Hawaii Immunization Registry (HIR)

HL7 2.5.1 Implementation Guide

Version 1.1

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Table of Contents

Introduction

Purpose

This document is designed to provide a concise guide to Health Level 7 (HL7) 2.5.1 messages accepted by the Hawaii Immunization Registry (HIR). HL7 is a standard messaging protocol used to exchange data between health care data systems.

The audience for this guide is technical staff responsible for the creation of HL7 files from within their EHR system or by another extract program to submit HL7 messages to HIR. This guide is not intended to provide a comprehensive overview of HL7 specifications. For the full HL7 specification guide, refer to the Centers for Disease Control and Prevention's (CDC) website at http://www.cdc.gov/vaccines/programs/iis/technical-guidance/hl7.html. Some of the HIR requirements are more stringent than those in the CDC guide.

Reference and Code Tables

The code tables referenced in this guide can be found in the HL7 2.4 Implementation Guide and the CDC HL7 Specifications posted at http://www.cdc.gov/vaccines/programs/iis/technical-guidance/hl7.html.

Detailed Segment Specifications

Legend for Required Column

R	Required
RE	Required but may be left empty
C	Required under certain conditions
CE	Required under certain conditions but may be left empty
O	Optional

HL7 Message Types Used in HIR Transmissions

VXU -Unsolicited Vaccination Record Update

MSH	Message Header
PID	Patient Identification
[PD1]	Patient Demographic
[{NK1}]	Next of Kin / Associated Parties
[{IN1}]	Insurance
{ORC	Order Request
RXA	Pharmacy / Treatment Administration
[RXR]	Pharmacy / Treatment Route (Only one RXR per RXA segment)
[{OBX}]	Observation/Result*
}	

QPB – Request for Immunization History

MSH	The MSH must include an identifier which indicates the Query Profile used.
QPD	The Query Profile will specify the list of fields and their components in the order that they will be expected for this query.
RCP	Response Control Parameters will list the segments that are expected to be returned in response to this query.

MSH – Message Header

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

MSH Segment				
Field	**Element Name**	**Required**	**Value/Comment**	**Code Table**
1	Field Separator	R	The field separator for the rest of the message. (|)	
2	Encoding Characters	R	This field contains the four characters in the following order: the component separator, repetition separator, escape characters and sub-component separator. (^~\&)	
3	Sending Application	RE	The name of the sending application. When receiving, HIR will ignore this field. When sending, HIR will use 'HIR'.	

4	Sending Facility	R	Identifies for whom the message is being sent. When sending, HIR will use 'HIR'. When the message is being sent to HIR 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 HIR Organization ID of the Provider Organization that **owns** the information (e.g. Org Name or Short Name^Org ID) Contact the HIR Help Desk for the appropriate Organization ID.	
5	Receiving Application	RE	Identifies the application receiving the message. When sending to HIR, this application is 'HIR'.	
6	Receiving Facility	RE	Identifies the message receiver. When sending, HIR will use the Provider Organization Short Name assigned to the provider organization.	
7	Date/Time of Message	R	Date and time the message was created. HIR ignores any time component.	
9	Message Type	R	For HIR purposes, this field should have the value VXU^V04^VXU_V04 for a message conveying patient and immunization information. A value ADT^A31 for a message conveying patient information is also acceptable via HL7 batch processing but not HL7 real-time processing.	0076
10	Message Control ID	R	The message control ID is a string (which may be alpha or numeric or a combination of both) uniquely identifying the message among all those ever sent by the sending system.	
11	Processing ID	R	The processing ID to be used by HIR is 'P' for production processing. If this field is null, an informational message is generated indicating that HIR is defaulting to 'P'.	0103
12	Version ID	R	For the parser, the HL7 version number (i.e. 2.5.1) that is read in the first MSH segment of the file will be the version assumed for the whole file.	0104
15	Accept Acknowledgement Type	RE	This field controls whether an enhanced acknowledgement (ACK) is generated for the message being sent. If the field is empty, HIR will assume a value of ER (i.e. Error/Reject conditions only).	0155

