Rhode Island Department of Health
KIDSNET

HL7 Implementation Guide for Immunization Transactions

Version 1.8

Last Updated: January 22, 2007

This document is a work in process. Notifications of changes are sent out via e-mail. If you have questions, comments, or wish to be added to the notification list please contact Kim Salisbury-Keith at the Rhode Island Department of Health.

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Summary of Updates

Version 1.5 August 2006	Initial release
Version 1.6 October 2006:	Updates from a meeting at the Department of Health with EMR vendors and other interested parties 9/29/2006. 1. Batch protocol example updates clarifying the required information (sender id and batch control id) 2. HL7 Table 0155, Accept/Application acknowledgment conditions where added to Appendix 1 MSH15-MSH16 3. In the Matrix of Information in Sample Message, financial class (PV1-20) was changed from required to not required but desired and used in KIDSNET 4. Following the "Sample HL7 Messages Narrative" is a new section "KIDSNET Specific Information for Senders" which contains important information about the content of the batch header, the message header, and the immunization segments. 5. Added RXA-21 Action Code to the first sample immunization message in the Matrix of Information in Sample Message.
Version 1.7 January 15, 2007	1. Removed reference to the File Header Segment (FHS) segment in the Batch Protocol Example. We do not expect the need to use this segment. 2. HTTPS Post Method was added in the Transport section. A Secure File Transfer method is mentioned directly below this. 3. A description of the Testing Procedure follows mention of the Secure File Transfer method. 4. Date format definition (see table of contents) 5. Insurance segment: Made changes to the IN2 and IN3 fields in the sample KIDSNET HL7 Messages and in the Matrix of Information in Sample Messages.
Version 1.8 January 22, 2008	1. In the Information Exchange Rules: a. A qualification has been added about only accepting Immunization information for people less than 19 years old. b. User Agreement requirement was added. 2. A new section: Assuring Patients are Uniquely Identified – Use of NK-1 has been added. 3. A new section: Recording Vaccine for Children (VFC) eligibility – Use of IN1-2 and PV1-20 has been added. 4. In the HTTPS Post transport section two transmission modes are available. A brief explanation of each is included (Batch vs. Real-Time). 5. In the Matrix of Information in Sample Message: a. The KIDSNET Provider Id now goes in the Administered at Location (RXA-11) not the

	Administering Provider (RXA-10). **The KIDSNET Provider Id must be sent in RXA-11,** KIDSNET does not use RXA-10. b. Reduced the number of examples, updated the matrix to more closely align with the CDC guide. Under the required column it is noted whether the field is required by the CDC and or whether it is consider a core data element. c. A sample optional Pharmacy/Treatment Route (RXR) segment has been added to the first sample message. d. The Next of Kin (NK1) segment now includes the Date Of Birth. e. In the Administrative Notes (RXA-9) field the "Data Value" column has been updated. 6. In the BHS Attributes section and in the Standard HL7 Message Header (MSH) section the required field value in the BHS-4 and MSH-4 Sending Facility fields has been changed. a. The KIDSNET assigned Sender Id will now be required in these fields, not the KIDSNET Provider Id. **The KIDSNET Provider Id is required in RXA-11 formatted as shown in the examples below**. 7. In the Unsolicited Vaccination Record Update (VXU) Message section the required segments are highlighted in the list of possible VXU message segments. 8. Appendix updates: a. Route of Administration table (HL7 table 0162) has been added for RXR Segment. b. NIP001 table has been updated in the Appendix. Several descriptions were incorrect. c. Relationship table (HL7 table 0063) in the Appendix has been updated. Several duplicate entries have been removed. d. Manufacturer code table has been updated.

Rhode Island Department of Health – KIDSNET System

The Rhode Island Department of Health (RIDOH) created its integrated child health information system, KIDSNET, to ensure that all children receive preventive care that is coordinated and comprehensive while offering better service to families. Currently, KIDSNET includes data from ten programs: Immunization, Newborn Development, Vital Records, Lead Poisoning, Early Intervention, Home Visiting, WIC, Newborn Bloodspot, Birth Defects. RIDOH plans to expand KIDSNET to include even more programs in the future.

Access to KIDSNET through the secure web application is role-based. Individual users and groups have their level of access specified in User Agreements or Data Sharing Agreements. Access is based on the "need to know."

The Health Level Seven (HL7) Standard

The ANSI HL7 standard is widely used for exchanging health care data. The full standard is extensive and a single application is not likely to use the full range of HL7 messages. The standard is designed to enable information exchange ranging from patient care, healthcare finance, and healthcare administration information. The CDC together with public and private healthcare professionals and software developers have worked together to define a set of messages that promote standardized exchange of immunization data.

Document Scope

The goal of this document is to define the flow of electronic messages and the subset of HL7 that will be used to exchange patient and immunization data between external systems and KIDSNET. In addition, the document contains additional specifications and instruction to assist in the implementation of the information exchange.

This document assumes the sending system understands and will adhere to the base HL7 message formatting and encoding rules. These rules are highlighted in this document. For more detailed information about this topic please reference the CDC Implementation Guide for Immunization Data Transactions (http://www.cdc.gov/nip/registry/st_terr/tech/stds/hl7guide.pdf) and the full HL7 Specification available from the Health Level 7 organization (http://www.hl7.org).

The RIDOH HL7 Immunization Information Exchange Specification is based on the CDC Implementation Guide. The CDC guide was developed and is maintained through the efforts of a diverse, dedicated workgroup comprised Public Health professionals from various jurisdictions throughout the United States in cooperation with CDC (http://www.cdc.gov/), AIRA (American Immunization Registry Association), HL7, vendors, and other interested parties.

The CDC implementation guide covers a broad set of possible messages. The initial release of the Rhode Island KIDSNET Immunization Information Exchange will enable a one way electronic exchange of immunization information between external (sending) systems to the KIDSNET (receiving) system.

Information Flow

Initially the immunization information will flow from the medical provider to the KIDSNET system. In the near future the information will be transmitted in both directions: from immunization provider to KIDSNET, and from KIDSNET to the immunization provider. Bi-directional information exchange will provide the ability to populate and update external systems (e.g. EMR systems) with information from KIDSNET.

The KIDSNET system will accept electronic HL7 messages containing new and updated patient and immunization information. The patient and immunization data sent to KIDSNET by the external systems will be checked to ensure that the required data is present and that all data provided is in the correct format. If the patient and immunization information is accepted it will be staged for automatic processing by the KIDSNET deduplication and matching software.

Information that passes successfully through the matching and deduplication software will be staged for processing by the KIDSNET database update functions which will add or change appropriate information in the KIDSNET database.

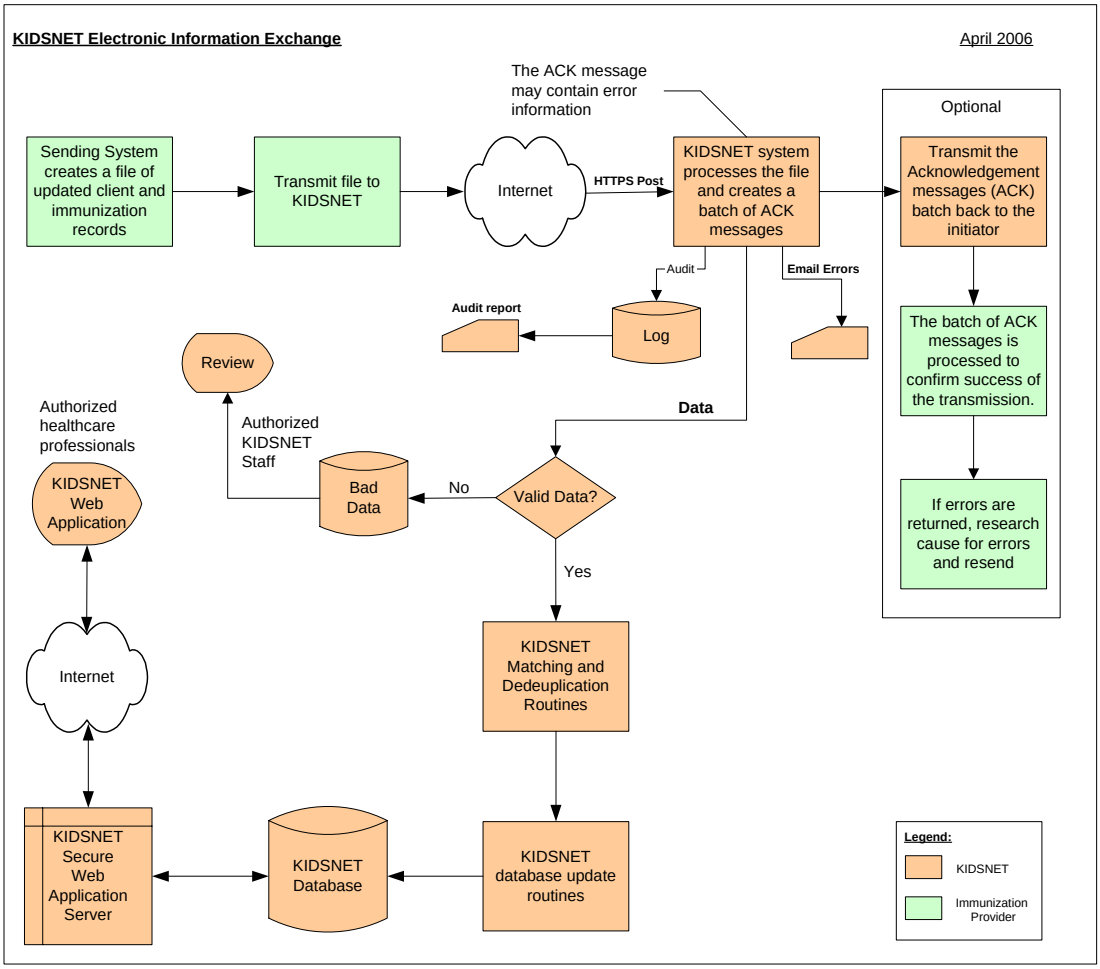

Figure 1: KIDSNET Electronic Information Exchange

The HL7 standard defines the message formatting and data mapping rules for information exchange. Use of the HL7 standard will allow the KIDSNET electronic exchange interface to be used by many medical healthcare entities throughout Rhode Island. This will eliminate the

need for customized software interfaces for each external system and it will minimize the need for expensive, time-consuming software and administrative upgrades.

