



MISSISSIPPI STATE DEPARTMENT OF HEALTH

MISSISSIPPI IMMUNIZATION INFORMATION EXCHANGE HL7 Implementation Guide

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1.0 Benefits of MIIX to the Provider

- Real-time electronic system eliminates lag time of viewing immunization data after reporting.
- Reduces paperwork.
- Provides easy access to consolidated patient immunization records.
- Decreases the need to pull and re-file paper patient records.
- Consolidates immunizations from multiple providers into one record.
- Source for obtaining immunization histories for patients.
- Generates parental reminder notices on due, overdue or invalid immunizations.
- Supports efforts to improve immunization coverage rates.
- Supports the ability to recall vaccines based on manufacturer error.
- Prints a completed official Immunization Certificate of Compliance (Form 121).
- Reduces calls from schools and day care centers during registration.
- Provides vaccine inventory management.
- Generates doses administered and immunization assessment reports upon demand.
- Forecasting recommendations based on the ACIP/AAP schedule.
- Satisfies "Meaningful Use" Criteria for interfacing with existing EMR/EHRS.

2.0 Overview of IWeb Software

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.

2.1 Immunization Data Interface

The HL7 interface supports CDC standard immunization messages and is the recommended format for submitting immunization data to MIIX.

Providers should have at least 250 patients with immunizations in their EMR so that adequate technical and data quality testing can be completed prior to taking

an electronic interface LIVE. Providers are responsible for keeping their vaccination codes in their application current and ensure that staff are using the appropriate vaccinations in their EMR documentation to preserve MIIX data integrity during testing and on an ongoing basis.

2.1.1 HL7

MIIX sends and receives HL7 immunization queries and updates. These messages conform to HL7 specification version 2.5.1 and the CDC's Implementation Guide for Immunization Messaging version 1.2 which can be found here:

<http://www.cdc.gov/vaccines/programs/iis/stds/downloads/hl7guide-02-2011.pdf>

2.1.1.1 MIIX HL7 Capabilities

- Accepts the following patient update messages: VXU, ADT, DFT, and ORU.
- Responds to immunization record query messages: VXQ.
- Queries external registries by sending immunization record query messages: VXQ.
- Sends batch updates to external registries: VXU.

2.1.1.2 Sample HL7 Messages

2.1.2.2.1 Vaccination Update (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|
PVL|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|
```

2.1.1.2.2 Acknowledgement (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|
```

2.1.1.2.3 Vaccination Query (VXQ) Message

```
MSH|^~\&|DBO^QSInsight^L|QS4444|5.0^QSInsight^L||20030828104856+0000||VXQ^V01|QS4444378610000004
2|P|2.3.1|||NE|AL|
```

```

QRD|20030828104856+0000|R|I|QueryID01|||5|00000001^Bucket^Pail^^^^^^^^^^MR|VXI|SIIS|
QRF|QS4444|20030828104856+0000|20030828104856+0000||100000001~19460401~~~~~1 Somewhere Lane
Boulevard^Indianapolis^IN~10000|

```

2.1.1.2.4 Query Acknowledgement (QCK) Message

```

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

```

2.1.1.2.5 Vaccination Query Possible Match (VXX) Message

```

MSH|^~\&|5.0^QSIgnite^L|^DBO^QSIgnite^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|

```

2.1.1.2.6 Vaccination Query Record (VXR) Message

```

MSH|^~\&|5.0^QSIgnite^L|^DBO^QSIgnite^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|
PVL||R|

```

2.2 File Size & Data Migration

The maximum size for import files will vary depending on the provider’s Internet connection speed and quality. A data set of 1000 records is recommended.

If the provider’s data is not part of the data migration to MIIX, then a one time data dump of historical immunizations is required. In general 5 years of back data is requested but MIIX can take as much historical data as the provider has available. For the one time dump, MIIX will set the provider to “non-owning” so that existing data in MIIX does not change ownership. This may require several separate uploads of 1,000 records until the entire historical data set has been sent to MIIX.

2.3 Deduplication (Patient Matching)

MIIX has a very sophisticated deduplication algorithm when runs every night. Automatic deduplication requests that are sent during off hours are queued to run

after the nightly process. Records accepted during the day will be processed during the night and will be viewable in the registry the following day.

2.4 Required and Expected Fields

Data Quality is a high priority for the immunization registry as information received is used to build a permanent vaccination record for patients. It is important that the information is accurate and as complete as possible. For this reason certain fields are required in every message (for example, patient date of birth) and other fields are expected to be sent (for example, patient phone number). Fields that are expected to be sent may be empty if there is no information to send but normally should have a value. During an initial data quality analysis and periodic checks the registry will review to ensure that expected fields are being sent as expected. **Please note that MSH-4 and RXA-11 are required fields in the MIIX Implementation Guide.** MSH-4 will be supplied to you by MIIX staff. The format will be as such:

|xxxx^Sending Facility|

2.4.1 IWeb Fields for Data Import

IWEB has several fields that are required. This means that files that do not include this information 100% of the time will fail to import into MIIX. Those fields required by MIIX will technically import but will not be accepted by MIIX unless the acceptance threshold is met during the testing phase.

