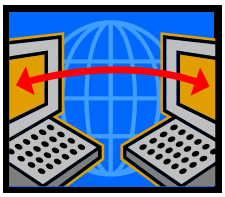
IWEB HL7 INTERFACE SPECIFICATION GUIDE



Scientific Technologies Corporation

Scientific Technologies Corporation
4400 E. Broadway Blvd, Ste. 705
Tucson, AZ 85711

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1 INTRODUCTION TO HL7 & IWEB

Scientific Technologies Corporation's (STC's) IWeb immunization registry sends and receives HL7 immunization queries and updates, allowing it to connect to private providers, other state registries, hospitals, and other state health systems.

The messages sent and accepted by IWeb do and should conform to HL7 specification version 2.3 and in the case of immunization specific messages, CDC's Implementation Guide for Immunization Transactions version 2.1.

Note: The IWeb HL7 Interface document is a comprehensive HL7 Interface guide that describes IWeb's HL7 interface, with information for both data submitters and IWeb administrators.

It is assumed that the reader is familiar with HL7 specification version 2.3, CDC's Implementation Guide for Immunization Data Transactions version 2.1 (downloadable from http://www.cdc.gov/vaccines/programs/iis/stds/downloads/hl7guide.pdf), and with HTTP.

Summary of IWeb HL7 capabilities:

- IWeb accepts the following patient update messages: VXU, ADT, DFT, and ORU.
- IWeb responds to immunization record query messages: VXQ.
- When IWeb users want to query external registries, IWeb will send immunization record query messages: VXQ.
- IWeb can send batch updates to external registries: VXU.

IWEB OVERVIEW

IWeb is a population-based immunization registry that helps public health agencies and vaccine providers make informed decisions that improve the health of children and the entire community. IWeb is a web-based product which is used by public health officials, public health employees, and private providers by enabling:

- Vaccinators to view a child's complete vaccination record, thus preventing over and under vaccination.
- Health officials to measure and improve vaccination rates by providing a big picture through various reports.
- Health officials to send mailings to remind parents of needed vaccinations.
- School nurses to review student vaccination records.

PUBLIC AND PRIVATE DATA

To encourage participation and ensure privacy, IWeb differentiates between public and private data. Changes to public data are visible to all IWeb users while changes to private data are only visible to users associated within the same logical entity called an IRMS. An IRMS is a collection of one or more facilities that constitute a single owning entity, normally a single clinic but sometimes several clinics together.

For example; if Johnny is first given a vaccination by Clinic A and then by Clinic B, Clinic A will still have the original address Johnny gave them and not the new address he gave to Clinic B; however, if Johnny returns to Clinic A for another vaccination, Clinic A will see the vaccination that was given at Clinic B.

IWeb also tracks the patient's medical home by assigning the last facility to update a patient's record as the current owner of the record. Patient ownership primarily impacts IWeb vaccination reports.

PATIENT IDENTIFICATION

IWeb uses two ids to identify patients, its own internal SIIS Id, and the externally defined id normally referred to as the Medical Record Number (aka Chart Number or Patient Id), which must be unique for a given IRMS. A patient in IWeb has one SIIS id and one or more Chart Numbers, one for every IRMS entity for the patient's association. If no Chart Number is defined, it defaults to the id "SIISCLIENT+SIIIS Id."

PATIENT MATCHING (DEDUPLICATION)

IWeb employs a sophisticated algorithm to identify and merge duplicate patient records. The process is called deduplication which results in one of three actions for a new record:

- The new record is a good match for exactly one patient record in the registry and the two records are automatically merged together.
- The new record is not a good match for any patient records in the registry and will automatically be added as a new patient record.
- The new record is a possible match with one or more patient records and must be reviewed by an IWeb administrator before it can be merged with any patient record.

Most IWeb administrators run deduplication nightly, which in these cases means that these updates will not be visible in IWeb until the next day. Also, records marked for manual review by IWeb administrators will not be available until reviewed, which may take several days.

AUTOMATIC DEDUPLICATION

IWeb can be configured to deduplicate incoming HL7 messages immediately, so that IWeb users will not have to wait until the next day to see patient information imported. This feature comes with some limitations:

- Most patients are accepted immediately but some have to be reviewed by registry staff to determine a proper registry match. Depending on the registry deduplication work queue, this may take several days. The “sending” systems can reduce the number of records that are affected by ensuring that complete patient records are sent. The more complete a patient-record’s demographics are, the more likely it is to be confidently matched to other records.
- IWeb runs the primary deduplication process every night which may take several hours. Automatic deduplication requests that are sent during off hours are queued to run after the nightly process. This delay is particularly noticeable after IWeb upgrades when the night process must run for long periods of time (sometimes all night) to apply new changes to patient records.

HL7 ACCOUNTS

IWeb user accounts that are given permission to submit HL7 are called "HL7 Accounts." All user accounts have a username and password. The IWeb Administrator creates a user account, gives it HL7 permission, and distributes the new username and password to the submitting system. This username and password can be used for several different things:

1. A person may login into IWeb using the HL7 account username and password to query patient records, configure HL7 settings, review HL7 logs, and submit HL7 data.
2. The sending system can be configured to submit directly to IWeb. The username and password will be used for authentication.

It is important to understand that an HL7 account is a full user account and may be used (depending on permissions) for querying and entering in-patient information manually. Thus, a current user's account may be extended to include HL7 support. It is recommended, and in some cases is the IWeb Administrator's policy, to give two accounts to HL7 users; one to submit data for their facility and another for regular day-to-day use.

2 MESSAGE TRANSPORT

There are two methods for importing HL7 data into IWeb: 1) A non-automated way that requires a user to login to the IWeb application, and 2) An automated way that allows any Internet enabled system to send HL7 into IWeb. As both import interfaces connect to the same internal HL7 processing engine, so all HL7 processing rules apply to both interfaces.

HTTP UPLOAD INTERFACE

Batch files may be uploaded directly into IWeb via the DTT/HL7 upload interface by registry or local clinic staffs that have been granted both HL7 upload permissions and DTT access permission. The batch file is processed immediately and the results (accept or reject messages) are shown to the user.

HTTP REAL-TIME INTERFACE

IWeb receives HL7 messages using a protocol defined in the document titled, “Transport of Immunization HL7 Transaction over the Internet Using Secure HTTP version 1.0” written by the HL7 Immunization Registry Task Force (Rockmore, Yeatts, and Davidson). It describes the following: sending an HL7 message, a username, a password, and a facility id in an HTTP POST transaction and receiving an HL7 message as a response.

For an external system to connect to the immunization registry it must have two things:

- A connection to the Internet so that it can “see” the registry’s web interface.
- The ability to send HL7 immunization messages using HTTPS.

In addition to the HTTPS interface, IWeb provides a file upload utility for IWeb users to upload HL7 batch files directly into the IWEB application. This user interface is not discussed here but it accepts the same messages in the same formats as discussed in this document.

REQUEST ENCODING

When the sending application sends IWeb an HL7 message via an **HTTPS POST** command, it must have the following fields:

- **USERID** - Assigned by the IWeb administrator.
- **PASSWORD** - Assigned by the IWeb administrator.
- **MESSAGEDATA** - The HL7 message(s).

The command may also contain the following fields:

- **FACILITY** – Facility Identification which is currently ignored.

  Note: The standard defines the FACILITY field which IWeb does not need or use. Any value may be sent here but it will be ignored.

- **debug** - Causes log info to be included with the response.
- **deduplicate** – Flags for immediate deduplication.

HL7 messages may be one at a time (one for every HTTPS request) or together as a batch. Batched messages do not have to have any special separators or wrappers, but the standard HL7 batch protocol may be used. The batch is formatted as follows:

```
[FHS]{[BHS]{[MSH] … ]}[BTS]}[FTS]
```

RESPONSE ENCODING

IWeb always returns responses in HL7 format. Requests with multiple messages can have multiple responses, one for each request message. Whether responses are returned depends on how the account is configured. The response configurations available are:

- **Always** – Send back responses for all messages received
- **Never** – Do not send back any responses
- **On Error** – Send back responses only for those messages that have errors and are not accepted
- **Determined by Message** – Incoming request message indicates in the MSH segment whether to always, never or only on error

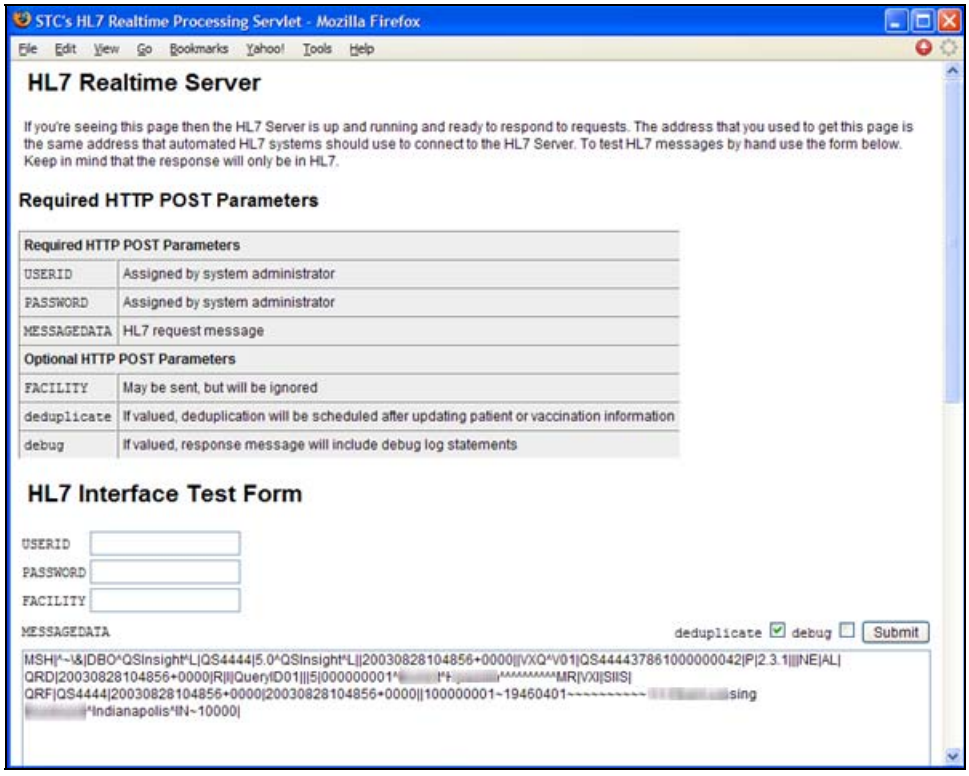
Responses from the HL7 interface are always in HL7 format. HL7 response can indicate any one of the following things:

- Authentication error, the HL7 user making the request is not allowed to because username and password are incorrect or account does not have permission to accept HL7
- Message parsing error, the HL7 parser is unable to read the incoming message because it does not conform to HL7 standards
- Message content error, IWeb cannot accept the data because of missing or incorrect information (i.e., message does not indicate patient's last name)
- Message processing exception, IWeb cannot process the message because of an unexpected problem
- Message accepted, IWeb has accepted the data and is sending it to be processed by deduplication
- Response to query, IWeb responds to query with query results

VIEWING THE REAL-TIME INTERFACE

The Real-Time Interface is visible using a standard web browser. Simply go to the IWeb main page (which is the first page before logging into the registry), and replace the words **/main.jsp** or **/login.jsp** in the address bar with **/HL7Server** and press Enter. This should bring up the page shown below.

Figure 2-1: HL7 Realtime Server



You may test this interface by entering the following field data into the HL7 Interface Test Form:

- **USERID** – type the HL7 Account username
- **PASSWORD** – type the correct password
- **FACILITY** – skip this field, leave it blank.
- **MESSAGEDATA** – paste the HL7 message, replace the test one that is already there

After entering the above field data, click the **SUBMIT** button. The next page will include your result in plain HL7 format.

The address you used to pull up the page shown above is the same address you should use to send real-time messages.

3 MESSAGE FORMAT

This section contains the formats for acceptable messages. Samples of these messages can be located in the Appendix A. Additionally, Appendix B offers Field Notes, Appendix C offers various Tables of Codes, and Appendix D offers a list of Frequently Asked Questions (and Answers).

IWeb will accept the following HL7 messages:

Table 3-1: IWeb Accepted HL7 Messages

MESSAGE	DESCRIPTION
VXU	Patient Vaccination Record
VXQ	Query for Patient Vaccination Record
DFT^P03	Post Detail Financial
ADT	Admission/Discharge/Transfer
ORU	Unsolicited Observation Result
MFN	Master File Notification

IWeb may send the following HL7 messages:

Table 3-2: IWeb Sending HL7 Messages

MESSAGE	DESCRIPTION
VXU	Unsolicited vaccination record update
VXQ	Query for vaccination record

IWeb may reply to a VXQ with one of the following HL7 messages:

Table 3-3: IWeb Reply HL7 Messages

MESSAGE	DESCRIPTION
VXX	Query Response with Patient Vaccination Record
VXR	Query Response with Multiple Matches

MESSAGE	DESCRIPTION
QCK	Query Acknowledgment (no match)
ACK	Acknowledgment (may indicate error)

PATIENT RECORD (VXU, DFT, ADT)

The patient record update messages should only be sent to IWeb when one of the following conditions applies:

- When the sending system's organization has just provided some type of service for the patient.
- When the patient's vaccination record has changed.
- When the sending system wishes to send patient records as part of an initial data load. This should be coordinated with registry staff to process this correctly without changing ownership.

The sending system should not send their entire patient population dumps each time it wants to update IWeb. This causes IWeb to change the patient's medical home when it wrongly assumes that the sending entity has recently provided services for the patient.

PATIENT IDENTIFIERS

IWeb looks in the Patient Identifier List (**PID-3**) field for two key patient ids to identify a patient:

- The id the remote application uses to uniquely identify the patient. This field is required.
- The id that IWeb uses to identify the patient. Since most systems do not store this id, it is not normally sent. This id is optional.

By default when receiving IWeb's id, it is labeled as "SR" for State Registry ID and the remote application's id as "MR" for Medical Record Number. When sending, IWeb places the role of an external medical system and treats the other system as a state registry.

PATIENT VACCINATION RECORD (VXU)

The **VXU** message contains one patient record (PID segment) and the patient's vaccination record. This is the preferred message for sending vaccination and patient records, even when a patient has no vaccinations. IWeb sends and prefers to receive complete vaccination records, this way sending systems do not need to track which vaccinations IWeb has and does not have.

QUERY FOR PATIENT VACCINATION QUERY (VXQ)

The **VXQ** includes patient demographic data used by a registry to query another registry for a patient's vaccination record. When IWeb receives a query, it tries to match the patient data sent with the patients in the registry and returns one of the following responses:

Table 3-4: Query Responses (VXQ)

MESSAGE	DESCRIPTION
VXR	Query Response with Patient Vaccination Record
VXX	Query Response with Multiple Matches
QCK	Query Acknowledgment (no match)
ACK	Acknowledgment (indicates error)

If the patient's Medical Record Number/State Registry Id, First Name, Last Name, and Birth Date match exactly one patient, the patient's complete vacation record is returned in a **VXR** message; otherwise, IWeb tries to find as many patients that closely match the given demographic data. If one or more are found, then a **VXX** message containing only patient demographic data is returned; otherwise, a **QCK** message is returned which indicates no matches found.

A negative **ACK** message is sent when an error prevents the completion of the request.

The CDD standard for immunization messages does not allow the sender (the system originating the query) to specify how to do the patient query but leaves it up to the receiving system to make that decision. Instead, the sender gives all known information about a particular patient and the receiving system must reply with exact or possible matches, according to its own criteria.

IWeb finds matches as follows:

1. Search for a match by patient id. If a match is found return this patient.
   - If the patient query is sent with an MPI ID, the patient is queried by this id and a shot record is returned.
   - If the patient query is sent with the State Registry Id, the patient is queried by this id and a shot record is returned.
   - If the patient query is sent with the sender's Medical Record Number, the patient is queried by this id and a shot record is returned.
2. If no match was found above in Step one, then the patient data is used to perform the “Advanced Search” which is a standard algorithm used by the main deduplication process to find exact and possible matches. The following fields are considered by the Advanced Search:
   - Patient Last, First, Middle Name
   - Patient Birth Date
   - Patient SSN - Patient Medicaid Number
   - Patient Birth Number
   - Guardian First Name - Guardian SSN - Mother Maiden Name
   - Patient Address - Patient Phone
3. If no matches are found, the interface may be configured to run additional searches such as “First initial, last name, birth date” searches; however, only a few of these additional searches are normally configured since the “Advanced Search” works the best.
4. Once the matching has completed, the following applies:
   - If one exact match is found, this is returned in a **VXR** message, which will include patient demographics and all immunizations.
   - If one or more matches is found but some matches are possible, then a **VXX** message is returned, which only includes the patient demographics for the possible matches.

- If no match is found, then a **QCK** message is returned, to acknowledge the query and report that no matches were found.

Note: The original CDC document specified that when there is one patient record match the VXR is returned and if there are two or more found then a VXX is returned. This description assumed that all single matches would be good matches. For situations where there is only one match and it is not a good match, IWeb returns a VXX.

5. If the sending system gets a response that indicates a multiple match, it may display the demographic information and prompt the query user to choose one.
6. The sending system may then re-query with a message that includes the State Registry Id sent in the first response; thus, ensuring an exact match on the second query and a return of an immunization record.

POST DETAIL FINANCIAL (DFT)

IWeb supports this message for billing systems that do not currently export **VXU** messages. The **DFT** message includes patient demographic data and services recently performed, which may include vaccinations.

ADMIT/DISCHARGE/TRANSFER (ADT)

Normally used by hospitals to communicate patient demographic information to various internal systems. The **ADT** message contains no vaccination information. The following ADT trigger messages are accepted: A01, A02, A03, A04, A05, A06, A07, A08, A09, A10, A14, A15, A16, A28, and A31. Regardless of the trigger these messages have the same effect; they add or update a patient record in the registry.

It is important to know that an ADT message is **not** required in order to register a patient in IWeb. A VXU message without immunizations is sufficient. The ADT is accepted to allow hospital systems register patients using a standard ADT message. Senders may choose to send ADT or VXU messages in order to register patients.

OBSERVATION RESULT (ORU)

The ORU message is a generic lab reporting message that is used by labs to report on the status of lab work. IWeb accepts lab messages for two different situations:

1. To receive lab data with lead test results.
2. To receive immunization data from GE Centricity® EMR (Logician) via its LabLink inteface in LinkLogic.

MASTER FILE NOTIFICATION (MFN)

The **MFN** message currently only supports updating a User password using the **STF** message

4 MESSAGE FIELDS ACCEPTED

The Message Fields that are accepted are each listed in a separate section. The field name corresponds to the internal IWeb-HL7 representation. More details are available for each HL7 field in Appendix B: Field Notes.

GUARDIAN FIELDS

Guardian fields may be sent in VXU, ADT, ORU, DFT, and VXR messages.

Table 4-1: Accepted Guardian Fields

Field	HL7	Comment
Name First	NK1-2, GT1-3	Required if patient address is not available.
Name Last	NK1-2, GT1-3	Required if patient address is not available.
Name Middle	NK1-2, GT1-3	
Phone	NK1-5, GT1-6	
Relationship	NK1-3	Required if patient address is not available. Must be 'MTH', 'FTH', 'GRD' or blank to be recognized as a guardian.
Social Security Number	NK1-33	

OBSERVATION FIELDS

Observation fields may be sent in VXU and ORU messages.

Table 4-2: Accepted Observation Fields

Field	HL7	Comment
Sample Draw Date	OBX-7	Only for lead lab result reporting
Sample Type	OBX-15	
Abnormal Flag	OBX-8	
Identifier	OBX-3	
Observation Date	OBX-14	
Reference Range	OBX-7	Only for lead lab result reporting
Units	OBX-6	
Value Coded	OBX-5	
Value Numeric	OBX-5	
Value String	OBX-5	

PATIENT FIELDS

Patient fields may be sent in VXU, ADT, ORU, and VXR messages.

Table 4-3: Accepted Patient Fields

Field	HL7	Comment
Address City	PID-11	Required if guardian first, last and relationship are not available. Should be patient's primary mailing address. Used for Reminder/Recall and patient matching/deduplication.
Address County		
Address State		
Address Street1		
Address Street2		
Address Zip		
Alias First	PID-9	Alternate name for patient
Alias Last		
Birth Country	PID-11	
Birth Date	**PID-7**	**Required**
Birth File Number	PID-3	
Birth Multiple	PID-24	Indicate properly for twins/triplets to keep from merging during deduplication
Birth Order	PID-25	
Birth State	PID-11	
Comment	ZSP-4	
Deceased	PID-30	
Eligible VFC	PV1-20	

Field	HL7	Comment
Email	PID-13	
Ethnicity	PID-22	
Facility Address City	ZSP-1	Extra information about the patient's primary facility need only be sent if the facility is to be automatically entered. If the facility id is already recognized then this information will be ignored.
Facility Address State	ZSP-1	
Facility Address Street 1	ZSP-1	
Facility Address Street 2	ZSP-1	
Facility Address Zip	ZSP-1	
Facility Email	ZSP-2	
Facility Fax	ZSP-2	
Facility Phone	ZSP-2	
Facility Health District	ZSP-5	
Gender	PID-8	
Facility Id Remote	PD1-3	Required if patient is to be linked to this facility.
Facility Name	PD1-3	Required if the facility is to be automatically inserted.
Gender	PID-8	
Health District	ZSP-5	
Immunization Registry Status	PID-16	
Inactive Code	PID-16	
Medicaid Number	PID-3	
Mother Maiden Name	PID-6	
Name First	**PID-5**	**Required**
Name Last	**PID-5**	
Name Middle	PID-5	
Name Suffix	PID-5	
Patient External Id	**PID-3**	**Required.** This is sometimes called the Medical Record Number, Patient Identifier, or Chart Number. Must be the unique id assigned by the external system.
Patient Internal Id	PID-3	This is the state registry id which is used internally by IWeb.
Phone	PID-13	
Physical Address Street 1	PID-11	The physical address is sent here if the mailing address is a PO Box.
Physician Bomex Number	PD1-4	
Physician Id Local	PD1-4	
Physician Id Remote	PD1-4	

Field	HL7	Comment
Physician Name First	PD1-4	
Physician Name Last	PD1-4	
Physician Name Middle	PD1-4	
Physician Name Suffix	PD1-4	
Physician SSN	PD1-4	
Primary Language	PID-15	
Publicity Code	PD1-11	
Race	PID-10	
Race 2	PID-10	
Race 3	PID-10	
Race 4	PID-10	
Race 5	PID-10	
Social Security Number	PID-3, PID-19	Should be sent in PID-3

QUERY FIELDS

These fields are found in VXQ messages:

Table 4-4: Accepted Query Fields

Field	HL7	Comment
Father Name First	QRF-5	Guardian first and last name required if patient address is not provided. Can be mother or father – does not need to be both mother and father.
Father Name Last	QRF-5	
Father Social Security Number	QRF-5	
Mother Name First	QRF-5	Guardian first and last name required if patient address is not provided. Can be mother or father – does not need to be both mother and father.
Mother Name Last	QRF-5	
Mother Name Maiden	QRF-5	
Mother Social Security Number	QRF-5	
Patient Address 1 City	QRF-5	Patient address required if patient's guardian information is not provided.
Patient Address 1 State	QRF-5	
Patient Address 1 Street 1	QRF-5	
Patient Address 1 Zip	QRF-5	

Field	HL7	Comment
Patient Birth Date	QRF-5	
Patient Id	QRD-8	
Patient Medicaid Number	QRF-5	
Patient Name First	QRD-8	
Patient Name Id Type Code	QRD-8	
Patient Name Last	QRD-8	
Patient Name Middle	QRD-8	
Patient Name Suffix	QRD-8	
Patient Phone Number	QRF-5	
Patient Social Security Number	QRF-5	
Quantity Limit	QRF-7	Defaults to 20
What Subject Filter	QRD-9	
When Date End	QRF-2	
When Date Start	QRF-3	

QUERY RESULT FIELDS

The query result fields are returned in addition to patient information in a VXR or VXX:

Table 4-5: Accepted Query Result Fields

Field	HL7	Comment
Patient Internal Id	QRD-8	State registry id used internally by IWeb

VACCINATION FIELDS

Vaccination fields may be sent in VXU and VXR. For DFT messages the immunization data is transferred from the FT1 segments. For ORU messages the immunization data is transferred from the OBX segments. VXU, DFT, and ORU messages may have 0 or more immunizations listed.

Table 4-6: Accepted Vaccination Fields

Field	HL7	Comment
Action Code	RXA-21, FT1-6	
Administered Amount	RXA-6	
Comment	RXA-9, ZSV-3	
Dose	RXA-2	
Facility Address City	RXA-11	
Facility Address State	RXA-11	
Facility Address Street 1	RXA-11	
Facility Address Street 2	RXA-11	
Facility Address Zip	RXA-11	
Facility Email	ZSV-2	
Facility Fax	ZSV-2	
Facility Id Local	ZSV-1	
Facility Id Remote	RXA-11	
Facility Name	RXA-11	
Facility Phone	ZSV-2	
Form VIS Given Date	ZSV-5	
Historical	RXA-9	
Indication	RXA-19	
Induration TB	ZSV-8	
Physician Bomex Number	RXA-10	
Physician Id Local	RXA-10	
Physician Id Remote	RXA-10, FT1-20	
Physician Name First	RXA-10, FT1-20	
Physician Name Last	RXA-10, FT1-20	
Physician Name Middle	RXA-10, FT1-20	
Physician Name Suffix	RXA-10	
Physician SSN	RXA-10	
Publication Date VIS 1	ZSV-9	
Publication Date VIS 2	ZSV-9	
Publication Date VIS 3	ZSV-9	
Publication Date VIS 4	ZSV-9	
Route	RXR-1	
Site	RXR-2	
Vaccination Date	RXA-3, FT1-4	
Vaccine Code CPT	RXA-5, FT1-25, FT1-7	
Vaccine Code CVX	RXA-5	

Field	HL7	Comment
Vaccine Code PCI	RXA-5	
Vaccine Eligible VFC	ZSV-7, OBX	
Vaccine Lot Number	RXA-15	
Vaccine Manufacturer	RXA-17	
Vaccine Manufacturer Code	RXA-17	
Vaccine Name	RXA-5	
Vaccine Publicly Supplied	ZSV-9, OBX	

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5 MESSAGE FIELDS SENT

The Message Fields that are sent by IWeb are each listed in a separate section. The field name corresponds to the internal IWeb-HL7 representation. Fields without values are sent as blank, unless marked as required by HL7. IWeb never sends HL7 null values. More details are available for each HL7 field in Appendix B: Field Notes.

GUARDIAN FIELDS

Guardian fields may be sent in VXU, ADT, ORU, DFT, and VXR messages.

Table 5-1: Sent Guardian Fields

Field	HL7	Comment
Address City	NK1-4	
Address City	NK1-4	
Address Street 1	NK1-4	
Address Zip	NK1-4	
Email	NK1-5	
Fax	NK1-5	
Name First	NK1-2	
Name Last	NK1-2	
Name Middle	NK1-2	
Name Suffix	NK1-2	
Next Of Kin Id	NK1-33	
Organization Name	NK1-13	
Phone	NK1-5	
Relationship	NK1-3	
Social Security Number	NK1-33	

OBSERVATION FIELDS

Observation fields may be sent in VXU and ORU messages.

Table 5-2: Sent Observation Fields

Field	HL7	Comment
Identifier	OBX-3	
Identifier Table	OBX-3	
Identifier Text	OBX-3	
Observation Date	OBX-14	
Units	OBX-6	
Value Coded	OBX-5	
Value Coded Table	OBX-5	
Value Coded Text	OBX-5	
Value String	OBX-5	
Value Type	OBX-2	

PATIENT FIELDS

Patient fields may be sent in VXU, ADT, ORU, and VXR messages.

Note: The HL7 fields denoted with an asterisk (*) are NOT sent to "CDC Standard" applications.

Table 5-3: Sent Patient Fields

Field	HL7	Comment
Address City	PID-11	
Address Country	PID-11	
Address County	PID-11	
Address State	PID-11	
Address Street1	PID-11	
Address Zip	PID-11	
Alias First	PID-9	
Alias Last	PID-9	
Birth Country	PID-11	
Birth Date	PID-7	
Birth File Number	PID-3	

Field	HL7	Comment
Birth Multiple	PID-24	
Birth Order	PID-25	
Birth State	PID-11	
Comment	ZSP-4*	
Deceased	PID-30	
Eligible VFC	PV1-20	
Email	PID-13	
Ethnicity	PID-22	
Facility Address City	ZSP-1*	
Facility Address State	ZSP-1*	
Facility Address Street 1	ZSP-1*	
Facility Address Zip	ZSP-1*	
Facility Email	ZSP-2*	
Facility Fax	ZSP-2*	
Facility Health District	ZSP-5*	
Facility Id Local	PD1-3	
Facility Id Remote	PD1-3*	
Facility Name	PD1-3	
Facility Phone	ZSP-2*	
Gender	PID-8	
Health District	ZSP-5*	
Immunization Registry Status	PID-16	
Inactive Code	PID-16*	
Medicaid Number	PID-3	
Mother Maiden Name	PID-6	
Name First	PID-5	
Name Last	PID-5	
Name Middle	PID-5	
Name Suffix	PID-5	
Patient External Id	PID-3	
Patient Internal Id	PID-3	
Patient Mpi Id	PID-3	
Phone	PID-13	
Physical Address Street 1	PID-11	
Physician Bomex Number	PD1-4*	
Physician Id Local	PD1-4	
Physician Id Remote	PD1-4*	

Field	HL7	Comment
Physician Name First	PD1-4	
Physician Name Last	PD1-4	
Physician Name Middle	PD1-4	
Physician Name Suffix	PD1-4	
Physician SSN	PD1-4*	
Primary Language	PID-15	
Publicity Code	PD1-11	
Race	PD1-10	
Race 2	PD1-10	
Race 3	PD1-10	
Race 4	PD1-10	
Race 5	PD1-10	
Social Security Number	PID-3, PID-19	
Note: The HL7 fields denoted with an asterisk (*) are NOT sent to “CDC Standard” applications.		

QUERY FIELDS

These fields are found in VXQ messages:

Table 5-4: Sent Query Fields

Field	HL7	Comment
Mother Name Maiden	QRF-5	
Patient Address 1 City	QRF-5	
Patient Address 1 State	QRF-5	
Patient Address 1 Street 1	QRF-5	
Patient Address 1 Zip	QRF-5	
Patient Birth Date	QRF-5	
Patient Birth Number	QRF-5	
Patient Birth State	QRF-5	
Patient Id	QRD-8	
Patient Medicaid Number	QRF-5	
Patient Name First	QRD-8	
Patient Name Id Type Code	QRD-8	
Patient Name Last	QRD-8	
Patient Name Middle	QRD-8	

Field	HL7	Comment
Patient Name Suffix	QRD-8	
Patient Phone Number	QRF-5	
Patient Social Security Number	QRF-5	
What Department Data Code	QRF-10	
What Subject Filter	QRD-9	
When Date End	QRF-2	
When Date Start	QRF-3	

QUERY RESULT FIELDS

The query result fields are returned in addition to patient information in a VXR or VXX:

Table 5-5: Sent Query Result Fields

Field	HL7	Comment
Query Response Status	QAK-2	

VACCINATION FIELDS

Vaccination fields may be sent in VXU and VXR. For DFT messages the immunization data is transferred from the FT1 segments. For ORU messages the immunization data is transferred from the OBX segments. VXU, DFT, and ORU messages may have 0 or more immunizations listed.

Note: The HL7 fields denoted with an asterisk (*) are NOT sent to "CDC Standard" applications.

Table 5-6: Sent Vaccination Fields

Field	HL7	Comment
Action Code	RXA-21	
Administered Amount	RXA-6	
Comment	RXA-9	
Facility Address City	RXA-11	
Facility Address State	RXA-11	

Field	HL7	Comment
Facility Address Street 1	RXA-11	
Facility Address Zip	RXA-11	
Facility Email	ZSV-2*	
Facility Fax	ZSV-2*	
Facility Id Local	ZSV-1*	
Facility Id Remote	RXA-11	
Facility Name	RXA-11	
Facility Phone	ZSV-2*	
Form VIS Given Date	ZSV-5*	
Health District	ZSV-4*	
Historical	RXA-9	
Indication	RXA-19	
Induration TB	ZSV-8*	
Information Source	RXA-9	
Physician Bomex Number	RXA-10*	
Physician Id Local	RXA-10	
Physician Id Remote	RXA-10*	
Physician Name First	RXA-10	
Physician Name Last	RXA-10	
Physician Name Middle	RXA-10	
Physician Name Suffix	RXA-10	
Physician SSN	RXA-10*	
Publication Date VIS 1	ZSV-9*	
Publication Date VIS 2	ZSV-9*	
Publication Date VIS 3	ZSV-9*	
Publication Date VIS 4	ZSV-9*	
Route	RXR-1	
Site	RXR-2	
Tb Induration Result	ZSV-6*	
Vaccination Date	RXA-3	
Vaccine Code CPT	RXA-5	
Vaccine Code CVX	RXA-5	
Vaccine Code PCI	RXA-5*	
Vaccine Eligible VFC	ZSV-7*	
Vaccine Lot Number	RXA-15	
Vaccine Manufacturer	RXA-17	
Vaccine Manufacturer Code	RXA-17	

Field	HL7	Comment
Vaccine Name	RXA-5	
Vaccine Publicly Supplied	ZSV-9*	
Note: The HL7 fields denoted with an asterisk (*) are NOT sent to “CDC Standard” applications		

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6 VFC AND LOT TRACKING

VACCINES FOR CHILDREN (VFC) TRACKING

IWeb can track Vaccines for Children (VFC) immunization administrations and vaccine lot inventory for providers. The following information is required to support this functionality:

- Vaccine Lot Number
- Vaccine Manufacturer
- VFC Status (of patient at time of vaccine administration)
  - OR -
  Vaccine Publicly Supplied? (*Yes* or *No*)
- Facility/Clinic Id (if IRMS includes multiple Facility/Clinics)

VFC Status must be transmitted in an OBX segment. Here is an example of how this is sent:

Figure 6-1: VFC Status OBX Segment Example

```
OBX|0|ST|VFC-STATUS^VFC STATUS^STC||V01||||||F|||20051101
```

Vaccine Publicly Supplied must be transmitted in an OBX segment. Here is an example of how this is sent:

Figure 6-2: Vaccine Publicaly Supplied OBX Segment Example

```
OBX|0|ST|30963-3^Vaccine purchased with^LN||Y||||||F|||20051101
```

The HL7 interface must be configured to “Track Lot Inventory” before submitting data. Currently configured Vaccine Lots will be decremented if they match the incoming vaccine code *exactly*. If the lot number is sent with a typo or the VFC status is incorrect, then the correct lot may not be decremented and no error message will be displayed. It is important to correctly configure the current lots and to transmit the vaccines given without typos.