KIDSNET- Information Exchange Capability

This release of the KIDSNET electronic information exchange system will accept the HL7 VXU (Unsolicited Vaccination Record Update) message which will contain patient and immunization information sent by external systems.

Patient and immunization data will be electronically gathered, packaged, and transmitted to the Rhode Island Department of Health KIDSNET system. Information may be electronically exchanged in a batch mode following an agreed upon schedule (e.g. daily or weekly) or may be sent in real time. The batch submission will adhere to the specifications in section 2.23.3 (HL7 Batch Protocol) within the CDC Implementation Guide. The batch protocol specification is also covered in more detail in the HL7 Batch Protocol section of this document.

After receipt, the KIDSNET system can send an electronic HL7 acknowledgement message to the initiating system. This process is described in more detail later in this document.

Information Exchange Rules

Before information can be exchanged with KIDSNET, a User Agreement must be signed. If a KIDSNET User Agreement already exists, an amendment may be needed to allow the Provider's EMR vendor to handle any data from KIDSNET. For more information please contact Kim Salisbury Keith at the Department of Health. (Email: Kim.SalisburyKeith@health.ri.gov, Phone: (401) 222-5925)

The following are general rules for sending systems:

- At this time immunizations are only added to KIDSNET for people who are less than 19 years old when the immunization was administered. This restriction may be removed in the future.
- The required segment order is specified in the HL7 message format.
- All segments must contain the appropriate segment ID (for example RXA)
- Standard HL7 recommended encoding characters will be used ("^~\&").
- Data must be encoded according to the appropriate HL7 data type format.
- To send null for a data field use empty double quotes "".
- Information systems should report VFC-eligibility in PV1:20 (at time of reporting)
- Ignore data segments that are included but not expected rather than treating it as an error. Also ignore data fields found but not expected within a segment.
- 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).

- Information systems that send data for more than one clinic or physician office must supply the provider identifier in PD1:3 [This will be reviewed on a case by case basis]

The KIDSNET system uses CPT codes to identify immunization information. The appropriate CPT code must be sent in the RXA-5 field. For the standard list of CPT codes please refer to Appendix 1 of this document. For a list of CPT codes and their associated CDC vaccine codes (CVX), please refer to http://www.cdc.gov/nip/registry/st_terr/tech/stds/cpt.htm.

Tips on sending data to KIDSNET:

- Make sure there are no gaps in data sent to KIDSNET. Data should be transmitted based on dates vaccine is entered into your data system, not on dates administered.
- The RXA-21 action code governs what type of processing will occur.
  - U = Update, A=Add, D=Delete
- Send an HL7 transmission at least weekly to assure that KIDSNET data is current.
- When new CPT codes are added, make sure that they are coded correctly and sent as part of your transmission.
- A medical record number should be sent only if it is unique to the child. Do not send family medical record numbers without unique identifiers.
- Make sure only the data VALID VALUES as defined within are used. See Appendix 1 for the required code values. For example, the Insurance Code for Blue Cross/Blue Shield must be sent as "1" – even if your system uses a different code for the insurer.
- Please try to match your current insurers to the valid insurance code values included in Appendix 1. If there is no match, sending a null value is acceptable because this is not a required field. The field can be represented as "".
- As far as the CPT codes, the valid value list may include codes that were historically used but are no longer in use. Please make sure that current CPT codes are used for current data.

Patient Identifier

It is important that accurate patient identifier be present in the HL7 PID:3 location. This patient identifier is used to link the new and updated information to the proper patient. Acceptable patient identifiers include the KIDSNET ID (unique ID assigned to each patient in the KIDSNET database) and an externally defined ID, normally referred to as the Medical Record number. The medical record number must be unique for each patient.

Every patient identifier present in PID:3 must have an associated identifier type. Additional patient identifiers will be ignored.

Type of ID	Identifier Type
KIDSNET ID	"SR" (State Registry)
Medical Record Id (i.e. chart number)	"MR"

Assuring Patients are Uniquely Identified – Use of the NK1

Parent/guardian name and date of birth are utilized as part of the matching and de-duplication routines in KIDSNET and can be sent in an HL7 message in the Next of Kin (NK1) segment. This information enhances the ability of the registry to assure that each child has only one record in the registry.Currently Providers who submit immunization data on paper include Parent/guardian name and date of birth. This information is particularly important when the child has a name change or when different providers submit information for the same child but with name variations. We **strongly encourage that all HL7 records be submitted with information in the HL7 NK1** segment and that whenever possible that this information be the mother's. When information is not sent in the NK1 segment it increases the likelihood of creating a duplicate record in KIDSNET for a child. Since duplicate child records will cause an incomplete view of the immunization information for a child it will be impossible to accurately assess the child's immunization record. Please help us in maintaining a single record for each child by including parent/guardian information in the NK1 segment. The mother's name is preferred in this segment since it can be matched to information in the birth record.

In some instances an Electronic Medical Record (EMR) may not have a field that stores the mother's name. We are happy to assist any EMR vendor in evaluating fields in the EMR that might be used in the NK1. We are also willing to assist with mapping relationship codes from the EMR to the published code set (see Table 0063 in the Appendix).

Recording Vaccine for Children (VFC) eligibility – Use of IN1-2 and PV1-20

Through the Federal Vaccine for Children (VFC) program Rhode Island is able to supply federally purchased vaccine at no cost to Providers, to eligible children under the age of 19. This Federal program pays for over 40% of Rhode Island's total childhood vaccine budget. To receive this vaccine the Provider must agree to screen patients at all immunization encounters for VFC eligibility and update any changes in eligibility. Initial screening and changes must be documented.

KIDSNET **strongly encourages either the use of IN1-2 or PV1-20** in the HL7 messages to provide the documentation required for VFC eligibility screening. When either the information in IN1-2 (Insurance type) or the PV1-20 (Financial class- VFC code) is sent in the HL7 message, KIDSNET is able to determine VFC eligibility and store that information with the immunization administered. If neither the IN1-2 or PV1-20 information is sent to KIDSNET, then the Provider is required to maintain a record of an initial screening and any changes in eligibility in another manner.

Insurance type may be sent in IN1-2. Included in this document is Rhode Island's code set for insurance type (see Rhode Island Defined Table RI0001 in the Appendix). There is not a national code set for insurances. If the coded insurance information is sent to KIDSNET, it is

used along with other information in KIDSNET to determine the child's eligibility for VFC vaccine. This information is stored with each dose of vaccine administered. Assistance can be provided to any Provider or Vendor with mapping the insurance codes utilized in their EMR to the Rhode Island code set.

Some EMRs may record the actual VFC eligibility for a child. We encourage any Provider who has the capacity to record VFC eligibility in their EMR to utilize this feature. This information can be sent as part of the HL7 message in PV1-20. The HL7 0064 code table for Financial class has the values used to transmit this information in the HL7 message.

Other uses of Insurance Information – Use of IN1-2
Insurance type (IN-2) is also used by public health in many types of data analyses to better understand the populations served and the funding mechanisms in place for their delivery of care. This information is used for policy and program development.

Transport

HL7 messages will be sent using the HTTPS post transport or a Secure File Transfer transport. Each transmission will be encrypted for security purposes using the industry standard secured socket layer (SSL) protocol. Only authorized partners will be permitted to exchange information.

For more information about how to obtain a sender id and password to send HL7 messages or about the methods to securely upload HL7 immunization information to KIDSNET please contact Kim Salisbury Keith at the Department of Health. (Email: Kim.SalisburyKeith@health.ri.gov, Phone: (401) 222-5925).

After the sender is successful authenticated and HL7 messages are sent, the KIDSNET system will read the electronic batch of messages including the HL7 BHS batch headers if present (see HL7 Batch Protocol). After processing the batch header the HL7 VXU messages will be parsed, edited, and processed. Any errors encountered while processing the HL7 batches and messages will either be sent back to the originating system for correction, or the errors will be written to an error queue where a KIDSNET data manager will attempt to correct errors before resubmission to the KIDSNET system.

The Rhode Island Department of Health will work with each trading partner to ensure an acceptable error notification and correction process is in place. All transactions received will be logged for tracking, audit, and correction purposes.

HTTPS Post Method (preferred)

Enabling an HL7 interface between information exchange partners and KIDSNET will provide significant time savings for physician offices and for the KIDSNET program. Utilizing the HL7 standard messaging format and an HTTPS post transport provides a streamlined method of automating the secure exchange of immunization information.

The following information is required in the HTTPS post:
1) **FIELD_USERID**
2) **FIELD_PASSWORD**
3) **FIELD_MESSAGEDATA** (the HL7 message)

The first two items (i.e. user id and password) and the required Uniform Resource Locator (URL) for the HTTPS post will be supplied by KIDSNET during the initial setup process. The third required field (FIELD_MESSAGEDATA) contains the HL7 message batch in its entirety.

When testing is completed successfully, the production KIDSNET URL and authentication credentials will be supplied to the newly authorized information exchange partner. Sample Java program code to perform an HTTPS post transmission is available upon request.

