments discussed here will be applied by the receiving system.

XAD - Address

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

Example:

```
|1234 Easy St.^Ste. 123^San Francisco^CA^95123^USA^B^^SF^^|
```

Street address (ST)

The street or mailing address of a person or institution.

Other designation (ST)

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

City (ST)

State or province (ST)

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

Zip or postal code (ST)

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

Country (ID)

Defines the country of the address. See Table 0212.

Address type (ID)

Address type is optional.

Other geographic designation (ST)

Other geographic designation includes country, bioregion, SMSA, etc.

County code (IS)

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

Census tract (IS)

An optional code that represents the census track in which the specified address resides. ALERT IIS does not store this value.

XCN - Extended Composite ID Number and Name for Persons

ALERT IIS uses this data type only to identify Provider Organizations that administer immunizations. See the field notes for segment RXA.

XPN - Extended Person Name

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

Example:

```
|Smith&St^John^J^III^DR^PHD^L|
```

Family name (ST)
Last Name Prefix (ST)
Given name (ST)
Middle initial or name (ST)

Suffix (ST)

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

Prefix (ST)

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

Degree (ST)

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

Name type code (ID)

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

Table 0200 - Name type

Value	Description
A	Alias Name
L	Legal Name
D	Display Name
M	Maiden Name
C	Adopted Name

Note:	The legal name is the same as the current married name.

Name representation code (ID)

This component can be used when names are represented in ideographic or non-alphabetic systems. ALERT IIS ignores this component.

XTN - Extended Telecommunication Number

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

Example:

```
(415)555-3210^ORN^FX^
```

[(999)] 999-9999 [X99999] [C any text]

Defined as the TN data type, except that the length of the country access code has been increased to three.

Telecommunication use code (ID)

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

Table 0201 - Telecommunication use code

Value	Description
PRN	Primary Residence Number
ORN	Other Residence Number
WPN	Work Number
VHN	Vacation Home Number
ASN	Answering Service Number
EMR	Emergency Number
NET	Network (email) Address
BPN	Beeper Number

Telecommunication equipment type (ID)

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

Value	Description
PH	Telephone
FX	Fax
MD	Modem
CP	Cellular Phone
BP	Beeper
Internet	Internet Address: Use Only If Telecommunication Use Code Is NET
X.400	X.400 email address: Use Only If Telecommunication Use Code Is NET

Email address (ST)
Any text (ST)
Country code (NM)
Area/city code (NM)
Phone number (NM)
Extension (NM)

Appendix B - HL7 Tables

The following tables give valid values for fields in the segments defined above, in the cases where the field definitions reference an HL7 table number. The tables are considered to be part of the HL7 standard, but those tables designated as type User have values determined by ALERT IIS.

Type	Table	Name	Value	Description
HL7	**0001**	**Sex**	**(use in PID-8)**	
	0001		F	Female
	0001		M	Male
	0001		U	Unknown
HL7	**0003**	**Event Type**	**(use in MSH-9, second component)**	
	0003		A24	ADT/ACK - Link patient information
	0003		A28	ADT/ACK - Add patient information
	0003		A31	ADT/ACK - Update patient information
	0003		A37	ADT/ACK - Unlink patient information
	0003		V01	VXQ - Query for vaccination record
	0003		V02	VXX - Response to vaccination query returning multiple PID matches
	0003		V03	VXU - Vaccination record response
	0003		V04	VXU - Unsolicited vaccination record update
HL7	**0004**	**Patient class**	**(use in PV1-2)**	
	0004		E	Emergency
	0004		I	Inpatient
	0004		O	Outpatient
	0004		P	Preadmit
	0004		R	Recurring
	0004		B	Obstetrics
HL7	**0005**	**Race**	**(use in PID-10)**	
	0005		1002-5	American Indian or Alaska Native
	0005		2028-9	Asian
	0005		2076-8	Native Hawaiian or Other Pacific Islander
	0005		2054-5	Black or African-American
	0005		2106-3	White
	0005		2131-1	Other Race
HL7	**0008**	**Acknowledgment Code**	**(use in MSA-1)**	
	0008		AA	Application Accept
	0008		AE	Application Error
	0008		AR	Application Reject
HL7	**0048**	**What Subject Filter**	**(use in QRD-9)**	
	0048		VXI	Vaccine Information
User	**0063**	**Relationship**	**(use in NK1-3)**	
	0063		ASC	Associate
	0063		BRO	Brother
	0063		CGV	Care giver
	0063		CHD	Child
	0063		DEP	Handicapped dependent
	0063		DOM	Life partner
	0063		EMC	Emergency contact
	0063		EME	Employee
	0063		EMR	Employer
	0063		EXF	Extended family
	0063		FCH	Foster Child