PID – Patient Identification

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

PID Segment				
Field	**Element Name**	**Required**	**Value/Comment**	**Code Table**
3	Patient Identifier List	R	Sub-components 1 (ID) and 5 (identifier type code) are required. HIR supports repetition of this field.	0203
5	Patient Name	R	Last name and first name are required in the first two components NOTE: If patient does not have a first name, “NO FIRST NAME” must be entered.	0200
6	Mother’s Maiden Name	O	In this context, where the mother‘s maiden name is used for patient identification, HIR uses only last name and first name.	
7	Date/Time of Birth	R	Give the year, month, and day of birth (YYYYMMDD). HIR ignores any time component.	
8	Administrative Sex	R	Element: Sex (Gender). Use F (Female), M (Male), or U (Unknown).	0001
10	Race	O	HIR stores and writes ‘Unknown’ values as null. HIR supports repetition of this field.	0005
11	Patient Address	O	This field contains the mailing address of the patient. Multiple addresses for the same person may be sent in the following sequence: The primary mailing address must be sent first in the sequence (for backward compatibility); if the mailing address is not sent, then a repeat delimiter must be sent in the first sequence.	0190
12	County Code	O	County code belongs in the Address field (PID-11)	
13	Phone Number-Home	O	This field is used to indicate the patient’s primary residence number. Use PRN ‘primary residence number’ in component 5.2 as the telecommunication use code and PH ‘phone’ specified in component 5.3. HIR will use the 6th 7th 8th and 9th components for specification of area code (13.6), phone number (13.7), and extension (13.8), respectively. HIR does not support repetition of this field	0201

22	Ethnic Group	O	This field further defines the patient's ancestry. HIR will stores and writes "Unknown" value as null.	0189
24	Multiple Birth Indicator	O	Use Y to indicate that the patient was born in a multiple birth. If Y is entered in this field, supply the birth order in PID-25.	0136
25	Birth Order	O	Relevant when patient was born in a multiple birth. Use 1 for the first born, 2 for the second, etc.	
29	Patient Death Date and Time	O	This information will not be stored in HIR, but is required when PD1-16 has a value of "P" Permanently Inactive/Deceased.	

PD1 – Patient Demographic

The PD1 segment contains demographic information that is likely to change about the patient. In immunization messages, this is information about the need to protect the patient's information, how they should be part of reminder efforts and their current status in the IIS.

PD1 Segment				
Field	**Element Name**	**Required**	**Value/Comment**	**Code Table**
11	Publicity Code	CE	Controls whether recall/reminder notices are sent. HIR will recognize '01' to indicate no recall/reminder notices or '02' recall/reminder notices are allowed to be sent for this patient.	0215
12	Protection Indicator	CE	Controls visibility of records to other organizations. Default value is blank. 'N' indicates that the patient's data will be stored in HIR. If a value of 'Y' is sent, the record will be rejected. Note: This setting is opposite from HL7 2.4	
13	Protection Indicator effective date	CE	Effective date for protection indicator reported in PD1-12. Format is YYYYMMDD.	
16	Immunization Registry Status	CE	Identifies the registry status of the patient for the organization that owns the message being sent. If no status is sent, HIR will assign a status of 'Active'.	0441
17	Immunization registry status effective date	CE	Effective date for registry status reported in PD1-16. Format is YYYYMMDD.	
18	Publicity Code effective date	CE	Effective date for publicity code reported in PD1-11. Format is YYYYMMDD.	

NK1 – Next of Kin

The NK1 segment contains information about the patient's other related parties. Any associated parties may be identified. Utilizing *NK1-1-set ID*, multiple NK1 segments can be sent to patient accounts.

NK1 Segment				
Field	**Element Name**	**Required**	**Value/Comment**	**Code Table**
1	Set ID – NK1	R	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, HIR 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.	
2	Name	O	Name of the responsible person who cares for the patient.	0200
3	Relationship	CE	Relationship of the responsible person to the patient. Use the first three components of the CE data type, for example |MTH^Mother^HL70063|.	0063
4	Address	O	Responsible person's mailing address. HIR does not support repetition of this field. |Street Address^Other Designation^City^State^Zip^Country^Address Type^^County|	
5	Phone Number	O	Responsible person's phone number. HIR does not support repetition of this field. PRN 'primary residence number' should be specified in component 5.2 as the telecommunication use code and 'PH' phone' specified in component 5.3. HIR will use components 5.6, 5.7 and 5.8 for specification of area code, phone number and extension respectively.	0201, 0202

PV1 – Patient Visit

The PV1 segment was used in previous HL7 versions to send visit-specific information including the patient's eligibility for state-supplied vaccines. CDC 2.5.1 Implementation Guide 1.3 August 2011 deprecated this use of the PV1 segment. For HL7 2.5.1 messages, the patient's eligibility should be sent on the immunization level using the OBX segment with the appropriate LOINC code in OBX-3 and eligibility code in OBX-5. Refer to the OBX segment section in this document for codes and examples.