Senders using the HTTPS post protocol can choose between two transmission modes.

Batch Transmission Mode

In the batch mode of sending child and immunization information using the HTTPS Post protocol, HL7 messages containing information for multiple children are batched together prior to sending the "batch" to the RI Department of Health.

The batch mode of sending HL7 messages via the HTTPS Post protocol is commonly used by EMR vendors and their practice customers to send information at a scheduled time during the day or week. For example, immunizations administered for the day are sent each day at 7 PM or immunizations administered for the week are sent once a week on Thursday at 10 PM.

Real-Time Transmission Mode

In the real-time mode of sending child and immunization information using the HTTPS Post protocol, one HL7 message is created and sent by the practice's EMR as the information is entered and saved. This method alleviates the need for a scheduled transmission daily or weekly because each immunization is sent to KIDSNET when it is saved.

The real-time HL7 transmission mode allows for an immediate response (i.e. acknowledgement) from KIDSNET notifying the sender about whether the HL7 message was received successfully and whether the message passed the KIDSNET initial parsing and edit routines successfully. It should be noted that the initial KIDSNET edits are preliminary. More detailed editing is performed by the KIDSNET back-end matching, deduplication, and load processes.

Transactions sent to KIDSNET in real-time are processed in batch mode and will not appear in the database until processed.

Secure File Transfer Method

If a potential HL7 exchange partner is not able to use the HTTPS post method of transmitting immunization information, KIDSNET will accept HL7 immunization information using a secure file transfer mechanism. This method uses the Rhode Island Department of Health's secure Web File Repository (WFR).

WFR is a web based tool which requires an Internet browser to securely upload HL7 information. The sender is required to use their KIDSNET assigned sender id and password to authenticate to the WFR before being allowed to upload the HL7 immunization information.

On a daily basis the Rhode Island Department of Health HL7 import processes read the HL7 files that have been uploaded to WFR. The patient and immunization information is then parsed, edited, matched, deduplicated, and stored in the KIDSNET database. KIDSNET data managers monitor these processes and notify senders when there are errors or other issues to be resolved.

Uploading HL7 immunization information to the secure file transfer (WFR) mechanism can also be automated using the WFR client software.

Testing Procedure

Before permitting the KIDSNET system to be updated with HL7 immunization data from a potential information exchange partner, a series of tests are required. This testing will be an iterative process. When all issues have been resolved, the first production HL7 information exchange will be scheduled with the newly authorized information exchange partner.

The testing process includes the following steps:

1. Identification of the contact people for KIDSNET and the potential information exchange partner.
2. KIDSNET will provide the potential information exchange partner with a Sender Id, a Password, and the appropriate URL for testing the HL7 HTTPS post transmission.
3. KIDSNET and the potential information exchange partner will review the physician office(s) involved. The KIDSNET provider Id(s) for the identified practice(s) will be supplied. A valid KIDSNET provider Id is required for each HL7 immunization message.
4. The potential information exchange partner will send a test transmission of HL7 immunization transactions. Please note, when testing a "T" must be present in this processing id field (MSH-11).
5. The test transmission will be processed by the test KIDSNET system and the results will be reviewed in detail with the potential information exchange partner. This review

will include the number of messages and the number of immunizations that were received, which KIDSNET providers were involved, the status of the each immunization, and a discussion about any problems that were encountered.

6. After the initial test transmission a plan will be developed by KIDSNET and the potential information exchange partner for subsequent test transmissions to resolve issues that occurred during the initial testing and to confirm the correct functioning of the sending and receiving systems.
7. When testing is completed, KIDSNET will work with the newly authorized and tested information exchange partner to plan for the start of the production HL7 immunization information exchange.

HL7 Information Exchange Specification

The CDC Implementation Guide for Immunization Data Transactions (http://www.cdc.gov/nip/registry/st_terr/tech/stds/hl7guide.pdf) is the basis for the KIDSNET HL7 Information Exchange Specification. It contains more detailed examples, explanations, and information about HL7 data types and older HL7 standard code set tables. The code-sets to be used for the Rhode Island information exchange are outlined in Appendix 1 of this document.

Please refer to the CDC implementation guide if more detailed information is needed.

HL7 Batch Protocol

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

(Portions below have been excerpted from the CDC Implementation Guide for Immunization Data Transactions).

A batch of HL7 messages may be sent online using a common file transfer protocol. If needed, a group of batches may be sent using the file header and trailer segments. The FHS and FTS are optional and need not be sent if the transaction is one batch of records. Both the batch header segment (BHS) and the file header segment (FHS) have fields that provide unique ID's for these segments. The file/batch syntax follows.

Message syntax: Each message is defined in special notation that lists the segment 3-letter identifiers in the order they will appear in the message. Braces, {}, indicate that one or more of the enclosed group of segments may repeat, and brackets, [ ], indicate that the enclosed group of segments is optional.

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

[BTS] (batch trailer segment)
}
[FTS] (file trailer segment)

Batch Protocol Example

BHS|^~\&|EMR NAME|1492||KIDSNET|20070802091524||||20070802RI149201|<CR>
MSH|...(1)VXU…
MSH|...(2)VXU…
MSH|...(3)VXU…
BTS|3<CR>

This example demonstrates three HL7 VXU messages being sent from an EMR system for KIDSNET Provider 1492 to KIDSNET (the Rhode Island Integrated Child Health System) on August 2, 1999, at 9:15 a.m.

BHS Attributes - bolded fields are required

SEQ	LEN	DT	R/O	ELEMENT NAME	Value
1	**1**	**ST**	**R**	**Batch field separator**	|
2	**3**	**ST**	**R**	**Batch encoding characters**	**^~\&**
3	15	ST	O	Batch sending application	Practice name, EMR name, ASP name
4	**20**	**ST**	**O**	**Batch sending facility**	**KIDSNET assigned Sender Id. Contact the KIDSNET help desk for more information**
5	15	ST	O	Batch receiving application	
6	20	ST	O	Batch receiving facility	KIDSNET
7	**26**	**TS**	**O**	**Batch creation date/time**	**20070802091524**
8	40	ST	O	Batch security	
9	20	ST	O	Batch name/ID/type	
10	80	ST	O	Batch comment	
11	**20**	**ST**	**O**	**Batch control ID**	**Sender determined, must be unique Example: date (YYYYMMDD)+StateCode+Sender Id + sequential number.) 20070802RI149201**
12	20	ST	O	Reference batch control ID	

During the initial contact and testing of the information exchange with each information exchange partner, the values to be sent in the HL7 batch header (BHS) and message headers (MSH) will be reviewed and agreed upon.

Standard HL7 Message Header

Each message must be prefaced with a standard HL7 message header. Refer to Section 2.4 (Message Control Segments) in the CDC Implementation Guide for Immunization Data Transactions for more detail.

Example:

MSH|^~\&|OCEANSYS|IMM51||KIDSNET|20070802091524||VXU^V04|20070802RI149201|P|2.5|||NE|AL<CR>

** MSH fields not described in the table below are not processed by the KIDNSET information exchange at this time.

In the MSH example below the **bolded fields** are the minimal data elements needed for the Rhode Island Department of Health to process a message.

Sample information	Data value	HL7	Edit
• **Message Sender**			
Field Separators	**|**	**MSH-1**	**Required by HL7 and Rhode Island.**
• **Encoding characters**	**^~\&**	**MSH-2**	**Required by HL7 and Rhode Island**
Sending Application	OCEANSYS Sender defined, during initial set up with KIDSNET this value will be defined	MSH-3	Optional and returned in response
Sending Facility	**KIDSNET assigned Sender Id. Examples: RI51 or RI99070323 Contact the KIDSNET help desk for more information.**	**MSH-4**	**Required by Rhode Island, returned in response**
Receiving Application		MSH-5	Optional and returned in response
Receiving Facility	KIDSNET	MSH-6	Optional and returned in response
Date/Time of Message	**20070802091524** **Date/time, Use YYYYMMDDHHMMSS**	**MSH-7**	**Required by Rhode Island.**
Message Type	**VXU^V04 (subcomponents below)**	**MSH-9**	
• Message type	VXU (Unsolicited vaccination record update)	MSH-9	Required by HL7 and Rhode Island.
• Trigger event	V04	MSH-9	Required by HL7 and Rhode Island
Message Control Id	**20070802RI149201** **Sender determined, must be unique (The receiving system echoes this ID back to the sending system in the message acknowledgment segment (MSA). Example: date (YYYYMMDD)+KIDSNET Provider Id code + sequential number.)**	**MSH-10**	**Required by HL7, must be unique – returned in response**
Processing Id	**Possible values (P=Production, T=Training, D=Debugging)**	**MSH-11**	**Required by HL7 and Rhode Island.**

Version Id	2.4	MSH-12	Required by HL7 and Rhode Island.
Accept acknowledgment type	NE (Never)	MSH-15	Optional
Application acknowledgment type	Recommend ER AL (Always, other possible values NE=Never, ER=Error/Reject conditions only, SU=Successful completion only)	MSH-16	Optional

Date Format

Whenever possible dates (e.g. date of administration) should be submitted in the following format:

Example Date (no time): 19920204

- the first 4 digits are the full century and year - 1992
- month is 2 digits afterwards - 02 (February)
- day is 2 digits after the month - 04

Example Date and Time: 1992020412322.111

- date format is the same as above, followed by:
  - hours, minutes and seconds have subsequent 2 digits - 12:23:22.111 (111 means milliseconds)

Unsolicited Vaccination Record Update (VXU) Message

The KIDSNET VXU (HL7 Message) contains segments: MSH, PID, PD1 (optional), PV1 (optional), NK1 (optional, but strongly encouraged, may repeat), IN1 (optional, but strongly encouraged), RXA, RXR (optional), (RXR, RXA may repeat).