Type	Table	Name	Value	Description
	0063		FND	Friend
	0063		FTH	Father
	0063		GCH	Grandchild
	0063		GRD	Guardian
	0063		GRP	Grandparent
	0063		MGR	Manager
	0063		MTH	Mother
	0063		NCH	Natural child
	0063		NON	None
	0063		OAD	Other adult
	0063		OTH	Other
	0063		OWN	Owner
	0063		PAR	Parent
	0063		SCH	Stepchild
	0063		SEL	Self
	0063		SIB	Sibling
	0063		SIS	Sister
	0063		SPO	Spouse
	0063		TRA	Trainer
	0063		UNK	Unknown
	0063		WRD	Ward of court
HL7	**0076**	**Message Type**	**(use in MSH-9, first component)**	
	0076		ACK	General acknowledgment message
	0076		ADR	ADT response
	0076		ADT	ADT message
	0076		QCK	Query general acknowledgment
	0076		VXQ	Query for vaccination record
	0076		VXX	Vaccination query response with multiple PID matches
	0076		VXR	Vaccination query record response
	0076		VXU	Unsolicited vaccination record update
	0076		ORU	Unsolicited observation results
HL7	**0085**	**Observation result status codes**	**(use in OBX-11)**	
	0085		F	Final results
	0085		O	Order detail description only
HL7	**0091**	**Query Priority**	**(use in QRD-3)**	
	0091		I	Immediate
HL7	**0103**	**Processing ID**	**(use in MSA-11, first component)**	
	0103		P	Production
HL7	**0104**	**Version ID**	**(use in MSH-12)**	
	0104		2.3.1	CDC IG Version 2.1, HL7 2.3.1, 2002 and CDC IG Version 2.2, HL7 2.3.1, 2006
	0104		2.4	CDC IG Version 2.1, HL7 2.3.1, 2002 and CDC IG Version 2.2, HL7 2.3.1, 2006
HL7	**0106**	**Query/Response format code**	**(use in QRD-2)**	
	0106		R	Response is in record-oriented format
HL7	**0126**	**Quantity limited request**	**(use in QRD-7)**	
	0126		RD	Records
HL7	**0136**	**Yes/No Indicator**	**(use in PID-24)**	
	0136		Y	Yes
	0136		N	No

Type	Table	Name	Value	Description
HL7	**0155**	**Accept/Application Acknowledgment Conditions**	**(use in MSH-15)**	
	0155		AL	Always
	0155		NE	Never
	0155		ER	Error/reject conditions only
	0155		SU	Successful completion only
HL7	**0162**	**Route of Administration**	**(use in RXR-1)**	
	0162		ID	Intradermal
	0162		IM	Intramuscular
	0162		IN	Intranasal
	0162		IV	Intravenous
	0162		PO	Oral
	0162		SC	Subcutaneous
	0162		TD	Transdermal
	0162		MP	Percutaneous (multiple puncture - Small Pox)
HL7	**0163**	**Administrative Site**	**(use in RXR-2)**	
	0163		BN	Bilateral Nares
	0163		LA	Left Arm
	0163		LD	Left Deltoid
	0163		LG	Left Gluteus Medius
	0163		LLFA	Left Lower Forearm
	0163		LN	Left Nares
	0163		LT	Left Thigh
	0163		LVL	Left Vastus Lateralis
	0163		MO	Mouth
	0163		RA	Right Arm
	0163		RD	Right Deltoid
	0163		RG	Right Gluteus Medius
	0163		RLFA	Right Lower Forearm
	0163		RN	Right Nares
	0163		RT	Right Thigh
	0163		RVL	Right Vastus Lateralis
HL7	**0189**	**Ethnic Group**	**(use in PID-22)**	
	0189		2135-2	Hispanic
	0189		2186-5	Non-Hispanic
	0189			Unknown
User	**0190**	**Address type**	**(use in PID-11; NK1-4)**	
	0190		H	Home
	0190		O	Office
User	**0200**	**Name type**	**(use in PID-5, 6; NK1-2)**	
	0200		L	Legal name
	0200		M	Maiden name
User	**0201**	**Telecommunication use code**	**(use in PID-13; NK1-5)**	
	0201		PRN	Primary residence number
User	**0202**	**Telecommunication equipment type**	**(use in PID-13; NK1-5)**	
	0202		PH	Telephone
HL7	**0203**	**Identifier type**	**(use in PID-3)**	
	0203		BR	Birth Registry Number
	0203		MA	Medicaid Number
	0203		MC	Medicare Number
	0203		MR	Medical Record Number