In addition, as lots may be tracked separately for each facility the facility MUST be designated if lots are defined by facility.

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7 INTEGRATION TOOLS

While **IWeb** does understand hospital and billing system messages it normally cannot accept connections directly from these systems. This is because most hospital and billing systems use the insecure Minimum Lower Level Protocol (MLLP) to send and receive HL7 messages. For security reasons **IWeb** only supports connections using HTTPS. To provide a secure connection without requiring a change to hospital and billing systems, STC has developed a product that "bridges" the gap.

HL7 BRIDGE

When installed on the local hospital or billing system, the HL7 Connection Bridge listens for an incoming HL7 message and immediately forwards it to **IWeb**. After processing the message, **IWeb** responds with an acknowledgment message which the Bridge will forward back to the originating system using the original connection. If the Bridge encounters an error in this process it immediately returns a negative acknowledgment message back to the originating system.

The HL7 Bridge is optimal for hospital and billing systems because it does not require special network setup or costly changes to the originating systems.

For more information please see the documentation distributed with the HL7 Bridge software.

HL7 COMMUNICATION PLATFORM

Because of the differences in HL7 implementations, interface integration can often be complicated and difficult. STC has created a web-based system for testing and receiving HL7 messages. The HL7 Communication Platform (HL7cp) provides a large number of tools to help vendors and immunization registry operators to understand HL7 and to import data.

The HL7 Test Platform includes the following tools:

- Real-time HTTPS interface
- Message Quick-View
- Transaction Debugger
- Message Constructor
- Code Table Viewer
- Cross-reference to CDC Standards
- Message Log
- Project Tracking
- Message Processing

8 CONFIGURING HL7 INTERFACES

This section includes instructions for configuring the incoming interfaces, map the data fields, and any applicable workarounds. Each is discussed in its own section.

CONFIGURING INCOMING INTERFACES

After an HL7 account has been created, it can be configured by either the IWeb Administrator or the HL7 User (if the IWeb Administer allows it).

1. Login to IWeb and click the **SETTINGS** menu.
2. From the "Settings Menu," click the **HL7 UPLOADS** option. The "HL7 Settings" page appears.

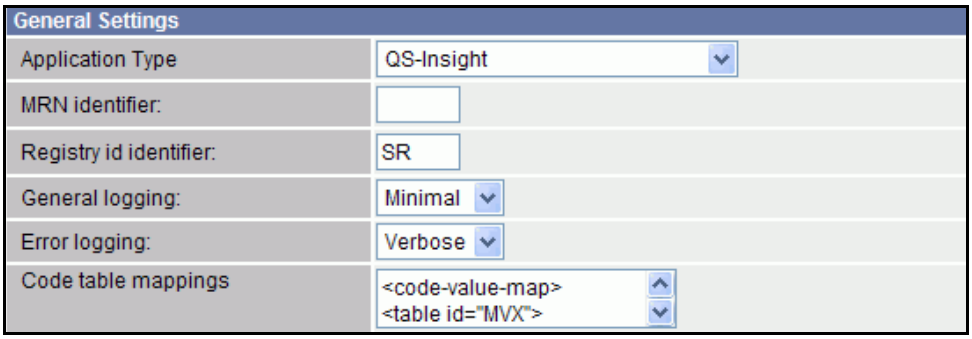
Figure 8-1: HL7 Settings

3. Click the drop-down menu arrow to select the appropriate **INCOMING ACCOUNT**. Upon making a selection, the following settings/options appear.
   - General Settings
   - Update Settings
   - Observation Settings
   - Query Settings
   - Record Export Options for Queries and Updates
   - Reciprocal Batch Update

GENERAL SETTINGS

These settings apply to all HL7 messages received.

Figure 8-2: General Settings



1. The fields and their descriptions are listed in the table.

Table 8-1: General Settings Field Descriptions

FIELD	DESCRIPTION
Application Type	Indicate what kind of application will be sending data: • **CDC Standard** Messages only include fields explicitly defined by CDC standard docs • **McKesson** DFT messages are formatted to newer standard • **MiSys** DFT messages are formatted to older standard • **QS-Insight** Same as CDC Standard • **STC-IWeb** Includes support for IWeb-specific fields and data • **STC-CDR**
MRN identifier	The PID-3 field may include one or more ids of which one should by the MRN. To differentiate between different ids, each is given an identifier. Common identifiers include:

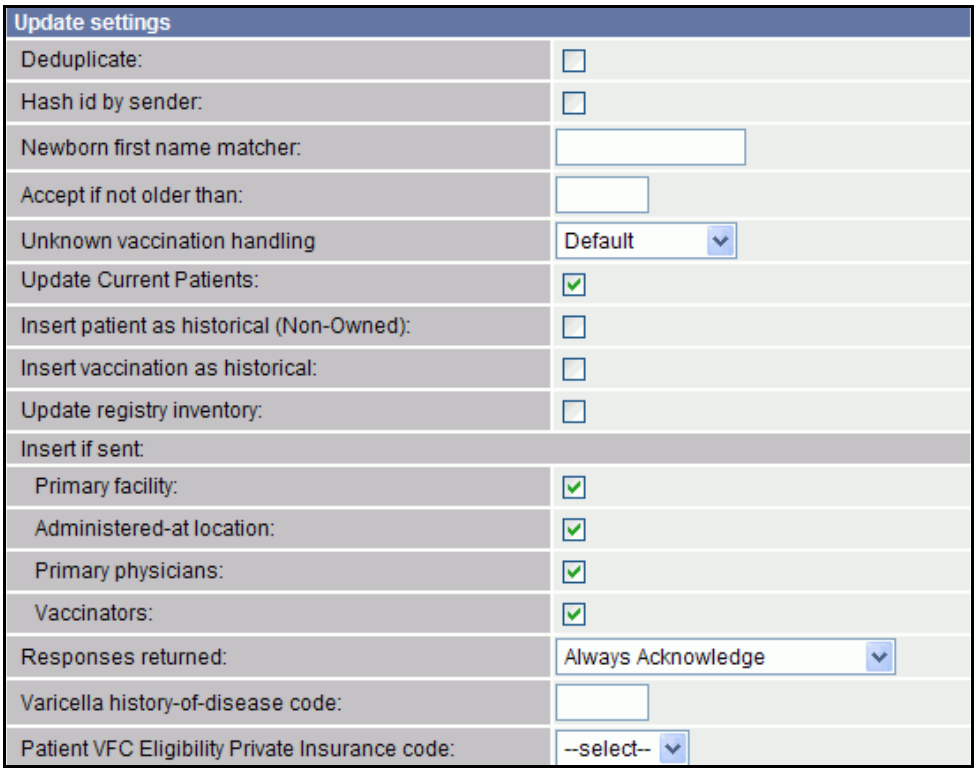
FIELD	DESCRIPTION
	• **MR** Medical Record Number • **PT** Patient Identifier • *[blank]* No identifier is sent • *Other value* Defined by sender Enter the correct identifier for the message this account will receive.
Registry id identifier	Similar to the MRN identifier, this is the identifier that is used by the sending system to indicate the IWeb SIIS Id. This field should normally be left as **SR**.
General logging	Indicate what level of logging should occur when messages are accepted (no errors encountered): • **None** Daily counts are updated • **Minimal** Daily counts are updated and message result text is logged • **Verbose** Daily counts are updated, message result text is logged, and original request and response HL7 messages are saved
Error logging	Indicate what level of logging should occur when messages are rejected (errors are encountered) • **None** Daily counts are updated • **Minimal** Daily counts are updated and message result text is logged • **Verbose** Daily counts are updated, message result text is logged, and original request and response HL7 messages are saved
Code table mappings	Use this box to paste an XML script that indicates how incoming and outgoing values should be mapped.

2. Choose the appropriate values. Continue to the next section.

UPDATE SETTINGS

These settings apply to primarily to update messages with patient, vaccination and observation information.

Figure 8-3: Update Settings



1. The fields and their descriptions are listed in the table.

Table 8-2: Update Settings Field Descriptions

FIELD	DESCRIPTION
Deduplicate	Indicate whether or not incoming data should automatically be deduplicated. All incoming data is eventually deduplicated, but this normally happens in the evening after business hours. Checking this box will request that deduplication be performed after the incoming data is received.
Hash id by sender	*This option is rarely used.* Sending systems are required to submit unique MRNs. Some sending systems may collect data from different systems and send them in one account. This is not

FIELD	DESCRIPTION
	preferred but in these rare cases the MRN id can be “hashed” to make it unique. The sending facility and sending application are used to generate a unique sequence of characters (the hash) and it is pre-pended to the MRN listed in the record. This new id is then submitted to IWeb as the patient's MRN. This method insures that even if two entities within the data stream assign the same MRN, they will appear as different MRNs after they are hashed. This option will make user searches by MRN in IWeb difficult as the MRN will not include a strange set of characters unique to the sending facility.
Newborn first name matcher	Systems that collect birthing information, such as hospitals, sometimes send patients that have not been named. These systems have a standard way of naming these patients such as “BABY BOY JONES” or “NEWBORN SMITH.” Although the systems software may not explicitly support this, the system users understand that this is just a “placeholder” name. IWeb supports and recognizes standard placeholder first names such as “NEWBORN,” “BABY GIRL,” and “BABY BOY,” but sending systems may use other naming systems such as “FC-Jones Jones” (**F**emale **C**hild of Ms. **Jones** with possible last name of Jones.) These custom naming conventions are not recognized by IWeb. To standardize incoming placeholder names a *regular expression* can be placed in this field to match against first names. If the *regular expression* matches against a first name then it is replaced with the name “NEWBORN.” Leaving this field blank turns this feature off. Please see the appendix for more information about how to write a *regular expression* to match the custom naming convention.
Accept if not older than	If patients that are older than a certain age (perhaps 18) are NOT to be accepted and the sending system sends them, this option may be used to ask IWeb to reject/ignore patient records that are too old. To enable this feature enter a cutoff age (in years) that is greater than 0. For example, if the value of 18 is used then all patients 19 years of age and older will not be accepted and

FIELD	DESCRIPTION
	all patients 0 through 18 will be accepted.
Unknown vaccination handling	Determines what is done when a vaccine code is received but is not recognized. • **Default** A vaccinations in financial (DFT) messages are ignored and in all other messages they are added. • **Always Add** Vaccination is added as an *Unknown Vaccination*. • **Always Ignore** Vaccination is skipped as if it were never sent. Select this option if you expect to receive non-vaccination codes and want to skip them. • **Always Reject** Vaccination and the containing message is rejected with an error message. Select this option if you never expect to receive unrecognized vaccination codes and wish to reject messages if this happens.
Update Current Patients	By default this is checked and patient demographics are always updated. If not checked then the interface checks first to see if a patient, with the same MRN, has already been submitted by this provider. If so then the patient update is skipped. Vaccinations included with the message will be added to the record. Use this option when old information is to be uploaded and the current demographics are already in IWeb for some or all patients. This option will keep the current patient records from being overwritten.
Insert patient as historical (Non-Owned)	Mark patient information as historical or non-owned. This option will keep ownership from changing because of this update. This option is useful when loading data for non-owning entities (such as mobile shot clinics) or when loading initial data dumps which include many patients that are no longer seen by this clinic.
Insert vaccination as historical	Vaccinations in HL7 may be marked as *administered* or *historical*. Some interfaces do not do this and so IWeb will assume that all vaccinations are administered. If a sending

FIELD	DESCRIPTION
	system does not properly indicate historical shots it may be necessary to force all vaccinations to be read as historical.
Update registry inventory	This flag triggers the inventory tracking system to decrement the appropriate lot inventory. Please see the section on VFC and Lot Tracking for more information.
Insert if sent	
Primary facility	If the primary facility id is not recognized, and the facility name is also sent, a new facility entry will be created and associated with this facility id.
Administered-at location	If the administered-at location is not recognized, and an administered-at location name is sent, a new facility entry will be created and associated with this administered-at location id.
Primary physicians	If the primary physician id is not recognized, and a primary physician first & last name is sent, a new physician entry will be created and associated with this primary physician id.
Vaccinators	If the vaccinator id is not recognized, and a vaccinator first & last name is sent, a new physician entry will be created and associated with this vaccinator id.
Responses returned	Indicates whether a response will be returned for a message. Since most messages result in an *Acknowledgment Message* being returned, this option determines whether acknowledgments are returned or not. The default action is determined by the value of MSH-16 in each message. This can be overridden here, in which case it will apply to all messages received regardless of the value in MSH-16. If MSH-16 does not specify an action then the message is always responded to. • **Defined by Incoming Message** Look at value in MSH-16 to determine action taken. If blank or some other value it will be treated

FIELD	DESCRIPTION
	as *always acknowledge*. • **AL** Always acknowledge • **NE** Never acknowledge • **ER** Only acknowledge for errors • **Always Acknowledge** Always send back response messages. • **Never Acknowledge** Never send back response messages. • **Only for Errors** Only send back responses when an error has occurred. This option is particularly important to set properly when reciprocal batch update is enabled. Sending systems who expect to get a batch update back may not want to see any responses back. Turning off the responses here will stop that from happening.
Varicella history-of-disease code	A parent report of child having had chicken pox is normally recorded as a contraindication, but some systems cannot record contraindications or are unable to send them. So, as a workaround they record the Varicella History-of-Disease as a custom code (e.g., 921). If the sending system does this, record the code here. Any vaccination with this code will be saved as a contraindication instead of a vaccination.
Patient VFC Eligibility Private Insurance code	Patient VFC Eligibility code can be sent as "private insurance" meaning the patient has private insurance and so is not eligible for a VFC supplied vaccine. This can be mapped to several VFC codes in IWeb. Choose the VFC code that this should be mapped to.

2. Choose the appropriate values. Continue to the next section.

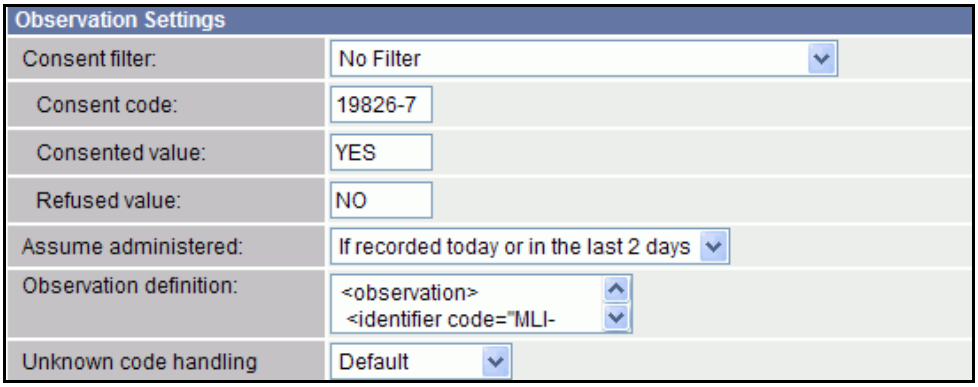
OBSERVATION SETTINGS

These settings apply to observation (ORU) messages that may include vaccination or lab test results.

Important: Some other HL7 messages may have observation segments in them but these settings will not apply to them unless they are part of an

observation (ORU) message; e.g., VXU messages with observation segments are not affected by settings in this section.

Figure 8-4: Observation Settings



1. The fields and their descriptions are listed in the table.

Table 8-3: Observation Settings Field Descriptions

FIELD	DESCRIPTION
Consent filter	The consent filter is used by states that require consent before accepting data into the registry and can only be used for filtering observation messages. ***Note***: This setting will only affect observation (ORU) messages and not other messages (e.g., VXU's, DFT's, ADT's) even though they may have observation segments in them. • **No filter** All messages are accepted. This value is appropriate for states that accept all records. • **Assume consented, ignore non-consented** The sending system has marked the patients that have not consented to be in the registry. Skip updates for patients that explicitly indicate that they are not consented. • **Assume non-consented, ignore consented** The sending system has marked the patients that have consented to be in the registry. Only accept those patients that explicitly indicate that they are consented.
Consent code	This is the observation code that the consent is recorded under. This code is defined by the

FIELD	DESCRIPTION
	sender and may differ from one system to the next. The default shown here is not the usual value.
Consented value	The value that indicates that the patient has consented. This value need only be set when the *consent filter* is set to *assume non-consented, ignore consented*.
Refused value	The value that indicates that the patient has refused. This value need only be set when the *consent filter* is set to *assume consented, ignore non-consented*.
Assume administered	Observation messages that contain vaccination data do not indicate whether a particular vaccination was administered or historical, but it does indicate when the vaccination was recorded in the sending system. This option allows for marking as historical vaccinations that were given long before they were recorded. The assumption being that vaccinations given previous to the data entry date were not administered by this submitter. This option allows you to control this behavior. • **Yes** Assume that all observations are administered regardless of the data entry date • **If recorded today** Assume administered only if recorded on the same day as it was given • **If recorded today or yesterday** Assume administered only if recorded on the same or next day as it was given. • **If recorded today or in the last 2 days** Assume administered only if it was recorded within 2 days of being administered.
Observation definition	Observation messages that contain vaccinations must have an XML mapping to define how the vaccinations are mapped into CPT codes. If this observation message contains lead lab data, leave this field blank.
Unknown code handling	If an observation code is not recognized it may be rejected or ignored (skipped). There are four

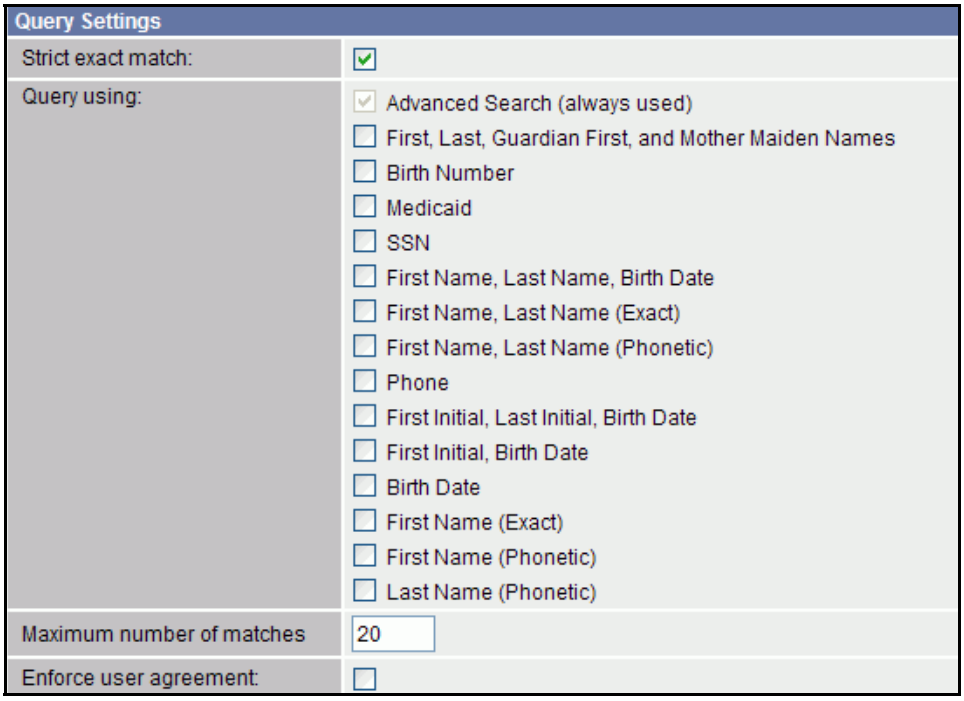
FIELD	DESCRIPTION
	options but three have the same behavior: • **Default**, **Always Add**, **Always Ignore** all indicate that the observation should be skipped and not processed • **Always Reject** indicates that the unrecognized observation should cause the message to be rejected and an error be generated.

2. Choose the appropriate values. Continue to the next section.

QUERY SETTINGS

These settings only apply to query (VXQ) messages.

Figure 8-5: Query Settings



1. The fields and their descriptions are listed in the table.

Table 8-4: Query Settings Field Descriptions

FIELD	DESCRIPTION
Strict exact match	Queries that contain a MRN or a SIIS patient id are first matched with a patient with the same id. If this option is checked then this match is returned as an exact match only if the first name, last name, and date of birth match, otherwise this is returned as a possible match. If the querying system is IWeb this may be left checked. For other systems this may need to be unchecked.
Query using	After querying by id and finding no match, the advanced search is run. The advanced search uses the following fields to find a set of matches: *first name*, *middle name*, *last name*, *date of birth*, *SSN*, *Medicaid number*, *birth number*, *guardian's first name*, *guardian's last name*, *guardian's social security number*, *mother's maiden name*, *address street*, *city*, *state*, *zip*, and *phone*. This is the same search that is run in IWeb before adding a new patient record. If an exact match is returned then the query process stops and this match is returned. Otherwise these additional queries may be run: • First, Last, Guardian First, and Mother Maiden Names • Birth Number • Medicaid • SSN • First Name, Last Name, Birth Date • First Name, Last Name (Exact) • First Name, Last Name (Phonetic) • Phone • First Initial, Last Initial, Birth Date • First Initial, Birth Date • Birth Date • First Name (Exact) • First Name (Phonetic) • Last Name (Phonetic) Each of these queries is run sequentially and as matches are found they are added to the list. The querying stops when either all queries have been run or the maximum number of matches has been

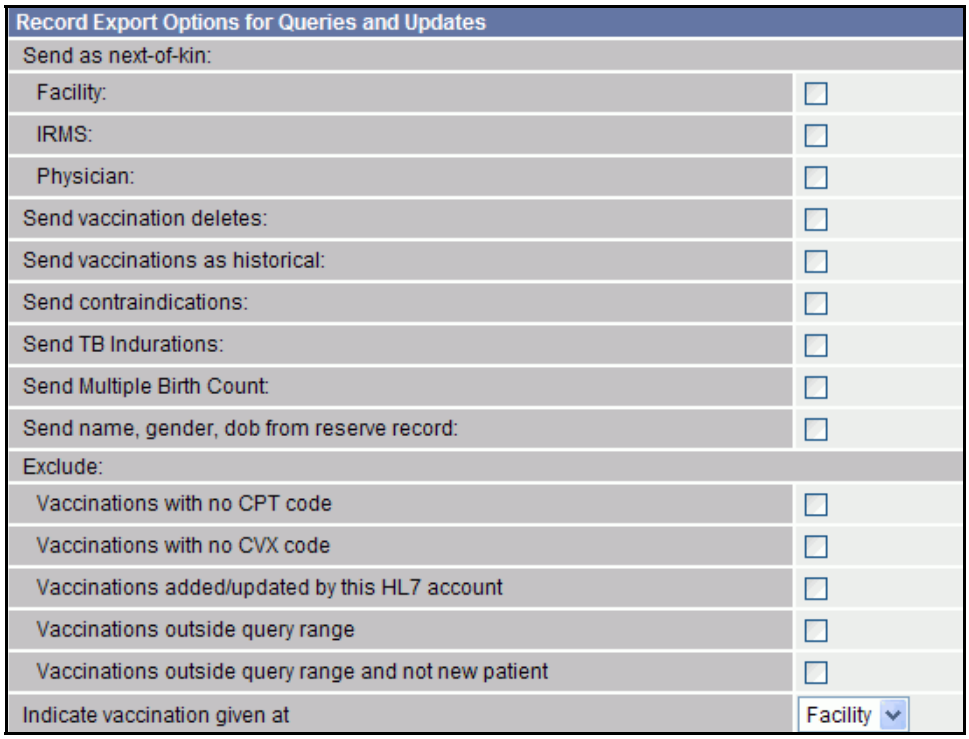
FIELD	DESCRIPTION
	reached. Selecting more query options will return more results and will cause queries to take longer to run. The advanced search is good at finding close matches but may miss other matches. The additional queries may find possible matches that have little relevancy to the query search. (For example, the phone query may match someone based on the same phone number even though the patient has a different name and birth date.)
Maximum number of matches	The maximum number of matches returned is the lower of (a) the value entered here or (b) the value indicated in the query (VXQ) message. Once the maximum number of matches is found they will be returned. Any other matches beyond this point will not be returned and no indication will be given that there are more matches beyond the maximum. (For example, if the maximum number of matches was 20 and 20 matches were returned it is impossible to know whether or not there were any more matches beyond the 20 returned.)
Enforce user agreement	Some states require that out-of-state query users accept a user agreement before completing a state-to-state query. If your state requires this, then check this box for incoming connections from other states. Do not check this box for in-state systems that do not have to accept the agreement before querying. The user agreement must be setup in the HL7 Interface options on the administrator properties page

2. Choose the appropriate values. Continue to the next section.

RECORD EXPORT OPTIONS FOR QUERIES AND UPDATES

These settings apply to query (VXQ) messages and update (VXU) messages that are sent in reciprocal batch updates.

Figure 8-6: Record Export Options for Queries and Updates



1. The fields and their descriptions are listed in the table.

Table 8-5: Record Export Options for Queries and Updates Field Descriptions

FIELD	DESCRIPTION
Send as next-of-kin:	The next-of-kin segment can be used to identify "associated parties" which may be used to identify organizations associated with a patient. IWeb has extended the recommendations on this segment to allow for sending the facility, IRMS and physician information for the user's information in order to lead to improved identification and service for the patient.
Facility	If checked, the facilities that the patient has been assigned to or has received vaccinations at are listed.
IRMS	If checked the IRMS's that the patient has been assigned to or has received vaccinations at are listed.

FIELD	DESCRIPTION
Physician	If checked the physicians/vaccinators that the patient has been assigned to or has received vaccinations from are listed.
Send vaccination deletes	Deleted vaccinations can be indicated in HL7 but they look very similar to valid updates. Systems that do not look for the delete "flag" may incorrectly add vaccinations when receiving deletes. Before sending deletes make sure the receiving system is ready to accept them.
Send vaccinations as historical	Check this box to force all vaccinations to be marked as historical.
Send contraindications	Send contraindications with vaccinations as observation segments.
Send TB Indurations	Send TB indurations.
Send Multiple Birth Count	The HL7 Standard supports reporting the birth position and whether the birth is a multiple birth or not (e.g., 1st in a multiple birth, 1st in a single birth). IWeb stores the birth position and the birth count (e.g., 1st of triplets, 1st of a single birth). Checking this box indicates to IWeb that it can send the multiple birth count (*1*, *2*, *3*, etc.) instead of just the multiple birth indicator (*Y* or *N*) and the receiving system will process it properly.
Send name, gender, dob from reserve record	Some receiving systems match on name, gender, and dob. This can cause problems when patients are updated by other systems. IWeb will always report back the most up-to-date name which may be different from what was originally reported. Checking this box forces these data items to reflect what was originally reported, if it is available. In this way if "Billy" was originally reported then "Billy" will be sent back even if someone else updated the name to "William."
Exclude	These options are used to exclude specific vaccinations from being sent with the record. By default all vaccinations are sent with each record

FIELD	DESCRIPTION
	unless excluded for the reasons below.
Vaccinations with no CPT code	If the receiving system stores the immunizations by CPT code then it is no use to send vaccinations that do not have CPT codes since the receiving system will not be able to accept them. Standard vaccinations have CPT codes. IWeb vaccinations without CPT codes usually represent items that are modeled in IWeb as vaccinations but are not really vaccinations and so do not have an assigned CPT code.
Vaccinations with no CVX code	If the receiving system stores the immunizations by CVX code then it is no use to send vaccinations that do not have CVX codes since the receiving system will not be able to accept them. Standard vaccinations have CVX codes. IWeb vaccinations without CVX codes usually represent items that are modeled in IWeb as vaccinations but are not really vaccinations and so do not have an assigned CVX code.
Vaccinations added/updated by this HL7 account	IWeb tracks who adds/updates vaccinations by user account. Every HL7 account is a user account and so every update by an HL7 user account is tracked. This option removes immunizations that were reported by this account. This stops IWeb from updating this user with information that it already reported to IWeb. If the HL7 account is used for regular IWeb use and patient records are modified using this account then changes done by this account will filtered out with this option.
Vaccinations outside query range	Vaccinations that were given before or after the query range will be excluded. This means that only a part of the patient's record will be returned. This option is used to provide incremental updates.
Vaccinations outside query range and not new patient	The previous option was not complete because if a patient was already in IWeb but just newly added as a new patient to the provider, only a part of the record within the query range would be returned even though the entire record was needed. This

FIELD	DESCRIPTION
	option limits the previous exclusion by not excluding the vaccinations if the patient has just been associated with this provider. So that in this situation the provider can get a full patient record.
Indicate vaccination given at	Determines whether the facility or IRMS information is sent as the vaccination location.

2. Choose the appropriate values. Continue to the next section.

RECIPROCAL BATCH UPDATE

These settings control the reciprocal batch updates. Reciprocal batch updates are an IWeb specific protocol that diverges from the standard HL7 messaging process in order to solve a major transport issue. Many sending systems can only receive updates when they are sending updates. This is because many systems do not have a (1) externally addressable access point because their local firewall blocks IWeb from connecting inward and (2) they do not have a server running ready to receive updates. Thus the only chance to get updates back is when updates are being sent.

The reciprocal batch update process works as follows:

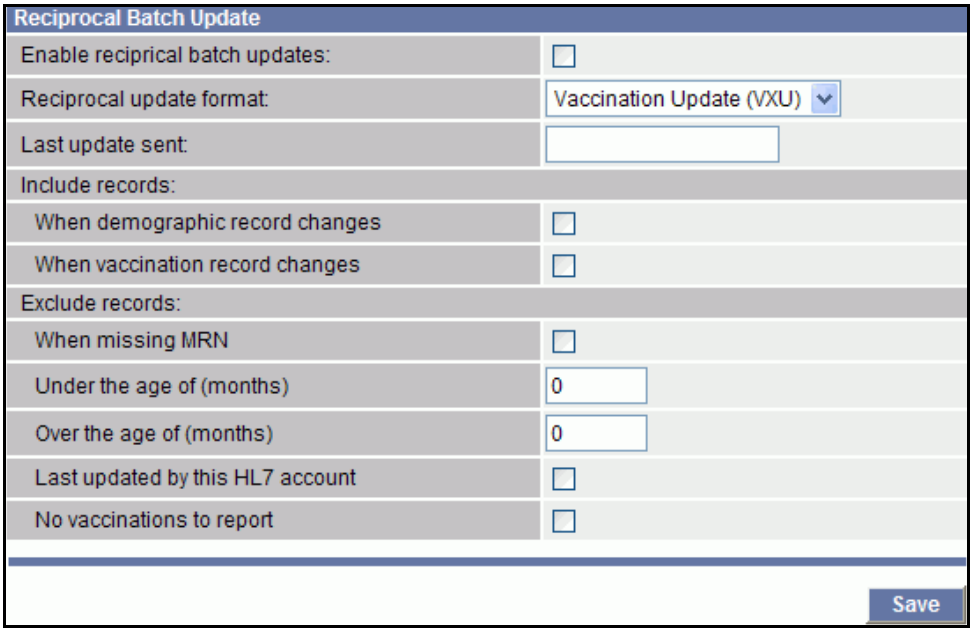
1. The sending system opens a connection to IWeb and transmits a batch of data. A batch may contain one or more records.
2. IWeb receives the batch from the sender and authenticates the connection.
3. IWeb places the batch on hold and searches for updates that have been made since the last reciprocal batch update.
4. IWeb returns an update batch for all the records that have been found to be changed.
5. IWeb processes the incoming batch updates and sends responses (if so configured.)
6. IWeb closes the connection that has been open for this entire process.

It is important to understand that what is contained in the batch that is being sent has no effect on what is returned in the same request because

the batch is not processed (or read, or looked at) until **after** the reciprocal batch update has been completed.

When enabling reciprocal batch updates it is best to turn off the response messages so that the receiving system only gets the updates and does not have to see the response messages.