ORC – Pharmacy/Treatment Orders

The Common Order segment (ORC) segment contains information about an order for a health service for the patient. HL7 requires an order (ORC) segment precede *each immunization/refusal (RXA) segment.*

ORC Segment				
Field	**Element Name**	**Required**	**Value/Comment**	**Code Table**
1	Order Control	RE	Determines the function of the order segment. HIR recommended values of 'RE'	0119
3	Filler Order Number	R	Indicates the Immunization ID for the sending system. Providers should submit the immunization ID in their system in component 3.1. HIR will ignore the assigning authority in component 3.2. Although this field is required by HL7, HIR will ignore its value. When sending outbound files, HIR will send the HIR immunization ID in component 3.1 and IDA as the assigning authority in component 3.2.	
10	Entered By	O	Identifies the name of the user that entered the information in HIR. This field is not supported on incoming data transfers. HIR will use components 2 – 4 to send the names of the user that entered the immunization if the immunization was entered via the HIR web interface.	
12	Ordering Authority	RE	Identifies the name of the person responsible for authorizing the order (ordering authority). HIR will use components 2 – 6 to record the names. HIR will store the ordering authority for new administered immunizations if sent. For incoming loads, it is recommended that license information (MD, NP) be put in the 5th component (12.5) so that it processes as the clinician suffix in HIR, as in the following example: |^BROWN^MATTHEW^JOHN^MD^DR|	

RXA – Pharmacy/Treatment Administration

The RXA segment contains pharmacy administration data such as the date of vaccination, type of vaccine administered, vaccine lot number, and vaccine manufacturer.

RXA Segment				
Field	**Element Name**	**Required**	**Value/Comment**	**Code Table**
1	Give Sub-ID Counter	R	Use '0' for HIR.	
2	Administration Sub-ID Counter	R	Use '1' for HIR. Other numeric values will pass and a message will be returned. Informational Error - If supplied, RXA 1 must match constraint listed in spec.	
3	Date/Time Start of Administration	R	Date the vaccine was given. HIR ignores any time component.	
4	Date/Time End of Administration	R	Required by HL7. Ignored by HIR, which will use the date value in RXA-3.	
5	Administered Code	R	Identifies the vaccine administered. HIR accepts the following vaccine code sets: CVX (CVX Codes), CPT (CPT Codes), WTVN (Vaccine Trade Names), and WVGC (Vaccine Group Codes).	
6	Administered Amount	R	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. HIR and HL7 require this field to contain a value. Currently a value of 1.0 is stored in HIR regardless of the value sent in the message.	
9	Administration Notes	CE	Use '00' to indicate the New Immunization Administered is owned by the sending organization or '01' to indicate Historical Record – Source Unspecified. If the source for a historical record is known, use values 02 through 07 or as described in Table NIP001. If left blank, the immunization will be recorded as historical (i.e. not administered by the org that owns the HL7 message).	NIP001
10	Administering Provider	O	Identifies the name of the administering clinician. HIR will use components 2 – 6 to record the name. It is recommended that the license information (RN, MD) be put in the 5th component. Example: |^CAPSHAW^ILIA^K^RN^MS|	
11	Administered-at Location	CE	Location vaccine was administered at. Administered-at location will be the provider organization name or short name for the clinic that owns the data. Place the	

			facility name in component 11.4, i.e. |^^^ORG Name| or |^^^ORG Short Name|. This will be the same code sent in MSH-4.	
15	Substance Lot Number	O	Manufacturer‘s lot number for the vaccine.	
16	Substance Expiration Date	O	This field contains the expiration date of the medical substance administered. It may remain empty if the dose is from a historical record. Format as YYYYMMDD.	
17	Substance Manufacturer Name	O	Identifies the manufacturer of the vaccine. 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’ rather than ‘HL70227’.	0227
18	Substance / Treatment Refusal Reason	O	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. Component 18.1 is for the refusal code, see table NIP002 and RXA-20 completion status must be ‘RE’. Component 18.2 is used for text entered as reason for refusal. 18.3 references the coding system used for refusal, NIP002. 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. Example: |00^PARENTAL REFUSAL^NIP002|	NIP002
20	Completion Status	RE	Indicates the immunization completion status. ‘RE’ is required in RXA-20 if refusal of the vaccine is indicated in RXA-18.	0322
21	Action Code – RXA	RE	Identifies the action for the RXA segment. It determines if the incoming immunization should be Added, Updated or Deleted. To delete an immunization from HIR, the field must be populated with ‘D’ and other fields in the RXA should match the original message. If blank, RXA will be processed as an A ‘Add’.	0323

RXR – Pharmacy/Treatment Route

The RXR segment contains the route and site of vaccine administration.