Type	Table	Name	Value	Description
	0203		PI	Patient Internal Identifier
	0203		PN	Person Number
	0203		PRN	Provider Number
	0203		PT	Patient External Identifier
	0203		RRI	Regional Registry ID
	0203		SR	State Registry Identifier
	0203		SS	Social Security Number
User	**0207**	**Processing mode**	**(use in MSH-11, second component)**	
	0207		A	Archive
	0207		R	Restore from archive
	0207		I	Initial load
	0207		T	Current processing, transmitted at intervals (scheduled or on demand)
User	**0208**	**Query response status**	**(find in QAK-2)**	
	0208		NF	No data found, no errors
User	**0212**	**Nationality**	**(use in PID-11; NK1-4)**	
	0212		CA	Canada
	0212		US	United States of America
User	**0215**	**Publicity Code**	**(use in PD1-11)**	
	0215		01	No reminder/recall
	0215		02	Yes reminder/recall – any method
HL7	**0227**	**Manufacturers of vaccines (code = MVX)**	**(use in RXA-17)**	
	0227		AB	Abbott Laboratories
	0227		ACA	Acambis, Inc. **[Inactive see sanofi pasteur]**
	0227		AD	Adams Laboratories, Inc.
	0227		AKR	Akorn, Inc.
	0227		ALP	Alpha Therapeutic Corporation
	0227		AR	Armour **[Inactive- use AVB]**
	0227		AVB	Aventis Behring L.L.C. **[Inactive – use ZLB]**
	0227		AVI	Aviron
	0227		BRR	Barr Laboratories
	0227		BA	Baxter Healthcare Corporation **[Inactive- use BAH]**
	0227		BAH	Baxter Healthcare Corporation
	0227		BAY	Bayer
	0227		BP	Berna Products
	0227		BPC	Berna Products Corporation
	0227		BTP	Biotest Pharmaceuticals Corporation
	0227		MIP	Bioport Corporation *(formerly Michigan Biologic Products Institute)*
	0227		CSL	CSL Biotherapies, Inc.
	0227		CNJ	Cangene Corporation
	0227		CMP	Celltech Medeva Pharmaceuticals **[Inactive- use NOV]**
	0227		CEN	Centeon **[Inactive- use AVB]**
	0227		CHI	Chiron Corporation **[Inactive – use NOV]** *(includes PowderJect Pharmaceuticals, Celltech Medeva Vaccines and Evans Medical Limited)*
	0227		CON	Connaught **[Inactive- use PMC]**
	0227		DVC	DynPort Vaccine Company, LLC
	0227		EVN	Evans Medical Limited **[Inactive- use NOV]**
	0227		GEO	GeoVax Labs, Inc.
	0227		SKB	GlaxoSmithKline *(formerly SmithKline Beecham;*