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

VXU	Unsolicited Vaccination Update	HL7 Chapter
MSH	**Message Header Segment**	**2**
PID	**Patient Identification Segment**	**3**
[PD1]	Additional Demographics	3
[{NK1}]	Next of Kin/Associated Parties	**3**
[PV1	Patient Visit	3
[PV2]]	Patient Visit Additional Information	3
[{IN1	Insurance	6
[IN2]	Insurance Additional Information	6
[IN3]	Insurance Additional Information-Cert.	6
}]		
[{ [ORC]	Common Order Segment	4

RXA	**Pharmacy Administration**	**4**
[RXR]	Pharmacy Route	4
[{ OBX	Observation/Result	7
[{NTE}]	Notes (Regarding Immunization)	2
}]		
}]		

Segments support by KIDSNET Information Exchange System. BOLD segments are required.

KIDSNET EXAMPLE

The next examples are based on the Rhode Island Department of Health KIDSNET specific requirements which use the CDC implementation guide fundamentals. The matrix below displays the information in layman terms. It shows the messages including which information is required and any associated rules. Detailed rules concerning HL7 formatting as well as more examples can be found in the CDC Implementation Guide for Immunization Data Transactions (http://www.cdc.gov/nip/registry/st_terr/tech/stds/hl7guide.pdf).

A detailed narrative follows the examples below to explain the intent of the messages and the information contained within each. 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>.

Sample KIDSNET HL7 Messages:

BHS|^~\&|OCEANSYS|1492||KIDSNET|20070802091523||||00010223|<CR>
MSH|^~\&|OCEANSYS|1492||KIDSNET|20070802091524||VXU^V04|20070802RI149201|P|2.4|||NE|AL|<CR>
PID|||123456^^^^SR~45999^^^^MR^||MILLER^GEORGE^M^JR| JONES^MARTHA^G |20070227|M|||127 W STATE ST^^ PROVIDENCE^RI^12501^US^^^ PROVIDENCE|<CR>
PV1||R|||||||||||||||||V02^20070227|<CR>
IN1|1|10^CHAMPUS^RI0001|443928|<CR>
NK1|1|MILLER^MARTHA|MTH^MOTHER^HL70063|127 W STATE ST^^ PROVIDENCE^RI^12501^US|(401)123-4567||||||||||19750411|<CR>
RXA|0|999|20070729|20070729|90744^ HEPB-PEDIATRIC/ADOLESCENT ^CPT|999|||00^NEW IMMUNIZATION RECORD^NIP001||^^^RI1492||||0039F||MSD^MERCK^MVX||||A|<CR>
RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163|<CR>
MSH|^~\&|OCEANSYS|1492||KIDSNET|20070802091524||VXU^V04|20070802RI149202|P|2.4|||ER|<CR>
PID|||123456^^^^SR~23LK729^^^^MR^||CALIFANO^MARIA|SMITH^ MARIA^G|20060413|F|||44 OCEAN BLVD^^ NEWPORT^RI^12502^US^^^ NEWPORT|<CR>
IN1|1|03^UNITED HEALTH^RI0001||<CR>
NK1|1| CALIFANO^MARIA|MTH^MOTHER^HL70063|44 OCEAN BLVD^APT 101^ NEWPORT^RI^12502^US|(401)987-8877||||||||||19780403|<CR>
RXA|0|999|20070723|20070723|90700^DTAP^CPT|999|||00^NEW IMMUNIZATION RECORD^NIP001||^^^RI1492||||AC21B101AA||SKB^GLAXOSMITHKLINE^MVX||||A|<CR>
RXA|0|999|20070723|20070723|90707^MMR^CPT|999|||00^NEW IMMUNIZATION RECORD^NIP001||^^^RI1492||||1218F||MSD^MERCK^MVX||||A|<CR>
BTS|2|<CR>

Legend for color coding of Required column below

- **Required**
- **Not required but desired and used in KIDSNET**
- **Not required but desired. Will be used by KIDSNET in the future**
- **Optional Segment**

Matrix of Information in Sample Message:

Sample information to be transmitted	Data value	HL7	Required
• **Patient #1**			
Patient Identifier Segment		**PID Segment**	Required
Patient Id List	Id identifiers in the example are SR= State Registry ID, MR-medical record number 123456^^^^SR~45999^^^^MR^ (subcomponents below)	PID-3	This field is not required but is desired and used by KIDSNET if medical record number. Required by HL7 – CDC core data element.
Medical Record Number (often the chart number	45999 (ID identifier "MR")	PID -3	
KIDSNET ID repeating PID3	123456 (ID identifier is "SR")	PID -3	
Name	**Format**: Lastname^Firstname^Middle Initial^Suffix MILLER^GEORGE^M^JR	PID-5	Required
Mother's maiden name	**Format**: Lastname^Firstname^Middle Initial^Suffix JONES^MARTHA^G	PID-6	Not required but desired. Will be used by KIDSNET in the future. CDC core data element.
Birth date	February 27, 1995 **Format**: YYYYMMDD, time optional, omit if not available 19950227	PID-7	Required
Sex	M Possible values: M, F U or O See table0001 in appendix 1.	PID-8	Required by Rhode Island.
Race	Valid code see table 0005 in Appendix 1 No race shown in example HL7.	PID-10	Not required but desired. Will be used by KIDSNET in the future

Sample information to be transmitted	Data value	HL7	Required
Address	127 W STATE ST^APT 23^PROVIDENCE^RI^12501 **Required format**: Street1^Apartment or Street2^City^State^Zip^Country	PID-11	Required by Rhode Island if this is a new patient. CDC Core data element.
Patient Visit		**PV1 segment**	Not Required but desired and used in KIDSNET
Patient Class	R = Patients are recurring	PV1-2	Not Required for Rhode Island. If the PV1 segment is included, this field is required by HL7.
Financial class	<financial class – table 0064)>^<effective date> V02^20070227 (VFC status is effective February 27, 2007)	PV1-20	Not Required but desired and used in KIDSNET to record VFC eligibility..
Insurance Segment		**IN1 Segment**	Optional Segment
Insurance Plan Id	10^CHAMPUS^RI0001 See list of acceptable Insurance Codes in Appendix 1	IN1-2	Not Required but highly desired and used in KIDSNET to determine VFC eligibility.
Insurance Company Id (The insured's policy number)	443928	IN1-3	Not Required but desired and used in KIDSNET
Next of Kin: Responsible Person (parent or other person who cares for Patient)		**NK1 segment**	Optional for Rhode Island, required by HL7.
Set Id	1 (serial counter showing the sequence of this NK1)	NK1-1	Required.
Name	Lastname^Firstname^Middle Initial^Suffix MILLER^ MARTHA	NK1-2	Not Required but highly desired and used in KIDSNET. CDC core data element.
Relationship to Patient	MTH (Table 0063 - Relationship)	NK1-3	Not Required but desired and

			used in KIDSNET. CDC core data element.
Sample information to be transmitted	**Data value**	**HL7**	**Required**
Address	127 W STATE ST^APT 5^PROVIDENCE^RI^12501 **Required format**: Street1^Apartment or Street2^City^State^Zip^Country	NK1-4	Not Required but desired and used in KIDSNET
Telephone	(401)123-4567	NK1-5	Not Required but desired and used in KIDSNET.
Date of Birth	19950729 **Format**: YYYYMMDD, time optional, if supplied use 24 hour method i.e. HHMM, 1525 is 3:15 p.m.	NK1-16	Not Required but desired and used in KIDSNET
Immunization		**RXA segment**	At least one RXA segment is required
Give Sub-ID Counter	Always “0”	RXA-1	Required
Administration Sub-ID Counter	Always “999”	RXA-2	Required
Date/time start of administration	19950729 **Format**: YYYYMMDD, time optional, if supplied use 24 hour method i.e. HHMM, 1525 is 3:15 p.m.	RXA-3	Required
Date/time end of administration	19950729	RXA-4	Required by HL7 but not required by KIDSNET.
Administered code	**Format**: 90744^ HEPB-PEDIATRIC/ADOLESCENT ^CPT See Appendix for a list of allowable CPT codes	RXA-5	Required
Administered Amount (Dose)	999	RXA-6	Required by HL7. Not required by Rhode Island.
Administration Notes	00^NEW IMMUNIZATION RECORD^NIP001 This field is used to determine the source of information (new or historical) Use NIP0001 code set (see Appendix)	RXA-9	Not Required but desired and used in KIDSNET.
Administered at Location	^ ^ ^RI1492 KIDSNET Provider Id (e.g. RI1492)	RXA-11	Required and assigned by Rhode Island.
Substance Lot Number	Lot number (e.g. 0039F)	RXA-15	Not Required but desired and used in

			KIDSNET. Required by HL7 and CDC core data element.
Sample information to be transmitted	**Data value**	**HL7**	**Required**
Lot manufacturer	Manufacturer (e.g. MSD^Merck) Please reference the code table in the Appendix for valid values.	RXA-17	Not Required but desired and used in KIDSNET. Required by HL7 and CDC core data element..
Substance Refusal Reason	See NIP-defined Table 002 in the appendix	RXA-18	Not required but desired if applicable. Will be used by KIDSNET in the future
Action Code	A = Add D = Delete U = Update	RXA-21	Not Required but desired and will be used in the future. Currently defaults to Add.
Pharmacy/Treatment Route		**RXR segment**	Not required but desired. Will be used by KIDSNET in the future
Route	Refer to HL7 Table 0162 - Route of administration for valid values.	RXR-1	If RXR is present, this field is required and will be used by KIDSNET in the future.
Site	Refer to HL7 Table 0163 – Administrative Site for valid values.	RXR-2	Not required but desired. Will be used by KIDSNET in the future
• **Patient #2**			
Patient Identifier Segment		**PID Segment**	Required
Patient Id List	Id identifiers in the example are SR= State Registry ID, , LR – local registry, MR-medical record number 123456^^^^SR~23LK729^^^^MR^ (subcomponents below)	PID-3	This field is not required but is desired and used by KIDSNET if medical record number.