Table 8-6: Reciprocal Batch Update



1. The fields and their descriptions are listed in the table.

Table 8-7: Reciprocal Batch Update Field Descriptions

FIELD	DESCRIPTION
Enable reciprocal batch updates	Reciprocal batch updates are not functional until this is checked.
Reciprocal update format	Vaccination Update (VXU) is currently the only option supported.
Last update sent	The date from when the last update was sent. The update range is always the last update sent until the current date/time. The first time the update is run this value must be set to some start date in the past. All updates since this time will be sent in the first reciprocal batch update. If the date is not set

FIELD	DESCRIPTION
	it will be defaulted to a value at least 30 years in the past (long before IWeb was installed.) After a successful batch update is completed this date is changed to the current date/time so that the next reciprocal batch update will provides updates from this point. **Important**: The date here is associated with when patient and vaccination records are modified NOT with patient date of births and vaccination dates. Vaccinations given last month and recorded yesterday will be submitted with data that was recorded yesterday. Thus once a particular date's data has been exported there is no need to re-export that date to get more data.
Include records	One or both of the following options must be checked in order for the reciprocal batch update to work.
When demographic record changes	Check this to export based on patient records being added/updated.
When vaccination record changes	Check this to export based on vaccination records being added/updated.
Exclude records	The following options exclude entire records from the batch if they meet certain conditions.
When missing MRN	If the sender has not previously reported an MRN for this patient then the patient is excluded. Use this option when the sending system depends on the MRN to match returning patients.
Under the age of (months)	If the sender wishes to get updates on a particular age group (e.g., 0 - 60 months) the months can be set here. A value of zero in the *Over age of (months)* disables the upper range.
Over the age of (months)	
Last updated by this HL7 account	If the sender does not want to get updates back for changes it reported.
No vaccinations to	If all vaccinations are excluded for reasons in the

FIELD	DESCRIPTION
report	previous vaccination exclude section then do not send the message. If the sender has no use for records without vaccinations then check this option and do not check the *Include records when demographic record changes* option.

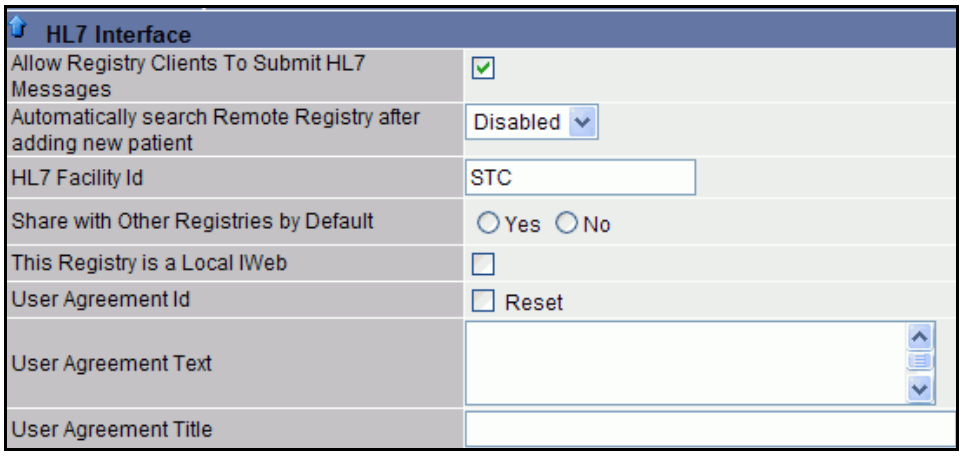
2. Click the **SAVE** button when finished making selections. A message appears at the top of the screen indicating, "HL7 Upload settings have been saved."

SYSTEM WIDE HL7 SETTINGS (ADMINISTRATION MENU)

While most HL7 settings are different for every user/account, some are set system wide. These settings are located under IWeb's Administration menu.

1. Click the **ADMINISTRATION** menu. The "Administration Main Menu" appears.
2. In the **SETTINGS** section of the window, click the **PROPERTIES** option. The various system-wide properties categories appear.
3. Click the **HL7 INTERFACE** option. The "HL7 Interface Settings" appear.

Figure 8-7: HL7 Interface Property Settings



4. The fields and their descriptions are listed in the table.

Table 8-8: HL7 Interface Field Descriptions

FIELD	DESCRIPTION
HL7 Facility Id	A name that uniquely identifies this installation of IWeb. This will be used for identification purposes in state-to-state connections. For a production system this is normally the immunization registry acronym (e.g., CHIRP). For non-production systems, a modifier can be attached (e.g., CHIRP-Test).
User Agreement Id	If using the state-to-state user agreements and you want have the remote users re-agree to the user agreement next time they query, check this box. It will change the user agreement id and forces the user to re-read and re-agree to the user agreement.
User Agreement Title	If using the state-to-state user agreements this is the title of the user agreement that the remote users will see when reading the agreement.
User Agreement Text	If using the state-to-state user agreements this is the text of the user agreement that the remote users will see. Every paragraph should be separated by two returns (one blank line).
This Registry is a Local IWeb	If this is a local IWeb check this box. This only applies to IWeb installations that use the Local IWeb module.
Share with Other Registries by Default	Used by Local IWeb modules.
Automatically search Remote Registry after adding new patient	Used by Local IWeb modules. Indicates that the remote registry should be automatically searched after adding a new patient.

5. Click the **SAVE** button when finished.

MAPPING DATA FIELDS IN

Managing the code values between two systems is one of the most important aspects of a good interface. To support this mapping, the HL7 Server has a place for *Code Table Mappings* on the settings page. It is a little box where you can paste an *XML* fragment that describes how to do the mapping. Here is an example of what the *XML* fragment looks like:

Figure 8-8: HL7 Server Code Table Mappings – XML Fragment Example

```
<code-value-map>
  <table id="MVX">
    <import value="AVE" code="ZLB"/>
    <export value="AVE" code="ZLB"/>
  </table>
  <table id="FACILITY">
    <import value="Ponderosa Pediatric" code="PP01"/>
    <import value="Carnation Clinic" code="CC01"/>
    <import value="Tumbleweed Office" code="TW01"/>
  </table>
</code-value-map>
```

The above example is formatted according to XML specifications. If you would like to know more about XML, search for "XML tutorial" on the Internet—there are many good sites that will explain the basics. For the purposes of configuring the mapping, it is only necessary to understand a few basic things about XML. Here is a quick introduction to XML.

QUICK XML TUTORIAL

All XML documents or fragments are made up of **tags**.

- Tags start with < and end with a >.
- The name of the tag is listed directly after the first <.
- The example above shows the first tag named "code-value-map".

Tags come in **pairs** or as **singles**.

- Singles always end like this: />.
- The terminating pair starts like this: </.

Tags can have **attributes**, which are name value pairs that appear just after the tag name but before the closing >.

- Notice that the <code-value-map> tag has no attributes while the <table …> tag does.
- An attribute modifies the tag by providing additional information.

Tag names and attribute names are case-sensitive.

Tags can be **nested** within other tags. It is important while doing this that the nesting is **balanced**.

- In other words the following would be incorrect: `<code-value-map><table></code-value-map></table>` where-as this would be correct: `<code-value-map><table></table></code-value-map>`.
- All tags, except the first one (called the root) may be **repeated**.

Spaces and extra lines (whitespace) between the tags does not matter. The example above is **indented** to make it easier to see how the tags are nested inside each other. It is common to see XML files indented to make them easier to read.

The tags that are used by the XML are defined by the application that needs them. The example above has a specific format that is defined by the HL7 Server settings page. The HL7 Server page is looking for specific tags in specific places.

FORMAT OF MAPPING XML

While XML does not define what tags are to be used, the HL7 Server settings page will expect a particular set of tags in a particular order.

The first and last tag (or root tag) must be `<code-value-map>…</code-value-map>`.

Inside this tag the `<table>…</table>` tag is repeated for as many tables that need to be mapped. The id is required and must be set to be one of these values:

- MVX
- RACE
- ETHNICITY
- LANGUAGE
- VFC
- COUNTY
- REGISTRY STATUS
- FACILITY
- PHYSICIAN
- LOT NUMBER
- CONTRAINDICATION

Inside each <table> tag list as many <import/> and <export/> tags as are needed to map codes in and out. The import tag defines how incoming data is supposed to be mapped and the export tag defines how outgoing data (such as from a query or reciprocal batch update) is supposed to be mapped back out.

The <import/> and <export/> tags each have two attributes: value and code. Value represents the value that the external connecting system uses, and the code represents the internal value that IWeb uses. These attributes are required.

SAVING XML MAPPING

Use Notepad or a similar text editor to type in the contents as specified above. Save it with an xml extension instead of the standard txt extension. Open the file in Internet Explorer (Internet Explorer is the default application for files that end in .xml). If the XML displays correctly in Internet Explorer, then you have formatted the message properly in XML. If not, correct the problem in Notepad and retry in Internet Explorer.

When you have completed the XML, copy the contents in Notepad, login to IWeb, and paste it into the Code Mapping setting box. You will see the XML in the box. Save the settings. You may come back at any time and copy it back out, modify it, and copy it back in.

Now test a message to make sure the mapping works. Take the test message and paste it into the real-time interface. Make sure to check the debug flag. Submit the message and read the debug log. It should indicate that it has read the mapping and will map your values; it will also indicate the final value that it is saving to IWeb. This should confirm your mapping.

If you make a mistake in your XML, the HL7 Server may return an error. If this is the case, make sure that your XML is formatted properly according to these specifications. Improperly formatted XML fragments are not flagged when the XML is saved but when a message is received for the first time.

WORKAROUND FOR LOGICIAN

***Important Update for January 2008**: GE Healthcare is working on Centricity (Logician) EMR 9.0 which will make the following work around*

obsolete. This new functionality will allow Logician to submit data using the standard immunization message. This release is planned for general availability mid-2008. Not sure how soon all sites will have this new version, but until then this work around can still be used.

Logician does not currently support the VXU message as required by the CDC to connect to registries; however, it does support the ORU message which is normally used to report lab test results. This format is unusual, but can be used to transfer the data.

Logician has a module called LinkLogic which includes LabLink. While LabLink's main use is for receiving test result data from labs it can be used to export data. Vaccination data is stored in Logician using OBSTERM codes, which can be grouped together into Flowsheets. An export interface is associated with a Flowsheet and all associated OBSTERM codes can then be exported.

Logician has a novel way of storing immunizations and this makes the interface quite a bit different from other HL7 interfaces. Here is a small subset of OBS TERM codes for one vaccine, DTaP:

Table 8-9: Logician OBS Term Codes for one Vaccine—DTaP

		Selected OBS TERM Codes			
DTaP	**CPT**	**Date**	**By**	**Lot**	**MVX**
1st	90700	DTAP #1	DTAP #1BY	DTAP #1LOT	DTAP #1MFR
2nd	90700	DTAP #2	DTAP #2BY	DTAP #2LOT	DTAP #2MFR
3rd	90700	DTAP #3	DTAP #3BY	DTAP #3LOT	DTAP #3MFR
4th	90700	DTAP #4	DTAP #4BY	DTAP #4LOT	DTAP #4MFR
5th	90700	DTAP #5	DTAP #5BY	DTAP #5LOT	DTAP #5MFR

While most immunization applications use one code to represent a DTaP series, Logician uses nearly 50. Each code represents a different aspect of a particular dose in a series.

To integrate with IWeb, these codes have to be translated into CPT codes. An XML document fragment must be pasted into the HL7 Server Settings page. To make creating and editing this XML easier, a spreadsheet named, "IWeb-Logician Code Map" has been created. This spreadsheet holds all the Logician codes and can automatically generate the XML.

IWEB-LOGICIAN CODE MAP SPREADSHEET

The code map spreadsheet should only be edited by someone who understands how MS Excel works and is able to create and edit formulas. If you are unfamiliar with MS Excel, you may wish to have someone review this spreadsheet with you to explain how to edit it properly.

The "CODES" tab in the spreadsheet holds the IWeb-Logician Code Table Mapping and has these columns:

- **OBS TERM** - The OBS TERM as assigned by Logician.
- **TYPE** - The type of data this code holds. Valid choices include:
  - **DATE** - Vaccination date. This field is required in order to add a vaccination in IWeb.
  - **MVX** - Manufacturer code.
  - **BYID** - Vaccinator id.
  - **BYNAME** - Vaccinator name
  - **LOT** - Manufacturer lot number.
  - **MVX** - Manufacture MVX code.
  - **ROUTE** - Route of administration.
  - **SITE** - Site of administration (on body).
  - **HIST** - Vaccination was not administered here.
  - **VACCVFC** - Vaccination VFC status.
  - **ATID** - Facility where vaccination given.
  - **EXP** - Expiration date, not used.
  - **VACCTYPE** - Vaccination was publicly or privately supplied.
  - **ACTION** - Vaccination was added, updated, or deleted.
- **CPT** - This is the code that will be imported into IWeb. If no CPT code is specified, then this code will not be put in the XML.
- **DOSE** - The dose number this code belongs to. Although this is not imported into IWeb, it is important to know which dose number a code refers to so it can be distinguished when multiple doses are sent together. This must be filled in.

- **OBS ID** - Another internal representation of the OBS CODE. Both codes are sent in HL7 messages and IWeb only reads the OBS ID. The OBS CODE is the one seen by Logician users.
- **DESCRIPTION** - Short description of the code.
- **ADDITIONAL DESCRIPTION** - Longer description of the same code.

When working with a new interface, make sure that all the codes that they plan to send you are represented in the worksheet.

When you are ready to extract the XML, switch to the "XML" sheet and copy the contents in Column A and paste them into the observation settings box on the HL7 Server settings page.

Important: The XML is automatically generated using Excel formulas. If rows are added or removed from the "CODES" spreadsheet it will affect the formulas on the "XML" spreadsheet. All the formulas, except the top and the bottom are the same. Make sure there is a formula for each row that you are putting into the XML. If you are having difficulty with the formulas, consult with someone familiar with MS Excel. Remember, the MS Excel spreadsheet has been created for your convenience; it is not required for creating the XML. There may be other ways of managing the codes that work better for you.

EXPORTING LOGICIAN DATA

The Logician administrator configures the interface and specifies a Flowsheet that lists all the codes that are to be exported. This Flowsheet will contain the immunization codes they use and will correspond to the XML you have created.

Logician data is exported using the LabLink interface in LinkLogic. Data can be sent via TCP/IP (MLLP) or saved to a file. The HL7 Bridge can be configured to either accept the data by TCP/IP or file. Either way works fine.

Setting up Logician is beyond the scope of this document but directions may be found by reading the Power Point Presentation titled "How to set up Immunization Outbound B" which has been helpfully offered by another Logician administrator. Logician administrators have found this presentation useful in helping them create the export file. GE Centricity should be consulted if further assistance is needed.

CONFIGURING THE REMOTE CONNECTION QUERY INTERFACE

Most of this document concerns how to handle incoming data. This section will describe how to setup IWeb to query other registries. This functionality is what makes it possible for IWeb to participate in state-to-state queries.

It is important to clarify terms. The ***remote registry*** is the registry that is being queried for information. The ***local registry*** is the registry that is doing the querying. Bi-directional interfaces will mean that both systems will act in both roles.

In order for IWeb to be able to query another registry, the following things have to be available:

1. The remote registry must have a URL that is accessible from the server.
2. The remote registry must have a valid certificate that matches the name in the URL (not needed if a non-secure connection is used for testing).
3. The remote registry must configure an incoming account.

Once the remote registry has set up an incoming HL7 account, they must send the username, password, and URL to the local registry. The local registry then must create a remote connection. Here are the steps:

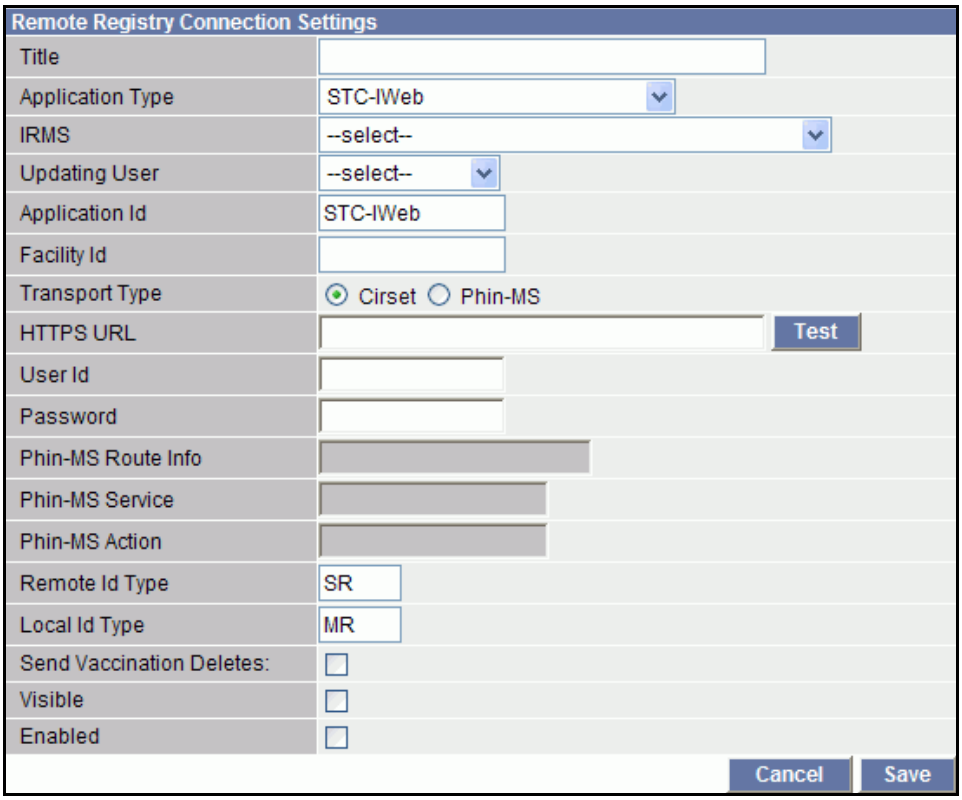
1. Login to **IWeb** as an administrator and select an **IRMS**.
2. Click on **Patient** and then **Remote Registry**. The "Remote Registry Connections" window appears.

Figure 8-9: Remote Registry Connections

Note: From this page, an administrator can add and edit remote connections. Regular users and administrators can also query remote connections from this page once a remote connection has been created.

3. Click the **NEW** button to create a new connection. The "Remote Registry Connection Settings" window appears.

Figure 8-10: Remote Registry Connection Settings



4. The fields and their descriptions are listed in the table.

Table 8-10: Remote Registry Connection Settings Field Descriptions

FIELD	DESCRIPTION
Title	The title of this connection as it will be shown to all IWeb users.
Application Type	The type of application that is being queried. For non-IWeb applications choose CDC Standard.
IRMS	This option is **not** normally selected. Unless you have a reason to, you should leave this unselected. This is used to indicate which IRMS in this IWeb represents the remote registry.
Updating User	This option is **not** normally selected. Unless you have a reason to, you should leave this unselected. This is used to indicate which user the remote

FIELD	DESCRIPTION
	registry uses to send updates with.
Application Id	The unique application id of the remote system. This, in combination with the facility id, must be unique within this IWeb instance. This application id is found in the MSH header.
Facility Id	The unique facility id of the remote system. This, in combination with the application id, must be unique within this IWeb instance. This facility id is found in the MSH header. This is a different concept from IRMS facilities.
Transport Type	The way the query will be sent. Normally choose CIRSET.
HTTPS URL	The URL of the other system as supplied by the remote administrator. The **TEST** button simply opens a new window and displays the results going to that URL. If the URL is from an IWeb system, you will see the HL7 Real-time interface. This can be used to verify that the URL has been typed correctly. This test also shows that your computer can connect to the real-time server, but it does not show whether the server itself can connect.
User Id	The username/userid as supplied by the Remote Registry administrator.
Password	The password as supplied by the remote registry administrator.
Phin-MS Route Info	This is only needed if the PHIN-MS option is selected. Consult PHIN-MS documentation to determine the values for these fields.
Phin-MS Service	
Phin-MS Action	
Remote Id Type	This is the id that is used to designate the remote systems id for a patient. This should normally be 'SR'.
Local Id Type	This is the id that is used to designate this registry's

FIELD	DESCRIPTION
	id for a patient. When querying, IWeb acts as a non-registry and designates its ids as Medical Record Numbers (MR) and expects the connecting system to designate its id as the State Registry Id (SR).
Send Vaccination Deletes	Some systems do not recognize vaccination deletes, but instead treat them as vaccination updates/adds. Only check this box if you are sure the receiving system understands vaccination deletes. IWeb understands vaccination deletes.
Visible	Check this box to make this connection visible to all users.
Enabled	Check this box to make this connection usable. Regular users will only be able to see and use a connection when both the visible and enabled options are selected. Administrators can see and use a connection even when it is not visible to other users.

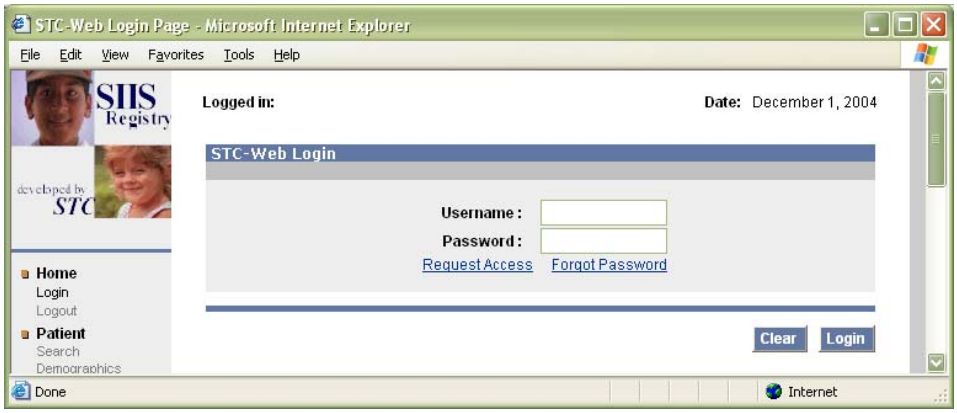
5. Enter the appropriate information and click the **SAVE** button.
6. Now the connection is available for all IWeb users to use.
7. After this is complete the roles are flipped and this process is repeated to enable the connection the other way.

USER AGREEMENT SUPPORT

Some states require users from the remote state to sign a user agreement before being allowed to query. This process can be facilitated if both systems use IWeb. The process is quite simple from the user's perspective and looks like this:

1. The user points to the URL for the IWeb application. The "STC – Web Login" window appears.

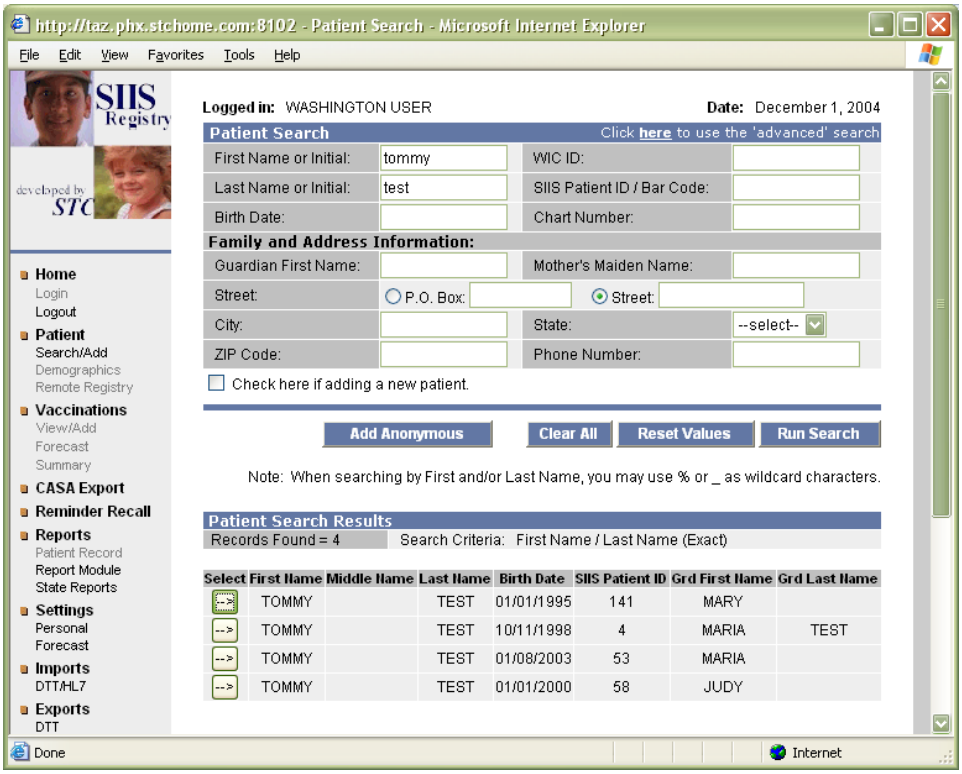
Figure 8-11: STC Web Login



2. Enter a valid username/password and click the **LOGIN** button.

3. Click the **PATIENT** menu and then click Search/Add. The "Patient Search" window appears.

Figure 8-12: Patient Search/Search Results

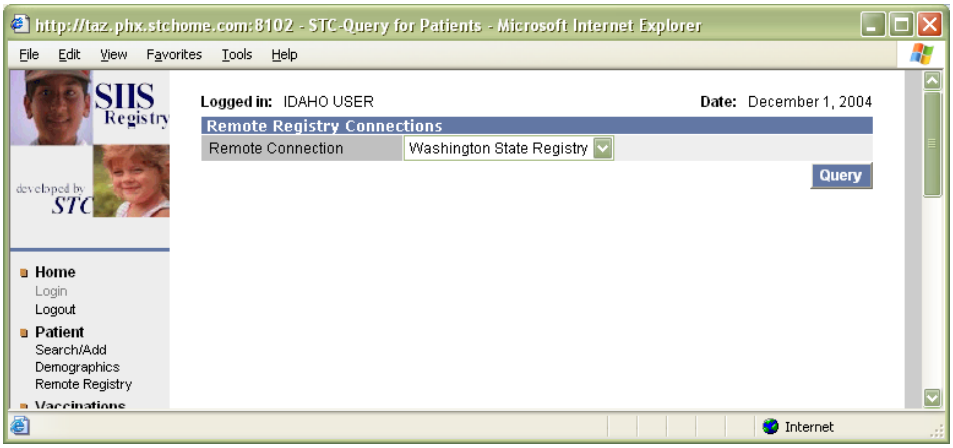


4. From the "Search Results," select the patient. The "Patient Demographics" window appears.

Figure 8-13: Patient Demographics

5. Click the **REMOTE REGISTRY** option. The "Remote Registry Connections" window appears.

Figure 8-14: Remote Registry Connections



6. Select the Remote Connection and click the **QUERY** button. The first time a user queries a specific state, the "Agreement" window appears (Washington is used in the illustration below).

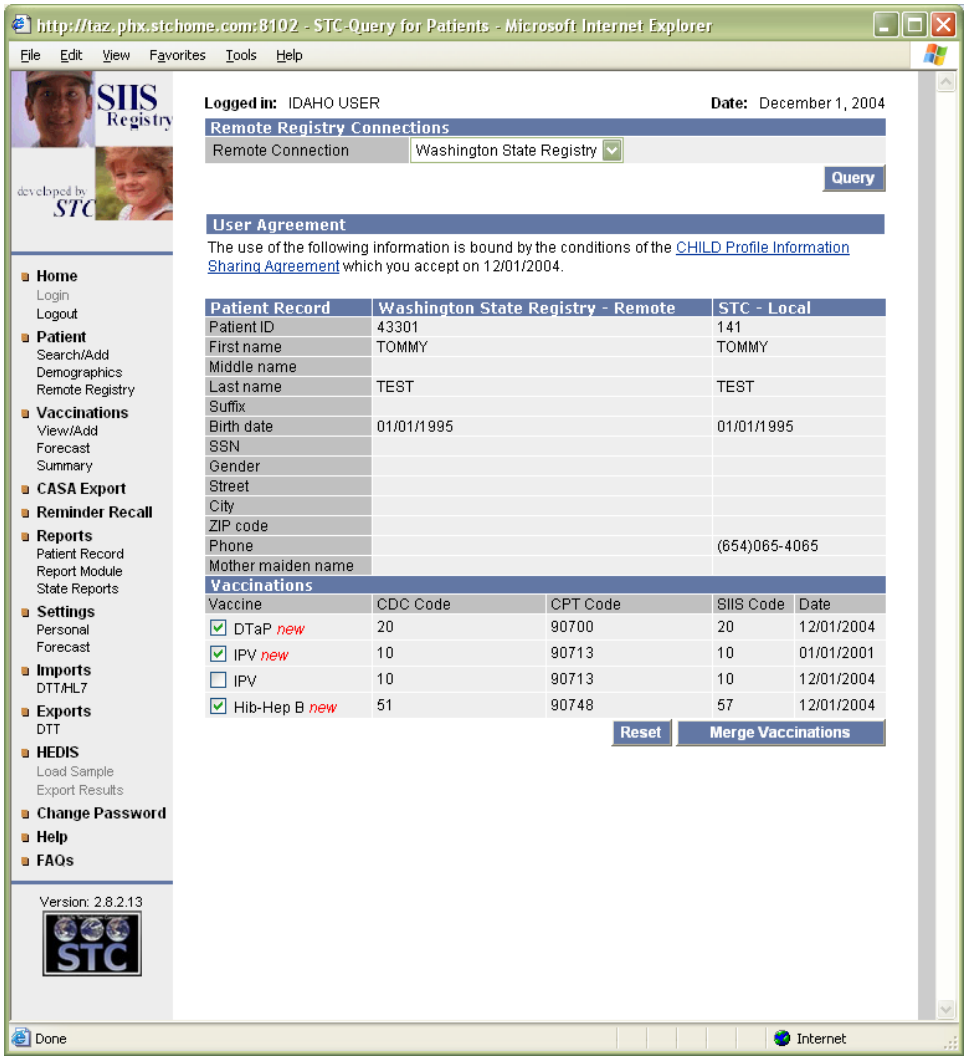
Figure 8-15: Agreement

7. If the user accepts the terms by clicking **YES**, the next screen shows all possible matches.

Figure 8-16: Possible Matches

8. Select the matching patient's vaccinations by clicking the desired **GET VACCINATION RECORD** button. The vaccinations that appear are those that can be imported. Notice the user agreement link that appears above the data.

Figure 8-17: Patient Record/Vaccinations



9. Click on **Merge Vaccinations** button to import the vaccinations.

Note: No Patient Demographics are saved in this process; only the vaccinations.

SETUP A USER AGREEMENT

If the remote system requires user agreements, then there are no configurations needed on your side. IWeb will automatically detect this and respond properly.

If you wish to setup a user agreement that Remote Systems agree to, then the following steps are needed to accomplish this:

1. Develop the text of the user agreement. There are two pieces, the title and the text. The title should be not be too long and the text a set of plain-text paragraphs to form the body of the agreement. There is no support for formatting or font changes.
2. Add the title and text in the administrator's HL7 Interface settings page, which can be found on the administrator's properties page.
3. Edit the HL7 Settings of each connection that you wish this agreement to apply to and indicate that the user agreement should be enforced. Do not enable this for non-IWeb applications as the user agreement process will not be understood and will effectively disable their query ability.

If the text of the agreement changes there are two things you can do:

1. If the change is minor and users do not have to re-agree, then simply update the agreement text in IWeb and all new query users will see the new agreement text.
2. If the change requires all users to re-agree, then reset the user agreement id. This will force everyone to re-agree next time they query for a patient record.

It is important to know that the agreement is not stored on the remote system, instead it is only sent when a user is required to agree to it. This means that registries store and maintain their own agreement. The remote system only displays the remote agreement when needed and then discards it. This is why changes to the agreement need only be made once, at the local site.

9 ORGANIZING INTERFACE PROJECTS

Interface projects are a challenge to organize, run and complete successfully. At first it may seem that interfacing systems would be quite easy. "Let's hook up the systems so we can share data!" But the reality is that there are many details that have to be decided:

1. What data needs to be shared?
2. How is the data going to be formatted?
3. How is the data going to be sent?
4. How is the data going to be incorporated into the new system?
5. How are data quality problems and inconsistencies going to be handled?
6. How often will data be sent?
7. What events will trigger data being sent?

HL7 only solves the second question!

The initial perception for HL7 projects is that since both systems are using HL7 that this will automatically answer all the above listed questions. Unfortunately, HL7 only answers the second question. The integration process has to answer all of the other questions. It is important to organize projects so that steady progress can be made answering these questions. With so many participants it is easy for the process to stall.

PROJECT STAGES

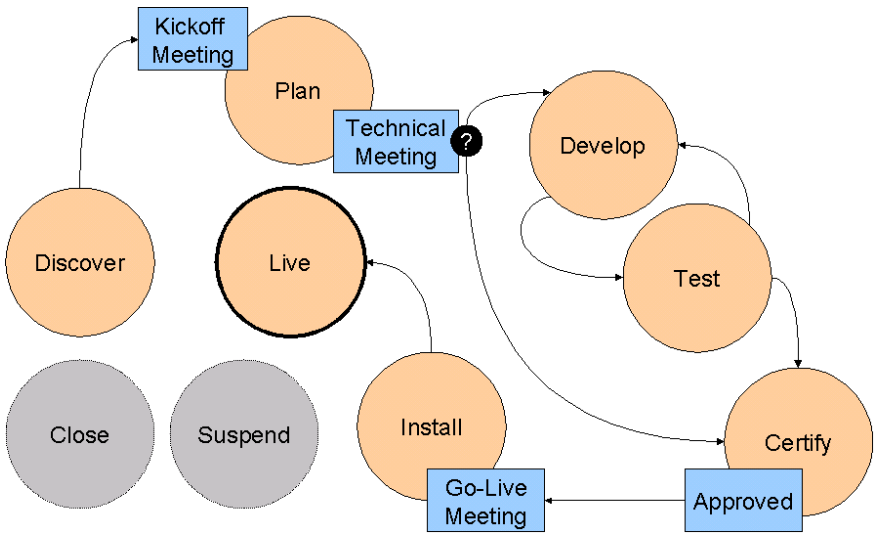
An interface project should be broken up into stages. Tracking by stages will help participants focus on what needs to be done next. Here are the stages:

- **Discover** – The project is proposed but the details are not known at this point. This is the initial stage, no work has been completed.
- **Plan** – After it is decided that an interface would be a good idea, a *kickoff meeting* is held and plans are made for the new interface. This meeting must include technical and management people. If the project is complete, the planning stage may include formal

documents, technical meetings, and presentations. Simple projects may get by with less planning.