Type	Table	Name	Value	Description
				includes SmithKline Beecham and Glaxo Wellcome)
	0227		GRE	Greer Laboratories Inc.
	0227		IAG	Immuno International AG **[Inactive- use BAH]**
	0227		IUS	Immuno-U.S., Inc.
	0227		INT	Intercell Biomedical
	0227		KGC	Korea Green Cross Corporation
	0227		LED	Lederle **[Inactive-use WAL]**
	0227		MBL	Massachusetts Biologic Laboratories *(formerly Massachusetts Public Heath Biologic Laboratories)*
	0227		MA	Massachusetts Public Health Biologic Laboratories **[Inactive-use MBL]**
	0227		MED	MedImmune, Inc.
	0227		MSD	Merck & Co., Inc.
	0227		IM	Merieux **[Inactive-use PMC]**
	0227		MIL	Miles [**Inactive-use BAY]**
	0227		NAB	NABI *(formerly North American Biologicals, Inc.)*
	0027		NYB	New York Blood Center
	0227		NAV	North American Vaccine, Inc. **[Inactive-use BAH]**
	0227		NOV	Novartis Pharmaceutical Corp
	0227		NVX	Novavax, Inc.
	0227		OTC	Organon Teknika Corporation
	0227		ORT	Ortho-clinical Diagnostics *(formerly Ortho Diagnostic Systems, Inc.)*
	0227		PD	Parkedale Pharmaceuticals *(formerly Parke-Davis)*
	0227		PFR	Pfizer-Wyeth
	0227		PWJ	PowerJect Pharmaceuticals **[Inactive- use NOV]**
	0227		PRX	Praxis Biologics **[Inactive- use WAL]**
	0227		PMC	Sanofi Pasteur Inc.
	0227		JPN	Osaka University
	0227		SCL	Sclavo, Inc.
	0227		SOL	Solvay Pharmaceuticals
	0227		SI	Swiss Serum and Vaccine Inst. **[Inactive-use BPC]**
	0227		TAL	Talecris Biotherapeutics
	0227		USA	United States Army Medical Research and Material Command
	0227		VXG	VaxGen
	0227		WA	Wyeth-Ayerst **[Inactive- use WAL]**
	0227		WAL	Wyeth-Ayerst **[Inactive]**
	0227		ZLB	ZLB Behring
	0227		OTH	Other manufacturer
	0227		UNK	Unknown manufacturer
User	**0289**	**County (Oregon only)**	**(use in PID-11; NK1-4)**	
	0289		OR001	Baker
	0289		OR003	Benton
	0289		OR005	Clackamas
	0289		OR007	Clatsop
	0289		OR009	Columbia
	0289		OR011	Coos
	0289		OR013	Crook
	0289		OR015	Curry
	0289		OR017	Deschutes
	0289		OR019	Douglas

Type	Table	Name	Value	Description
	0289		OR021	Gilliam
	0289		OR023	Grant
	0289		OR025	Harney
	0289		OR027	Hood River
	0289		OR029	Jackson
	0289		OR031	Jefferson
	0289		OR033	Josephine
	0289		OR035	Klamath
	0289		OR037	Lake
	0289		OR039	Lane
	0289		OR041	Lincoln
	0289		OR043	Linn
	0289		OR045	Malheur
	0289		OR047	Marion
	0289		OR049	Morrow
	0289		OR051	Multnomah
	0289		OR053	Polk
	0289		OR055	Sherman
	0289		OR057	Tillamook
	0289		OR059	Umatilla
	0289		OR061	Union
	0289		OR063	Wallowa
	0289		OR065	Wasco
	0289		OR067	Washington
	0289		OR069	Wheeler
	0289		OR071	Yamhill
HL7	**0322**	**Completion Status**	**(use in RXA-20)**	
	0322		CP	Complete
	0322		RE	Refused
	0322		NA	Not Administered
	0322		PA	Partially Administered (“sub potent?” dose)
HL7	**0323**	**Action code**	**(use in RXA-21)**	
	0323		A	Add
	0323		D	Delete
	0323		U	Update
HL7	**0357**	**Message error status code**	**(find in ERR-1)**	
	0357		0	Message accepted
	0357		100	Segment sequence error
	0357		101	Required field missing
	0357		102	Invalid data value
	0357		103	Table value not found
	0357		104	Required Segment missing
	0357		105	Invalid data value
	0357		200	Unsupported message type
	0357		201	Unsupported event code
	0357		202	Unsupported processing ID
	0357		203	Unsupported version ID
	0357		204	Unknown key identifier
	0357		205	Duplicate key identifier
	0357		206	Application record locked
	0357		207	Application internal error