			Required by HL7 – CDC core data element.
Medical Record Number (often the chart number)	23LK729	PID -3	
KIDSNET ID repeating PID-3	123456 (id identifier also is "SR")	PID -3	
Sample information to be transmitted	**Data value**	**HL7**	**Required**
Name	**Format**: Lastname^Firstname^Middle Initial^Suffix CALIFANO^MARIA	PID-5	Required
Birth date	April 13, 1998 **Format**: YYYYMMDD, time optional 19980413	PID-7	Required
Sex	F Possible values: M, F U or O See table0001 in appendix 1.	PID-8	Required by Rhode Island.
Address	44 OCEAN BLVD^APT 101^ NEWPORT^RI^12502^US^^^ NEWPORT Street1^Apartment or Street2^City^State^Zip^Country	PID-11	Required by Rhode Island if this is a new patient. CDC Core data element
Insurance Segment		**IN1 Segment**	Optional Segment
Set Id	1	IN1-1	Default Value
Insurance Plan Id	03^UNITED HEALTH^RI0001 See list of acceptable Insurance Codes in Appendix 1	IN1-2	Not Required but highly desired and used in KIDSNET to determine VFC eligibility
Next of Kin: Responsible Person (parent or other person who cares for Patient)		**NK1 segment**	Optional for Rhode Island, required by HL7.
Set Id	1 (serial counter showing the sequence of this NK1)	NK1-1	Required.
Name	Lastname^Firstname^Middle Initial^Suffix M CALIFANO^MARIA	NK1-2	Not Required but highly desired and used in KIDSNET. CDC core data element.
Relationship to Patient	MTH (Table 0063 - Relationship)	NK1-3	Not Required but desired and used in

			KIDSNET. CDC core data element.
Sample information to be transmitted	**Data value**	**HL7**	**Required**
Address	44 OCEAN BLVD^APT 101^ NEWPORT^RI^12502^US^^^ NEWPORT Street1^Apartment or Street2^City^State^Zip^Country	NK1-4	Not Required but desired and used in KIDSNET
Date of Birth	19780403 **Format**: YYYYMMDD, time optional, if supplied use 24 hour method i.e. HHMM, 1525 is 3:15 p.m.	NK1-16	Not Required but desired and used in KIDSNET
Immunization		**RXA segment**	At least one RXA segment is required
Give Sub-ID Counter	Always “0”	RXA-1	Required.
Administration Sub-ID Counter	Always “999”	RXA-2	Required.
Date administered	19990723 (July 23, 1999)	RXA-3	Required.
Date/time end of administration	19990723	RXA-4	Not required or used by KIDSNET. This field is required by HL7.
Administered code	**Format**: 90700^DTaP^CPT See Appendix for a list of allowable CPT codes	RXA-5	Required.
Administered Amount (Dose)	999	RXA-6	Required by HL7. Not required by Rhode Island.
Administration Notes	00^NEW IMMUNIZATION RECORD^NIP001 This field is used to determine the source of information (new or historical). Use NIP0001 code set (see Appendix)	RXA-9	Not Required but desired and used in KIDSNET.
Administered at Location	^ ^ ^RI1492 KIDSNET Provider Id (e.g. RI1492)	RXA-11	Required and assigned by Rhode Island.
Substance Lot Number	Lot number (e.g. AC21B101AA)	RXA-15	Not Required but desired and used in KIDSNET. This field is required by HL7.
Lot manufacturer	Manufacturer (e.g. SKB^GLAXOSMITHKLINE^MVX)	RXA-17	Not Required but desired and used in

			KIDSNET. This field is required by HL7.
Sample information to be transmitted	**Data value**	**HL7**	**Required**
Action Code	A = Add D = Delete U = Update	RXA-21	Not Required but desired and will be used in the future. Currently defaults to Add.
Immunization		**RXA segment**	At least one RXA segment is required
Give Sub-ID Counter	Always "0"	RXA-1	Required.
Administration Sub-ID Counter	Always "999"	RXA-2	Required.
Date administered	July 23,1999	RXA-3	Required.
Administered code	**Format**: 90707^MMR^CPT See Appendix for a list of allowable CPT codes	RXA-5	Required.
Administered Amount (Dose)	999	RXA-6	Not required by Rhode Island. but desired. This field is required by HL7.
Administration Notes	00^NEW IMMUNIZATION RECORD^NIP001 This field is used to determine the source of information (new or historical) Use NIP0001 code set (see Appendix).	RXA-9	Not Required but desired and used in KIDSNET.
Administered at Location	^ ^ ^RI1492 KIDSNET Provider Id (e.g. RI1492)	RXA-11	Required and assigned by Rhode Island. .
Substance Lot Number	Lot number (e.g. 1218F)	RXA-15	Not Required but desired and used in KIDSNET. This field is required by HL7.
Substance Manufacturer Name	Manufacturer (e.g. MSD^MERCK^MVX) (**Note** the code ZZZ is invalid above. It is used in the next section to describe one way to handle errors)	RXA-17	Not Required but desired and used in KIDSNET. This field is required by HL7.
Action Code	A = Add D = Delete	RXA-21	Not Required but desired and

	U = Update		will be used in the future. Currently defaults to Add.

Sample KIDSNET HL7 Messages: (Duplicated from above for convenience)

BHS|^~\&|OCEANSYS|1492||KIDSNET|20070802091523||||00010223|<CR>
MSH|^~\&|OCEANSYS|1492||KIDSNET|20070802091524||VXU^V04|20070802RI149201|P|2.4|||NE|AL|<CR>
PID|||123456^^^^SR~45999^^^^MR^||MILLER^GEORGE^M^JR| JONES^MARTHA^G |20070227|M|||127 W STATE ST^^ PROVIDENCE^RI^12501^US^^^ PROVIDENCE|<CR>
PV1||R|||||||||||||||||V02^20070227|<CR>
IN1|1|10^CHAMPUS^RI0001|443928|<CR>
NK1|1|MILLER^MARTHA|MTH^MOTHER^HL70063|127 W STATE ST^^ PROVIDENCE^RI^12501^US|(401)123-4567||||||||||19750411|<CR>
RXA|0|999|20070729|20070729|90744^ HEPB-PEDIATRIC/ADOLESCENT ^CPT|999|||00^NEW IMMUNIZATION RECORD^NIP001||^^^RI1492||||0039F||MSD^MERCK^MVX||||A|<CR>
RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163|<CR>
MSH|^~\&|OCEANSYS|1492||KIDSNET|20070802091524||VXU^V04|20070802RI149202|P|2.4|||ER|<CR>
PID|||123456^^^^SR~23LK729^^^^MR^||CALIFANO^MARIA|SMITH^ MARIA^G|20060413|F|||44 OCEAN BLVD^^ NEWPORT^RI^12502^US^^^ NEWPORT|<CR>
IN1|1|03^UNITED HEALTH^RI0001||<CR>
NK1|1| CALIFANO^MARIA|MTH^MOTHER^HL70063|44 OCEAN BLVD^^ NEWPORT^RI^12502^US|(401)987-8877||||||||||19780403|<CR>
RXA|0|999|20070723|20070723|90700^DTAP^CPT|999|||00^NEW IMMUNIZATION RECORD^NIP001||^^^RI1492||||AC21B101AA||SKB^GLAXOSMITHKLINE^MVX||||A|<CR>
RXA|0|999|20070723|20070723|90707^MMR^CPT|999|||00^NEW IMMUNIZATION RECORD^NIP001||^^^RI1492||||1218F||MSD^MERCK^MVX||||A|<CR>
BTS|2|<CR>

Sample HL7 Messages - Narrative:

Above, Ocean Clinic transmits two HL7 messages to KIDSNET. Note the batch header and footer segments. Each message is an HL7 VXU message type. Patient George M Miller Jr. is identified by Ocean Clinic's chart number 45999 in his PID segment. The message also includes George's KIDSNET ID number "123456" in field PID-3 with the id type of "SR" (i.e. state registry id). The KIDSNET Id is preferred if it is available. This provides a direct linkage with the appropriate patient's medical record.

George's birth date, sex, and address also serve to identify him. Fields not defined in this implementation guide are not currently used by KIDSNET. Additional fields can be sent, but KIDSNET will not use them at this time. Plans are in place to enhance KIDSNET to make use of additional useful information in the future.

In the first example message above, an NK1 segment provides some information for George's mother. KIDSNET responds to the transmission with ACK messages. Ocean Clinic's message "20070802RI149201" had the value AL in field MSH-15, asking for acknowledgements for each message sent. The value AA in MSA-1 below indicates that this message was processed without error. For message 20070802RI149202, the value ER in field MSH-15 requests acknowledgements only in case of errors, so this message is acknowledged implicitly and no ACK message is sent from the KIDSNET. This example while legitimate is for purposes of

illustration and most providers will probably prefer to follow the KIDSNET recommendation of error acknowledgements only.

```
BHS|^~\&||KIDSNET||1492|20070802||||20070802RI149201<CR>
MSH|^~\&||KIDSNET||1492|20070802||ACK|20070802RI149201|P|2.4<CR>
MSA|AA|20070802RI149201<CR>
MSH|^~\&| |KIDSNET||OCEANCLIN|20070802||ACK|20070802RI149202|P|2.4<CR>
MSA|AE|20070802|RI149202|INVALID MANUFACTURER CODE<CR>
ERR|RXA^12^17^ 1<CR>
BTS|2<CR>
```

For message "20070802RI149202" an error was detected and the ERR segment in its acknowledgement indicates the segment ID (RXA) of the segment, the line number (14) where it appears in the input file, the errant field (17) and the field component (1). The MSA segment contains the error message. Errors are generated when there is missing required data, invalid data or any other inconsistencies from the rules documented within this guide or by the HL7 organization.