RXR Segment				
Field	**Element Name**	**Required**	**Value/Comment**	**Code Table**
1	Route	CE	This is the route of administration.	0162
2	Administration Site	CE	This is the site of administration.	0163

OBX – Observation Result

The OBX segment has many uses. It carries observations about the object of its parent segment. In the VXU, it is associated with the RXA or immunization record. The basic format is a question and an answer.

OBX Segment				
Field	**Description**	**Required**	**Value/Comment**	**Code Table**
1	Set ID-OBX	O	Sequential numbers. Use '1' for the first OBX within the message, '2' for the second, and so forth.	
2	Value Type	O	This field contains the data type which defines the format of the observation value in OBX-5. For Provider to HIR data transfer, use 'CE' for Coded Entry. For HIR to Provider data transfer, HIR will send values of CE, TS, NM for Coded Entry, Timestamp, and Number respectively, depending on what is sent in OBX-5.	
3	Observation Identifier	R	Identifies the general category of an observation. Example: |30945-0^Contraindication^LN|	
5	Observation Value	R	The field identifies the specific value observed. HIR 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: |21^acute illness^NIP004^^^|	
11	Observation Result Status	R	Required for HL7. Use 'F' for HIR.	0085
14	Date/Time of the Observation	O	Records the time of the observation. HIR ignores any time component. Format as YYYYMMDD.	

QPD – Input Parameter Specification

QBP Segment				
Field	**Description**	**Required**	**Value/Comment**	**Code Table**
1	Message Query Name	R	Z34^Request Immunization History^HL70471	
2	Query Tag	R	Unique to each query message instance	
3	Patient List	O	PID-3	
4	Patient Name	R	PID-5	
5	Mothers Maiden Name	O	PID-6	
6	Patients DOB	R	PID-7	
7	Patients Gender	O	PID-8	
8	Patients Address	O	PID-11	
9	Patients Home Phone	O	PID-13	
10	Patient Multiple Birth	O	PID-24	
11	Patient Birth Order	O	PID-25	
12	Patient Last Update	O	PID-33	
13	Patient Last Update Facility	O	PID-34	

RCP – Response Control Parameter Segment

QBP Segment				
Field	**Description**	**Required**	**Value/Comment**	**Code Table**
1	Query Priority	RE	The time frame in which the response is expected. Only I for Immediate is used for this field.	0091
2	Quantity Limited Request	RE	This field may contain a maximum number of records that may be returned. The first component contains the count and the second contains “RD” for records. Example: |5^RD^HL70126|	0126
3	Response Modality	O	The timing and grouping of the response message(s). Example: |R^real-time^HL70394|	0394

Sample Messages

VXU

MSH|^~\&|Immunization
Generator^1.4|^2|||20121217134645||VXU^V04^VXU_V04|64443|P^|2.5.1^^^^^^^^^^^^|||ER||||
PID|||1234^^^^PI^||HASBRO^ANDY^JOHN^^^^L^|SLINKY^FUN^^^^^L^|20010606|M|||1564
MONROE^^BROOKLYN^HI^56808^^^^^^|||||||||||||||||||
PD1||||||||||01|N||||A
NK1|1|HASBRO^ANDY^JOHN^^^^L^|SEL^SELF^HL70063^^^|1564
MONROE^^BROOKLYN^HI^13808^^^^^^|||||||||||||||||||||||||||||||||||
IN1|1|G54321^Insurance plan^072|47055^^^NAIC^NIIP|||||||||20120101|20121231|
|||||||||||||||||||POL55555|
ORC|RE||2^DCS|||||||||||||||||||||||||R
RXA|0|1|20130124|20130124|10^Polio-Inject^CVX^90713^Polio-Inject^CPT|1.0|||00||||||12345||PMC
RXR|IM
OBX|1|CE|30945-0^Contraindication^LN||21^acute illness^NIP^^^|||||||F|

QBP

MSH|^~\&|Immunization Generator^1.2.4|IR
Physicians^2^|||20111207090212||QBP^Q11^QBP_Q11|1|P^|2.5.1^^^^^^^^^^^^|||ER||||
QPD|Z34^Request Immunization
History^HL70471|PHIN_QUERY_01|2^^^^PI^|HASBRO^ANDY^^^^^L^|APPLESEED^HEATHER^^^^^L^|
20010606|M|1564 MONROE^^BROOKLYN^HI^13808^^^^^^|
RCP|I|5^RD^HL70126|R^real-time^HL70394