Type	Table	Name	Value	Description
	0357		500	Record not released
User	**0441**	**Immunization Registry Status**	**(use in PD1-16)**	
	0441		A	Active
	0441		I	Inactive-Other
	0441		M	Inactive-MOGE
	0441		P	Inactive-Permanently (deceased)
	0441		L	Inactive-Lost to Follow Up
	0441		O	Inactive-One Time Only
	0441		S	Inactive-MOOSA
	0441		U	Inactive-Unknown
NIP	**NIP001**	**Immunization Information Source**	**(use in RXA-9)**	
	NIP001		00	New Immunization Administered (by Sending Organization)
	NIP001		01	Source Unspecified
	NIP001		02	Other Provider
	NIP001		03	Parent Written Record
	NIP001		04	Parent Recall
	NIP001		05	Other Registry
	NIP001		06	Birth Certificate
	NIP001		07	School Record
	NIP001		OU	Outside USA
NIP	**NIP002**	**Substance Refusal Reason**		
	NIP002		00	Parental Refusal
	NIP002		01	Religious Exemption
LN	**NIP003**	**Observation Identifiers**	**(use in OBX-3)**	
	NIP003		30945-0	Vaccination contraindication/precaution
	NIP003		31044-1	Reaction
	NIP003		30949-2	Vaccination adverse event outcome
	NIP003		30963-3	Vaccines purchased with
	NIP003		38890-0	Component Vaccine Type. This term is used to distinguish separate vaccine components of a multiple antigen vaccine. Included in LOINC 1/2005.
	NIP003		30973-2	38890-0&30973-2 – Dose Number in Series
	NIP003		30979-9	Vaccines due next
	NIP003		30980-7	30979-9&30980-7 – Date vaccine due
	NIP003		30973-2	30979-9&30973-2 – Vaccine due next dose number
	NIP003		30981-5	30979-9&30981-5 – Earliest date to give
	NIP003		30982-3	30979-9&30982-3 – Reason applied by forecast logic to project this vaccine
NIP	**NIP004**	**Contraindications, Precautions**	**(use in OBX-5)**	
	NIP004		03	Allergy to baker's yeast (anaphylactic)
	NIP004		04	Allergy to egg ingestion (anaphylactic)
	NIP004		05	Allergy to gelatin (anaphylactic)
	NIP004		LTX_A	Allergy to latex (anaphylactic)
	NIP004		06	Allergy to neomycin (anaphylactic)
	NIP004		PLYB_A	Allergy to POLYMYXIN B
	NIP004		07	Allergy to streptomycin (anaphylactic)
	NIP004		08	Allergy to thimerosal (anaphylactic)
	NIP004		09	Allergy to previous dose of this vaccine or to any of its unlisted vaccine components (anaphylactic)
	NIP004		10	Anaphylactic (life-threatening) reaction to previous dose of this vaccine

Type	Table	Name	Value	Description
	NIP004		ARTHUS	Arthus type reaction to previous dose of tetanus containing vaccine.
	NIP004		11	Collapse or shock like state within 48 hours of previous dose of DTP/DTaP
	NIP004		12	Convulsions (fits, seizures) within 3 days of previous dose of DTP/DTaP
	NIP004		13	Persistent, inconsolable crying lasting 3 hours within 48 hours of previous dose of DTP/DTaP
	NIP004		14	Current diarrhea, moderate to severe
	NIP004		15	Encephalopathy within 7 days of previous dose of DTP
	NIP004		16	Current fever with moderate-to-severe illness
	NIP004		17	Fever of 40.5 C (105 F) within 48 hours of previous dose of DTP/DTaP
	NIP004		18	Gullain-Barre syndrome (GBS) within 6 weeks of previous dose of DTP/DTaP
	NIP004		18A	History of Gullain-Barre syndrome (GBS)
	NIP004		33A	History of Varicella
	NIP004		21	Current acute illness, moderate to severe (with or without fever) (e.g. diarrhea, otitis media, vomiting)
	NIP004		22	Chronic illness (e.g. chronic gastrointestinal disease)
	NIP004		23	Immune globulin (IG) administration, recent or simultaneous
	NIP004		24	Immunity: diphtheria
	NIP004		HEPA_I	Immunity: hepatitis A
	NIP004		25	Immunity: Haemophilus influenzae type B (Hib)
	NIP004		26	Immunity: hepatitis B
	NIP004		27	Immunity: measles
	NIP004		28	Immunity: mumps
	NIP004		29	Immunity: pertussis
	NIP004		30	Immunity: poliovirus
	NIP004		31	Immunity: rubella
	NIP004		32	Immunity: tetanus
	NIP004		33	Immunity: varicella (chicken pox)
	NIP004		OTH_I	Immunity: other lab confirmed
	NIP004		36	Immunodeficiency (hematologic and solid tumors, congenital immunodeficiency, lon-term immunosuppressive therapy, including steroids) (in recipient)
	NIP004		36A	Temporary immunodeficiency caused by immunosuppressive therapy, including steroids, radiation treatment or chemotherapy.
	NIP004		37	Neurologic disorders, underlying (including seizure disorders, cerebral palsy, and developmental delay)
	NIP004		38	Otitis media (ear infection) moderate to severe (with or without fever)
	NIP004		39	Pregnancy (in recipient)
	NIP004		40	Thrombocytopenia
	NIP004		41	Thrombocytopenic purpura (history)
	NIP004		RABEXP	Patient has been exposed to Rabies
	NIP004		HIRISK	High Risk Condition(s)
	NIP004		10_11	PRIOR doses OF HEPA caused anaphylactic reaction
	NIP004		10_12	PRIOR doses OF HEPB caused anaphylactic reaction
	NIP004		10_129	PRIOR doses OF ZOSTER caused anaphylactic reaction
	NIP004		10_13	PRIOR doses OF HIB caused anaphylactic reaction
	NIP004		10_130	PRIOR doses OF HUMAN PAPILLOMA VIRUS caused