- **Develop** – If there is technical work involved in this project, it will have to be developed. This technical work can happen on either or both sides of the interface. Developers will take the requirements that were created in the *Planning stage* to make changes.
- **Test** – The developers will need to test their new interface before declaring their work to be done. They will have to go back and forth to the *Develop Stage* until they are able to interface properly.
- **Certify** – This stage is to certify that the data quality coming from the source system meets the data quality standards of the receiving system. For registries receiving data this means that they are doing the data quality check. If the data is going from the registry to another system, then that system is doing the data quality check.
- **Install** – Now that the software and the data has passed inspection, the interface can be installed. A meeting should be held with the same participants as the *Kickoff Meeting* and the final decision to go live should be made.
- **Live** – The interface is now live. The certification process should be repeated regularly to ensure data quality.

Figure 9-1: Project Stages



By tracking projects in these stages it can be easier to show progress to highlight the areas of effort that need focus. It also prevents

discouragement by creating a clear road map that can be used to gauge success.

QUALITY ASSURANCE

Assuring data quality is very important. There are three aspects to data quality that need to be verified:

- **Completeness** – Is data missing?
- **Accuracy** – Is the data wrong?
- **Timeliness** – Is the data late?

There are three different opportunities to detect these kinds of problems:

- **Certification** – When the interface is certified before it goes live.
- **Receiving Data** – When the interface is live and data is accepted.
- **Reviewing Data** – When the data is already in the database.

Certification is the best opportunity to catch problems as they are easy to see and can be stopped before they are put in the registry.

Receiving Data is the last opportunity to check for problems before accepting the data but only a limited set of problems can be detected at this point.

Reviewing Data can catch problems that were missed and new problems that occur after the new interface has gone live.

All three of these opportunities should be used to improve data quality.

CERTIFICATION

Creating and standardizing the certification process is critical. A checklist of data quality problems needs to be created and reviewed with each new interface. Problems that are encountered should be added to the list of problems to check.

One of the first checks that should be made is a data completeness check. IWeb has only a few required fields and so it is important to make sure that new interfaces are normally sending information such as addresses, phone numbers, etc.

A data completeness check requires that the sender give at least a 1000 patients (or one month's worth) to review. Some senders want to certify using only one or two test patients. But for a proper certification you will need many real patients. Test patients are okay when testing software for proper functionality but not for certifying data from a new provider.

Important: The difference between testing and certifying is that testing refers to *software* testing, and is the process where software developers verify that the software is operating as specified; and certifying refers to *data quality* certification and is a process of verifying that the data created/sent by the software meets certain criteria. For example, software testing can verify that a patient's address can be formatted and sent properly in the HL7 message; and data quality certification can verify that the users at a particular clinic consistently enter the address information correctly so that it can be transmitted correctly to the registry. Software testing need only be completed when software changes are made. Data quality certification needs to be conducted on any new interface, even if it uses the same software as another successful interface.

This data should be submitted to a test system and an analysis of what data was received conducted. A standard report should be generated. Here is an example of one such report that may be used:

SAMPLE CERTIFICATION REPORT

Here is a sample certification report that was generated in an interface project in Indiana. This was the first test file. An overall completeness score of 68% was assigned. Based on this report another test file was generated with several improvements and the overall score was raised to 86%. The interface then passed certification and was approved to go live.

Figure 9-2: Sample Certification Report

Test Results

File Format ..... HL7 VXU
Date 12/21/2005
Tester ..... Nathan Bunker

Records Received	Count	Percent
Record Count	3,290	
Records Accepted	3,202	97%
Records Rejected	88	2%
Unique Patients	2,597	78%
Vaccination Count	3,290	
Vaccinations Accepted	3,202	97%
Unique Vaccinations	3,197	97%

Problems Found

1. RXR can be empty but to avoid this problem set RXR|. Then this message, and the one after it will process properly.
2. The Manufacturer code was not recognized. Please use valid MVX codes.
3. You are not sending any guardian information. This is very helpful in matching patients.
4. Do you have historical immunizations in your system? If so they should be marked as such.

Patient Data

Patient Fields	Count	Percent
First Name	3,202	97%
Last Name	3,202	97%
Date of Birth	3,202	97%
Middle Name	2,491	75%
Suffix	5	0%
Gender	3,202	97%
SSN	2,600	79%
Medicaid		
Birth File Number		
Birth Order		
Race		
Ethnicity		
Language		
VFC Eligible		
Street 1	3,202	97%
Street 2	107	3%
City	3,202	97%
State	3,202	97%
County		
Zip	3,202	97%
Phone	3,179	96%
Email		
Registry Status		
Mother Maiden Name		
Guardian First Name		
Guardian Last Name		
Guardian SSN		
Primary Facility		
Primary Physician		

Gender	Count	Percent
F : FEMALE	1,848	56%
M : MALE	1,354	41%

Year of Birth	Count	Percent
2005	220	6%
2004	124	3%
1938	83	2%
1936	77	2%
1935	75	2%
1932	70	2%
1924	61	1%
1926	61	1%

1923	60	1%
1930	59	1%
1937	59	1%
2000	59	1%
1939	58	1%
1933	57	1%
1925	55	1%
1942	53	1%
1929	52	1%
1931	52	1%
1947	52	1%
1934	51	1%

Only the first 20 records shown

Suffix	**Count**	**Percent**
[NS]	3,197	97%
JR	3	0%
SR	2	0%

Race	**Count**	**Percent**
[NS] :	3,202	97%

Ethnicity	**Count**	**Percent**
[NS] :	3,202	97%

Patient VFC Eligible	**Count**	**Percent**
[NS] :	3,202	97%

City	**Count**	**Percent**
LAFAYETTE	1,376	41%
MONTICELLO	598	18%
WEST LAFAYETTE	267	8%
MONON	78	2%
DELPHI	67	2%
FRANKFORT	59	1%
BROOKSTON	52	1%
WILLIAMSPORT	43	1%
ATTICA	37	1%
BATTLE GROUND	35	1%
OTTERBEIN	33	1%
REYNOLDS	32	0%
W LAFAYETTE	29	0%
CLARKS HILL	28	0%
IDAVILLE	28	0%
BURNETTSVILLE	23	0%
LOGANSPORT	22	0%
CRAWFORDSVILLE	21	0%
ROSSVILLE	20	0%
CHALMERS	18	0%

Only the first 20 records shown

State	**Count**	**Percent**
IN	3,182	96%
IL	13	0%
OH	2	0%
FL	1	0%
MI	1	0%
MN	1	0%

GA	1	0%
HI	1	0%

Duplicate MRNs

MRN	First Name	Last Name

Patient Names to Consider

First Name	Middle Name	Last Name
CHART	T	TEST

Vaccination Data

Vaccination Fields	Count	Percent
Vaccination Date	3,202	97%
CVX Code	3,202	97%
CPT Code		
Historical		
Lot Number	2,985	90%
Manufacturer	36	1%
Vaccinator	239	7%
VFC Eligible		
Facility	3,202	97%

Vaccine	Count	Percent
Influenza--unspecified	2,278	69%
Pneumococcal - unspecified	232	7%
Pneumococcal(PCV7)	123	3%
Td (Adult)	122	3%
Influenza Split	80	2%
DTaP/Hep B/IPV	74	2%
MMR	48	1%
Hib--PRP-OMP	43	1%
IPV	39	1%
PPD Test	30	0%
Hib--PRP-T	24	0%
Hep B/Hib	22	0%
DTaP	21	0%
Varicella	19	0%
HBIG	18	0%
Meningococcal Conjugate (MCV4)	10	0%
DTaP/Hib	7	0%
Influenza Nasal Spray	7	0%
Hepatitis B--adol. or pediatric	2	0%
Tetanus Toxoid, adsorbed	2	0%
Hep A/Hep B - Adult	1	0%

Vaccines with Manufacturer	Count	Percent
Influenza--unspecified	2,278	69%
Pneumococcal - unspecified	229	6%
Pneumococcal(PCV7)	123	3%
Td (Adult)	120	3%
Influenza Split	79	2%
DTaP/Hep B/IPV	72	2%
MMR	48	1%
Hib--PRP-OMP	43	1%
IPV	39	1%

PPD Test	30	0%
Hib--PRP-T	24	0%
Hep B/Hib	19	0%
DTaP	21	0%
Varicella	18	0%
HBIG	16	0%
Meningococcal Conjugate (MCV4)	10	0%
DTaP/Hib	2	0%
Influenza Nasal Spray	7	0%
Hepatitis B--adol. or pediatric	2	0%
Tetanus Toxoid, adsorbed	2	0%
Hep A/Hep B - Adult	1	0%

Vaccines with Lot Numbers	**Count**	**Percent**
Influenza--unspecified	2,166	65%
Pneumococcal - unspecified	192	5%
Pneumococcal(PCV7)	105	3%
Td (Adult)	106	3%
Influenza Split	78	2%
DTaP/Hep B/IPV	67	2%
MMR	48	1%
Hib--PRP-OMP	40	1%
IPV	36	1%
PPD Test	26	0%
Hib--PRP-T	23	0%
Hep B/Hib	16	0%
DTaP	20	0%
Varicella	19	0%
HBIG	17	0%
Meningococcal Conjugate (MCV4)	8	0%
DTaP/Hib	7	0%
Influenza Nasal Spray	7	0%
Hepatitis B--adol. or pediatric	2	0%
Tetanus Toxoid, adsorbed	2	0%
Hep A/Hep B - Adult	0	0%

Vaccinator	**Count**	**Percent**
[NS] :	2,963	90%
288 :	196	5%
715 :	15	0%
759 :	8	0%
564 :	7	0%
464 :	6	0%
748 :	2	0%
354 :	1	0%
480 :	1	0%
950 :	1	0%
952 :	1	0%
504 :	1	0%

Manufacturer	**Count**	**Percent**
AVE :	2,515	76%
MER :	372	11%
WYE :	107	3%
GLA :	93	2%
MAS :	50	1%
[NS] :	19	0%
LED : LEDERLE (Use WAL)	17	0%

CON : CONNAUGHT (Use PMC)	12	0%
MED : MEDIMMUNE, INC.	7	0%
ORG :	6	0%
SAN :	4	0%

Lot Number	Count	Percent
U1803AA	1371	41%
U1830AA	777	23%
[NS]	217	6%
1048P	49	1%
TD-139	44	1%
1046P	33	1%
0790P	30	0%
1006P	30	0%
TD-144	24	0%
0792P	23	0%
TD-146	19	0%
B08636A	16	0%
B08640F	15	0%
1038P	14	0%
A25964D	14	0%
A25964A	14	0%
AC21B033BA	13	0%
AC14A006BA	12	0%
U1083AA	11	0%
Y0264	11	0%

Only the first 20 records shown

Unrecognized Vaccinations

Vaccination Code	Count	Percent

Unrecognized Manufacturers

Manufacturer	Count	Percent
AVE	2515	76%
MER	372	11%
WYE	107	3%
GLA	93	2%
MAS	50	1%
ORG	6	0%
SAN	4	0%

Possibly Incorrect Lot Numbers

Lot Number	Count	Percent
U1803 AA	8	0%
U 1803 AA	7	0%
U 1803AA	6	0%
TD 139	4	0%
1038 P	2	0%
(L) C2155AA	1	0%
1046 P	1	0%
U 1803 AA	1	0%

U 1830AA	1	0%
U1350AA AND UE405AA	1	0%
° TD. 139	1	0%
UE714AA AND U1400AA	1	0%
UE560AA AND U1369DA	1	0%
U 1830 AA	1	0%
U 1830 AA	1	0%
U 1803A A	1	0%
TD 146	1	0%
TD - 139	1	0%
C	1	0%
+	1	0%

Import Scoring

Sample Size	**Count**	**Score**	**Weight**	**Total**
Unique Patient Records received	2,597	100%	. 50%	.. 50%
Unique Vaccination Records received	3,197	100%	. 50%	.. 50%
Total	100%			

Patient Data	**Count**	**Score**	**Weight**	**Total**
Records accepted	3,202	.. 97%	. 50%	.. 49%
Address Street count	3,202	.. 97%	. 10%	.. 10%
Highest SSN or Medicare count	2,600	.. 79%	. 10%	.... 8%
Highest Guardian Name count	0	.... 0%	. 10%	.... 0%
Phone Number count	3,179	.. 97%	... 5%	.... 5%
Lowest of City, State or Zip count	3,202	.. 97%	... 5%	.... 5%
Birth Order count	0	.... 0%	... 5%	.... 0%
Gender count	3,202	.. 97%	... 5%	.... 5%
Possible Bad Names count	2	.... 4%	. -5%	.... 0%
Total				.....81%

Vaccination Data	**Count**	**Score**	**Weight**	**Total**
Records accepted	3202	.. 97%	. 60%	.. 58%
Historical count	0	.... 0%	. 10%	.... 0%
Lot Number count	2985	.. 93%	. 10%	.... 9%
Manufacturer count	36	.... 1%	. 10%	.... 0%
VFC Status count	0	.... 0%	... 5%	.... 0%
VFC Status count	0	.... 0%	... 5%	.... 0%
Unrecognized Manufacturers count	3147	.. 98%	-20%	. -20%
Incorrect Lot Numbers count	42	.... 1%	-20%	.... 0%
Total				..... 48%

Overall Score	**Weight**	**. Total**
Sample Size	10%	100%
Patient Data	45%	.. 81%
Vaccination Data	45%	.. 48%
Total		.....68%

The overall score shown above is based on the relative benefit of different fields to the registry. The values chosen were based on past experience with incoming data. The overall score was used to communicate to interface participants how complete the data was and for giving confidence in decisions of whether to ask for improvements or to recommend that this interface go live. This process was shown to be very effective.

MIROW BEST PRACTICES

The Modeling of Immunization Registry Operations Workgroup (MIROW), which is sponsored by AIRA, is working on a document to be released in 2008 that recommends best practices for registries in regards to data quality. This report may be consulted for additional recommendations.

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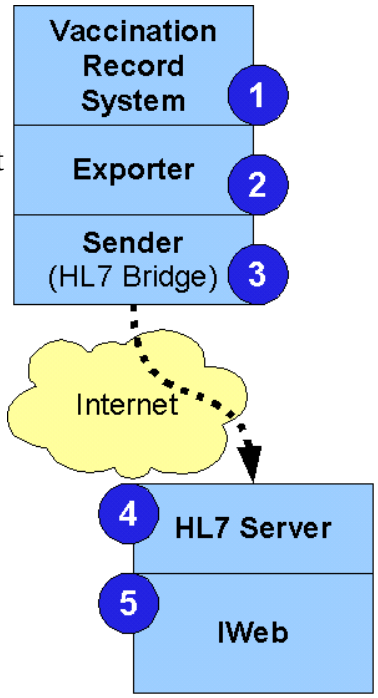
10 TROUBLESHOOTING

Troubleshooting interface problems is particularly difficult, but some simple steps and procedures can make the process more straightforward. Remember that figuring out what caused the problem is half the battle. Simple diagnostic problems can be used to find the problem and then the solution is usually pretty clear. Many times the diagnostic step is skipped because it appears to be too time-consuming or too difficult to complete. Here is how you find the problem.

FINDING THE PROBLEM

Interfacing is a process of moving data from one system to another. Along the way it goes through many different steps with each one having the potential to cause problems. The diagram shows the steps and systems that are normally seen in IWeb interface projects. Interfaces may vary but more-or-less have these steps. The very first thing to do is to determine at which step the problem is occurring. When reviewing a particular step you must verify that it is working properly, **do not assume**. You will many times find that the problem lies in a place that you assume to be working correctly. So always take the time to verify your assumptions.



To determine which step the problem has occurred look at what kind of a problem you have:

1. Delivery problem – Data is not being sent or received as expected
2. Data problem – Incorrect or missing data is being sent or received

Delivery problems tend to occur in the middle steps, data problems tend to happen at the beginning and end steps. For example do not look at the HL7 Bridge first when there is a problem with the zip code on patient addresses; this most likely indicates a problem with the sending or

receiving end. But if the message never shows up, the HL7 Bridge is a good place to start.

If you have multiple problems, just start with one that seems to be representative of all the problems. For example, if all patients are coming in with no zip code, you do not need to look at each one to figure out what is going on. Just pick one and find out why that one is not working properly.

A good way to start is to cut your problem in half by picking a middle point and verify that the process is working properly. Have you ever played the game where you guess the number between 1 and 100 that the other player is thinking of? For every guess they say higher or lower. With only a few guess you can figure out the answer if you always start in the middle. Do the same with troubleshooting. Start in the middle and first figure out if the problem is on the sending side or receiving side. Once you determine which side then you can look in the middle of that process and pinpoint exactly where the problem is occurring.

Here is a description of the points and the problems that occur in each one:

POINT 1: VACCINATION RECORD SYSTEM

The vaccination record system may be an EMR or PMS, or another registry. From IWeb's perspective, it is a system that holds vaccination records.

Question to ask: Is the data stored here correctly, as we expect it to be? This can be verified by reviewing records directly in the sending system.

POINT 2: EXPORTER

Sometimes the exporter is built into the sending system, sometimes it is a module, and sometimes it is a separate application. The exporter is responsible for reading the data and transforming it into the HL7 message.

Question to ask: Is the exporter transforming the data appropriately when it creates the HL7 message? This can be verified by comparing the record in the sending system database with the HL7 message that was created.

POINT 3: SENDER

The sender is responsible for getting the HL7 message to IWeb. Sometimes the sender is built into the exporter, and other times it is a separate application. The STC HL7 Bridge is a sender for systems that are not able to connect to IWeb by themselves.

Question to ask: Is the sender successfully connecting and sending the data as expected to IWeb? This can be verified by reviewing sender logs and HL7 Server logs in IWeb.

POINT 4: HL7 SERVER

The IWeb server acts as a receiver and HL7 translator. It receives the message, and saves the contents in IWeb or retrieves data from IWeb.

Question to ask: Is the data in the HL7 message being read properly? This can be verified by comparing the incoming message to the debug logs that the HL7 Server produces.

POINT 5: IWEB

IWeb is the final destination for the data. The data is pulled into IWeb using the deduplication process. The HL7 Server places the data in the pre-reserve tables where the IWeb deduplication process reads it.

Question to ask: Is the data in IWeb the same as what the HL7 Server saved to the pre-reserve tables? This can be verified by comparing the pre-reserve table contents or the HL7 debug log with what is in IWeb.

SOLVING THE PROBLEM

Once you have determined where the problem is now it is time to fix it. The problem can be fixed in different ways depending on the type of problem:

1. Configuration
2. Data Entry
3. Design
4. Functionality

Once a problem is found, the solution is usually easy to see, but even after the initial problem is fixed the real problem may still linger. It is important to make fixes that are permanent so that you do not have to keep coming back to the same problem. Here are some ways of doing this for each kind of problem.

CONFIGURATION

Incorrectly configured interfaces are the number one cause of interface problems. It is important for system operators to understand their interfaces, configure them properly, and document the appropriate configurations. Every interface should have a simple document that describes the necessary configuration parameters. In IWeb it is a good idea to print out the HL7 Settings page and save it in a binder for future reference. Write your notes on this page and when problems occur, verify that the interface is still configured as it should be.

DATA ENTRY

Interfaces can often have problems when users enter data they did not expect to see. Once you have identified a user data entry error, a few questions need to be asked:

1. Is this a rare problem or is it likely to happen again?
2. Is additional user training necessary?
3. Could the interface be changed to handle this problem better?

DESIGN

Even well built systems are sometimes not designed to properly handle some situations that are encountered. When this happens you may need to request changes to add new capabilities. Asking for changes to software is not always practical or possible, depending on the situation. Many vendors are not interested in customizing their software in order to accommodate immunization registries. In these cases, interfaces have to accept what capability there is.

FUNCTIONALITY

Even well built software will sometimes have problems. A functionality problem differs from a design problem in that the software does not act in the way that it was documented or designed. Functionality problems may be resolved under a warranty or support contract.

CONCLUSION

It is important to methodically resolve interface problems. It is easy to become too involved in an interface project and take personally how software and interfaces work. Always be professional. Do not criticize other people's systems or software; instead keep your focus on solving the problem at hand. Overall, you must be patient when working interface projects. If you expect to encounter setbacks and problems, you will be able to quickly and effectively deal with them.

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11 APPENDICES

APPENDIX A: SAMPLE MESSAGES

SAMPLE VXU MESSAGE

```
MSH|^~\&|^STC-IWeb&2.10.0.1^|KEVIN^STC-Nathan^|nathan^STC-IWeb^|^savetofile^|
    20050608111146||VXU^V04|1118254306762.100000010|P|2.3.1|
PID|1||43773^^^^MR||DOE^JOHN^C^^^^L||19420915|M|||||||||||||||||||||N|
PD1|||^^^^^^MR|^^^^^^^^^^^^MR|||||||02^Reminder/recall -any method^HL70215|||||  A^Active^HL70441|
ZSP||^^PH~^^FX~^INTERNET^NET|
PV1||R|
RXA|0|999|20041214|20041214|33^pneumococcal^CVX^90732^Pneumococcal(PPV23)^CPT~
    31^Pneumococcal(PPV23)^STC0292|999|||00^New immunization record^NIP001||||||||||||
    A|20050608111146|
RXR|OTH^Other/Miscellaneous^HL70162|
ZSV|^^^^^^MR~^^^^^^SR|^^PH~^^FX~^INTERNET^NET|
RXA|0|999|20021122|20021122|15^influenza, split (incl. purified surface antigen)^CVX^
    90658^Influenza Split^CPT~61^Influenza Split^STC0292|999|||00^New immunization record^
    NIP001||||||||||||A|20050608111146|
RXR|OTH^Other/Miscellaneous^HL70162|
ZSV|^^^^^^MR~^^^^^^SR|^^PH~^^FX~^INTERNET^NET|
RXA|0|999|20041214|20041214|15^influenza, split (incl. purified surface antigen)^CVX^
    90658^Influenza Split^CPT~61^Influenza Split^STC0292|999|||00^New immunization record^
    NIP001||||||||||||A|20050608111146|
RXR|OTH^Other/Miscellaneous^HL70162|
ZSV|^^^^^^MR~^^^^^^SR|^^PH~^^FX~^INTERNET^NET|
```

SAMPLE ACK MESSAGE

```
MSH|^~\&|^^|DOE^^|DCC^^|DOE^^|20050829141336||ACK^|1125342816253.100000055|P|2.3.1|
MSA|AE|00000001|Patient id was not found, must be of type 'MR'|||^^HL70357|
ERR|PID^1^3^^^HL70357|
```

SAMPLE VXQ MESSAGE

```
MSH|^~\&|DBO^QSInsight^L|QS4444|5.0^QSInsight^L||20030828104856+0000||VXQ^V01|QS44443786100000004
    2|P|2.3.1|||NE|AL|
QRD|20030828104856+0000|R|I|QueryID01|||5|000000001^Bucket^Pail^^^^^^^^^^MR|VXI|SIIS|
QRF|QS4444|20030828104856+0000|20030828104856+0000||100000001~19460401~~~~~~~~~~1 Somewhere Lane
    Boulevard^Indianapolis^IN~10000|
```

SAMPLE QCK MESSAGE

```
MSH|^~\&|5.0^QSInsight^L|^^|DBO^QSInsight^L|QS4444^^|20051019154952||QCK^|1129754992182.100000002
    |P|2.3.1|
MSA|AA|QS444437861000000042|No patients found for this query|
QAK||NF|
```

SAMPLE VXX MESSAGE

```
MSH|^~\&|5.0^QSInsight^L|^^|DBO^QSInsight^L|QS4444^^|20051019163235||VXX^V02|1129757555111.100000
    025|P|2.3.1|
MSA|AA|QS444437861000000042||
```

```
QRD|20030828104856|R|I|QueryID01|||5|10^SNOW^MARY^^^^^^^^^^SR|VXI^Vaccine
    Information^HL70048|SIIS|
QRF|QS4444|20030828104856|20030828104856||100000001~20021223|
PID|1||41565^^^^SR~2410629811:72318911||SNOW^MARY^^^^^L||20021223|F|||2 NORTH WAY
    RD^^MOORESVILLE^INDIANA^46158^^M||(317)123-4567^^PH||EN^English^HL70296|||||||||||||||N|
PID|2||28694^^^^SR~2663391364:111111111||FROG^KERMIT^^^^^L||20021223|
NK1|1|PIGGY^MISS|GRD^Guardian^HL70063|
```

SAMPLE VXR MESSAGE

```
MSH|^~\&|5.0^QSInsight^L|^^|DBO^QSInsight^L|QS4444^^|20051019163315||VXR^V03|1129757595953.100000
    029|P|2.3.1|
MSA|AA|QS444437861000000042||
QRD|20030828104856|R|I|QueryID01|||5|41565^SNOW^MARY^^^^^^^^^^SR|VXI^Vaccine
    Information^HL70048|SIIS|
QRF|QS4444|20030828104856|20030828104856||100000001~20021223|
PID|1||41565^^^^SR~2410629811:72318911||FROG^KERMIT^^^^^L||20021223|F|||3 SOUTH WAY
    RD^^MOORESVILLE^INDIANA^46158^^M||(317)222-1234^^PH||EN^English^HL70296|||||||||||||||N|
PD1|||^^^^^^SR|^^^^^^^^^^^^SR|||||||02^Reminder/recall -any method^HL70215|||||A^Active^HL70441|
PV1||R|
```

SAMPLE ORU MESSAGE

```
MSH|^~\&|LinkLogic-2149|2149001^BMGPED|CHIRPS-Out|BMGPED|20060915210000||ORU^R01
    |1473973200100600|P|2.3|||NE|NE
PID|1||00000-0000000|000000|AAAAAAAA^AAAAAA^A||00000000|M||U|00000 A AA AA AAA^^AAAAAA^AA^00000
    ||(000)000-0000|||S|||000-00-0000
PV1|1|O|^^^BMGPED||||dszczepaniak
OBR|1|||5^Preload|||20060915095920|||||||donaldduck||ZZ
OBX|1|ST|CPT-90707.2^MMR #2||given||||||R|||20040506095950
OBX|2|ST|CPT-90737.4^HEMINFB#4||given||||||R|||19931103100050
OBX|3|ST|CPT-90707.1^MMR #1||given||||||R|||19931103095950
OBX|4|ST|CPT-90731.3^HEPBVAX#3||given||||||R|||19930712100120
OBX|5|ST|CPT-90731.2^HEPBVAX#2||given||||||R|||19930112100120
OBX|6|ST|CPT-90737.3^HEMINFB#3||given||||||R|||19930112100050
OBX|7|ST|CPT-90731.1^HEPBVAX#1||given||||||R|||19921027100120
OBX|8|ST|CPT-90737.2^HEMINFB#2||given||||||R|||19921027100050
OBX|9|ST|CPT-90737.1^HEMINFB#1||given||||||R|||19920826100050
```

APPENDIX B: FIELD NOTES

These field notes provide field-by-field documentation and discussion. These notes should be used in tandem with the CDC guide for immunization messages.

MSH: MESSAGE HEADER SEGMENT

The Message Header segment is required for all HL7 messages and is used by IWeb to signal the start of a new message. Batched messages may be sent together with or without batch headers/footers or file headers/footers. Batch and file header/footer segments are ignored.

MSH-1: FIELD SEPARATOR

The Field Separator is recommended to be the vertical bar "|", but may be any value legal in HL7. IWeb will parse the rest of the message based on this field.

MSH-2: ENCODING CHARACTERS

The Encoding Characters are read to determine how the rest of the message will be constructed. The default values or custom values will both work equally well. The default values are recommended because they allow for easier reading of the HL7 message when reviewed by HL7 administrator users.

ESCAPE CHARACTER

It is important to understand that the escape character in HL7 **does not** work the same as escape characters in other languages such as C++ or Java. When used escape characters must come in pairs (except in this field where it is only listed once.) To escape the character you must have a starting escape and ending escape that wraps around a code representing the escaped character. Refer to the HL7 documentation on how to use escape characters.

Single escape characters in the body of an HL7 message will cause the HL7 message to be rejected. It is important to always remove or escape

all encoding characters before placing in HL7 messages. An unescaped escape character will cause the parser to reject this message.

MSH-3: SENDING APPLICATION

The Sending Application is the identification of the software application that is sending the message. The sending application is expected in the MSH-3.2, but if blank will be read from MSH-3.

For IWeb applications the sending application is IWeb.

MSH-4: SENDING FACILITY

The Sending Facility indicates the facility that is sending the data. IWeb reads this from MSH-4.2, but if empty reads it from MSH-4.

For IWeb applications the sending facility is the name of the registry (e.g., CHIRP).

The sending facility is logged as the "user" in the HL7 import logs.

MSH-5: RECEIVING APPLICATION

The name or ID of the application that this message has been constructed for, and should be sent to. IWeb assumes that this is a value determined by the application vendor and is similar across the same application. The name or ID is used for routing the message to its appropriate end-point, but in point-to-point environments it may only be used for logging.

	HL7 sub-field	
1	Namespace ID (IS)	
2	Universal ID (ST)	
3	Universal ID type (ID)	

IWeb reads the application name from `Universal ID` if sent, or from Namespace ID.

This field is important when routing messages, but IWeb does not route messages. IWeb is a final destination for messages so will accept any message without regard to receiving application indicated on the message.

MSH-6: RECEIVING FACILITY

The Receiving Application is the name of the application that the message is being sent to. This field is important when routing messages, but IWeb does not route messages. IWeb is a final destination for messages so will accept any message without regard to receiving facility indicated on the message.

MSH-7: DATE/TIME OF MESSAGE

The Date/Time of the Message is the date and time of when the message was constructed. This is **not** the date/time of when the event that triggered this occurred. IWeb takes no action on this field, but it should still be sent.

MSH-8: SECURITY

The Security field is ignored by IWeb.

MSH-9: MESSAGE TYPE

The Message Type field indicates what kind of message is being sent and what trigger occurred to have it sent. This field is required by IWeb and is essential for determining what kind of action should occur to handle this message.

Several important points about message types:

- Messages with an unrecognized message type will be acknowledged with an error.
- Messages sent together in a batch may have different message types.
- Triggers are required for some messages (ADT) and optional for others (VXU).

MSH-10: MESSAGE CONTROL ID

The Message Control ID is required and is returned with all acknowledgements. This unique id allows the sending system to match the reply message with the request message.

This field is essential when messages are sent asynchronously. But IWeb's interface is synchronous so senders can safely assume that if 10 request messages were sent and 10 responses were received back, that the 10 responses are in the same order and correspond directly to the 10 requests. In this way sending applications can choose whether to use the message control id or not.

MSH-11: PROCESSING ID

The Processing ID indicates under what processing rules this application should be handled. Here are the ids supported:

- **D**: Debugging
- **T**: Training
- **P**: Production

It is important to always send HL7 messages to IWeb as "P" for production. The other methods behave differently.

D: DEBUGGING

In the debugging processing mode messages are received and validated, but they are not processed. Any warnings encountered are returned as errors.

T: TRAINING

In the training processing mode the messages are received, validated and processed and then the request is rolled back. But because IWeb must immediately commit, the entire transaction cannot be rolled back. Thus, training messages will be committed as regular processing messages.

P: PRODUCTION

In the production processing mode, the messages are processed properly. Always use this mode even when connecting to a test system as it will then behave as it will in production.

MSH-12: VERSION ID

The Version ID indicates which HL7 version rules apply to this message. As HL7 versions are backwards compatible, IWeb assumes version 2.3.1 is being used and does not check for version. Any value sent in this field will be ignored.

MSH-13: SEQUENCE NUMBER

The Sequence Number field is ignored by IWeb.

MSH-14: CONTINUATION POINTER

The Continuation Pointer field is ignored by IWeb.

MSH-15: ACCEPT ACKNOWLEDGMENT TYPE

The Accept Acknowledgment Type is ignored by IWeb.

MSH-16: APPLICATION ACKNOWLEDGMENT TYPE

The Application Acknowledgment Type indicates whether or not an acknowledgment should be returned. By default IWeb will always return an acknowledgement. By changing this option this behavior can be changed:

- **AL**: Always return acknowledgement
- **NE**: Never return acknowledgment
- **ER**: Only return acknowledgment when an error occurs

IWeb extends this option to indicate whether any message is returned, not just acknowledgments. This is if a query message is sent with NE specified, the query will be performed, but no response will be returned.

The acknowledgment type can be overridden on the HL7 Settings page.