In the case where all messages request error acknowledgement only and none have errors, then the answering message from KIDSNET will contain just the BHS, BTS segments. All the received messages are implicitly acknowledged as successfully processed.

In the above example, the information exchange partner's system initiated the exchange with the group of VXU segments and KIDSNET responded with ACK segments.

In the future when KIDSNET is able to send information to other systems, in the BHS, and MSH segments, the values of the fourth and sixth fields are reversed to show sender and receiver. In the future when sending data to information exchange partners, KIDSNET will send the KIDSNET ID in the required field PID-03 and it will also include the information exchange partner's identifier (e.g. chart number) in PID-03 if known.

Information exchange partners are encouraged to store the KIDSNET's patient ID and use it in PID-03 when sending to KIDSNET. This provides a direct patient identification and makes processing more accurate for the KIDSNET system. This way immunization and demographic information is accurately connected to the correct patient thus eliminating duplicate records caused by an insufficiently identified patient record that cannot be matched with a patient record already in the KIDSNET database.

KIDSNET makes a great effort to match patient records accurately regardless of whether the KIDNSET ID is used, but if used, the KIDSNET ID ensures clean and useful data.

KIDSNET Specific Information for Senders

The following section contains important information regarding the content of the batch header, the message header, and the immunization segments.

Batch Header and Message Header Segments

- Batch control ID (BHS-11) must contain a unique identifier for the batch.
  - The batch control id helps to identify which batch transmission contained specific messages. The receiving system echoes this Id back to the sending system in the response BHS.
  - Example batch control id:
    - 20070802RI347801 = date (YYYYMMDD)+State Code+KIDSNET Provider Id code + sequential number.)
  - The batch control Id can be any number or combination of characters that was never sent as a batch control id before for this sender Id.

- Message control ID (MSH-10) must contain a unique identifier for the message.
  - The message control id is required so that the sender can match the original message with an acknowledgement and possible error responses from the receiver. The receiving system echoes this ID back to the sending system in the message acknowledgment segment (MSA). It is also very useful for debugging issues.
  - Example batch control id:
    - 20070802RI34781091 = date (YYYYMMDD)+Provider Id code(RI3487) + sequential number (1091).)
  - The message control Id can be any be any number or combination of characters that was never sent as a message control id before for this sender Id.

- Accept/Application acknowledgment conditions (MSH-15 and MSH-16)
  - MSH-15 - This field is required if the enhanced acknowledgement mode is used, when the sending system wants a guarantee that the underlying communications system has delivered the message. Immunization registries will usually use the original acknowledgement mode and will value this field as NE.
  - MSH-16 - This mode specifies that the message be acknowledged at the application level. The reasoning is that it is not sufficient to know that the underlying communications system guaranteed delivery of the message. It is also necessary to know that the receiving application processed the data successfully at a logical application level. Immunization registries will usually use the original acknowledgement mode and will value this field as ER.
  - Recommended values:
    - MSH-15 = NE (Never)
    - MSH-16 = ER (Error/Reject conditions only)
  - Possible values:
    - AL Always
    - ER Error/Reject conditions only
    - NE Never
    - SU Successful completion

Immunization Segment (HL7 Pharmacy Treatment Administration RXA Segment)

- Administered Code (RXA-5)
  - KIDSNET uses CPT codes and would prefer that a valid CPT be sent in RXA-5 (see Appendix 1 for a list of valid code). For example: 90744^ HEPB-PEDIATRIC/ADOLESCENT ^CPT
  - If only CVX codes are available or if the CVX code reflects a more accurate assignment, the CVX codes will be accepted as long as the RI DOH and the sending system agree on a proper conversion between the CVX code and a CPT code. Please contact Kim Salisbury-Keith at the Rhode Island Department of Health (Kim.SalisburyKeith@health.ri.gov) if you think you need to send the CVX code instead of a CPT code.

- Administered at location (RXA-11)
  - The RXA-11 must contain the KIDSNET provider id. This Id is controlled by, and will be provided by the RI Department of Health Immunization Program:
    - For example: John Smith Family Practice is a participating KIDSNET Provider assigned to KIDSNET Provider Id = 3478. In this case John Smith Family Practice would send |^^^RI3478| in RXA-11.

- Action Code (RXA-21)
  - This field is not required but it is desired and will be used in the future. This currently defaults to Add. **KIDSNET currently only processes Add transactions**. Future valid values are:
    1. A= Add
    2. D= Delete (CPT code and date of administration must match)
    3. U=Update (CPT code and date of administration must match)
    4. If changing the CPT code or administration date please send a delete request followed by an add request.

KIDSNET Response – Additional Information

When the patient and immunization data is received from the medical provider's system it will be processed to ensure that the necessary information is present in the correct format. If the information is accepted it will be staged for processing by the KIDSNET matching and deduplication routines (see Figure 1).

The matching and deduplication routines will automatically process the information from the Immunization provider and will forward accepted information to the KIDSNET database update routines which will add to and update the KIDSNET database.

Acknowledgment Messages (with Errors)

ACK messages are generated for message acceptance, rejections, and for informational error messages.

The most likely conditions to cause a message rejection:

- Sequencing (e.g. a PID segment must follow an MSH segment.
- Segment required fields contain no data (e.g. Patient name missing)
- Segment required fields contain invalid data. (e.g. CPT Code Invalid)

An ACK can be generated to notify the sender about informational errors which do not result in rejection of the message (e.g. NK1 segment contains no first name). When this happens the segment containing the error is ignored but the remainder of the message is processed. An ACK message can be sent informing the sender of the problem. The ACK contains the MSH, MSA and ERR segments.

The MSH message header segment allows the sender to ask that the message be acknowledged only if there is an error (see 15th field in MSH header). In this case the ACK file will contain error only messages. All accepted messages (i.e. messages without errors) are implicitly acknowledged as having been successfully processed.

The MSH segment is generated according to normal HL7 processing guidelines (see above and CDC guide). The MSA and ERR segments are detailed below:

MSA - Message Acknowledgment Segment

SEQ	LEN	DT	R/O	RP/#	TBL#	ELEMENT NAME
1	2	ID	R		0008	Acknowledgment code
2	20	ST	R			Message control ID
3	80	ST	O			Text message
4	15	NM	O			Expected sequence number
5	1	ID	B		0102	Delayed acknowledgment type
9	100	CE	O			Error condition

Notes:

- MSA 01: The acknowledgment code indicates whether the message was accepted, rejected, error, etc…This is a required field. KIDSNET will generate an "AE" (i.e. application error) for informational or rejection error messages. An "AA" (i.e. application accepted) is generated for a simple acknowledgment acceptance.
- MSA 02: The message control ID is the unique ID that is sent by the sending system. This is a required field and it allows the sending and receiving systems to associate each message with the originator or receiver. When responding, this Id is the same as the control ID (see MSH-10) sent by the sending system.
- MSA 03: This optional field describes the error condition. If this is a message rejection KIDSNET will generate the text "ERROR: MSG REJECTED" as the first portion of the text. Informational error messages will not contain this message rejection text.
- MSA 04: This optional numeric field is used in the sequence number protocol. KIDSNET will not generate this field.
- MSA 05: Delayed Acknowledgement type. KIDSNET will not generate this field.

- MSA 06 Error Condition. KIDSNET will not generate this field.

ERR - Error Segment

The ERR segment is used to add comments about errors to acknowledgment messages. If this is a message rejection, this segment will stipulate the error location and provide a description using locally established codes. Field components include:

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

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

Example: ACK Message with Error

MSH|^~\&||ZZ000||QUERYING ORG|20040101101||VXQ^V01|001|P^|2.4|||ER
MSA|AE|001|Invalid relationship code. Defaulting to Guardian|3||102^Invalid data value^HL70357^^^
ERR|NK1^16^3^0

This document is a work in process. Notifications of changes are sent out via e-mail. If you have questions, comments, or wish to be added to the notification list please contact Kim Salisbury-Keith at the Rhode Island Department of Health.
Email: Kim.SalisburyKeith@health.ri.gov **Phone: (401) 222-5925**

Appendix 1 –Code Tables

Type	Table	Name	Value	Description
HL7	0001	**Sex**		PID:8 (Code Source=HL7 table 0001)
	0001		F	Female
	0001		M	Male
	0001		O	Other
	0001		U	Unknown
HL7	0002	**Substance Refusal Reason** (RXA-18)	00	Parent decision
	0002		01	Religious exemption
	0002		02	Other (must add text component of the CE field with description)
	0002		03	Patient decision
AIRA	0005	**Race**		PID:10 (2006 AIRA code-sets)
	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		2135-2	Hispanic or Latino
	0005		2186-5	Other race
	0005		2131-1	Unknown
HL7	0008	**Acknowledgment Code**		HL7 Table0008
	0008		AA	Application Accept
	0008		AE	Application Error
	0008		AR	Application Reject
User	0063	**Relationship**		NK1:3 (Code Source=HL7 table0063)
	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
	0063		FND	Friend
	0063		FTH	Father
	0063		GCH	Grandchild
	0063		GRD	Guardian
	0063		GRP	Grandparent
	0063		MGR	Manager