Type	Table	Name	Value	Description
				anaphylactic reaction
	NIP004		10_16	PRIOR doses OF MENINGO caused anaphylactic reaction
	NIP004		10_17	PRIOR doses OF MMR caused anaphylactic reaction
	NIP004		10_19	PRIOR doses OF PNEUMOCONJUGATE caused anaphylactic reaction
	NIP004		10_20	PRIOR doses OF POLIO caused anaphylactic reaction
	NIP004		10_23	PRIOR doses OF ROTAVIRUS caused anaphylactic reaction
	NIP004		10_24	PRIOR doses OF TYPHOID caused anaphylactic reaction
	NIP004		10_26	PRIOR doses OF VARICELLA caused anaphylactic reaction
	NIP004		10_27	PRIOR doses OF YELLOW FEVER caused anaphylactic reaction
	NIP004		10_31	PRIOR doses OF TETANUS caused anaphylactic reaction
	NIP004		10_34	PRIOR doses OF PNEUMOPOLY 23 caused anaphylactic reaction
	NIP004		10_48	PRIOR doses OF IG-RSV IGIM caused anaphylactic reaction
	NIP004		10_6	PRIOR doses OF TD/TDAP caused anaphylactic reaction
	NIP004		10_7	PRIOR doses OF DTAP caused anaphylactic reaction
	NIP004		10_8	PRIOR doses OF ENCEPHALITIS caused anaphylactic reaction
	NIP004		10_9	PRIOR doses OF INFLUENZA caused anaphylactic reaction
NIP	**NIP005**	**Event Consequence**	**(use in OBX-5)**	
	NIP005		D	Patient Died
	NIP005		L	Life threatening illness
	NIP005		E	Required emergency room/doctor visit
	NIP005		H	Required hospitalization
	NIP005		P	Resulted in prolongation of hospitalization
	NIP005		J	Resulted in permanent disability
ALERTIIS	**OR001**	**Reaction Codes**	**(use in OBX-5)**	
	OR001		10	Anaphylactic reaction
	OR001		11	Hypotonic-hyporesponsive collapse within 48 hours of immunization
	OR001		12	Seizure occurring within 3 days of immunization
	OR001		13	Persistent crying lasting >= 3 hours within 48 hours of immunization
	OR001		17	Temperature >= 105 (40.5 C) within 48 hours of immunization
	OR001		PERTCONT	Pertussis allergic reaction
	OR001		TETCONT	Tetanus allergic reaction
ALERTIIS	**OR002**	**Vaccine Eligibility Code**	**(use in OBX-5)**	
	OR002		V03	N - No Insurance
	OR002		V02	M - Medicaid, OHP
	OR002		V04	A - Am. Indian/AK Native
	OR002		V05	F - Underinsured, FQHC
	OR002		OR03	U - Underinsured, not FQHC
	OR002		OR02	C - Insured, Co-pay Unaffordable
	OR002		OR05	O - Other State Supplied
	OR002		OR04	R - Unknown Insurance Status
	OR002		OR01	S - Special Projects