FT1: FINANCIAL TRANSACTION

A FT1 segment is normally sent as part of a Detailed Financial Transaction (DFT) Message. An FT1 represents a single billable item. One DFT message usually represents an encountere and one or more FT1

segments represent the billable procedures. Some systems support HL7 in order to report billing information. These interfaces can be used to glean immunization data.

A few important points about DFT messages and FT1 segments:

- IWeb accepts but never sends DFT messages.
- IWeb processes DFT messages as a variation of the VXU message. This is because the structure is very similar. Where VXU and DFT share the same segments that same processing rules for VXU apply.
- There are two different FT1 formats that are currently in use. The biggest difference between them is where the CPT code is placed in the FT1 segment.
- DFT messages only contain a minimum of vaccination information.

FT1-4 Transaction Date

The date when the procedure was completed or in this case the date the immunization was given.

XML Definition

```
<value name="Vaccination Date" type="DateTime" format="M/D/Y"/>
<warn-if message="Missing vaccination date">
  <empty name="Vaccination Date"/>
</warn-if>
<error-if message="Invalid vaccination date">
  <or>
    <not-valid name="Vaccination Date"/>
    <greater-than name="Vaccination Date" value="tomorrow"/>
  </or>
</error-if>
```

FT1-6 Transaction Code

The transaction code is the action that should be taken for this item. Normally this indicates that the procedure should be billed, but in case of a mistake it can be used to indicate that a previously reported procedure should not be billed (because it had been sent in error). Unless marked as deleted, IWeb assumes the action is to add/update the shot.

XML DEFINITION

```
<value name="Action Code"/>
```

FT1-7 TRANSACTION CODE

The transaction code may be used to indicate the CPT code. This is where some Misys systems report their CPT code. If the CPT is sent in this field, it is important to select “MiSys” as the application type in the HL7 settings page.

The CPT code may also be sent in FT1-25.

XML DEFINITION

```
<query>
  <select>
    <value name="Vaccine Code CPT" type="CodedElement" tableId="CPT"/>
  </select>
  <where>
    <equal name="GLOBAL:Application Type" value="MiSys"/>
  </where>
</query>
```

FT1-20 PERFORMED BY

The performed by is the person who performed the procedure, in this case the vaccinator.

XML DEFINITION

```
<value name="Physician Id Remote"/>
<value name="Physician Name Last" index="2"/>
<value name="Physician Name First" index="3"/>
<value name="Physician Name Middle" index="4"/>
```

FT1-25 PROCEDURE CODE

The procedure code may be used to indicate the CPT code. If the system is “McKesson-Horizon Practice Plus” or a particular Misys system, then you will need to select this system from the application types drop-down on the IWeb settings page. Not selecting the right application type will result in the CPT not being read. To verify that you have the right

application selected review a sample message and see which field the CPT code is sent in.

XML DEFINITION

```
<query>
  <select>
    <value name="Vaccine Code CPT" type="CodedElement" tableId="CPT"/>
  </select>
  <where>
    <equal name="GLOBAL:Application Type" value="McKesson-Horizon
Practice Plus"/>
  </where>
</query>
```

GT1: GUARANTOR

The guarantor is the person who is financially responsible for the payment of procedures performed. This person is usually the guardian and so is assumed to be so by IWeb.

GT1-3 GUARANTOR NAME

The guarantor name is assumed by IWeb to be guardian name.

XML DEFINITION

```
<value name="Name First" index="2"/>
<value name="Name Last" index="1"/>
<value name="Name Middle" index="3"/>
<value name="Name Suffix" index="4"/>
```

GT1-6 GUARANTOR PHONE NUMBER

The guarantor phone number and other contact information is assumed by IWeb to be the guardian contact information.

XML DEFINITION

```
<value name="Phone" type="PhoneNumber"/>
<set name="Fax" index="1" position="2" type="PhoneNumber"/>
<set value="FX" index="3" position="2">
  <when>
    <not-empty name="Fax"/>
  </when>
```


```
    </set>
    <query>
      <select>
        <value name="Fax" index="1" type="PhoneNumber"/>
        <value name="_type" index="3"/>
      </select>
      <where>
        <equal name="_type" value="FX"/>
      </where>
    </query>
    <set name="Email" index="4" position="3"/>
    <set value="INTERNET" index="2" position="3">
      <when>
        <not-empty name="Email"/>
      </when>
    </set>
    <set value="NET" index="3" position="3">
      <when>
        <not-empty name="Email"/>
      </when>
    </set>
    <query>
      <select>
        <value name="Email" index="4"/>
        <value name="_use" index="2"/>
        <value name="_type" index="3"/>
      </select>
      <where>
        <equal name="_use" value="INTERNET"/>
        <equal name="_type" value="NET"/>
      </where>
    </query>
```

NK1: NEXT OF KIN / ASSOCIATED PARTIES

The Next-of-Kin segment is used to represent a patient's guardian, mother or father. IWeb stores guardian information, but does not distinguish between mother and father information.

In addition, when sending data, IWeb may be configured to use this segment to report on the patient's associated parties such as assigned/associated IRMS, assigned/associated facilities, and assigned/associated physicians. Since this use is not specified by the CDC standard, this functionality must be explicitly enabled per HL7 connection.

NK1-1: SET ID

The set id is required by HL7 but not by IWeb. IWeb will ignore any value here when receiving. When sending this segment IWeb will properly indicate here 1, 2, 3, etc. for every repeat.

XML DEFINITION

```
<value name="Segment Set Id" type="Increment" default="${NextOfKin
Segment Set Id}"/>
```

NK1-2: NEXT-OF-KIN NAME

This field indicates the next-of-kin's name. IWeb stores up to two guardians per patient and does not distinguish between mother and father.

RECEIVING NOTES

If NK1-3 indicates that this relationship is Mother 'MTH', Father 'FTH', or Guardian 'GRD' then this name is recorded as the patient's first or second guardian.

Important: Although IWeb stores two guardian names, it can only accept one guardian record in an update; all additional guardians will be ignored.

SENDING NOTES

IWeb will send the first or second guardian name here. Up to two guardians may be sent.

IWeb may be configured to indicate the name of an associated physician, or the name of the contact at an associated facility or the name of the contact at an associated IRMS.

XML DEFINITION

```
<value name="Name First" index="2"/>
<value name="Name Last" index="1"/>
<value name="Name Middle" index="3"/>
<value name="Name Suffix" index="4"/>
```

NK1-3: NEXT-OF-KIN RELATIONSHIP

This field indicates the next-of-kin's relationship to the patient.

RECEIVING NOTES

IWeb accepts the following codes to indicate a guardian:

GRD	Guardian
MTH	Mother
FTH	Father

If no code is sent, the first next-of-kin sent is assumed to be guardian.

SENDING NOTES

IWeb will always send 'GRD' to indicate guardian. IWeb does not store whether the guardian is a mother or a father so no 'MTH' or 'FTH' codes are sent. In addition IWeb may be configured to send associated IRMS, facility and physician information. The following codes may be sent:

GRD	Guardian
IRMS	IRMS
FACILITY	Facility
PHYSICIAN	Physician or Vaccinator

It is important to remember that the last three codes are only sent when the HL7 account has been configured to do so.

XML DEFINITION

```
<set name="Relationship" type="CodedElement" tableId="HL70063"/>
<get name="Relationship" type="CodedElement" tableId="HL70063"
value="GRD"/>
<query>
  <select>
    <get name="Relationship" type="CodedElement" tableId="HL70063"/>
  </select>
  <where>
    <not-empty name="Relationship"/>
    <valid name="Relationship"/>
  </where>
</query>
<get name="_relationship" type="CodedElement" tableId="HL70063"
default="GRD"/>
<warn-if message="Relationship not specified, assumed to be 'GRD'">
  <empty name="_relationship"/>
</warn-if>
<warn-if message="Relationship not recognized, assumed to be 'GRD'">
  <not-valid name="_relationship"/>
</warn-if>
```

NK1-4: NEXT-OF-KIN ADDRESS

This field indicates the next-of-kin's address. This field is only used when IWeb sends IRMS, facility or physician information. IWeb does not record address information for patient guardians.

RECEIVING NOTES

This field is ignored.

SENDING NOTES

This may be sent, if configured for this HL7 account, and if this next-of-kin represents an IRMS, facility, or physician. In which case, this address will be the same as is recorded in IWeb for this entity.

XML DEFINITION

```
<value name="Address Street1" index="1"/>
<value name="Address Street2" index="2"/>
<value name="Address City" index="3"/>
<value name="Address State" index="4" type="CodedValue"
tableId="STATES"/>
<value name="Address Zip" index="5"/>
```

NK1-5: NEXT-OF-KIN PHONE NUMBER

This field contains the next-of-kin's phone number.

RECEIVING NOTES

Only the phone number is accepted with this field. Any fax or email addresses sent will be ignored.

SENDING NOTES

Phone number, fax number and email address are sent when known. IWeb does not store fax or email addresses for guardians. These are only sent for IRMS, facility, and physician associated parties.

Phone number is always sent in the first repeat and is designated with `telecommunication equipment type` 'PH'.

Fax number is always sent in the second repeat and is designated with `telecommunication equipment type` 'FX'.

Email address is always sent in the third repeat and is designated with `telecommunication equipment type` 'NET' and `telecommunication use` 'INTERNET'.

XML DEFINITION

```
<value name="Phone" type="PhoneNumber"/>
<set name="Fax" index="1" position="2" type="PhoneNumber"/>
<set value="FX" index="3" position="2">
  <when>
    <not-empty name="Fax"/>
  </when>
</set>
<query>
  <select>
    <value name="Fax" index="1" type="PhoneNumber"/>
    <value name="_type" index="3"/>
  </select>
  <where>
    <equal name="_type" value="FX"/>
  </where>
</query>
<set name="Email" index="4" position="3"/>
<set value="INTERNET" index="2" position="3">
  <when>
    <not-empty name="Email"/>
  </when>
</set>
```

```
    <set value="NET" index="3" position="3">
      <when>
        <not-empty name="Email"/>
      </when>
    </set>
    <query>
      <select>
        <value name="Email" index="4"/>
        <value name="_use" index="2"/>
        <value name="_type" index="3"/>
      </select>
      <where>
        <equal name="_use" value="INTERNET"/>
        <equal name="_type" value="NET"/>
      </where>
    </query>
```

NK1-13: NEXT-OF-KIN ORGANIZATION NAME

This field indicates the next-of-kin's organization name.

RECEIVING NOTES

This field is ignored.

SENDING NOTES

This may be sent, if configured for this HL7 account, and if this next-of-kin represents an IRMS, facility or physician. If sent this represents the IRMS name, the facility name, or the physician's facility name.

XML DEFINITION

```
    <value name="Organization Name"/>
```

NK1-33: NEXT-OF-KIN IDENTIFIERS

This field is used to hold ids that may be used to identify this next-of-kin. For guardians this is usually a SSN, for associated parties such as IRMS', facilities, and physicians this is the IWeb assigned id.

RECEIVING NOTES

The guardian's SSN may be sent in this field. The `identifier type code` must be set to 'SS'.

SENDING NOTES

If the primary guardian has a SSN, it will be sent in the second repetition. If the next-of-kin is an IRMS, facility, or physician the IWeb id will be sent in the first repetition with no `identifier type code` defined.

XML DEFINITION

```
<value name="Next Of Kin Id"/>
<query>
  <select>
    <value name="Social Security Number" type="SSN" index="1"/>
    <value name="_typeCode" index="5"/>
  </select>
  <where>
    <equal name="_typeCode" value="SS"/>
  </where>
</query>
<set name="Social Security Number" type="SSN" position="2">
  <when>
    <not-empty name="Social Security Number"/>
  </when>
</set>
<set value="SS" index="5" position="2">
  <when>
    <not-empty name="Social Security Number"/>
  </when>
</set>
<warn-if message="No social security number found">
  <empty name="Social Security Number"/>
</warn-if>
```

OBX: OBSERVATION RESULT

The observation result is used in observation (ORU) messages and other update messages. As a part of the ORU message, the OBX segment acts as a key segment to transmit the results of the observations. In other update messages it includes additional information that could not be fit into any other segment.

OBX-2: VALUE TYPE

The value type indicates the format of the observation value.

XML DEFINITION

```
<value name="Value Type" type="CodedValue" tableId="HL70125"/>
```

OBX-3: OBSERVATION IDENTIFIER

The identifier indicates what kind of data being sent in the OBX. An OBX has no meaning by itself.

RECEIVING NOTES

OBX is used for the following purposes:

- To indicate additional data in VXU messages.
- To communicate immunization messages from a Logician system.
- To include Lead lab results.

Observations in VXU messages can be used to include additional information that is not currently supported by RXA or RXR segments. These extra values have specific identifiers that must be set properly in order for IWeb to recognize them. The value types may be customized for every installation of IWeb. The following table gives the default value types and the IWeb Key that the customized may be stored under. Unless otherwise directed, assume that the value type listed here is the one IWeb is expecting:

Identifier	Description	IWeb Key
1648-5	TB Induration	hl7.obs.tb_induration.id
30945-0	Contraindication	hl7.obs.contraindication.id
30963-3	Publicly Supplied	hl7.obs.publicly_supplied.id
29768-9	VIS Form Date	hl7.obs.vis_form_date.id
29769-7	VIS Form Given Date	hl7.obs.vis_form_given_date.id

Observation segments in observation messages may include lead data. The following identifiers represent lead lab results:

Value Type
5671-3
9051
11018

Value Type
LEADB
PBX
14807-2
17052-2
10912-4
25459-9
10368-9
5674-7
27129-6
32325-3
755660
11019

Observation identifiers for Logician must be defined by each interface. Please see the section titled, “How to Configure Logician” for more information.

SENDING NOTES

IWeb will send observation segments with VXU messages. IWeb does not sent observation messages.

The following identifiers can be sent in OBX segments in association with an RXA segment:

Value Type	Description	IWeb Key
1648-5	TB Induration	hl7.obs.tb_induration.id
30945-0	Contraindication	hl7.obs.contraindication.id
30963-3	Publicly Supplied	hl7.obs.publicly_supplied.id
29768-9	VIS Form Date	hl7.obs.vis_form_date.id
29769-7	VIS Form Given Date	hl7.obs.vis_form_given_date.id

The identifier may be different for a particular IWeb installation. The values shown are defaults.

XML DEFINITION

```
<value name="Identifier" type="CodedElement" tableId="NIP003"/>
<get name="Identifier Text" index="2"/>
<set name="Identifier Text" index="2">
  <when>
```

```
        <not-empty name="Identifier Text"/>
      </when>
    </set>
    <get name="Identifier Table" index="3"/>
    <set name="Identifier Table" index="3">
      <when>
        <not-empty name="Identifier Table"/>
      </when>
    </set>
    <warn-if message="Unrecognized observation identifier
    '${Identifier}'">
      <not-valid name="Identifier"/>
    </warn-if>
```

OBX-5: OBSERVATION VALUE

The observation value is the actual value that is being transmitted by this segment.

RECEIVING NOTES

For VXU messages, IWeb reads the values as code tables.

For ORU messages with lead lab results, IWeb reads the values as numeric.

For ORU messages from Logician, IWeb reads the values as code.

SENDING NOTES

For VXU messages IWeb always sends coded values with code, text, and table.

XML DEFINITION

```
    <get name="_ob1" index="1"/>
    <get name="_ob2" index="2"/>
    <get name="Value Numeric" value="${_ob1}${_ob2}"/>
    <get name="Value String"/>
    <set name="Value String">
      <where>
        <not-empty name="Value String"/>
      </where>
    </set>
    <get name="Value Coded"/>
    <set name="Value Coded">
      <where>
        <not-empty name="Value Coded"/>
      </where>
    </set>
```

```
<get name="Value Coded Text" index="2"/>
<set name="Value Coded Text" index="2">
  <where>
    <not-empty name="Value Coded Text"/>
  </where>
</set>
<get name="Value Coded Table" index="3"/>
<set name="Value Coded Table" index="3">
  <where>
    <not-empty name="Value Coded Table"/>
  </where>
</set>
<query>
  <select>
    <get name="Value Numeric" value="0"/>
    <value name="_none_detected" index="5"/>
  </select>
  <where>
    <equals name="_none_detected" value="NONE DETECTED"/>
  </where>
</query>
```

OBX-6: UNITS

This is only used for receiving lead lab results.

XML DEFINITION

```
<value name="Units" />
```

OBX-7: REFERENCE RANGES

This is only used for receiving lead lab results.

XML DEFINITION

```
<value name="Reference Range" />
```

OBX-8: ABNORMAL FLAGS

This is only used for reporting lead lab results.

XML DEFINITION

```
<value name="Abnormal Flag" />
```

OBX-11: Observation Result Status

This is required by HL7, but IWeb always assumes that all results are final "F."

Receiving Notes

IWeb always assumes that results are final.

Sending Notes

IWeb always marks results as final.

XML Definition

```
<value name="Status" type="CodedValue" tableId="HL70085" default="F"/>
```

OBX-14: Date/Time of the Observation

This represents the date and time the observation was made. This is only used in Observation (ORU) messages.

Receiving Notes

For Observation (ORU) lab messages this indicates the date and time when the lab test was run.

For Observation (ORU) messages from Logician this indicates the date when the vaccination was given. The time component is ignored since it indicates the time of day when the data was entered (even if on a different date, very strange).

Sending Notes

Not sent.

XML Definition

```
<value name="Observation Date" type="DateTime" />
```

OBR-15: SPECIMEN SOURCE

The specimen source is the location or area where the specimen was collected from. This is important for lab test that have results that must be interpreted based on the source of the specimen.

RECEIVING NOTES

This is read for Lead lab results in Observation (ORU) messages.

XML DEFINITION

```
<value name="Sample Type" type="CodedElement" tableId="HL70070"/>
<warn-if message="Unrecognized specimen source '${Sample Type}'">
  <not-valid name="Sample Type"/>
  <not-empty name="Sample Type"/>
</warn-if>
```

PD1: PATIENT ADDITIONAL DEMOGRAPHIC

The Patient Additional Demographic segment contains additional information that was either not originally included in the PID, or was considered extra information and not necessary for patient identification. A few of the fields are used by IWeb.

PD1-3: PRIMARY FACILITY

This field indicates the facility that the patient is currently assigned to. The concept of facility in IWeb is fairly general and may also be termed “organization” and has specific meaning as defined by the IRMS it belongs to. A facility in a hospital network may indicate the hospital, or even the care unit. A facility in a public health system may indicate departments, or individual clinics. The facility information is used to aggregate patient data into reportable groups.

RECEIVING NOTES

IWeb stores two facility ids: (1) the facility id assigned by IWeb when the facility was created and (2) the facility id that was assigned by the provider. The provider's facility id can only be set at the time the facility is created, and the user interface does not allow for setting the provider's facility interface. This value may only be set by electronic imports.

If the facility name and facility id are both submitted, IWeb will review facilities in the same IRMS to determine if the facility needs to be added. If the provider's facility id is found then no action is taken. If a facility with the same name, but different provider id is found, then an exception occurs and the entire message is rejected. If the facility name and provider's facility id are not present then this facility is added. The HL7 import account may be configured to skip this facility insert step.

SENDING NOTES

The facility name is sent if the patient is associated with a primary facility. The provider's facility id is sent if the patient is associated with a primary facility and that facility has a provider id that is known to IWeb.

In addition, if IWeb is configured to connect to another IWeb application it will send a second repeat with the same facility name but with the facility id that IWeb uses. This is not available when the interface is configured to connect to a CDC Standard version application, as it is not compliant with HL7 standards.

The facility id is stored on the patient record as the patient's primary or assigned facility.

XML DEFINITION

```
<value name="Facility Name" index="1" position="1"/>
<set name="Facility Id Local" index="3" position="1"/>
<set value="${GLOBAL:Internal App Id Type}" index="7" position="1"/>
<set name="Facility Name" index="1" position="2">
  <when>
    <not-empty name="Facility Id Remote"/>
    <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
    <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
  </when>
</set>
<set name="Facility Id Remote" index="3" position="2">
  <when>
    <not-empty name="Facility Id Remote"/>
    <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
    <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
  </when>
</set>
<set value="${GLOBAL:External App Id Type}" index="7" position="2">
  <when>
    <not-empty name="Facility Id Remote"/>
    <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
    <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
  </when>
</set>
<query>
  <select>
```

```
        <value name="Facility Id Remote" index="3"/>
        <value name="_idType" index="7"/>
      </select>
      <where>
        <or>
          <equal name="_idType" value="${GLOBAL:External App Id Type}"/>
          <and>
            <empty name="_idType"/>
            <instance position="1"/>
          </and>
        </or>
      </where>
    </query>
    <query>
      <select>
        <value name="Facility Id Local" index="3"/>
        <value name="_idType" index="7"/>
      </select>
      <where>
        <equal name="_idType" value="${GLOBAL:Internal App Id Type}"/>
      </where>
    </query>
```

PD1-3: PRIMARY PHYSICIAN

This field indicates the physician that the patient is currently assigned to.

RECEIVING NOTES

IWeb stores two physician ids: (1) the physician id assigned by IWeb when the physician record was created and (2) the physician id that was assigned by the provider. The provider's physician id can only be set at the time the physician record is created, and the user interface does not allow for setting the provider's physician id. This value may only be set by electronic imports.

To insert a physician record automatically via HL7, the Physician id, first name and last name must be sent. If a physician with the same first and last name, but a different provider id is already in the same IRMS, an exception will cause the entire message to be rejected. If the physician id is already recorded then no action is taken. If the physician id has not been recorded and the name is new then the physician is automatically added. This entire process may be disabled for this HL7 connection.

SENDING NOTES

The physician name is sent if the patient is associated with a primary physician. The provider's physician id is sent if the patient is associated

with a primary physician and that physician has a provider id that is known to IWeb.

In addition, if IWeb is configured to connect to another IWeb application, it will send multiple repeats populated with additional physician ids: (2) IWeb id designated as 'SR'; (3) SSN designated as 'SS'; and (4) Bomex id designated as 'LN';

XML DEFINITION

```
    <set name="Physician Name Last" index="2"/>
    <set name="Physician Name First" index="3"/>
    <set name="Physician Name Middle" index="4"/>
    <set name="Physician Name Suffix" index="5"/>
    <set name="Physician Id Local" index="1"/>
    <set value="${GLOBAL:Internal App Id Type}" index="13" position="1"/>
    <set name="Physician Id Remote" index="1" position="2">
      <when>
        <not-empty name="Physician Id Remote"/>
        <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
        <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
      </when>
    </set>
    <set value="${GLOBAL:External App Id Type}" index="13" position="2">
      <when>
        <not-empty name="Physician Id Remote"/>
        <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
        <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
      </when>
    </set>
    <set name="Physician SSN" index="1" position="3">
      <when>
        <not-empty name="Physician SSN"/>
        <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
        <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
      </when>
    </set>
    <set value="SS" index="13" position="3">
      <when>
        <not-empty name="Physician SSN"/>
        <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
        <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
      </when>
    </set>
    <set name="Physician Bomex Number" index="1" position="4">
      <when>
        <not-empty name="Physician Bomex Number"/>
        <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
        <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
      </when>
    </set>
    <set value="LN" index="13" position="4">
      <when>
        <not-empty name="Physician Bomex Number"/>
        <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
        <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
      </when>
    </set>
    <query>
      <select>
```

```
        <value name="Physician Id Remote"/>
        <value name="Physician Name Last" index="2"/>
        <value name="Physician Name First" index="3"/>
        <value name="Physician Name Middle" index="4"/>
        <value name="Physician Name Suffix" index="5"/>
        <value name="_idType" index="13"/>
      </select>
      <where>
        <or>
          <equal name="_idType" value="${GLOBAL:External App Id Type}"/>
          <and>
            <empty name="_idType"/>
            <instance position="1"/>
          </and>
        </or>
      </where>
    </query>
    <query>
      <select>
        <value name="Physician Id Local"/>
        <value name="_idType" index="13"/>
      </select>
      <where>
        <equal name="_idType" value="${GLOBAL:Internal App Id Type}"/>
      </where>
    </query>
    <query>
      <select>
        <value name="Physician SSN"/>
        <value name="_idType" index="13"/>
      </select>
      <where>
        <equal name="_idType" value="SS"/>
      </where>
    </query>
    <query>
      <select>
        <value name="Physician Bomex Number"/>
        <value name="_idType" index="13"/>
      </select>
      <where>
        <equal name="_idType" value="LN"/>
      </where>
    </query>
```

PD1-11: PUBLICITY CODE

This field indicates whether the patient should be blocked from receiving reminder/recall notices via mail. The publicity code is stored in an IWeb patient field called BLOCK_RECALL which flags users who should not be reminded/recalled. The HL7 code table 0215 defines a larger granularity of data than IWeb supports.

RECEIVING NOTES

Optional field. Code values received map in the following ways:

Publicity Code		Block Recall
01	No reminder/recall	YES
02	Reminder/recall – any method	NO
03	Reminder/recall – no calls	NO
04	Reminder/recall – any method	YES
05	Reminder/recall – no calls	YES
06	Recall only – any method	YES
07	Recall only – no calls	YES
08	Reminder/recall – to provider	YES
09	Reminder to provider	YES
10	Only reminder to provider, no recall	YES

Any other value received will result in BLOCK_RECALL set to NO.

SENDING NOTES

Publicity code is always sent with id, text and coding system. The following codes will be sent:

Block Recall	Publicity Code	
YES	01	No reminder/recall
NO	02	Reminder/recall – any method

XML DEFINITION

```
<value name="Publicity Code" type="CodedElement" tableId="HL70215"/>
```

PD1-16: IMMUNIZATION REGISTRY STATUS

This field indicates the patient's status in the registry. This is used to indicate patient status such as active, inactive, or moved. This field roughly corresponds to the IWeb patient inactive code.

As you can see, these two code tables are only slightly aligned and that deceased is used in IWeb Inactive Code and not the HL7 Immunization Registry Status.

RECEIVING NOTES

Optional field. Immunization registry status received will be mapped in the following ways:

Immunization Registry Status		Code
A	Active	
I	Inactive	O
L	Inactive-Lost to follow-up (cannot contact)	O
M	Inactive-Moved or gone elsewhere (transferred)	G
P	Inactive-Permanently inactive (do not re-activate or add new entries to this record)	O
O	Other	O
U	Unknown	U

Notice that an active code is recorded as a blank inactive code, since the inactive code is only set when the patient is inactive.

If the inactive code is sent in the second triplet then its value will supersede the value sent in the first triplet.

See field PID-30 documentation for information about transmitting deceased status.

SENDING NOTES

The immunization registry status is sent for every patient, along with its description and code table name.

IWeb Inactive Code		Status
	no value	A
A	Address Incorrect	L
D	Deceased	I
F	Postal Forward Order Expired	L
M	Moved Out of State	M
N	No Postal Forward on File	L
O	Other	O
U	Delivery Unsuccessful	L
P	Changed to another provider	M
G	Moved or Gone Elsewhere	M

When sending to other STC applications or when not operating in CDC standard compliant mode, IWeb will send the inactive code in the second triplicate.

See field PID-30 documentation for information about transmitting deceased status.

XML DEFINITION

```
<value name="Immunization Registry Status" type="CodedElement"
tableId="HL70441"/>
<set name="Inactive Code" type="CodedElement" tableId="STC0441"
index="4">
  <when>
    <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
    <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
  </when>
</set>
<query>
  <select>
    <value name="Inactive Code" type="CodedElement" tableId="STC0441"
index="4"/>
    <value name="_tableId" index="6"/>
  </select>
  <where>
    <equal name="_tableId" value="STC0441"/>
  </where>
</query>
```

PID: PATIENT IDENTIFIER

The patient identifier segment includes basic demographic information about a patient and is used by IWeb to create the patient's demographic record and to match this patient's vaccination record with vaccination records from other providers.

- Only one PID segment should be sent per message. There should be only one patient per message.
- The PID segment is required for all update messages.
- All PID segments from update messages are processed using the same application logic, whether or not they are from a VXU message.
- Only three fields are required but additional information is needed in order to match effectively. (See deduplication.)

PID-3 PATIENT IDENTIFIER LIST

This required field lists one or more ids that are assigned to this patient. Each id should be identified as to type. IWeb requires at least one id which is designated as the Medical Record Number, Chart Number, or Primary Identifier. This id is referred to as MRN and is defined as the id that is used by the sending system to identify this patient.

IWeb stores multiple MRNs for a patient, one MRN for each provider that has reported to the registry. It is important that providers maintain internally unique MRNs and do not reassign them to other patient records, except in cases of patient record merges. In addition, care should be taken when installing new systems for providers that the MRNs remain the same, or do not clash with the previous system; e.g., if a previous reporting system assigned patient's sequential MRNs starting at 1000, it would not be good to replace it with a new system that reassigned patients with new MRNS also starting at 1000.

IWeb stores two provider ids: (1) MRN and (2) Chart Id. The MRN must be reported electronically to IWeb and cannot be hand-entered by users. The Chart Id however, is a user editable field that is not required to be unique. When IWeb receives an update from a provider with a MRN, it copies this value into the patient's MRN and Chart Id field. But when it sends updates to the provider, it only submits the value in the MRN field. Users may change, or erase the Chart Id field at any time and they will not affect the MRN field.

	HL7 sub-field	Notes
1	ID (ST)	The id, as assigned to the patient. This field is required.
2	check digit (ST)	not supported
3	check digit scheme (ID)	not supported
4	assigning authority (HD)	not supported
5	identifier type code (IS)	Used to identify the type of code. Should be sent with all ids, highly recommended when this field repeats.
6	assigning facility (HD)	not supported

RECEIVING NOTES

IWeb will reject this message if there is no Medical Record Number sent. By default, IWeb assumes this to be marked by the identifier type code 'MR', but the interface may be configured to look for a specified id type

code. If no id type code is sent, the primary identifier must be placed in the first repetition, and the interface must indicate the id type code as ".

IWeb also reads ids from marked with the following id types:

- 'SR' : State Registry ID (May be configured to different code)
- 'SS' : Social Security Number
- 'MA' : Medicaid Number
- 'BR' : Birth File Number
- 'MPI' : Master Patient Id

Maximum length of patient identifiers:

30	'MR' : Medical Record Number
30	'SR' : State Registry ID
9	'SS' : Social Security Number
16	'MA' : Medicaid Number
16	'BR' : Birth File Number
30	'MPI' : Master Patient Id

The Master Patient ID must be a positive integer.

SENDING NOTES

IWeb holds two primary identifiers for a patient: (1) the State Registry Id and (2) the provider defined MRN.

The State Registry Id is always reported, and by default is marked with an id type code of 'SR'. This may be configured to any id type code desired

If it is recorded in IWeb, the MRN is reported and by default is marked with an id type code of 'MR'. This may be configured to any id type code desired.

IWeb will also report the following id types, when available:

- 'SS' : Social Security Number
- 'MA' : Medicaid Number
- 'BR' : Birth File Number
- 'MPI' : Master Patient Id

XML DEFINITION

```
    <set name="Patient Internal Id" index="1" position="1"/>
    <set value="${GLOBAL:Internal App Id Type}" index="5" position="1"/>
    <set name="Patient External Id" index="1" position="2">
      <when>
        <not-empty name="Patient External Id"/>
      </when>
    </set>
    <set value="${GLOBAL:External App Id Type}" index="5" position="2">
      <when>
        <not-empty name="Patient External Id"/>
      </when>
    </set>
    <set name="Social Security Number" index="1" position="3">
      <when>
        <not-empty name="Social Security Number"/>
      </when>
    </set>
    <set value="SS" index="5" position="3">
      <when>
        <not-empty name="Social Security Number"/>
      </when>
    </set>
    <set name="Medicaid Number" index="1" position="4">
      <when>
        <not-empty name="Medicaid Number"/>
      </when>
    </set>
    <set value="MA" index="5" position="4">
      <when>
        <not-empty name="Medicaid Number"/>
      </when>
    </set>
    <set name="Birth File Number" index="1" position="5">
      <when>
        <not-empty name="Birth File Number"/>
      </when>
    </set>
    <set value="BR" index="5" position="5">
      <when>
        <not-empty name="Birth File Number"/>
      </when>
    </set>
    <set name="Patient Mpi Id" index="1" position="6">
      <when>
        <not-empty name="Patient Mpi Id"/>
      </when>
    </set>
    <set value="MPI" index="5" position="6">
      <when>
        <not-empty name="Patient Mpi Id"/>
      </when>
    </set>
    <query>
      <select>
        <value name="Patient Internal Id" index="1"/>
        <value name="_idType" index="5"/>
      </select>
      <where>
        <equal name="_idType" value="${GLOBAL:Internal App Id Type}"/>
      </where>
    </query>
    <query>
      <select>
```

```
        <value name="Medical Record Number" index="1"/>
        <value name="_idType" index="5"/>
      </select>
      <where>
        <equal name="_idType" value="MR"/>
      </where>
    </query>
    <query>
      <select>
        <value name="Patient External Id" index="1"/>
        <value name="_idType" index="5"/>
        <value name="_facility" index="6"/>
      </select>
      <where>
        <or>
          <and>
            <equal name="_idType" value="${GLOBAL:External App Id Type}"/>
            <or>
              <empty name="${GLOBAL:External App Facility}"/>
              <equal name="_facility" value="${GLOBAL:External App
    Facility}"/>
            </or>
          </and>
          <and>
            <empty name="GLOBAL:External App Id Type"/>
            <instance position="1"/>
          </and>
        </or>
      </where>
    </query>
    <error-if message="Patient id was not found, must be of type
    '${GLOBAL:External App Id Type}'" code="101">
      <empty name="Patient External Id"/>
      <not-empty name="GLOBAL:External App Id Type"/>
      <not-equal value="PID-2" name="GLOBAL:External App Id Type"/>
    </error-if>
    <error-if message="Patient id was not found" code="101">
      <empty name="Patient External Id"/>
      <empty name="GLOBAL:External App Id Type"/>
    </error-if>
    <query>
      <select>
        <value name="Social Security Number" index="1"/>
        <value name="_idType" index="5"/>
      </select>
      <where>
        <equal name="_idType" value="SS"/>
      </where>
    </query>
    <query>
      <select>
        <value name="Medicaid Number" index="1"/>
        <value name="_idType" index="5"/>
      </select>
      <where>
        <equal name="_idType" value="MA"/>
      </where>
    </query>
    <query>
      <select>
        <value name="Birth File Number" index="1"/>
        <value name="_idType" index="5"/>
      </select>
      <where>
        <equal name="_idType" value="BR"/>
      </where>
```


```
    </query>
    <query>
      <select>
        <value name="State Registry Id" index="1"/>
        <value name="_idType" index="5"/>
      </select>
      <where>
        <equal name="_idType" value="SR"/>
      </where>
    </query>
    <query>
      <select>
        <value name="Patient Mpi Id" index="1"/>
        <value name="_idType" index="5"/>
      </select>
      <where>
        <equal name="_idType" value="MPI"/>
      </where>
    </query>
```

PID-5: PATIENT NAME

This required field records the patient's legal name, as it should appear in the registry. The first and last names are both required. Names that are too long will be silently truncated.