	0063		MTH	Mother
	0063		NCH	Natural
	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	0064	**Financial class**		PV1:20 (Code Source=HL7 table 0064)
	0064		V00	VFC eligibility not determined/unknown
	0064		V01	Not VFC eligible
	0064		V02	VFC eligible – Medicaid/Medicaid Managed Care
	0064		V03	VFC eligible – Uninsured
	0064		V04	VFC eligible – American Indian/Alaskan Native
	0064		V05	VFC eligible – Federally Qualified Health Center Patient (under-insured)
	0064		V06	VFC eligible – State-specific eligibility (e.g. S-Chip plan)
	0064		V07	VFC eligible – Local-specific eligibility
HL7	0103	**Processing** ID		MSH-11
			T	Test
	0103		P	Production
HL7	0104	**Version ID**		MSH-12
	0104		2.3.1	Release 2.3.1 1999
	0104		2.4	Release 2.4 2000
HL7	0155	**Accept/Application acknowledgment conditions**		use in MSH-15 and 16
	0155		AL	Always
	0155		ER	Error/Reject conditions only
	0155		NE	Never
	0155		SU	Successful completion
HL7	0162	**Route of Administration**		RXR:1 (Code Source=HL7 table 0162) Used in KIDSNET
	0162		ID	Intradermal
	0162		IM	Intramuscular
	0162		IN	Intranasal
	0162		IV	Intravenous
	0162		PO	Oral
	0162		OTH	Other/Miscellaneous

	0162		SCH	Subcutaneous
	0162		TD	Transdermal
HL7	0163	**Administrative Site**		RXR:2 (Code Source=HL7 table 0163) [Used by KIDSNET
	0163		LT	Left Thigh
	0163		LA	Left Arm
	0163		LD	Left Deltoid
	0163		LG	Left Gluteus Medius
	0163		LVL	Left Vastus Lateralis
	0163		LLFA	Left Lower Forearm
	0163		RA	Right Arm
	0163		RT	Right Thigh
	0163		RVL	Right Vastus Lateralis
	0163		RG	Right Gluteus Medius
	0163		RD	Right Deltoid
	0163		RLFA	Right Lower Forearm
HL7	0203	**Identifier Type**		PID:3 (Code Source=HL7 table 0203) **Note: Subset of table**
	0203		MA	Medicaid Number
	0203		MC	Medicare Number
	0203		MR	Medical Record Number
	0203		SR	State Registry Identifier
User	0215	**Publicity Code**		PD1:11 (Code source = HL7 table 0215) **Note**: **Subset of table** [*Not currently Used in KIDSNET*
	0215		01	No reminder/recall
	0215		02	Yes reminder/recall – any method
NIP	NIP001	**Immunization Information Source**		RXA:9 (Code source = NIP table 001) **Note**: **Subset of table**
	NIP001		00	New Immunization Record
	NIP001		01	Historical Information –source unspecified
	NIP001		02	Historical information - from other provide
	NIP001		03	Historical information - from parent's written record
	NIP001		04	Historical information - from parent's recall
	NIP001		05	Historical information - from other registry
	NIP001		06	Historical information - from birth certificate
	NIP001		07	Historical information – from school record
	NIP001		08	Historical information - from public agency
NIP	NIP002	**Substance Refusal Reason**		RXA:18 (Code source = NIP table 002) [*Not currently Used in KIDSNET*]
	NIP002		00	Parental Refusal
	NIP002		01	Religious Exemption
	NIP002		02	Other (must add text component of the CE field with description)
	NIP002		03	Patient decision

KIDSNET CPT CODES

CPT Code	Short Description	Full Description
90281	IG IM	IMMUNE GLOBULIN (IG), HUMAN, FOR INTRAMUSCULAR USE
90283	IGIV	IMMUNE GLOBULIN (IGIV), HUMAN, FOR INTRAVAENOUS USE
90287	BOTULNM AT	BOTULINUM ANTITOXIN, EQUINE, ANY ROUTE
90288	BOTULISMIG	BOTULISM IMMUNE GLOBULIN, HUMAN, FOR INTRAVENOUS USE
90291	CMV IGIV	CYTOMEGALOVIRUS IMMUNE GLOBULIN (CMV-IGIV), HUMAN, FOR INTRAVENOUS USE
90296	DPTH AT EQ	DIPHTHERIA ANTITOXIN, EQUINE
90371	HBIG	HEPATITIS B IMMUNE GLOBULIN (HBIG), HUMAN, FOR INTRMUSCULAR USE
90375	RIG	RABIES IMMUNE GLOBULIN (RIG), HUMAN, FOR INTRAMUSCULAR AND/OR SUBCUT
90378	RSV-MAB	RESP SYNCYTIAL VIRUS MONOCLONAL ANTIBODY IM (PALIVIZUMAB)
90376	RIG HT	RABIES IMMUNE GLOBULIN, HEAT-TREATED (RIG-HT), HUMAN, FOR INTRAMUSCULR
90379	RSV IGIV	RESPIRATORY SYNCYTIAL VIRUS IMMUNE GLOBULIN (RSV-IGIV), HUMANM INTRAVEN
90384	RHIG FULL	RHO (D) IMMUNE GLOBULIN (RHIG), HUMAN, FULL-DOSE, FOR INTRAMUSCULAR USE
90385	RHIG MINI	RHO (D) IMMUNE GLOBULIN (RHIG), HUMAN, MINI-DOSE, FOR INTRAMUSCULAR USE
90386	RHIGIV	RHO (D) IMMUNE GLOBULIN (RHIGV), HUMAN, FOR INTRAVENOUS USE
90389	TIG	TETANUS IMMUNE GLOBULIN (TIG), HUMAN, FOR INTRAMUSCULAR USE
90393	VACCINIAIG	VACCINIA IMMUNE GLOBULIN, HUMAN, FOR INTRAMUSCULAR USE
90396	VZIG	VARICELLA-ZOSTER IMMUNE GLOBULIN, HUMAN, FOR INTRAMUSCULAR USE
90399	OTHER IG	UNLISTED IMMUNE GLOBULIN
90476	ADENO 4	ADENOVIRUS VACINE, TYPE 4,LIVE, FOR ORAL USE
90477	ADENO 7	ADENOVIRUS VACCINE, TYPE 7,LIVE, FOR ORAL USE
90581	ANTHRAX	ANTHRAX VACCINE, FOR SUBCUTANEOUS USE
90585	BCG PERCUT	BACILLUS CALMETTE-GUERIN VACINE (BCG) FOR TUBBERCULOSIS, LIVE, PERCUTANE
90586	BCG BLADCA	BACILLUS CALMETTE-GUERIN VACCINE (BCG) FOR BLADDER CANCER, LIVE, INTRAVES
90632	HEPA ADULT	HEPATITIS A VACCINE, ADULT DOSAGE, FOR INTRAMUSCULAR USE
90633	HEPA PEDI2	HEPATITIS A VACCINE, PEDIATRIC/ADOLESCENT DOSAGE-2 DOSE SCHEDULE, INTRAM

CPT Code	Short Description	Full Description
90634	HEPA PEDI3	HEPATITIS A VACCINE, PEDIATRIC/ADOLESCENT DOSAGE-3 DOSE SCHEDULE, INTRA
90645	HIB HBOC	HEMOPHILUS INFLUENZA B, HBOC CONJUGATE (4 DOSE)
90647	HIB PRPOMP	HEMOPHILUS INFLUENZA B VACCINE, PRP-OMP CONJUGATE, 3 DOSE SCHEDULE
90648	HIB PRP T	HEMOPHILUS INFLUENZA B, PRP-T CONJUGATE (4 DOSE)
90655	FLU6-35MPF	INFLUENZA VIRUS VACCINE, SPLIT, PRESERVATIVE FREE, CHILDREN 6-35M, INTR
90657	FLU 6-35MO	INFLUENZA VIRUS VACCINE, SPLIT VIRUS, 6-35 MONTHS DOSAGE, FOR IM OR JET
90658	FLU>3YR-SP	INFLUENZA VIRUS VACCINE, SPLIT VIRUS, 3 YRS AND ABOVE DOSAGE, FOR IM
90660	FLU NASAL	INFLUENZA VIRUS VACINE, LIVE, FOR INTRANASAL USE
90665	LYME	LYME DISEASE VACCINE, ADULT DOSAGE, FOR INTRAMUSCULAR USE
90669	PNU7	PNEUMOCOCCAL CONJUGATE VACCINE, POLYVALENT, FOR INTRAMUSCULAR USE
90675	RABIES IM	RABIES VACCINE, FOR INTRAMUSCULAR USE
90676	RABIES-ID	RABIES VACCINE, FOR INTRADERMAL USE
90680	ROTAVIRUS	ROTAVIRUS VACCINE, TETRAVALENT, LIVE, FOR ORAL USE
90690	TYPHD ORAL	TYPHOID VACCINE, LIVE, ORAL
90691	TYPH VICPS	TYPHOID VACCINE, VICAPSULAR POLYSACCHARIDE (VICPS), FOR INTRAMUSCULAR
90692	TYPHOID HP	TYPHOID VACCINE, HEAT AND PHENOL-INACTIVATED (H-P), FOR SUBCUT OR ID USE
90693	TYPHD AKD	TYPHOID VACCINE, ACETONE-KILLED, DRIED (AKD), FOR SUBCUT OR JET INJ USE
90700	DTAP	IMMUNIZATION, ACTIVE, DIPHTHERIA, TETANUS, & ACELLULAR PERTUSSIS
90701	DTP	DIPHTHERIA AND TETANUS TOXOIDS AND PERTUSSIS VACCINE
90702	DT	DIPHTHERIA AND TETANUS VACCINE
90703	TETANUS	TETANUS TOXOID
90704	MUMPS	MUMPS VIRUS VACCINE, LIVE
90705	MEASLES	MEASLES VACCINE VIRUS, LIVE
90706	RUBELLA	RUBELLA
90707	MMR	MEASLES, MUMPS AND RUBELLA VACCINE, LIVE
90708	MR	MEASLES AND RUBELLA VIRUS VACCINE, LIVE
90710	MMR/V	MEASLES, MUMPS, RUBELLA, VARICELLA VACCINE
90712	OPV	POLIOVIRUS, LIVE, ORAL
90713	IPV	POLIOMYELITIS VACCINE
90714	TYPHOID	TYPHOID VACCINE
90715	TDAP	TETANUS DIPHTHERIA, PERTUSSIS
90716	VARICELLA	VARICELLA (CHICKEN POX) VACCINE
90717	YELLOWFVR	YELLOW FEVER VACCINE