Type	Table	Name	Value	Description
	OR002		OR07	G - IG only
	OR002		OR06	L - Locally Owned
	OR002		H03	B – Billable/Not Eligible
	OR002		V01	Q - Org not VFC active
ALERTIIS	**OR003**	**State Code**	**(use in PID-11; NK1-4)**	
	OR003		AL	ALABAMA
	OR003		AK	ALASKA
	OR003		AZ	ARIZONA
	OR003		AR	ARKANSAS
	OR003		CA	CALIFORNIA
	OR003		CO	COLORADO
	OR003		CT	CONNECTICUT
	OR003		DE	DELAWARE
	OR003		DC	DISTRICT OF COLUMBIA
	OR003		FL	FLORIDA
	OR003		GA	GEORGIA
	OR003		OK	OKLAHOMA
	OR003		HI	HAWAII
	OR003		ID	IDAHO
	OR003		IL	ILLINOIS
	OR003		IN	INDIANA
	OR003		IA	IOWA
	OR003		KS	KANSAS
	OR003		KY	KENTUCKY
	OR003		LA	LOUISIANA
	OR003		ME	MAINE
	OR003		MD	MARYLAND
	OR003		MA	MASSACHUSETTS
	OR003		MI	MICHIGAN
	OR003		MN	MINNESOTA
	OR003		MS	MISSISSIPPI
	OR003		MO	MISSOURI
	OR003		MT	MONTANA
	OR003		NE	NEBRASKA
	OR003		NV	NEVADA
	OR003		NH	NEW HAMPSHIRE
	OR003		NJ	NEW JERSEY
	OR003		NM	NEW MEXICO
	OR003		NY	NEW YORK
	OR003		NC	NORTH CAROLINA
	OR003		ND	NORTH DAKOTA
	OR003		OH	OHIO
	OR003		OR	OREGON
	OR003		PA	PENNSYLVANIA
	OR003		RI	RHODE ISLAND
	OR003		SC	SOUTH CAROLINA
	OR003		SD	SOUTH DAKOTA
	OR003		TN	TENNESSEE
	OR003		TX	TEXAS
	OR003		UT	UTAH
	OR003		VA	VIRGINIA

Type	Table	Name	Value	Description
	OR003		WA	WASHINGTON
	OR003		WV	WEST VIRGINIA
	OR003		WI	WISCONSIN
	OR003		WY	WYOMING
	OR003		AS	AMERICAN SAMOA
	OR003		FM	FEDERATED STATES OF MICRONESIA
	OR003		GU	GUAM
	OR003		MH	MARSHALL ISLANDS
	OR003		MP	NORTHERN MARIANA ISLANDS
	OR003		PW	PALAU
	OR003		PR	PUERTO RICO
	OR003		UM	US MINOR OUTLYING ISLANDS
	OR003		VI	US VIRGIN ISLANDS
	OR003		VT	VERMONT
HL7	**CVX (0292)**	**Vaccines Administered**	**(use in RXA-5)**	See ALERT IIS Vaccine Codes **PDF** or **Spreadsheet**.
HL7	**CPT**	**Current Procedural Code**	**(use in RXA-5)**	See ALERT IIS Vaccine Codes **PDF** or **Spreadsheet**.
ALERTIIS	**WVGC**	**Vaccine Group Code**	**(use in RXA-5)**	See ALERT IIS Vaccine Codes **PDF** or **Spreadsheet**.
ALERTIIS	**WVTN**	**Vaccine Trade Name**	**(use in RXA-5)**	See ALERT IIS Vaccine Codes **PDF** or **Spreadsheet**.
ALERTIIS	**NDC**	**National Drug Code**	**(use in RXA-5)**	See ALERT IIS Vaccine Codes **PDF** or **Spreadsheet**.

Appendix C – Vaccine Codes

Please see the ALERT IIS Vaccine Codes PDF or Spreadsheet for a listing of vaccine codes including: CVX Code, CPT Code, NDC Code, Trade Name, and Vaccine Group.

Change History

Published / Revised Date	Version #	Author	Section / Nature of Change
06/25/2010	1.0	HP	Initial approved version.
07/29/2010	1.1	HP	Correction. OBX Example 3 LOINC code is 30949-2. OBX Example 4 LOINC code is 30963-3.
10/01/2010	1.2	HP	Pg 5 – carriage return/line feed Pg 24 – Update bi-directional image to display VXU sent from Registry to Provider Application Pg 36 – Two Relationships removed 'OWN' and 'TRN'
3/25/2011	1.3	HP	Merged "General" and "Real-time" specifications into this one document. Also added Web Services related information.
5/3/2011	1.4	HP	Applied changes to HL7-defined Table 0227 – Manufacturer's of Vaccines. Changes per Change Request (CR) CR10010.
5/9/2011	1.5	HP	Applied changes per OHA review and added "Master Field List"
7/1/2011	1.6	HP OHA	Document has gone through additional OHA reviews and changes as well as an HP internal review.
11/4/2011	1.7	OHA	Clarified references to HL7 versions 2.3.1 and 2.4