Note: Alias names should be sent in PID-9.

RECEIVING NOTES

IWeb will reject this message if there is no first or last name sent. This field is not expected to repeat, but if it does the legal name should be marked with a name type code of 'L' or be placed in the first repetition with no name type code specified.

If no first name is sent and the last name contains a comma, the last name will be split and the data right of the comma and any spaces will be considered the first name and the data left of the comma will be considered the last name. This fixes problems when some users incorrectly enter first names with the last name.

SENDING NOTES

IWeb will always send a first and last name and will mark the name type code as 'L'. IWeb will not send more than one name in this field.

XML DEFINITION

```
    <set name="Name Last" index="1"/>
    <set name="Name First" index="2"/>
    <set name="Name Middle" index="3"/>
    <set name="Name Suffix" index="4"/>
    <set value="L" index="7"/>
    <query>
      <select>
        <value name="Name Last" index="1"/>
        <value name="Name First" index="2"/>
        <value name="Name Middle" index="3"/>
        <value name="Name Suffix" index="4"/>
        <value name="Name Type Code" index="7" type="CodedValue"
    tableId="HL70200"/>
      </select>
      <where>
        <or>
          <equal name="Name Type Code" value="L"/>
          <and>
            <instance position="1"/>
            <empty name="Name Type Code"/>
          </and>
        </or>
      </where>
    </query>
    <error-if message="Last name required">
      <empty name="Name Last"/>
    </error-if>
    <error-if message="First name required">
      <empty name="Name First"/>
      <not-contains name="Name Last" value=","/>
    </error-if>
    <warn-if message="First name found in last name field">
      <contains name="Name Last" value=","/>
      <empty name="Name First"/>
    </warn-if>
```

PID-6: MOTHER'S MAIDEN NAME

This field is an optional field that contains the mother's maiden name. Only the last name is supported by IWeb.

RECEIVING NOTES

IWeb accepts the mother's maiden name. This is used to help match patient records.

SENDING NOTES

IWeb sends the mother's maiden name, if known.

XML DEFINITION

```
    <value name="Mother Maiden Name"/>
```

PID-7: DATE OF BIRTH

The date of birth field is required and must not occur in the future. Any time component sent is ignored.

RECEIVING NOTES

Required.

SENDING NOTES

Always sent. No time included.

XML DEFINITION

```
    <value name="Birth Date" type="DateTime" format="M/D/Y"/>
    <error-if message="Patient DOB required">
      <empty name="Birth Date"/>
    </error-if>
    <error-if message="Patient DOB not valid">
      <or>
        <not-valid name="Birth Date"/>
        <greater-than name="Birth Date" value="tomorrow"/>
      </or>
    </error-if>
```

PID-8: SEX

This field contains the patient's sex

RECEIVING NOTES

Optional, these values are accepted:

F	Female
M	Male
O	Other
U	Unknown

SENDING NOTES

Sent if known:

F	Female
M	Male
O	Other
U	Unknown

XML DEFINITION

```
<value name="Gender" type="CodedValue" tableId="HL70001"/>
```

PID-9: PATIENT ALIAS

This field contains other legal names the patient has been known by.

RECEIVING NOTES

Optional field.

SENDING NOTES

Sent when known.

XML DEFINITION

```
<value name="Alias Last" index="1"/>
<value name="Alias First" index="2"/>
```

PID-10: PATIENT RACE

This optional field contains the patient's indicated race(s). This field may repeat to report multiple race codes.

RECEIVING NOTES

Optional field. Up to five race codes may be submitted by repeating the field. Values accepted:

2076-8	Native Hawaiian or Other Pacific Islander
2131-1	Multi-Racial
2028-9	Asian
2106-3	White
1002-5	American Indian or Alaska Native
2054-5	Black or African-American

These values have been deprecated but may still be submitted:

U	Unknown
O	Multi-Racial
A	Asian
W	White
I	American Indian or Alaska Native
B	Black or African-American

SENDING NOTES

Sent when known. Up to five race codes may be exported. Values sent:

2076-8	Native Hawaiian or Other Pacific Islander
2131-1	Multi-Racial
2028-9	Asian
2106-3	White
1002-5	American Indian or Alaska Native
2054-5	Black or African-American

XML DEFINITION

```
<value name="Race" type="CodedElement" tableId="HL70005"/>
<value name="Race2" type="CodedElement" tableId="HL70005"
position="2"/>
<value name="Race3" type="CodedElement" tableId="HL70005"
position="3"/>
<value name="Race4" type="CodedElement" tableId="HL70005"
position="4"/>
<value name="Race5" type="CodedElement" tableId="HL70005"
position="5"/>
```

```
    <query>
      <select>
        <value name="Race2" index="1" tableId="HL70005"/>
      </select>
      <where>
        <equal name="_position" value="2"/>
      </where>
    </query>
    <query>
      <select>
        <value name="Race3" index="1" tableId="HL70005"/>
      </select>
      <where>
        <equal name="_position" value="3"/>
      </where>
    </query>
    <query>
      <select>
        <value name="Race4" index="1" tableId="HL70005"/>
      </select>
      <where>
        <equal name="_position" value="4"/>
      </where>
    </query>
    <query>
      <select>
        <value name="Race5" index="1" tableId="HL70005"/>
      </select>
      <where>
        <equal name="_position" value="5"/>
      </where>
    </query>
```

PID-11: PATIENT ADDRESS

This field contains the primary mailing address and mailing address of the patient or the patient's primary guardian. Values that are too long will be silently truncated.

RECEIVING NOTES

Optional field. The first address sent is assumed to be the patient's primary and mailing address. If the patient has a PO Box, the second address should be the physical address. IWeb only stores the physical address street one and assumes that the rest of the address is the same as the mailing address. Because of this, all other fields in the second address will be ignored.

SENDING NOTES

Sent when known. The first address is always the primary or mailing address. The second address may be sent if the patient has a different

physical address. In this case only the address street one will be sent and all other address sub-fields will be empty.

XML DEFINITION

```
<value name="Address Street 1" index="1"/>
<value name="Address Street 2" index="2"/>
<value name="Address City" index="3"/>
<value name="Address State" index="4" type="CodedValue"
tableId="STATES"/>
<value name="Address Zip" index="5"/>
<value name="Address Country" index="6"/>
<value name="Address County" index="9"/>
<set value="M" position="1" index="7">
  <when>
    <or>
      <not-empty name="Address Street 1"/>
      <not-empty name="Address Street 2"/>
      <not-empty name="Address City"/>
      <not-empty name="Address State"/>
      <not-empty name="Address Zip"/>
    </or>
  </when>
</set>
<set value="H" position="2" index="7">
  <when>
    <not-empty name="Physical Address Street 1"/>
  </when>
</set>
<set name="Physical Address Street 1" position="2" index="1">
  <when>
    <not-empty name="Physical Address Street 1"/>
  </when>
</set>
<set name="Birth Country" position="3" index="6">
  <when>
    <or>
      <not-empty name="Birth State"/>
      <not-empty name="Birth Country"/>
    </or>
  </when>
</set>
<set name="Birth State" position="3" index="4">
  <when>
    <or>
      <not-empty name="Birth State"/>
      <not-empty name="Birth Country"/>
    </or>
  </when>
</set>
<set value="N" position="3" index="7">
  <when>
    <or>
      <not-empty name="Birth State"/>
      <not-empty name="Birth Country"/>
    </or>
  </when>
</set>
<query>
  <select>
    <value name="Physical Address Street 1" index="1"/>
    <value name="_type" index="7" />
  </select>
```

```
      <where>
        <equal name="_type" value="H"/>
      </where>
    </query>
    <query>
      <select>
        <value name="Birth Country" index="6" />
        <value name="Birth State" index="4" />
        <value name="_type" index="7" />
      </select>
      <where>
        <equal name="_type" value="N"/>
      </where>
    </query>
```

PID-13: PHONE NUMBER

This field contains the patient's home phone number.

	HL7 sub-field	Notes
1	fax or phone number	Format: [NNN][(999)]999-9999[X99999][B99999][C any text]
2	telecommunication use code (ID)	Values found in HL7 code table 0201. Only used to indicate if this is an email address.
3	telecommunication equipment type (ID)	Values found in HL7 code table 0202. Used to indicate whether this repetition contains a phone number, fax number, or email address.
4	email address (ST)	Email address.
5	country code (NM)	not supported
6	area/city code (NM)	not supported
7	phone number (NM)	not supported
8	extension (NM)	not supported
9	any text (ST)	not supported

RECEIVING NOTES

The phone number, fax number, and email address should each be sent in separate repeats.

The first repeat should contain the phone number, or every repeat should have a `telecommunication equipment type` defined with the phone number designated as 'PH'.

The fax number must be designated with `telecommunication equipment type` 'FX'.

The email address should be designated with `telecommunication equipment type` 'NET' and `telecommunication use` 'INTERNET'.

SENDING NOTES

Phone number, fax number and email address are sent when known.

Phone number is always sent in the first repeat and is designated with `telecommunication equipment type` 'PH'.

Fax number is always sent in the second repeat and is designated with `telecommunication equipment type` 'FX'.

Email address is always sent in the third repeat and is designated with `telecommunication equipment type` 'NET' and `telecommunication use` 'INTERNET'.

XML DEFINITION

```
<set name="Phone" index="1" position="1" type="PhoneNumber"/>
<set value="PH" index="3" position="1">
  <when>
    <not-empty name="Phone"/>
  </when>
</set>
<query>
  <select>
    <value name="Phone" index="1" type="PhoneNumber"/>
    <value name="_type" index="3"/>
  </select>
  <where>
    <or>
      <equal name="_type" value="PH"/>
      <and>
        <empty name="_type"/>
        <instance position="1"/>
      </and>
    </or>
  </where>
</query>
<set name="Fax" index="1" position="2" type="PhoneNumber"/>
<set value="FX" index="3" position="2">
  <when>
    <not-empty name="Fax"/>
  </when>
</set>
<query>
  <select>
    <value name="Fax" index="1" type="PhoneNumber"/>
    <value name="_type" index="3"/>
  </select>
  <where>
    <equal name="_type" value="FX"/>
  </where>
```

```
    </query>
    <set name="Email" index="4" position="3"/>
    <set value="INTERNET" index="2" position="3">
      <when>
        <not-empty name="Email"/>
      </when>
    </set>
    <set value="NET" index="3" position="3">
      <when>
        <not-empty name="Email"/>
      </when>
    </set>
    <query>
      <select>
        <value name="Email" index="4"/>
        <value name="_use" index="2"/>
        <value name="_type" index="3"/>
      </select>
      <where>
        <or>
          <and>
            <equal name="_use" value="INTERNET"/>
            <equal name="_type" value="NET"/>
          </and>
          <and>
            <empty name="_use"/>
            <empty name="_type"/>
            <not-empty name="Email"/>
          </and>
         </or>
      </where>
    </query>
```

PID-15: PRIMARY LANGUAGE

This field contains the patient's primary language.

	HL7 sub-field	Notes
1	identifier (ST)	Primary language as defined by HL7 code table 0296.
2	text (ST)	Description of the primary language.
3	coding system (ST)	Should be 'HL70296'.
4	alternate identifier (ST)	not supported
5	alternate text (ST)	not supported
6	alternate code system (ST)	not supported

RECEIVING NOTES

Optional. Values accepted:

EN	English
ES	Spanish

SENDING NOTES

Exported if known. Values sent:

EN	English
ES	Spanish

XML DEFINITION

```
<value name="Primary Language" type="CodedElement" tableId="HL70296"
/>
```

PID-22: ETHNIC GROUP

This field contains the patient's ethnic group. This is currently used to indicate Hispanic or non-Hispanic. This was previously sent as race code. This use is now deprecated.

RECEIVING NOTES

Optional. Values accepted

2186-5	Not Hispanic or Latino
2135-2	Hispanic or Latino
2131-1	Multi-Racial

Deprecated values accepted:

NH	Not Hispanic or Latino
H	Hispanic or Latino

IWeb values accepted:

1	Hispanic or Latino
2	Not Hispanic or Latino
3	Unknown

SENDING NOTES

Exported if known. Values sent:

2186-5	Not Hispanic or Latino
2135-2	Hispanic or Latino
2131-1	Multi-Racial

XML DEFINITION

```
<value name="Ethnicity" type="CodedElement" tableId="HL70189"/>
```

PID-24: MULTIPLE BIRTH INDICATOR

This field indicates whether this child was part of a multiple birth (e.g., a twin).

RECEIVING NOTES

Optional. Values accepted:

Y	Yes
N	No

In order for IWeb to properly record a multiple birth, it is necessary to know the birth count, where twins = 2, triplets = 3, etc. HL7 does not support transmitting this information. As a compromise, IWeb will accept an ordinal number instead of the Yes to indicate a multiple birth. Values accepted:

1	No - Single Birth
2	Yes - Twin
3	Yes - Triplet
4	Yes - Quadruplet
5	Yes - Quintuplet
6	Yes - Sextuplet
7	Yes - Septuplet
8	Yes - Octuplet
9	No - Invalid Value

SENDING NOTES

Exported if child is known to be part of a multiple birth. Values sent:

Y	Yes

In order to export the multiple birth count, IWeb may be configured to export the multiple birth count. Values sent:

2	Yes - Twin
3	Yes - Triplet
4	Yes - Quadruplet
5	Yes - Quintuplet
6	Yes - Sextuplet
7	Yes - Septuplet
8	Yes - Octuplet

XML DEFINITION

```
<value name="Birth Multiple"/>
```

PID-25: BIRTH ORDER

This field indicates in which order a multiple birth child was born.

RECEIVING NOTES

Optional. Do not send a value in this field unless the child is part of a multiple birth. Single birth children should not be sent as '1'. If this field is valued then PID-24 must also be valued with a 'Y'.

SENDING NOTES

Exported only if child is known to be part of a multiple birth.

XML DEFINITION

```
<value name="Birth Order"/>
```

PID-30: Patient Death Indicator

This field indicates that the child has passed away. In IWeb, this value is stored as the patient's registry status.

Receiving Notes

Optional. If the patient is indicated as deceased, this value will replace any value sent in PD1-16 indicating immunization registry status. Values accepted:

Y	Yes
N	No

Sending Notes

Only sent when a patient is marked as deceased. Values sent:

Y	Yes

XML Definition

```
<value name="Deceased" type="CodedValue"/>
```

PV1: Patient Visit Segment

The Patient Visit Segment contains information about a specific visit. This is information that is expected to change on each visit. IWeb only uses one field from this segment.

PV1-2: Patient Class

Patient class is required by HL7, but IWeb ignores it when receiving and sets it to ‘R’ for recurring patient when sending.

XML Definition

```
<set value="R"/>
```

PV1-20: FINANCIAL CLASS

This field indicates the patient's financial class at the time of service and is used by immunization registries to indicated eligibility for Vaccines For Children (VFC) programs or other immunization reimbursement programs. This field does not indicate that the patient was or was not given publicly supplied immunizations. This must be determined at the vaccination level.

	HL7 sub-field	Notes
1	financial class (IS)	Financial class
2	effective date (TS)	*not supported*

RECEIVING NOTES

Optional field. Immunization registry status received will be mapped in the following ways:

Immunization Registry Status		Code
V00	VFC eligibility not determined/unknown	
V01	Not VFC eligible	
V02	VFC eligible – Medicaid/Medicaid Managed Care	1
V03	VFC eligible – Uninsured	2
V04	VFC eligible – American Indian/Alaskan Native	3
V05	VFC eligible – Federally Qualified Health Center Patient (under-insured)	4
V06	VFC eligible – State-specific eligibility (e.g., S-CHIP plan)	5, 6, 7, 8, or 9
V07	VFC eligible – Local-specific eligibility	

* Additional financial codes that are not used have been omitted from this table listing.

An unknown or a not eligible code is recorded as a blank VFC Eligible code, since it is only set when the patient has a positive VFC status. State specific eligibility is coded differently depending on state configuration. Default encodings are:

ASIIS	6	KidsCare
LINKS	6	KidsCare
IRIS	6	KidsCare

CHIRP	7	Hoosier HWise Pkg C
WVSIIS	8	CHIP
IMMUNET	9	Healthy Kids
all others	5	*not defined*

SENDING NOTES

Financial class is sent with every patient. The values are mapped as follows:

VFC Eligible		**Status**
	no value	V01
1	Medicaid	V02
2	Uninsured	V03
3	Nat. Amer. or Alaskan	V04
4	Underinsured	V05
5	*not defined*	V06
6	KidsCare	V06
7	Hoosier HWise Pkg C	V06
8	CHIP	V06
9	Healthy Kids	V06

The CDC immunization guide recommends that shots that are given the same day as the effective date be considered as administered under the appropriate VFC program rules as listed here. IWeb does not consider this field since it is possible for a patient to be VFC eligible at the time of the visit but not receive a publicly supplied vaccination. VFC eligibility must be explicitly defined for each vaccination.

XML DEFINITION

```
    <value name="Eligible VFC" type="CodedValue" tableId="HL70064"/>
    <value name="Eligible VFC Effective Date" index="2"/>
```

QAK: QUERY ACKNOWLEDGEMENT

The Query Acknowledgement (QAK) segment is sent to acknowledge that a query was received.

QAK-2: QUERY RESPONSE STATUS

Indicates what kind of response is being returned. Here are the values that IWeb expects and that it sends:

OK	Data found, no errors
NF	No data found, no errors
AE	Error occurred
AR	Error occurred

XML DEFINITION

```
<value name="Query Response Status" type="CodedValue"
tableId="HL70208"/>
```

QRD: QUERY DEFINITION SEGMENT

The Query Definition segment defines part of a query.

QRD-1: QUERY DATE/TIME

The date and time the query was made. IWeb reads this value only to put it in the response as required by HL7; otherwise, IWeb ignores this value.

XML DEFINITION

```
<value name="Query Date Stamp" type="DateTime" default="today"/>
```

QRD-2: QUERY FORMAT CODE

IWeb expects this to always be ‘R’ for Record. If not it is assumed to be ‘R’, IWeb essentially ignores this field and will always send ‘R’.

XML DEFINITION

```
<warn-if message="Indicated query format is not supported">
  <not-empty name="Query Format Code"/>
  <not-equal name="Query Format Code" value="R"/>
</warn-if>
```

QRD-3: QUERY PRIORITY

IWeb expects this to always be 'I' for Immediate. If not it is assumed to be 'I'. IWeb essentially ignores this field and will always send 'I'.

XML DEFINITION

```
<value name="Query Priority" type="CodedValue" tableId="HL70091"/>
```

QRD-4: QUERY ID

Query ID is required by HL7 and IWeb will report it back in the query response just as HL7 specifies. IWeb does not use the query id for any other purpose.

XML DEFINITION

```
<value name="Query Id"/>
```

QRD-7: QUANTITY LIMITED REQUEST

The Quantity Limited Request is the maximum number of records that should be returned. IWeb has an internal maximum with a default of 20. The maximum number returned is the lesser of this value and the internal maximum. The internal maximum can be changed by the IWeb administrator.

IWeb ignores the limiting units.

XML DEFINITION

```
<value name="Quantity Limit" type="WholeNumber"/>
<value name="Quantity Limit Units" index="2" type="CodedValue"
tableId="HL70126"/>
<warn-if message="Limiting unit is not supported">
  <not-empty name="Quantity Limit Units"/>
  <not-equal name="Quantity Limit Units" value="RD"/>
</warn-if>
```

QRD-8: WHO SUBJECT FILTER

The Who Subject Filter is part of the name of the patient to search by. IWeb expects at least part of the patient name to appear here. Different searches will be performed depending on how complete this information is.

XML DEFINITION

```
<value name="Patient Id" index="1"/>
<value name="Patient Name Last" index="2"/>
<value name="Patient Name First" index="3"/>
<value name="Patient Name Middle" index="4"/>
<value name="Patient Name Suffix" index="5"/>
<value name="Patient Name Id Type Code" index="13" type="CodedValue"
tableId="HL70203"/>
<query>
  <select>
    <value name="Patient Internal Id" index="1"/>
  </select>
  <where>
    <equals name="Patient Name Id Type Code" value="${GLOBAL:Internal
App Id Type}"/>
  </where>
</query>
<query>
  <select>
    <value name="Patient External Id" index="1"/>
  </select>
  <where>
    <equals name="Patient Name Id Type Code" value="${GLOBAL:External
App Id Type}"/>
  </where>
</query>
```

QRD-9: WHAT SUBJECT FILTER

The What Subject Filter indicates what query to run. IWeb supports two query methods:

- **VXI** : Standard CDC defined query for immunization registries
- **ZVXI-IRMS**: STC defined query for requested a batch of updates

The VXI query is defined in the CDC Immunization Guide.

The ZVXI-IRMS will initiate a batch update for the system querying. The result of this query will be an acknowledgment that the query was successful and a text message (human readable) indicating how many patients were selected for the batch. The connection is closed and the patients are sent via a new connection to the system that queried. The

connection is chosen based on the sending application and sending facility in the message headers. The IWeb administrator has to setup the return connection with a matching sending application and sending facility.

Local IWeb uses both the VXI and ZVXI-IRMS queries to synchronize registries together.

XML DEFINITION

```
<value name="What Subject Filter" type="CodedElement"
tableId="HL70048" default="VXI"/>
<error-if message="Subject filter not supported">
  <not-empty name="What Subject Filter"/>
  <not-equal name="What Subject Filter" value="VXI"/>
  <not-equal name="What Subject Filter" value="ZVXI-IRMS"/>
</error-if>
```

QRD-10: WHAT DEPARTMENT DATA CODE

This is required by HL7 but is ignored by IWeb.

XML DEFINITION

```
<value name="What Department Data Code"/>
```

QRF: QUERY FILTER SEGMENT

The Query Filter segment modifies the query definition by limiting what is returned. For vaccination queries this contains additional information about the patient.

QRF-1: WHERE SUBJECT FILTER

This field is required by HL7, but is ignored by IWeb.

QRF-2: WHEN DATA START DATE/TIME

The data start date/time is used by IWeb to indicate the start of the range of which vaccinations should be returned. All vaccinations are updated in IWeb at different times. By setting this value, only vaccinations updated on or since this date will be returned.

XML DEFINITION

```
<value name="When Date Start" type="DateTime" format="M/D/Y"/>
```

QRF-3: WHEN DATA END DATE/TIME

The data start date/time is used by IWeb to indicate the end of the range of which vaccinations should be returned. All vaccinations are updated in IWeb at different times. By setting this value only vaccinations updated on or before this date will be returned.

XML DEFINITION

```
<value name="When Date End" type="DateTime" format="M/D/Y"/>
```

QRF-5: OTHER QUERY SUBJECT FILTER

The query subject filter repeats and the order of the repeats are important. The following values may be sent in this field:

Repeat	Field
1	Patient Social Security Number
2	Patient Birth Date
3	Patient Birth State
4	Patient Birth Number
5	Patient Medicaid Number
6	Mother Name
7	Mother Maiden Name
8	Mother Social Security Number
9	Father Name First
10	Father Social Security Number
11	Phone Number
12	Patient Address 1

RECEIVING NOTES

All but the *Patient Birth Number* and *Patient Birth State* may be read by IWeb for use in querying.

SENDING NOTES

When sending a query message, IWeb may populate all fields except for *Mother Name*, *Mother Social Security Number*, *Father Name*, *and Father Social Security Number*. This is because IWeb does not indicate or store which guardian is the mother and which is the father.

XML DEFINITION

```
<value name="Patient Social Security Number" position="1" type="SSN"/>
<value name="Patient Birth Date" position="2" type="DateTime"
format="M/D/Y"/>
<value name="Patient Birth State" position="3" type="CodedValue"
tableId="STATES"/>
<value name="Patient Birth Number" position="4"/>
<value name="Patient Medicaid Number" position="5"/>
<value name="Mother Name First" position="6" index="2"/>
<value name="Mother Name Last" position="6" index="1"/>
<value name="Mother Name Middle" position="6" index="3"/>
<value name="Mother Name Suffix" position="6" index="4"/>
<value name="Mother Name Maiden" position="7"/>
<value name="Mother Social Security Number" position="8" type="SSN"/>
<value name="Father Name First" position="9" index="2"/>
<value name="Father Name Last" position="9" index="1"/>
<value name="Father Name Middle" position="9" index="3"/>
<value name="Father Name Suffix" position="9" index="4"/>
<value name="Father Social Security Number" position="10" type="SSN"/>
<value name="Phone Number" position="11" index="1"
type="PhoneNumber"/>
<value name="Patient Address1 Street1" position="12" index="1"/>
<value name="Patient Address1 Street2" position="12" index="2"/>
<value name="Patient Address1 City" position="12" index="3"/>
<value name="Patient Address1 State" position="12" index="4"
type="CodedValue" tableId="STATES"/>
<value name="Patient Address1 Zip" position="12" index="5"/>
<value name="Patient Address1 Country" position="13" index="6"/>
```

RXA: PHARMACY/TREATMENT ADMINISTRATION

The Pharmacy/Treatment Administration segment contains most of the vaccination information. Multiple RXA segments may be sent in every VXU message.

RXA-1: GIVE SUB-ID COUNTER

This is required by HL7, but IWeb ignores it. The CDC Immunization Guide recommends sending 0.

RXA-2: ADMINISTRATION SUB-ID COUNTER

This field indicates which dose this is within the vaccination series. Because IWeb collects data from multiple sources, it does not explicitly record the vaccination dose. Instead a forecast mechanism dynamically marks vaccinations as valid or invalid, and indicates when further vaccinations are due.

RECEIVING NOTES

Dose may be sent, but is normally ignored. If dose is unknown, send '999'. If Dose and Administered Amount (RXA-6) are set to '0', this vaccination will be considered as not administered. This "dummy" vaccination may be used to encode forecasting recommendations, contraindications, or other meta information.

SENDING NOTES

Always sent as “999” unless a “dummy” vaccination is sent. In which case, Dose and Administered Amount (RXA-6) are both set to “0.” A “dummy” vaccination may be sent when contraindications need to be communicated.

XML DEFINITION

```
<value name="Dose" type="WholeNumber" default="999"/>
```

RXA-3: DATE/TIME START OF ADMINISTRATION

This required field indicates the date when the vaccination was given. The RXA segment has been defined to allow for specifying the start and end of IV or timed administrations, so this field indicates the start and the next field (RXA-4) indicates the end of the administration. IWeb expects that both times are exactly the same.

RECEIVING NOTES

This field is required. Send exact dates, do not sent year and month only. Time portion will be ignored.

SENDING NOTES

IWeb will always send a full vaccine administration date with no time.

XML DEFINITION

```
<value name="Vaccination Date" type="DateTime" format="M/D/Y"/>
<error-if message="Immunization date was not-valued">
  <empty name="Vaccination Date"/>
</error-if>
```

RXA-4: DATE/TIME END OF ADMINISTRATION

This field indicates the date when the vaccination was given. The RXA segment has been defined to allow for specifying the start and end of IV or timed administrations, so the previous field (RXA-3) indicates the start and this field indicates the end of the administration. IWeb expects that both times are exactly the same.

RECEIVING NOTES

This field is ignored.

SENDING NOTES

IWeb will always send a full vaccine administration date with no time.

XML DEFINITION

```
<set name="Vaccination End Date" type="DateTime"
default="${Vaccination Date}"/>
```

RXA-5: ADMINISTERED CODE

This required field indicates the vaccination that was administered.

RECEIVING NOTES

This field is required. IWeb will accept STC, CVX/CDC, or CPT codes. If multiple codes are sent, the CVX/CDC codes will trump the CPT codes, and the STC codes will trump the CVX/CDC or CPT codes.

All STC codes sent must be designated with 'STC0292'. All CVX/CDC codes sent must be designated with 'CPT'. All CPT codes sent must be designated with 'CPT'. CVX/CDC codes and CPT codes may be sent in the first or second triplet. The STC codes must be sent in the first triplet.

If IWeb is unable to determine the STC vaccination code, it can be configured to do one of three things:

1. Reject the message with an error.
2. Record the vaccination as an 'unknown' vaccination.
3. Ignore and skip the vaccination without reporting an error.

VARICELLA HISTORY OF DISEASE

Although history of Varicella disease is not a CDC or STC immunization code it can be submitted as a CPT or CVX/CDC code. To do this, the HL7 interface needs to be configured with the code that will be used to identify the Varicella history of disease. The recommended code is '921'.

SENDING NOTES

IWeb sends both CVX/CDC and CPT codes when available. The HL7 interface may be configured to only export vaccinations with a CPT code or a CVX/CDC code.

In addition, the STC code may be sent in a second repeat if the receiving application is an STC application or a non-CDC standard application. In CDC standard mode, no STC code is sent.

XML DEFINITION

```
<set name="Vaccine Code CVX" type="CodedElement" tableId="CVX"/>
<set name="Vaccine Code CPT" type="CodedElement" tableId="CPT"
index="4"/>
<set name="Vaccine Code PCI" type="CodedElement" tableId="STC0292"
position="2">
```

```
      <when>
        <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
        <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
      </when>
    </set>
    <query>
      <select>
        <value name="Vaccine Code PCI" type="CodedElement"
    tableId="STC0292"/>
        <value name="_type" index="3"/>
      </select>
      <where>
        <equal name="_type" value="STC0292"/>
      </where>
    </query>
    <query>
      <select>
        <value name="Vaccine Code CVX" type="CodedElement" tableId="CVX"/>
        <value name="_codeTableCVX" type="String" index="3"/>
        <get name="_foundCVX" value="true"/>
      </select>
      <where>
        <or>
          <and>
            <valid name="Vaccine Code CVX"/>
            <equals name="_codeTableCVX" value=""/>
          </and>
          <equals name="_codeTableCVX" value="CVX"/>
        </or>
      </where>
    </query>
    <query>
      <select>
        <value name="Vaccine Code CVX" type="CodedElement" tableId="CVX"
    index="4"/>
        <value name="_codeTableCVX" type="String" index="6"/>
      </select>
      <where>
        <not-equal name="_foundCVX" value="true"/>
        <or>
          <and>
            <valid name="Vaccine Code CVX"/>
            <equals name="_codeTableCVX" value=""/>
          </and>
          <equals name="_codeTableCVX" value="CVX"/>
        </or>
      </where>
    </query>
    <query>
      <select>
        <value name="Vaccine Code CPT" type="CodedElement" tableId="CPT"/>
        <value name="_codeTableCPT" type="String" index="3"/>
        <get name="_foundCPT" value="true"/>
      </select>
      <where>
        <or>
          <and>
            <valid name="Vaccine Code CPT"/>
            <equals name="_codeTableCPT" value=""/>
          </and>
          <equals name="_codeTableCPT" value="CPT"/>
        </or>
      </where>
    </query>
    <query>
      <select>
```

```
        <value name="Vaccine Code CPT" type="CodedElement" tableId="CPT"
    index="4"/>
        <value name="_codeTableCPT" type="String" index="6"/>
      </select>
      <where>
        <not-equal name="_foundCPT" value="true"/>
        <or>
          <and>
            <valid name="Vaccine Code CPT"/>
            <equals name="_codeTableCPT" value=""/>
          </and>
          <equals name="_codeTableCPT" value="CPT"/>
        </or>
      </where>
    </query>
    <get name="_vaccineName1" index="2"/>
    <get name="_vaccineName2" index="5"/>
    <get name="Vaccine Name" index="2"/>
    <query>
      <select>
        <value name="Vaccine Name" index="5"/>
      </select>
      <where>
        <empty name="_vaccineName1"/>
      </where>
    </query>
```

RXA-6: ADMINISTERED AMOUNT

This field indicates how much of the vaccine was administered.

RECEIVING NOTES

This field should be submitted as the actual amount or as '999' if it is unknown or is not to be reported. If this vaccination was not administered, then this should be set as '0'. See RXA-2 for more information.

SENDING NOTES

Always sent as '999' unless a "dummy" vaccination is sent. In which case, Dose (RXA-2) and Administered Amount are both set to '0'. A "dummy" vaccination may be sent when contraindications need to be communicated.