CPT Code	Short Description	Full Description
90718	TD	TETANUS&DIPHTHERIA TOXOIDS ABSORBED FOR ADULT USE
90719	DIPHTH TOX	DIPHTHERIA TOXOID IMMUNIZATION
90720	DTP/HIB	DIPHTHERIA, TETANUS, PERTUSSIS, HEMOPHILIS INFLUENZA B
90721	DTAP/HIB	DIPHTHERIA, TETANUS TOXOIDS, ACELLULAR PERTUSSIS, HEMOPHILIS INFLUENZA B
90723	DTAPHBVIPV	DIPHTHERIA, TETANUS TOXOID, ACELLULAR PERTUSSIS, HEP B, INACTIVATED POLIO
90725	CHOLERA	CHOLERA VACCINE
90727	PLAGUE	PLAGUE VACCINE, FOR INTRAMUSCULAR OR JET INJECTION USE
90732	PNEUMO POL	PNEUMOCOCCAL POLYSACCHARIDE VACCINE, 23-VALENT, ADULT DOSAGE, FOR SUB
90733	MENING	MENINGOCOCCAL POLYSACCHARIDE VACCINE (ANY GROUP (S))
90734	MCV4	MENINGOCOCCAL CONJUGATE, IM
90735	ENCEPH	JAPANESE ENCEPHALITIS VIRUS VACCINE
90744	HEPB CHILD	IMMUNIZATION, ACTIVE, HEPATITIS B: NEWBORN TO 11 YEARS
90746	HEPB ADULT	HEPATITIS B VACCINE: 20 YEARS AND ABOVE
90747	HEPB IMMUN	HEPATITIS B VACCINE: DIALYSIS OR IMMUNOSUPPRESSED PATIENT ANY AGE
90748	HEPB-HIB	HEP.B AND HEMOPHILUS INFLUENZA B VACCINE (HEPB-HIB) FOR INTRA. USE

The following vaccines were valid at one point.
***These should only be present if used for historical data.**

CPT Code	Short Description	Full Description
90659	FLU WHOLE	INFLUENZA VIRUS VACCINE, WHOLE VIRUS, FOR INTRAMUSCULAR OR JET INJECT
90709	RU/MUMPS	RUBELLA,MUMPS VACCINE, LIVE
90724	FLU	INFLUENZA VACCINE
90726	RABIES	RABIES VACCINE
90728	BCG	BCG VACCINE
90730	HEPA	HEPATITIS A VACCINE
90731	HEPB	HEPATITIS B VACCINE
90737	HIB	HEMOPHILUS INFLUENZA B VACCINE
90741	ISG	IMMUNIZATION, PASSIVE:IMMUNE SERUM GLOBULIN, HUMAN
90742	HYPERISG	SPECIFIC HYPERIMMUNE SERUM GLOBULIN
90745	HEPB ADOL	HEPATITIS B VACCINE: 11 - 19 YEARS

INSURANCE Codes – Rhode Island Defined Table (RI0001)

Please contact Kim Salisbury-Keith (Kim.SalisburyKeith@health.ri.gov) at the Rhode Island Department of Health if you have any questions when they construct a conversion table.

Code	Insurance
01	BLUE CROSS/BLUE SHIELD
06	BLUE CHIP
07	SELF-INSURED
11	NEIGHBORHOOD HEALTH
10	CHAMPUS/TRICARE
50	MEDICAID/RITE CARE OOPS *
48	RI DEPT. OF HEALTH
41	RITE CARE - NEIGHBORHOOD HEALTH *
46	RITE CARE - BLUE CHIP *
43	RITE CARE - UNITED HEALTH *
99	UNKNOWN
88	OTHER
08	NO INSURANCE
14	RITE CARE - UNKNOWN *
03	UNITED HEALTH
04	MEDICAL ASSISTANCE/MEDICAID*

Manufacturer Codes

Check the following URL for the most recent list
http://www.cdc.gov/nip/registry/st_terr/tech/stds/hl7-mvx.htm.

Health Level Seven (HL7) Standard Code Set
MVX – Manufacturers of Vaccines
Maintained by the Centers for Disease Control and Prevention (CDC)
Updated: October 3, 2007

The CDC's National Immunization Program maintains the HL7 external code set MVX. The implementation of the HL7 standard for immunization data exchange is described in Chapter 4 of the HL7 standard. The codes in HL7 Version 2.3 table 0227 represent the initial content of the external MVX code set. This document represents the most up-to-date version of the MVX code set.

MVX – Manufacturers of Vaccines

(alphabetized by manufacturer name)

Code	Vaccine Manufacturer/Distributor
AB	Abbott Laboratories *(includes Ross Products Division)*
AD	Adams Laboratories, Inc.
ALP	Alpha Therapeutic Corporation
AR	Armour [**Inactive – use AVB**]
AVB	Aventis Behring L.L.C. *(formerly Centeon L.L.C.; includes Armour Pharmaceutical Company)* [**Inactive – use ZLB**]
AVI	Aviron
BA	Baxter Healthcare Corporation [**Inactive – use BAH**]
BAH	Baxter Healthcare Corporation *(includes Hyland Immuno, Immuno International AG, and North American Vaccine, Inc.)*
BAY	Bayer Corporation *(includes Miles, Inc., and Cutter Laboratories)*
BP	Berna Products [**Inactive – use BPC**]
BPC	Berna Products Corporation *(includes Swiss Serum and Vaccine Institute Berne)*
MIP	Bioport Corporation *(formerly Michigan Biologic Products Institute)*
CSL	CSL Biotherapies, Inc.

CNJ	Cangene Corporation
CMP	Celltech Medeva Pharmaceuticals [**Inactive – use NOV**]
CEN	Centeon L.L.C. [**Inactive – use AVB**]
CHI	Chiron Corporation **[Inactive – use NOV]** Includes PowderJect Pharmaceuticals, Celltech Medeva Vaccines and Evans Medical Limited
CON	Connaught [**Inactive – use PMC**]
DVC	DynPort Vaccine Company, LLC
EVN	Evans Medical Limited [**Inactive – use NOV**]
GEO	GeoVax Labs, Inc.
SKB	GlaxoSmithKline *(formerly SmithKline Beecham; includes SmithKline Beecham and Glaxo Wellcome)*
GRE	Greer Laboratories, Inc.
IAG	Immuno International AG [**Inactive – use BAH**]
IUS	Immuno-U.S., Inc.
KGC	Korea Green Cross Corporation
LED	Lederle [**Inactive – use WAL**]
MBL	Massachusetts Biologic Laboratories *(formerly Massachusetts Public Health Biologic Laboratories)*
MA	Massachusetts Public Health Biologic Laboratories [**Inactive – use MBL**]
MED	MedImmune, Inc.
MSD	Merck & Co., Inc.
IM	Merieux [**Inactive – use PMC**]
MIL	Miles [**Inactive – use BAY**]
NAB	NABI *(formerly North American Biologicals, Inc.)*
NYB	New York Blood Center
NAV	North American Vaccine, Inc. [**Inactive – use BAH**]

NOV	Novartis Pharmaceutical Corporation *(includes Chiron, PowderJect Pharmaceuticals, Celltech Medeva Vaccines and Evans Limited, Ciba-Geigy Limited and Sandoz Limited)*
NVX	Novavax, Inc.
OTC	Organon Teknika Coporation
ORT	Ortho-clinical Diagnostics *(formerly Ortho Diagnostic Systems, Inc.)*
PD	Parkedale Pharmaceuticals *(formerly Parke-Davis)*
PWJ	PowderJect Pharmaceuticals *(includes Celltech Medeva Vaccines and Evans Medical Limited)* [**Inactive – use NOV**]
PRX	Praxis Biologics [**Inactive – use WAL**]
JPN	The Research Foundation for Microbial Diseases of Osaka University (BIKEN)
PMC	sanofi pasteur *(formerly Aventis Pasteur, Pasteur Merieux Connaught; includes Connaught Laboratories and Pasteur Merieux)*
SCL	Sclavo, Inc.
SOL	Solvay Pharmaceuticals
SI	Swiss Serum and Vaccine Inst. [**Inactive – use BPC**]
TAL	Talecris Biotherapeutics (includes Bayer Biologicals)
USA	United States Army Medical Research and Material Command
VXG	VaxGen
WA	Wyeth-Ayerst [**Inactive – use WAL**]
WAL	Wyeth-Ayerst *(includes Wyeth-Lederle Vaccines and Pediatrics, Wyeth Laboratories, Lederle Laboratories, and Praxis Biologics)*
ZLB	ZLB Behring (includes Aventis Behring and Armour Pharmaceutical Company)
OTH	Other manufacturer

UNK	Unknown manufacturer

NOTE: The MVX table reflects name changes and changes in corporate status. Where there have been company mergers, the affected old codes have been labeled "inactive."

For further information on HL7 immunization data exchange and the MVX code set, contact Ron Van Duyne, Public Health Analyst at:

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www.cdc.gov/vaccines/programs/iis/stds/mvx.htm