XML DEFINITION

```
    <value name="Administered Amount" type="WholeNumber" default="999"/>
```

RXA-9: ADMINISTERED NOTES

This field holds the information source and the free-text comments for the vaccination.

The information source is used to designate whether a vaccination is historical or not. If a vaccination is known from second-hand information, such as a paper record, it is historical; otherwise, it is considered administered. The information source is very important and allows IWeb to decide the weight it should give to reported vaccinations.

The free-text comment can contain any comments made by those who ordered, administered or recorded the vaccination. This text is displayed with all the other details of a vaccination when shown to a user.

RECEIVING NOTES

This field contains two values, both of them are optional. It is important to code them properly so they both can be read.

The information source is sometimes called the historical/administered flag. This indicates whether the vaccination reported here was reported directly to the sending system or was reported from a secondary source, such as a paper shot record. The following codes are accepted:

00	New immunization record
01	Historical information – source unspecified

The information source should have a coding table specified. If no code is sent, the vaccination record is assumed to be a new immunization record. The HL7 interface may also be configured to force all immunizations to be marked as historically reported.

The free-text comments may be sent in any repeat, but the first sub-field must be left blank and the comment must be placed in the second subfield. Comments longer than 254 characters will be silently truncated.

Example of HL7 encodings:

```
|00^New immunization record^NIP001~^Kid fussed, gave him lollipop|
|^Referred from Pine View Peds|
|01^Historical information – source unspecified^NIP001|
```

SENDING NOTES

The information source is always sent in the first repeat, and if there are comments they are sent in the second repeat.

The interface may be configured to force all immunizations to be marked with a historical information source when exported.

XML DEFINITION

```
<value name="Information Source" type="CodedElement"
tableId="NIP001"/>
<query>
  <select>
    <get name="Historical" value="Y"/>
  </select>
  <where>
    <not-empty name="Information Source"/>
    <valid name="Information Source"/>
    <not-equal name="Information Source" value="00"/>
  </where>
</query>
<set name="Comment" position="2" index="2"/>
<query>
  <select>
    <get name="Comment" index="2"/>
    <get name="_comment_code" index="1"/>
  </select>
  <where>
    <empty name="_comment_code"/>
    <not-empty name="Comment"/>
  </where>
</query>
```

RXA-10: ADMINISTERING PROVIDER

This field records the person who administered the vaccination. The CDC guide allows for three different persons to be recorded here: (OEI) the person who ordered the vaccination to be given, (VEI) the person who administered the vaccination, and (REI) the person who recorded the administration. IWeb does not differentiate between these three persons and only allows one person to be recorded on an immunization record. This should be the person most knowledgeable about event and the one of which questions should be directed from other providers when there are questions about the administration.

RECEIVING NOTES

This person is stored as a "physician" in IWeb. A "physician" in IWeb is not necessarily a medical doctor, but may be any person involved with the delivery of health care, specifically immunizations.

The physician id is attached to the vaccination record and the physician record may be inserted into IWeb. This functionality is the same as what is discussed in PD1-3. Please see the notes for this field for more information.

SENDING NOTES

Physician information is sent, if known. The first repetition contains the full physician name and IWeb's id for the physician.

In addition, if IWeb is configured to connect to another IWeb application, it will send multiple repeats populated with additional physician ids: (2) IWeb id designated as 'SR'; (3) SSN designated as 'SS'; and (4) Bomex id designated as 'LN';

XML DEFINITION

```
<set name="Physician Name Last" index="2"/>
<set name="Physician Name First" index="3"/>
<set name="Physician Name Middle" index="4"/>
<set name="Physician Name Suffix" index="5"/>
<set name="Physician Id Local" index="1" position="1"/>
<set value="${GLOBAL:Internal App Id Type}" index="13" position="1">
  <when>
    <or>
      <not-empty name="Physician Name Last"/>
      <not-empty name="Physician Name First"/>
      <not-empty name="Physician Name Middle"/>
      <not-empty name="Physician Name Suffix"/>
      <not-empty name="Physician Id Local"/>
    </or>
  </when>
</set>
<set name="Physician Id Remote" index="1" position="2">
  <when>
    <not-empty name="Physician Id Remote"/>
    <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
    <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
  </when>
</set>
<set value="${GLOBAL:External App Id Type}" index="13" position="2">
  <when>
    <not-empty name="Physician Id Remote"/>
    <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
    <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
```


```
      </when>
    </set>
    <set name="Physician SSN" index="1" position="3">
      <when>
        <not-empty name="Physician SSN"/>
        <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
        <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
      </when>
    </set>
    <set value="SS" index="13" position="3">
      <when>
        <not-empty name="Physician SSN"/>
        <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
        <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
      </when>
    </set>
    <set name="Physician Bomex Number" index="1" position="4">
      <when>
        <not-empty name="Physician Bomex Number"/>
        <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
        <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
      </when>
    </set>
    <set value="LN" index="13" position="4">
      <when>
        <not-empty name="Physician Bomex Number"/>
        <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
        <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
      </when>
    </set>
    <set name="Physician Id Local" index="1" position="5">
      <when>
        <not-empty name="Physician Id Local"/>
        <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
        <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
      </when>
    </set>
    <set value="VEI" index="13" position="5">
      <when>
        <not-empty name="Physician Id Local"/>
        <not-equal name="GLOBAL:Application Type" value="QS-Insight"/>
        <not-equal name="GLOBAL:Application Type" value="CDC Standard"/>
      </when>
    </set>
    <query>
      <select>
        <value name="Physician Id Remote"/>
        <value name="Physician Name Last" index="2"/>
        <value name="Physician Name First" index="3"/>
        <value name="Physician Name Middle" index="4"/>
        <value name="Physician Name Suffix" index="5"/>
        <value name="_idType" index="13"/>
      </select>
      <where>
        <or>
          <equal name="_idType" value="${GLOBAL:External App Id Type}"/>
          <and>
            <empty name="_idType"/>
            <instance position="1"/>
          </and>
        </or>
      </where>
    </query>
    <query>
      <select>
        <value name="Physician Id Local"/>
```

```
        <value name="_idType" index="13"/>
      </select>
      <where>
        <equal name="_idType" value="${GLOBAL:Internal App Id Type}"/>
      </where>
    </query>
    <query>
      <select>
        <value name="Physician SSN"/>
        <value name="_idType" index="13"/>
      </select>
      <where>
        <equal name="_idType" value="SS"/>
      </where>
    </query>
    <query>
      <select>
        <value name="Physician Bomex Number"/>
        <value name="_idType" index="13"/>
      </select>
      <where>
        <equal name="_idType" value="LN"/>
      </where>
    </query>
```

RXA-11: ADMINISTERED AT LOCATION

This field indicates the facility where the patient received an immunization or where the immunization was recorded (if historical). The concept of facility in IWeb is fairly general and may also be termed "organization" and has specific meaning as defined by the IRMS it belongs to. A facility in a hospital network may indicate the hospital, or even the care unit. A facility in a public health system may indicate departments, or individual clinics. The facility information is used to aggregate patient and vaccination data into reportable groups.

	HL7 sub-field	Notes
1	Point of care	Facility Id
2	Room	
3	Bed	
4	Facility	Facility Name
5	Location status	
6	Patient location type	
7	Building	
8	Floor	
9	Street address	Facility Address Street 1
10	Other designation	Facility Address Street 2

11	City	Facility Address City
12	State	Facility Address State
13	Zip	Facility Address Zip
14	Country	
15	Address type	

RECEIVING NOTES

IWeb stores two facility ids: (1) the facility id assigned by IWeb when the facility was created and (2) the facility id that was assigned by the provider. The provider's facility id can only be set at the time the facility is created, and the user interface does not allow for setting the provider's facility interface. This value may only be set by electronic imports.

If the facility name and facility id are both submitted, IWeb will review facilities in the same IRMS to determine if the facility needs to be added. If the provider's facility id is found, then no action is taken. If a facility with the same name, but different provider id is found, then an exception occurs and the entire message is rejected. If the facility name and provider's facility id are not present, then this facility is added. The HL7 import account may be configured to skip this facility insert step.

The facility id is stored on the patient record as the patient's primary or assigned facility.

SENDING NOTES

The facility name is sent if the patient is associated with a primary facility. The provider's facility id is sent if the patient is associated with a primary facility and that facility has a provider id that is known to IWeb.

In addition, if IWeb is configured to connect to another IWeb application, it will send a second repeat with the same facility name but with the facility id that IWeb uses. This is not available when the interface is configured to connect to a CDC Standard version application, as it is not compliant with HL7 standards.

XML DEFINITION

```
<value name="Facility Id Remote" index="1"/>
<value name="Facility Name" index="4"/>
<value name="Facility Address Street 1" index="9"/>
<value name="Facility Address Street 2" index="10"/>
<value name="Facility Address City" index="11"/>
<value name="Facility Address State" index="12" type="CodedValue"
tableId="STATES"/>
<value name="Facility Address Zip" index="13"/>
```

RXA-15: SUBSTANCE LOT NUMBER

The Substance Lot Number is the lot number associated with the vaccination given. This is used for inventory and recall purposes. IWeb takes all lot numbers as they are, but with one exception: Zero's and letter O's are treated as the same. So "0111" is equivalent to "o111", or "O111".

XML DEFINITION

```
<value name="Vaccine Lot Number"/>
```

RXA-17: SUBSTANCE MANUFACTURER NAME

The Substance Manufacturer Name is the Manufacturer code or MVX code. Please use proper MVX codes. This code field may be mapped if you are using a different code set.

XML DEFINITION

```
<value name="Vaccine Manufacturer Code" type="CodedElement"
tableId="HL70227"/>
<get name="Vaccine Manufacturer" index="2"/>
```

RXA-19: INDICATION

The Indication field contains the reason why this vaccination is needed. This is not normally valued since the vaccinations are recommended for all patients unless contraindicated. In the original HL7 importer IWeb there was a misunderstanding as to what this field meant and it was assigned to the IWeb adverse event field. As this field is not currently used it is still used by IWeb to accept and report adverse events associated

with the vaccination procedure. For accepted code values please see the Adverse Events code table.

XML DEFINITION

```
<value name="Indication" type="CodedElement" tableId="STC-ARC"/>
```

RXA-21: ACTION CODE

The Action Code indicates whether to *add*, *update,* or *delete* a vaccination. IWeb treats *add* and *update* as the same, duplicate vaccinations are always merged together. IWeb will delete a vaccination if so indicated.

RECEIVING NOTES

This field is not required and will be assumed to be add/update unless specified as a delete.

It is important to send deletes when making a significant change to a vaccination. IWeb identifies vaccinations by date and by code. If one of these values changes, then a *delete* must be sent for the old values followed by an *add* for the new values; otherwise, IWeb may not properly remove the incorrect entry. For example, if an MMR given on 01/03/2008 is submitted as being given on 01/03/2007 and then corrected and resent, IWeb will not know that the new one is a match for the old one and will leave the incorrect one on the record.

Deletes and *adds* may be sent in the same message without a problem. The same vaccination may even be added, updated, deleted, and then added again in the same message. All *adds*/*updates* and *deletes* are processed in the order received.

When deleting a vaccination IWeb also records a deletion date. This is always set as the date the HL7 message was received by IWeb.

SENDING NOTES

IWeb will only indicate *adds* and *deletes,* but not *updates*. (*Updates* are sent, but they are always marked as *adds*.) Deletes may be sent if so configured. Some systems may not understand deletes properly and may

add them to their system. Do not configure deletes to be sent unless the receiving system is prepared to receive them.

XML DEFINITION

```
<value name="Action Code" type="CodedValue" tableId="HL70323"/>
<error-if message="Unrecognized action code" code="103">
  <not-empty name="Action Code"/>
  <not-valid name="Action Code"/>
</error-if>
<query>
  <select>
    <value name="Deletion Date" type="DateTime" value="today"/>
  </select>
  <where>
    <equals name="Action Code" value="D"/>
  </where>
</query>
```

RXR: PHARMACY/TREATMENT ROUTE SEGMENT

The Pharmacy/Treatment Route segment is used only for the route and site.

RXR-1: ROUTE

This field indicates the route used for the immunization.

	HL7 sub-field	Notes
1	identifier (ST)	Route
2	text (ST)	Description of route
3	coding system (ST)	Value as 'HL70162'
4	alternate identifier (ST)	*not supported*
5	alternate text (ST)	*not supported*
6	alternate coding system (ST)	*not supported*

XML DEFINITION

```
<value name="Route" type="CodedElement" tableId="HL70162"
default="OTH"/>
```

RXR-2: SITE

This field indicates the site for the immunization given.

	HL7 sub-field	Notes
1	identifier (ST)	Site
2	text (ST)	Description of site
3	coding system (ST)	Value as 'HL70163'
4	alternate identifier (ST)	*not supported*
5	alternate text (ST)	*not supported*
6	alternate coding system (ST)	*not supported*

XML DEFINITION

```
<value name="Site" type="CodedElement" tableId="HL70163"/>
```

STF: STAFF IDENTIFICATION SEGMENT

This segment is used as part of HL7 messages used to change user passwords. This is to allow IWeb to be synchronized with user authentication systems. It has no use in regular vaccination update and query messages.

STF-1: ENCRYPTED USER ID

This field contains the 3DES encrypted User Ids for the User of the password being changed.

	HL7 sub-field	Notes
1	User Id (CE)	Encrypted User Id

STF-2: ENCRYPTED PASSWORD

This field contains the 3DES encrypted new Password for the User specified in STF-1.

	HL7 sub-field	Notes
1	Password (CX)	Encrypted Password

ZSP: STC PATIENT SEGMENT

The STC Patient segment is a custom segment for sending patient information that is not captured by the standard PID, PD1, and PV1 segments. This segment is not sent if 'CDC Standard' is selected as the receiving application type. This segment may be submitted by any sending system but it is not required.

ZSP-1: FACILITY NAME

Includes additional information about the facility the patient is assigned to. The PD1 segment only transmits the facility name and id. This allows for the address to be sent as well.

	HL7 sub-field	Notes
1	Point of care	Facility Id
2	Room	
3	Bed	
4	Facility	Facility Name
5	Location status	
6	Patient location type	
7	Building	
8	Floor	
9	Street address	Facility Address Street 1
10	Other designation	Facility Address Street 2
11	City	Facility Address City
12	State	Facility Address State
13	Zip	Facility Address Zip
14	Country	

	HL7 sub-field	Notes
15	Address type	

XML DEFINITION

```
<set name="Facility Id" index="1"/>
<set name="Facility Name" index="4"/>
<set name="Facility Address Street 1" index="9"/>
<set name="Facility Address Street 2" index="10"/>
<set name="Facility Address City" index="11"/>
<set name="Facility Address State" index="12" type="CodedValue"
tableId="STATES"/>
<set name="Facility Address Zip" index="13"/>
<query>
  <select>
    <value name="Facility Id" index="1"/>
    <value name="Facility Name" index="4"/>
    <value name="Facility Address Street 1" index="9"/>
    <value name="Facility Address Street 2" index="10"/>
    <value name="Facility Address City" index="11"/>
    <value name="Facility Address State" index="12" type="CodedValue"
tableId="STATES"/>
    <value name="Facility Address Zip" index="13"/>
  </select>
  <where>
    <not-empty value="Facility Name"/>
    <not-empty value="Facility Id"/>
  </where>
</query>
```

ZSP-2: FACILITY PHONE

The Facility Phone is not sent in the PD1 segment and so is available here. May send fax and email as well.

XML DEFINITION

```
<set name="Facility Phone" index="1" position="1" type="PhoneNumber"/>
<set value="PH" index="3" position="1"/>
<query>
  <select>
    <value name="Facility Phone" index="1" type="PhoneNumber"/>
    <value name="_type" index="3"/>
  </select>
  <where>
    <or>
      <equal name="_type" value="PH"/>
      <and>
        <empty name="_type"/>
        <instance position="1"/>
      </and>
    </or>
  </where>
</query>
<set name="Facility Fax" index="1" position="2" type="PhoneNumber"/>
```

```
    <set value="FX" index="3" position="2"/>
    <query>
      <select>
        <value name="Facility Fax" index="1" type="PhoneNumber"/>
        <value name="_type" index="3"/>
      </select>
      <where>
        <equal name="_type" value="FX"/>
      </where>
    </query>
    <set name="Facility Email" index="4" position="3"/>
    <set value="INTERNET" index="2" position="3"/>
    <set value="NET" index="3" position="3"/>
    <query>
      <select>
        <value name="Facility Email" index="4"/>
        <value name="_use" index="2"/>
        <value name="_type" index="3"/>
      </select>
      <where>
        <equal name="_use" value="INTERNET"/>
        <equal name="_type" value="NET"/>
      </where>
    </query>
```

ZSP-4: COMMENT

The Comment field may be sent for the patient. This differs from comments that may be made on a particular vaccination. This comment applies to the patient record as a whole and is not associated with a particular vaccination event.

XML DEFINITION

```
  <field seq="4" status="optional" length="" dataType="" required="no"
    optional="yes" repeats="" item="">
    <value name="Comment"/>
  </field>
```

ZSP-5: HEALTH DISTRICT

The Health District is a custom IWeb installation designation that differentiates records from different health districts within the states. The appropriate values for this field are defined by the IWeb administrator.

XML DEFINITION

```
    <value name="Health District"/>
```

ZSV: STC VACCINATION SEGMENT

The STC Vaccination Segment is a custom segment to hold information not sent in the RXA or RXR segment. Most of the values in this segment may now be sent via additional OBX segments.

ZSV-1: FACILITY NAME

The Facility Name is used to transmit additional facility ids that are not sent in the RXA.

XML DEFINITION

```
<value name="Facility Name" index="1" position="1"/>
<set name="Facility Id Local" index="3" position="1"/>
<set value="${GLOBAL:Internal App Id Type}" index="7" position="1"/>
<set name="Facility Name" index="1" position="2"/>
<set name="Facility Id Remote" index="3" position="2"/>
<set value="${GLOBAL:External App Id Type}" index="7" position="2"/>
<query>
  <select>
    <value name="Facility Id Remote" index="3"/>
    <value name="_idType" index="7"/>
  </select>
  <where>
    <or>
      <equal name="_idType" value="${GLOBAL:External App Id Type}"/>
      <and>
        <empty name="_idType"/>
        <instance position="1"/>
      </and>
    </or>
  </where>
</query>
<query>
  <select>
    <value name="Facility Id Local" index="3"/>
    <value name="_idType" index="7"/>
  </select>
  <where>
    <equal name="_idType" value="${GLOBAL:Internal App Id Type}"/>
  </where>
</query>
```

ZSV-2: FACILITY PHONE

The Facility Phone is used to transmit the facility phone, email, and fax number.

XML DEFINITION

```
<set name="Facility Phone" index="1" position="1" type="PhoneNumber"/>
<set value="PH" index="3" position="1"/>
<query>
  <select>
    <value name="Facility Phone" index="1" type="PhoneNumber"/>
    <value name="_type" index="3"/>
  </select>
  <where>
    <or>
      <equal name="_type" value="PH"/>
      <and>
        <empty name="_type"/>
        <instance position="1"/>
      </and>
    </or>
  </where>
</query>
<set name="Facility Fax" index="1" position="2" type="PhoneNumber"/>
<set value="FX" index="3" position="2"/>
<query>
  <select>
    <value name="Facility Fax" index="1" type="PhoneNumber"/>
    <value name="_type" index="3"/>
  </select>
  <where>
    <equal name="_type" value="FX"/>
  </where>
</query>
<set name="Facility Email" index="4" position="3"/>
<set value="INTERNET" index="2" position="3"/>
<set value="NET" index="3" position="3"/>
<query>
  <select>
    <value name="Facility Email" index="4"/>
    <value name="_use" index="2"/>
    <value name="_type" index="3"/>
  </select>
  <where>
    <equal name="_use" value="INTERNET"/>
    <equal name="_type" value="NET"/>
  </where>
</query>
```

ZSV-3: COMMENT

The Comment field contains the same comment as is found in RXA-9. If both are valued then they should be given the same value. Only one is accepted.

XML DEFINITION

```
<value name="Comment"/>
```

ZSV-4: HEALTH DISTRICT

The Health District is a local code used by IWeb to divide a state jurisdiction into smaller pieces. This field indicates in which health district this vaccination was given. For appropriate values please contact the IWeb administrator.

XML DEFINITION

```
<value name="Health District"/>
```

ZSV-5: VIS GIVEN DATE

The VIS Given Date is the date when the Vaccine Information Sheet (VIS) was given to the patient. This may also be transmitted via an OBX segment.

XML DEFINITION

```
<value name="Form VIS Given Date" type="DateTime"/>
```

ZSV-6: TB INDURATION RESULT

The TB Induration Result field indicates the result of a TB Induration (take or no take). This value is sent by IWeb but not accepted.

XML DEFINITION

```
<value name="Tb Induration Result"/>
```

ZSV-7: VFC ELIGIBILITY

The VFC Eligibility field has the same format as PV1-20 and indicates the VFC eligibility at the time of the vaccination. This may also be sent in an OBX.

XML DEFINITION

```
     <value name="Vaccine Eligible VFC" type="CodedValue"
    tableId="HL70064"/>
```

ZSV-8: TB INDURATION

The TB Induration field is only used for vaccinations that represent TB Indurations.

XML DEFINITION

```
    <value name="Induration TB"/>
```

ZSV-9: VIS DATE

The VIS Date field indicates the VIS publication dates and may be repeated up to four times to indicate different dates. Additional repeats will be ignored.

XML DEFINITION

```
    <value name="Publication Date VIS 1" type="DateTime" position="1"/>
    <value name="Publication Date VIS 2" type="DateTime" position="2"/>
    <value name="Publication Date VIS 3" type="DateTime" position="3"/>
    <value name="Publication Date VIS 4" type="DateTime" position="4"/>
```

APPENDIX C: CODE TABLES

ADVERSE REACTION

CODE	DESCRIPTION	INACTIVE
1	Adverse reaction occurred. Contact appropriate party to learn details.	
10	Paralytic polio in an immunodeficient recipient	
11	Paralytic polio in a vaccine-associated community case	
12	Vaccine-strain polio viral infection in a non-immunodeficient recipient	
13	Vaccine-strain polio viral infection in an immunodeficient recipient	
14	Vaccine-strain polio viral infection in a vaccine-associated community case	
15	Early on-set HIB disease	
16	Inadvertent autoinoculaton	
17	Eczema vaccinatum	
18	Generalized vaccinia	
19	Progressive vaccinia	
2	Anaphylaxis or anaphylactic shock	
20	Erythematous or urticarial rashes	
21	Post vaccinial encephalitis	
22	Injection site reaction	
23	Systemic reactions, e.g. immediate hypersensitivity, fever or muscle aches	
24	Fetal vaccinia	
25	Death	
26	Other	
27	Bronchiolitis	
28	Gastroenteritis	
29	Pneumonia	
3	Brachial neuritis	
30	Uninary tract infection	
31	Seizure	
4	Any sequela (including death) of events	
5	Encephalopathy (or encephalitis)	
6	Chronic arthritis	
7	Thombocytopenic purpura	
8	Vaccine-strain measles viral infection in an immunodeficient recipient	
9	Paralytic polio in a non-immunodeficient recipient	

ANATOMICAL ROUTE

CODE	DESCRIPTION	INACTIVE
INTRAMUSCULAR	Intramuscular	
INTRADERMAL	Intradermal	
SUBCUTANEOUS	Subcutaneous	
ORAL	Oral	
NASAL	Nasal	
IV	Intravenous	
OTH	Other Miscellaneous	
TD	Transdermal	

ANATOMICAL SITE

CODE	DESCRIPTION	INACTIVE
LEFT_ARM	Left Arm	
RIGHT_ARM	Right Arm	
LEFT_THIGH	Left Thigh	
RIGHT_THIGH	Right Thigh	
LEFT_GLUTEUS	Left Gluteus	
RIGHT_GLUTEUS	Right Gluteus	
NOSE	Nose	
MOUTH	Mouth	
LD	Left Deltoid	
LVL	Left Vastus Lateralis	
LLFA	Left Lower Forearm	
RVL	Right Vastus Lateralis	
RD	Right Deltoid	
RLFA	Right Lower Forearm	

CONTRAINDICATION

CODE	DESCRIPTION	TYPE
1	Parent or Patient Refusal: Personal	EXEMPTION
2	Laboratory evidence of immunity	CONTRAINDICATION
3	Anaphylactic reaction to a previous dose of the vaccine	CONTRAINDICATION
4	Anaphylactic reaction to a vaccine component	CONTRAINDICATION
5	Anaphylactic reaction to streptomycin	CONTRAINDICATION
6	Anaphylactic reaction to neomycin	CONTRAINDICATION
7	Anaphylactic reaction to gelatin	CONTRAINDICATION
8	Anaphylactic reaction to bakers yeast	CONTRAINDICATION
9	Encephalopathy within 7 days after a previous dose	CONTRAINDICATION
10	Fever of >= 40.5 C (105 F) within 48 hours of previous dose	PRECAUTION

CODE	DESCRIPTION	TYPE
11	Collapse or shocklike state within 48 hours of previous dose	PRECAUTION
12	Convulsions (seizures) within 72 hours of previous dose	PRECAUTION
13	Persistent crying lasting >= 3 hours within 48 hours of prev. dose	PRECAUTION
14	Guillain-Barre syndrome (GBS) within 6 weeks	PRECAUTION
15	Symptomatic HIV in recipient	CONTRAINDICATION
16	Symptomatic HIV in recipient	CONTRAINDICATION
17	Recent administration of antibody-containing blood products	PRECAUTION
18	Immunodeficiency (household contact)	CONTRAINDICATION
19	Immunodeficiency in recipient	CONTRAINDICATION
20	Underlying unstable, evolving neurologic disorder	PRECAUTION
21	Thrombocytopenic purpura (history)	PRECAUTION
22	Pregnancy of recipient	CONTRAINDICATION
23	Pregnancy of recipient	PRECAUTION
24	Weight <= 2000 grams	CONTRAINDICATION
25	Moderate or severe acute illness	PRECAUTION
26	Anaphylactic reaction to Thimerosal	CONTRAINDICATION
27	Anaphylactic reaction to Polymixin B	CONTRAINDICATION
28	Patient or parent report of disease	CONTRAINDICATION
29	Anaphylactic reaction to Alum	CONTRAINDICATION
30	Anaphylactic reaction to 2-Phenoxyethnol (Havrix)	CONTRAINDICATION
31	TB - untreated, active	CONTRAINDICATION
32	Previous anthrax disease	CONTRAINDICATION
33	Age < 18 years	CONTRAINDICATION
34	Eczema, history of eczema, in self or household contact	CONTRAINDICATION
35	Parent or Patient Refusal: Religious	EXEMPTION
36	Moderate or severe illness	CONTRAINDICATION
37	Medical - Not otherwise specified	CONTRAINDICATION
38	Deferred pending further medical information	CONTRAINDICATION
39	Known cardiac disease	CONTRAINDICATION
40	Hypersensitivity/Anaphylactic reaction to eggs/egg products	CONTRAINDICATION
41	5-17 yrs of age receiving aspirin/aspirin containing therapy	CONTRAINDICATION
42	History of Gullain Barre syndrome	CONTRAINDICATION
43	Chronic underlying medical conditions, incl. asthma or reactive airway disease	CONTRAINDICATION
44	Allergic to Doxycycline	CONTRAINDICATION
45	Allergic to Ciprofloxacin	CONTRAINDICATION
46	Hypersensitivity/Anaphylactic reaction dry rubber latex	CONTRAINDICATION
47	Laboratory evidence of suppression	CONTRAINDICATION
48	Medical Condition - Immunosuppression	CONTRAINDICATION
49	Immunodeficient close contacts	PRECAUTION

ETHNICITY CODES

CODE	OLD CODE	DESCRIPTION	SIIS
2135-2	H	Hispanic or Latino	1
2186-5	N	Not Hispanic or Latino	2
	U	Unknown	3

INACTIVE CODE

CODE	DESCRIPTION	INACTIVE
A	Address Incorrect	
D	Deceased	
F	Postal Forward Order Expired	
G	Moved or Gone Elsewhere	
M	Moved Out of State	
N	No Postal Forward on File	
O	Other	
P	Changed to another provider	
U	Delivery Unsuccessful	

INSERT ERROR

CODE	DESCRIPTION	INACTIVE
1	Invalid IRMS system id.	
10	ASIIS vaccine code and CDC code vaccine code both present.	
11	IRMS patient ID cannot be sent with CDC vaccine code.	
12	Billing patient ID cannot be sent with ASIIS vaccine code.	
13	CDC vaccine code not found.	
14	ASIIS vaccine code not found.	
15	Invalid or missing vaccination date	
16	IRMS sys-pat ID combo blocked.Patient deleted from Registry.	
17	Missing facility name.	
18	Missing physician last name.	
19	Facility exists as another IRMS_FAC_ID	
2	Missing physician id.	
20	Administered vaccination cannot be unspecified antigen.	
21	More than one facility exists in this IRMS with same name.	
22	Physician exists for facility with different irms_phys_id.	
23	Multiple race code values not separated by comma.	
24	Patient birthdate not allowed by registry administrative	

CODE	DESCRIPTION	INACTIVE
	settings	
3	Missing facility id.	
4	Missing patient id.	
5	IRMS patient ID and Billing patient ID both present.	
6	Missing patient first name.	
7	Missing patient last name.	
8	Missing patient birth date.	
9	Missing vaccine code.	

LANGUAGE

CODE	DESCRIPTION	INACTIVE
E	English	
S	Spanish	

MANUFACTURER MVX CODES

MVX	DESCRIPTION	INACTIVE
AB	ABBOT	
AD	ADAMS	
ALP	ALPHA	
AR	ARMOUR (Use AVB)	Y
AVB	AVENTIS BEHRING LLC (USE ZLB)	Y
AVI	AVIRON	
BA	BAXTER HEALTHCARE CO (Use BAH	Y
BAH	BAXTER HEALTHCARE CORPORATION	
BAY	BAYER CORPORATION	
BP	BERNA (USE BPC)	Y
BPC	BERNA PRODUCTS CORPORATION	
CEN	CENTEON L.L.C. (use AVB)	Y
CHI	CHIRON CORPORATION (Use NOV)	Y
CMP	CELLTECH MEDEVA (Use NOV)	Y
CNJ	CANGENE CORPORATION	
CON	CONNAUGHT (Use PMC)	Y
CSL	CSL BIOTHERAPIES, INC.	
DVC	DYNPORT VACCINE CO., LLC	
EVN	EVANS (Use NOV)	Y
GEO	GEOVAX LABS, INC.	
GRE	GREER	
IAG	IMMUNO INTERNAT. AG (Use BAH)	Y
IM	MERIEUX (Use PMC)	Y
IUS	IMMUNO-US	
JPN	MICROBIAL DIS/OSAKA U	
KGC	KOREA GREEN CROSS	
LED	LEDERLE (Use WAL)	Y
MA	MASSACHUSETTS PH (Use MBL)	Y
MBL	MASSACHUSETTS BIOLOGICAL LABS	
MED	MEDIMMUNE, INC.	

MVX	DESCRIPTION	INACTIVE
MIL	MILES (Use BAY)	Y
MIP	BIOPORT CORPORATION	
MSD	MERCK	
NAB	NABI	
NAV	N. AMER. VACC., INC. (Use BAH	Y
NOV	NOVARTIS PHARMACEUTICAL CORP.	
NVX	NOVAVAX, INC.	
NYB	NEW YORK BLOOD CENTER	
ORT	ORTHO-CLINICAL DIAGNOSTICS	
OTC	ORGANON TEKNIKA	
OTH	OTHER	
PD	PARKEDALE PHARMACEUTICALS	
PMC	SANOFI PASTEUR	
PRX	PRAXIS BIOLOGICS (Use WAL)	Y
PWJ	POWERJECT PHARM. (USE NOV)	Y
SCL	SCLAVO	
SI	SWISS SERUM-VACC INST(USE BPC	Y
SKB	GLAXOSMITHKLINE	
SOL	SOLVAY PHARMACEUTICALS	
TAL	TALECRIS BIOTHERAPEUTICS	
UNK	UNKNOWN MANUFACTURER	
USA	U.S. ARMY MEDICAL RESEARCH	
VXG	VAXGEN	
WA	WYETH-AYERST (Use WAL)	Y
WAL	WYETH-AYERST	
ZLB	ZLB BEHRING	

RACE CODES

CODE	DESCRIPTION	SIIS
1002-5	American Indian or Alaska Native	5
2028-9	Asian	4
2076-8	Native Hawaiian or Other Pacific Islander	7
2054-5	Black or African American	2
2106-3	White	1
2135-2	Hispanic or Latino (see Ethnicity table)	
2186-5	not Hispanic or Latino (see Ethnicity table)	
2131-1	Multi-Racial	6
	Multi-racial	8
	Unknown	9

SEX CODES

CODE	DESCRIPTION
M	Female
F	Male

CODE	DESCRIPTION
U	Unknown
O	Other

SUFFIX CODES

CODE
ARNP
BSN
DO
I
II
III
IV
IX
JR
LPN
LVN
MA
MD
MISS
MR
MRS
MS
MSN
ND
NP
PA
RN
SR
V
VI
VII
VIII
X

VACCINATION CPT CODES

CPT	DESCRIPTION	SIIS
11	Pertussis	11
200	PPD Positive Result	200

CPT	DESCRIPTION	SIIS
201	PPD Negative Result	201
207	Smallpox	207
210	DTaP, 5 pertussis antigens	210
86580	PPD (tuberculosis skin test) Intradermal	30
86585	PPD (tuberculosis skin test) Tine Test	30
86648	Diphtheria antitoxin	58
90281	Immune globulin (IG), human for intramuscular use	14
90283	Immune globulin (IGIV), human, for intravenous use	15
90287	Botulinum antitoxin, equine, any route	48
90288	Botulism immune globulin, human, for intravenous use	500
90291	Cytomegalovirus immune globulin (CMV-IGIV), human for intravenous use	49
90296	Diphtheria antitoxin, equine, any route	58
90371	Hepatitis B immune globulin (HBIG), human, for intravenous use	29
90375	Rabies immune globulin (RIG), human, for intravenous use	52
90376	Rabies immune globulin, heat treated (RIG-HT), human, for intramuscular and-or subcutaneous use	52
90378	Respiratory syncytial virus immune globulin (RSV-IgIM), for intramuscular use, 50mg, each	208
90379	Respiratory syncytial virus immune globulin (RSV-IGIV), human, for intravenous use	209
90384	Immune globulin (IGIV), human, for intravenous use	300
90385	Rho(D) immune globulin (RhIG), human, mini-dose, for intramuscular use	301
90386	Rho(D) immune globulin (RhIG), human, for intravenous use	302
90389	Tetanus immune globulin (TIG), human, for intramuscular use	13
90393	Vaccinia immune globulin, human, for intramuscular use	211
90396	Varicella-zoster immune globulin, human, for intramuscular use	36
90399	Unlisted immune globulin	213
90476	Adenovirus vaccine, type 4, live, for oral use	400
90477	Adenovirus vaccine, type 7, live, for oral use	401
90581	Anthrax vaccine, for subcutaneous use	37
90585	Bacillus Calmette-Guerin vaccine (BCG) for tuberculosis, live, for percutaneous use	19
90586	Bacillus Calmette-Guerin vaccne (BCG) for bladder cancer, live, for intravesical use	19
90592	Cholera	26
90632	Hep A, Adult dosage for intramuscular use	105
90633	Hepatitis A vaccine, pediatric/adolescent dosage-2 dose schedule, for intramuscular use	34
90634	Hepatitis A vaccine, pediatric/adolescent dosage, 3 dose schedule, for intramuscular use	103
90636	Hepatitis A and hepatitis B (HepA-HepB), adult dosage, for intramuscular use	104
90645	Hemophilus influenza b vaccine (Hib), HbOC conjugate (4	47

CPT	DESCRIPTION	SIIS
	dose schedule), for intramuscular use	
90646	Hemophilus influenza b vaccine (Hib), PRP-D conjugate, for booster use only, intramuscular use	46
90647	Hemophilus influenza b vaccine (Hib), PRP-OMP conjugate, (3 dose schedule), for intramuscular use	23
90648	Hemophilus influenza b vaccine (Hib), PRP-T conjugate, (4 dose schedule), for intramuscular use	24
90649	human papilloma virus vaccine, quadrivalent	925
90655	Influenza virus vaccine, split virus, preservative free, children 6-35 mos., for intramuscular use	605
90656	Influenza virus vaccine, split virus, preservative free, 36 mos and older.	606
90657	Influenza virus vaccine, split virus, 6-35 months dosage, for intramuscular use	602
90658	Influenza virus vaccine, split virus, 3 years and above dosage, for intramuscular use	603
90659	Influenza virus vaccine, whole virus, for intramuscular or jet injection use	16
90660	Influenza virus vaccine, live, for intranasal use	62
90665	Lyme disease vaccine, adult dosage, for intramuscular use	60
90669	Pneumococcal conjugate vaccine, polyvalent, for children under five years,for intramuscular use	102
90675	Rabies Intramuscular	40
90676	Rabies Intradermal	63
90680	Rotavirus vaccine, pentavalent, 3 dose schedule, live, for oral use	116
90690	Typhoid vaccine, live oral	25
90691	Typhoid vaccine, Vi capsular polysaccharide (ViCPs), for intramuscular use	41
90692	Typhoid vaccine, heat- and phenol- inactivated (H-P), for subcutaneous or intradermal use	601
90693	Typhoid vaccine, acetone-killed, dried (AKD), for subcutaneous use (U.S. military)	601
90698	Diphtheria,tetanus toxoids and acellular pertussis, haemophilus influenza Type B, and poliovirus vaccine, inactivated (DTaP-Hib-IPV), for IM use	920
90700	Diptheria, tetanus toxoids, and acellular pertussis vaccine (DTaP), children younger than 7 years, intramuscular use	20
90701	diphtheria and tetanus toxoids and pertussis vaccine (DTP)	1
90702	diphtheria and tetanus toxoids (DT) absorbed for use in individuals younger than seven years, for intramuscular use	28
90703	Tetanus toxoid adsorbed, intramuscular use	35
90704	Mumps virus vaccine, live, subcutaneous use	7
90705	Measles virus vaccine, live, subcutaneous use	5
90706	Rubella virus vaccine, live, subcutaneous use	6
90707	Measles, mumps and rubella virus vaccine (MMR), live, subcutaneous use	3

CPT	DESCRIPTION	SIIS
90708	Measles and rubella virus vaccine, live, subcutaneous use	4
90709	rubella and mumps virus vaccine, live	38
90710	measles, mumps, rubella, varicella vaccine	54
90711	diphtheria, tetanus toxoids, and pertussis (DTP) and injectable poliomyelitis vaccine	55
90712	poliovirus vaccine, live, oral (any type(s))	2
90713	Poliovirus vaccine, inactivated, (IPV), for subcutaneous use or intramuscular use	10
90714	typhoid vaccine	25
90714	Tetanus and diphtheria toxoids (Td) adsorbed, preservative free, for use in individuals seven years or older, for intramuscular use	67
90715	Tetanus, diphtheria toxoids and acellular pertussis vaccine (Tdap), for use in individuals 7 years or older, for intramuscular use	921
90716	varicella (chicken pox) vaccine	21
90717	yellow fever vaccine	32
90718	Tetanus and diphtheria toxoids (Td) adsorbed for use in individuals seven years or older, for intramuscular use	9
90719	diphtheria toxoid	12
90720	Diphtheria, tetanus toxoids, and whole cell pertussis vaccine (DTP) and Hemophilus influenza B vaccine (DTP-HIB) for intramuscular use	22
90721	diphtheria, tetanus toxoids, and acellular pertussis vaccine (DtaP) and Hemophilus influenza B (HIB) vaccine	53
90723	Diphtheria, tetanus toxoids, acellular pertussis vaccine, Hepatitis B, and poliovirus vaccine, inactivated (DTaP-HepB-IPV), for intramuscular use	203
90724	influenza virus vaccine	16
90725	cholera vaccine	26
90726	rabies vaccine	40
90727	Plague vaccine, intramuscular use	50
90728	BCG Vaccine	19
90730	hepatitis A vaccine	34
90731	hepatitis B vaccine	45
90732	Pneumococcal polysaccharide vaccine, 23-valent, adult or immunosuppressed patient dosage, for subcutaneous or intramuscular use	31
90733	meningococcal polysaccharide vaccine (any group(s)) MPSV4	33
90734	Meningococcal A,C,Y,W-135 diptheria conjugate (MCV4)	918
90735	Japanese encephalitis virus vaccine, for subcutaneous use	39
90736	Zoster (shingles) vaccine, live, for subcutaneous injection	607
90737	Hemophilus influenza B	17
90740	Hepatitis B vaccine, dialysis or immunosuppressed patient dosage (3 dose schedule), for intramuscular use	42
90741	Immunization, passive; immune serum globulin, human (ISG)	14

CPT	DESCRIPTION	SIIS
90742	Immunization, passive; specific hyperimmune serum globulin (eg, hepatitis B, measles, pertussis, rabies, Rho(D), tetanus, vaccinia, varicella-zoster)	14
90743	Hepatitis B vaccine, adolescent (2 dose schedule), for intramuscular use	202
90744	Hepatitis B vaccine, pediatric/adolescent dosage (3 dose schedule), for intramuscular use	8
90745	Immunization, active, hepatitis B vaccine; 11-19 years	56
90746	Hepatitis B vaccine, adult dosage, for intramuscular use	43
90747	Hepatitis B vaccine, dialysis or immunosuppressed patient dosage (4 dose schedule), for intramuscular use	42
90748	Hepatitis B vaccine and Hemophilus influenza b vaccine (Hepb-Hib), for intramuscular use	57
90749	Unlisted vaccine toxoid	213

VACCINATION CVX CODES

CVX	DESCRIPTION	SIIS
1	DTP	1
2	OPV	2
3	MMR	3
4	M/R	4
5	Measles	5
6	Rubella	6
7	Mumps	7
8	Hepatitis B-- adolescent or pediatric	8
9	Td (Adult)	9
10	IPV	10
11	Pertussis	11
12	Diphtheria antitoxin	58
13	TIG	13
14	IG, NOS	14
15	Influenza--split (incl. purified surface antigen)	61
16	Influenza--whole	16
17	Hib--unspecified	17
18	Rabies-- intramuscular injection	40
19	BCG	19
20	DTaP	20
21	Varicella	21
22	DTP-Hib	22
23	Plague	50
24	Anthrax	37
25	Typhoid-oral	25
26	Cholera	26
27	Botulinum Antitoxin	48
28	DT (Pediatric)	28
29	CMVIG	49
30	HBIG	29
31	Hepatitis A- pediatric, NOS	34

CVX	DESCRIPTION	SIIS
32	Meningococcal (MPSV4)	33
33	Pneumococcal	31
34	RIG	52
35	Tetanus Toxoid, adsorbed	35
36	VZIG	36
37	Yellow Fever	32
38	Rubella/Mumps	38
39	Japanese Encephalitis	39
40	Rabies-intradermal injection	63
41	Typhoid, parenteral, other than acetone-killed, dried	601
42	Hepatitis B-- adolescent/high risk infant	56
43	Hepatitis B--adult	43
44	Hep B--dialysis	42
45	Hep B--other or unspecified	45
46	Hib-PRP-D	46
47	Hib--HbOC	47
48	Hib--PRP-T	24
49	Hib--PRP-OMP	23
50	DTaP/Hib	53
51	Hib-Hep B	57
52	Hep A-adult	105
53	Typhoid, parenteral, AKD (U.S. military)	601
54	Adenovirus, Type 4	400
55	Adenovirus, Type 7	401
56	Dengue Fever	601
57	Hantavirus	920
58	Hep C	20
59	Hep E	1
60	Herpes Simplex 2	28
61	HIV	35
62	HPV, quadrivalent	925
63	Junin Virus	5
64	Leishmaniasis	6
65	Leprosy	3
66	Lyme Disease	60
67	Malaria	38
68	Melanoma	54
69	Parainfluenza-3	55
70	Q Fever	2
71	RSV-IGIV	209
72	Rheumatic Fever	25
73	Rift Valley Fever	67
74	Rotavirus vaccine, tetravalent, live, oral	59
75	Smallpox	207
76	Staphylococcus Bacteria Lysate	32
77	Tick-Borne Encephalitis	9
78	Tularemia Vaccine	12
79	Vaccinia immune globulin	211
80	VEE, live	53

CVX	DESCRIPTION	SIIS
81	VEE, Inactivated	203
82	Adenovirus, NOS	16
83	Hepatitis A vaccine, pediatric/adolescent dosage, 2 dose schedule	34
84	Hepatitis A, pediatric/adolescent dosage 3-dose schedule, for intramuscular use	103
85	Hep A, NOS	107
86	Immune Globulin, Intramuscular	14
87	IGIV	15
88	Influenza, NOS	108
89	Polio, NOS	204
90	Rabies, NOS	916
91	Typhoid, NOS	604
92	VEE, NOS	39
93	RSV-MAb	208
94	Measles, mumps, rubella, and varicella virus vaccine	54
95	TST-OT Tine Test	42
96	Tuberculin skin test; purified protein derivative solution, intradermal	30
97	TST-PPD Tine Test	30
98	TST, NOS	30
100	Pneumococcal conjugate vaccine, polyvalent	102
101	Typhoid Vi capsular polysaccharide vaccine	41
102	DTP/Hib/Hep B	106
103	Meningococcal C Conjugate	919
104	Hep A - Hep B	104
105	Smallpox vaccine, diluted	212
106	Diptheria, tetanus toxoids and acellular pertussis vaccine, 5 pertussis antigens	210
107	DTaP, NOS	600
108	Meningococcal, NOS	922
109	Pneumococcal, NOS	205
110	DTaP/Hep B/IPV	203
111	Influenza, live, intranasal	62
112	Tetanus toxoid, NOS	217
113	Td (adult) tetanus and diphtheria toxoids, adsorbed, preservative free, for adult use	67
114	Meningococcal A,C,Y,W-135 diptheria conjugate (MCV4)	918
115	Tdap	921
116	Rotavirus, live, pentavalent vaccine	116
117	VZIG (IND) Investigational New Drug	926
118	HPV, bivalent	
119	Rotavirus, live, monovalent vaccine	119
120	DTaP/Hib/IPV	920
121	Zoster vaccine, live	607
122	Rotavirus vaccine, NOS	608
123	Influenza virus vaccine,H5N1,A/Vietnam/1203/2004 (national stockpile)	976
923	Using ASIIS code because no CDC - Hep A 12+ months	923

CVX	DESCRIPTION	SIIS
998	No vaccine administered	
999	Unknown vaccine or immune globulin	213
86580	PPD	30
86585	PPD	30
90710	Using CPT because no CDC - measles, mumps, rubella, varicella vaccine	54
90711	Using CPT because no CDC - diphtheria, tetanus toxoids, and pertussis (DTP) and injectable poliomyelitis vaccine	55
90719	Using CPT because no CDC - Diphtheria Toxoid	12
90743	Using CPT because no CDC - Hep B 2 dose	202

VACCINATION SIIS CODES

CODE	DESCRIPTION	CPT	CVX
1	DTP	90701	1
2	OPV	90712	2
3	MMR	90707	3
4	M/R	90708	4
5	Measles	90705	5
6	Rubella	90706	6
7	Mumps	90704	7
8	Hepatitis B--adol. or pediatric	90744	8
9	Td (Adult)	90718	9
10	IPV	90713	10
11	Pertussis		11
12	Diphtheria Toxoid	90719	
13	TIG	90389	13
14	IG	90281	86
15	Immune globulin, (IGIV)	90283	87
16	Influenza Whole	90659	16
17	Hib--unspecified	90645	17
19	BCG		19
20	DTaP	90700	20
21	Varicella	90716	21
22	DTP/Hib	90720	22
23	Hib--PRP-OMP	90647	49
24	Hib--PRP-T	90648	48
25	Typhoid, oral	90690	25
26	Cholera	90725	26
28	DT (Pediatric)	90702	28
29	HBIG	90371	30
30	PPD Test	86580	96
31	Pneumococcal(PPV23)	90732	33
32	Yellow Fever	90717	37
33	Meningococcal (MPSV4)	90733	32
34	Hep A 2 dose - Ped/Adol	90633	83
35	Tetanus Toxoid, adsorbed	90703	35
36	VZIG	90396	36
37	Anthrax	90581	24

CODE	DESCRIPTION	CPT	CVX
38	Rubella/Mumps	90709	38
39	Japanese Encephalitis	90735	39
40	Rabies	90675	18
41	Typhoid, ViCPs	90691	101
42	Hepatitis B--dialysis	90747	44
43	Hepatitis B--adult	90746	43
45	Hep B - unspecified	90744	45
46	Hib-PRP-D	90646	46
47	Hib--HbOC	90645	47
48	Botulinum Antitoxin	90287	27
49	CMVIG	90291	29
50	Plague	90727	23
52	RIG	90375	34
53	DTaP/Hib	90721	50
54	MMR/Varicella	90710	94
55	DTP/IPV	57	
56	Hepatitis B--adolescent, high risk		42
57	Hep B/Hib	90748	51
58	Diphtheria antitoxin	90296	12
59	Rotavirus, tetravalent	90680	74
60	Lyme Disease	90665	66
61	Influenza Split	90658	15
62	Influenza Nasal Spray	90660	111
63	Rabies Intradermal	90676	40
67	Td Adult, Preserv Free	90714	113
100	Hep B Ped/Adol - Preserv Free	90744	8
101	Hep B Ped/Adol - W/Thimerosal	90744	8
102	Pneumococcal(PCV7)	90669	100
103	Hep A 3 dose - Ped/Adol	90634	84
104	Hep A/Hep B - Adult	90636	104
105	Hep A 2 dose - Adult	90632	52
106	DTP/Hib/Hep B		102
107	Hep A--unspecified	90633	85
108	Influenza--unspecified	90656	88
109	Hepatitis A- pediatric, NOS	90633	31
116	Rotavirus, pentavalent	90680	116
119	Rotavirus, monovalent	90680	119
200	PPD Positive Result	67	
201	PPD Negative Result	59	
202	Hep B 2 dose - Adol/Adult	90743	43
203	DTaP/Hep B/IPV	90723	110
204	Polio - unspecified	90713	89
205	Pneumococcal - unspecified	90732	109
206	DTP - unspecified	90701	1
207	Smallpox		75
208	RSV-IgIM	90378	93
209	RSV-IGIV	90379	71
210	DTaP, 5 pertussis antigens	90700	106
211	VIG Vaccinia IG	90393	79

CODE	DESCRIPTION	CPT	CVX
212	Smallpox vaccine, diluted		105
213	Unknown vaccine or IG		999
214	Smallpox Major Take	15	
215	Smallpox No Take	108	
216	Tetanus toxoids, adsorbed	90703	110
217	Tetanus toxoids, NOS	90703	112
218	Smallpox Equivocal Take	604	
219	Prev. Smallpox-Childhood	39	
220	Prev. Smallpox-Recall Date	208	
221	Prev. Smallpox-Documented Date	54	
222	Diluent	42	
223	Prev. Smallpox-Adulthood	30	
224	Prev. Smallpox-Not Vaccinated/Unknown	30	
300	RhIG, full-dose, intramuscular	90384	
301	RhIG, mini-dose, intramuscular	90385	
302	RhIG, intravenous	90386	
400	Adenovirus, type 4, live, oral	90476	54
401	Adenovirus, type 7, live, oral	90477	55
500	Botulism IG, human, intravenous	90288	
600	DTaP--unspecified	90700	107
601	Typhoid, parenteral	90692	41
602	Influenza split, 6-35 mos.	90657	15
603	Influenza split, 36 mos. and older	90658	15
604	Typhoid, NOS		91
605	Influenza split,6-35 mos, presv free	90655	15
606	Influenza split, 36+ mos,presv free	90656	15
607	Zoster, live	90736	121
608	Rotavirus, NOS		122
901	Doxycycline - Adult	918	
902	Doxycycline - Ped, 0 - 10 lbs	921	
903	Doxycycline - Ped, 11 - 25 lbs	116	
904	Doxycycline - Ped, 26 - 50 lbs	926	
905	Doxycycline - Ped, 50 - 75 lbs		
910	Ciprofloxacin - Adult	119	
911	Ciprofloxacin - Ped, 0 - 10 lbs	920	
912	Ciprofloxacin - Ped, 11 - 20 lbs	607	
913	Ciprofloxacin - Ped, 21 - 30 lbs	608	
914	Ciprofloxacin - Ped, 31 - 40 lbs	976	
915	Ciprofloxacin - Ped, 41 - 50 lbs	923	
916	Rabies NOS		90
917	Botulinum Toxoid	213	
918	Meningococcal Conjugate (MCV4)	90734	114
919	Meningococcal C Conjugate		103
920	DTaP/Hib/IPV	90698	120
921	Tdap	90715	115
922	Meningococcal, NOS		108
923	Hep A 2 dose - Ped/Adol 12+ mos.	90633	923
924	Influenza Split, 18+ yrs, presv. free	90656	15
925	HPV, quadrivalent	90649	62

CODE	DESCRIPTION	CPT	CVX
926	VZIG (IND)	90396	117
927	Amoxicillin - Adult		
928	Amoxicillin - Ped, 0 - 10 lbs		
929	Amoxicillin - Ped, 11 - 20 lbs		
930	Amoxicillin - Ped, 21 - 30 lbs		
931	Amoxicillin - Ped, 31 - 40 lbs		
932	Amoxicillin - Ped, 41 - 50 lbs		
933	Amoxicillin - Ped, 51 - 60 lbs		
934	Amoxicillin - Ped, 61 - 70 lbs		
935	Amoxicillin - Ped, 71 - 80 lbs		
936	Amoxicillin - Ped, 81 - 90 lbs		
937	Septra - Adult		
938	Septra - Ped, 0 - 10 lbs		
939	Septra - Ped, 11 - 20 lbs		
940	Septra - Ped, 21 - 30 lbs		
941	Septra - Ped, 31 - 40 lbs		
942	Septra - Ped, 41 - 50 lbs		
943	Septra - Ped, 51 - 60 lbs		
944	Septra - Ped, 61 - 70 lbs		
945	Septra - Ped, 71 - 80 lbs		
946	Septra - Ped, 81 - 90 lbs		
947	Albuterol Metered Dose Inhaler 17 GM		
948	Amoxicillin 200mg Chewable		
949	Atrophine Sulfate 0.4MG/ML 20ML MDV for Injection		
950	Bacitracin 500U/Polymixin B 10000U Ointment 0.9 GM Packets		
951	Ciproflaxacin HCL 500MG Tablets 100 Tablets per unit		
952	Ciproflaxacin HCL 500MG Tablets 20 Unit of Use (10-day regimen)		
953	Ciproflaxacin HCL PO Suspension 250MG/5ML 100 ML Bottle		
954	Ciproflaxacin IV 400MG/200ML DSW		
955	Diazepan HCL 10MG Auto-injector CSIV		
956	Diazepan HCL 10MG (5MG/ML) SDL for injection CSIV		
957	Dopamine HCL 400MG (80MG/ML) Vial for injection		
958	Doxycycline Hyclate 100MG Tablets 100 tables per unit		
959	Doxycycline Hyclate 100MG Tablets 20 units of use		
960	Doxycycline Hyclate 100MG Tablets 500 tablets per unit		
961	Doxycycline Hyclate Suspension 25MG/5ML 60 ML Bottle		
962	Doxycycline Hyclate 100MG Powder Vial for injection		

CODE	DESCRIPTION	CPT	CVX
963	Epinephrine HCL 1:1000 (0.1MG/ML) 10ML SYR/NDL for injection		
964	Epinephrine 1:1000 (0.3MG/ML) Auto-injector		
965	Epinephrine 1:2000 (0.15MG/ML) Auto-injector		
966	Erythromycin Lactobionate 500MG Powder vial for injection		
967	Gentamicin Sulfate 40MG/ML (20ML) MDV for injection		
968	Lorazepam HCL 2MG/ML (1ML) 22G Needle Carpuject CSIV		
969	Mark 1 (Pralidoxime 600MG/Atrophine 2MG)Auto-Injector		
970	Methylprednisolone SOD SUC 125MG (2ML) Vial for Injection		
971	Morphine Sulfate 10MG/ML 1ML 25G Needle Carpuject CSII		
972	Providine Iodine 10% Swab Sticks Triples		
973	Pralidoxime Hydrocholoride 1GM Powder Vial for Injection		
974	DTaP/IPV		
975	Td-IPV		
976	Influenza, 1203		123

VFC CODES

CODE	DESCRIPTION	SIIS
V00	VFC eligibility not determined/unknown	
V01	Not VFC eligible	
V02	Medicaid	1
V03	Uninsured	2
V04	Nat. Amer. or Alaskan	3
V05	Underinsured	4
V06	State-specific eligibility, depending on installation maps to	
	Default	5
	KidsCare (ASIIS, LINKS, and IRIS)	6
	Hoosier HWise Pkg C (CHIRP)	7
	CHIP (WVSIIS)	8
	Healthy Kids (IMMUNET)	9

APPENDIX D: FREQUENTLY ASKED QUESTIONS

SEQ	Q/A	Question/Answer
1	Q	When you send a VXX message what are the data elements that are included?
	A	VXX returns one or more patient records that are possible matches to the query. For each patient the following items are always sent if available: Guardian Name, Patient Birth Date, Patient Name, SIIS registry id, MRN assigned by querying provider. If the query was a close match (according to the advanced searched) then the additional fields may be sent: Patient Address, Patient Birth Country, Patient Birth File Number, Patient Birth State, Email, Ethnicity, Sex, Primary Language, Medicaid Number, Mother Maiden Name, Phone, Race(s), Birth Order, Alias Name, SSN, Guardian SSN, and Guardian 2 Name. All fields are subject to registry Public/Private rules of visibility.
2	Q	Are the data elements always the same?
	A	If the patient is found with the “Advanced Search,” then many different fields of data may be returned. If a patient is found with the additional searches, then only the minimum is returned.
3	Q	Do you only send public ones or are private ones included as well?
	A	Both public and private values are sent back, but the private fields will only have the data that was reported by the querying provider. So if an SSN is returned, it will be the same SSN that was reported by this provider previously. See SIIS rules for public/private fields. These rules apply to the HL7 query interface as well.
4	Q	Is there a limit to the number of matches you send back in a VXX?
	A	The VXQ message can indicate a limit and the HL7 account used to query is setup with a limit. The maximum number of matches sent back is the lower of these two limits. Any matches returned over this limit are not returned in the query and no message is given to indicate that this has occurred.
5	Q	What are required fields for a minimum immunization record that we send to you in a VXU? I have seen what HL7 defines as a minimum set and I saw in an STC spec a few that were marked as required, but I wonder if it is correct because, for example, vaccination date was not indicated as a required field. Can you let me know what the minimum set of data are?
	A	Vaccination date and vaccination code (CPT or CVX) are required fields to submit a vaccination.
6	Q	If we sent a VXU that didn't have the required minimum fields would the STC registry just drop the message or would it send an ACK with error message back?
	A	Normally IWeb will return a Negative ACK (N'ACK). This can be changed by either setting the connection preferences in IWeb as "never acknowledge" or by indicating in your HL7 message header to "never acknowledge". Under default setup, and with a normal HL7 message you should expect to always receive N'ACKs.
7	Q	I saw in your spec that your registry prefers to receive a complete set of

SEQ	Q/A	Question/Answer
		vaccination records for a patient anytime there is an update. Are there any adverse consequences with just sending new data rather than the complete record?
	A	Either method (sending partial updates or complete histories) is fine for the registry. The registry wants to make sure reporting is complete, and since it can easily merge duplicate records, the preference is for senders to send everything they know for a patient each time they report. In this way if a previous submission was skipped (by the sender) the data still makes it the registry.
8	**Q**	When you return a VXR or a VXU, do you send all data elements that are available for each immunization, or just some? If some, what are they?
	A	Both the VXR and VXU return the same set of data. The only vaccination data that you may expect to see and will not get is Dose Number and Administered Amount.

APPENDIX E: REGULAR EXPRESSIONS

The following information is excerpted from the Java Sun documentation on Java Regular Expressions and can be found at this location: http://java.sun.com/j2se/1.4.2/docs/api/java/util/regex/Pattern.html

(Similar information may be found by searching the Internet for "Java regexp.")

SUMMARY OF REGULAR-EXPRESSION CONSTRUCTS

Construct	Matches
Characters	
x	The character *x*
`\\`	The backslash character
`\0`*n*	The character with octal value `0`*n* (0 <= *n* <= 7)
`\0`*nn*	The character with octal value `0`*nn* (0 <= *n* <= 7)
`\0`*mnn*	The character with octal value `0`*mnn* (0 <= *m* <= 3, 0 <= *n* <= 7)
`\x`*hh*	The character with hexadecimal value `0x`*hh*
`\u`*hhhh*	The character with hexadecimal value `0x`*hhhh*
`\t`	The tab character (`'\u0009'`)
`\n`	The newline (line feed) character (`'\u000A'`)
`\r`	The carriage-return character (`'\u000D'`)
`\f`	The form-feed character (`'\u000C'`)
`\a`	The alert (bell) character (`'\u0007'`)
`\e`	The escape character (`'\u001B'`)
`\c`*x*	The control character corresponding to *x*
Character classes	
`[abc]`	a, b, or c (simple class)
`[^abc]`	Any character except a, b, or c (negation)
`[a-zA-Z]`	a through z or A through Z, inclusive (range)
`[a-d[m-p]]`	a through d, or m through p: `[a-dm-p]` (union)

Construct	Matches
[a-z&&[def]]	d, e, or f (intersection)
[a-z&&[^bc]]	a through z, except for b and c: [ad-z] (subtraction)
[a-z&&[^m-p]]	a through z, and not m through p: [a-lq-z](subtraction)
Predefined character classes	
.	Any character (may or may not match line terminators)
\d	A digit: [0-9]
\D	A non-digit: [^0-9]
\s	A whitespace character: [\t\n\x0B\f\r]
\S	A non-whitespace character: [^\s]
\w	A word character: [a-zA-Z_0-9]
\W	A non-word character: [^\w]
POSIX character classes (US-ASCII only)	
\p{Lower}	A lower-case alphabetic character: [a-z]
\p{Upper}	An upper-case alphabetic character:[A-Z]
\p{ASCII}	All ASCII:[\x00-\x7F]
\p{Alpha}	An alphabetic character:[\p{Lower}\p{Upper}]
\p{Digit}	A decimal digit: [0-9]
\p{Alnum}	An alphanumeric character:[\p{Alpha}\p{Digit}]
\p{Punct}	Punctuation: One of !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~
\p{Graph}	A visible character: [\p{Alnum}\p{Punct}]
\p{Print}	A printable character: [\p{Graph}]
\p{Blank}	A space or a tab: [\t]
\p{Cntrl}	A control character: [\x00-\x1F\x7F]
\p{XDigit}	A hexadecimal digit: [0-9a-fA-F]
\p{Space}	A whitespace character: [\t\n\x0B\f\r]

Construct	Matches
Classes for Unicode blocks and categories	
`\p{InGreek}`	A character in the Greek block (simple block)
`\p{Lu}`	An uppercase letter (simple category)
`\p{Sc}`	A currency symbol
`\P{InGreek}`	Any character except one in the Greek block (negation)
`[\p{L}&&[^\p{Lu}]]`	Any letter except an uppercase letter (subtraction)
Boundary matchers	
`^`	The beginning of a line
`$`	The end of a line
`\b`	A word boundary
`\B`	A non-word boundary
`\A`	The beginning of the input
`\G`	The end of the previous match
`\Z`	The end of the input but for the final terminator, if any
`\z`	The end of the input
Greedy quantifiers	
X?	*X*, once or not at all
*X**	*X*, zero or more times
X+	*X*, one or more times
X{*n*}	*X*, exactly *n* times
X{*n*,}	*X*, at least *n* times
X{*n*,*m*}	*X*, at least *n* but not more than *m* times
Reluctant quantifiers	
X??	*X*, once or not at all
*X**?	*X*, zero or more times
X+?	*X*, one or more times
X{*n*}?	*X*, exactly *n* times

Construct	Matches
X{*n*,}?	*X*, at least *n* times
X{*n*,*m*}?	*X*, at least *n* but not more than *m* times
Possessive quantifiers	
X?+	*X*, once or not at all
*X**+	*X*, zero or more times
X++	*X*, one or more times
X{*n*}+	*X*, exactly *n* times
X{*n*,}+	*X*, at least *n* times
X{*n*,*m*}+	*X*, at least *n* but not more than *m* times
Logical operators	
XY	*X* followed by *Y*
X|*Y*	Either *X* or *Y*
(*X*)	X, as a capturing group
Back references	
n	Whatever the n^{th} capturing group matched
Quotation	
\	Nothing, but quotes the following character
\Q	Nothing, but quotes all characters until \E
\E	Nothing, but ends quoting started by \Q
Special constructs (non-capturing)	
(?:*X*)	*X*, as a non-capturing group
(?idmsux-idmsux)	Nothing, but turns match flags on - off
(?idmsux-idmsux:*X*)	*X*, as a non-capturing group with the given flags on - off
(?=*X*)	*X*, via zero-width positive lookahead
(?!*X*)	*X*, via zero-width negative lookahead

Construct	Matches
(?<=*X*)	*X*, via zero-width positive lookbehind
(?<!*X*)	*X*, via zero-width negative lookbehind
(?>*X*)	*X*, as an independent, non-capturing group

BACKSLASHES, ESCAPES, AND QUOTING

The backslash character (`'\'`) serves to introduce escaped constructs, as defined in the table above, as well as to quote characters that otherwise would be interpreted as unescaped constructs. Thus the expression `\\` matches a single backslash and `\{` matches a left brace.

It is an error to use a backslash prior to any alphabetic character that does not denote an escaped construct; these are reserved for future extensions to the regular-expression language. A backslash may be used prior to a non-alphabetic character regardless of whether that character is part of an unescaped construct.

CHARACTER CLASSES

Character classes may appear within other character classes, and may be composed by the union operator (implicit) and the intersection operator (`&&`). The union operator denotes a class that contains every character that is in at least one of its operand classes. The intersection operator denotes a class that contains every character that is in both of its operand classes.

The precedence of character-class operators is as follows, from highest to lowest:

1	Literal escape	`\x`
2	Grouping	`[...]`
3	Range	`a-z`
4	Union	`[a-e][i-u]`
5	Intersection	`[a-z&&[aeiou]]`

Note that a different set of meta-characters are in effect inside a character class than outside a character class. For instance, the regular expression `.` loses its special meaning inside a character class, while the expression `-` becomes a range forming meta-character.