2.4.1.1 MIIX Required Data Fields

Table 1.1 Data Fields

HL7 SEGMENT /FIELD LOCATION	FIELD	REQUIRED	ACCEPTANCE THRESHOLD *
	GUARDIAN FIELDS		
NK1-2	Name First	✓	100%
NK1-2	Name Last	✓	100%
NK1-2	Name Middle	Optional	
NK1-5	Phone	✓	80%
NK1-3	Relationship	✓ (if patient address is not available)	

NK1-33	Social Security Number	✓	90%
	PATIENT FIELDS		
PID-11	Address City	✓	100%
PID-11	Address County		
HL7 Segment /field location	Field	Required	Acceptance Threshold *
PID-11	Address State	✓	100%
PID-11	Address Street1	✓	100%
PID-11	Address Street2		
PID-11	Address Zip	✓	100%
PID-9	Alias First		
PID-9	Alias Last		
PID-11	Birth Country		
PID-11	Birth Date	✓	100%
PID-3	Birth File Number		
PID-24	Birth Multiple		
PID-25	Birth Order		
PID-11	Birth State		
PID-30	Deceased	✓	80%
PV1-20	Eligible VFC	✓	100%
PID-13	Email	✓	20%
PID-22	Ethnicity		
	Facility Address City		
	Facility Address State		
	Facility Address Street 1		
	Facility Address Street 2		

	Facility Address Zip		
	Facility Email		
	Facility Fax		
	Facility Phone		
HL7 Segment /field location	Field	Required	Acceptance Threshold *
	Facility Health District		
PID-8	Gender	✓	100%
PD1-3	Facility Id Remote	✓	100%
PD1-3	Facility Name	✓	100%
	Health District		
PID-16	Immunization Registry Status		
PID-16	Inactive Code		
PID-3	Medicaid Number	✓	95%
PID-6	Mother Maiden Name	✓	20%
PID-5	Name First	✓	100%
PID-5	Name Last	✓	100%
PID-5	Name Middle		
PID-5	Name Suffix		
PID-3	Patient External Id (Medical Record Number)	✓	100%
PID-3	Patient Internal Id		
PID-13	Phone		
PID-11	Physical Address Street 1		
PD1-4	Physician Bomex Number		
PD1-4	Physician Id Local	✓	100%
PD1-4	Physician Id Remote		

PD1-4	Physician Name First	✓	95%
PD1-4	Physician Name Last	✓	95%
PD1-4	Physician Name Middle		
PD1-4	Physician Name Suffix		
HL7 Segment /field location	Field	Required	Acceptance Threshold *
PD1-4	Physician SSN		
PID-15	Primary Language		
PD1-11	Publicity Code		
PID-10	Race	✓	75%
PID-10	Race 2		
PID-10	Race 3		
PID-10	Race 4		
PID-10	Race 5		
PID-3	Social Security Number	✓	30%
	QUERY FIELDS		
	Father Name First	✓ (if address is not provided and mother first name is not provided)	
	Father Name Last	✓ (if address is not provided and mother last name not given)	
	Father Social Security Number		
	Mother Name First	✓	20%
	Mother Name Last	✓ (if address is not provided and father's last name not given)	

	Mother Name Maiden		
	Mother Social Security Number		
HL7 Segment /field location	Field	Required	Acceptance Threshold *
	Patient Address 1 City	✓ (if no patient guardian info)	
	Patient Address 1 State		
	Patient Address 1 Street 1		
	Patient Address 1 Zip		
	Patient Birth Date		
	Patient Id		
	Patient Medicaid Number		
	Patient Name First		
	Patient Name Id Type Code		
	Patient Name Last		
	Patient Name Middle		
	Patient Name Suffix		
	Patient Phone Number		
	Patient Social Security Number		
	Quantity Limit		
	What Subject Filter		
	When Date End		
	When Date Start		
	Patient Internal Id (SIIS ID)		

	VACCINATION FIELDS		
RXA-21	Action Code		
RXA-6	Administered Amount	✓	20%
HL7 Segment /field location	Field	Required	Acceptance Threshold *
RXA-9	Comment		
RXA-2	Dose		
RXA-11	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		
	Facility Email		
	Facility Fax		
	Facility Id Local		
RXA-11	Facility Id Remote		
RXA-11	Facility Name	✓	100%
	Facility Phone		
	Form VIS Given Date	✓	20%
RXA-9	Historical	✓	80%
RXA-19	Indication		
	Induration TB		
RXA-10	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		
HL7 Segment /field location	Field	Required	Acceptance Threshold *
RXA-10	Physician SSN		
	Publication Date VIS 1		
	Publication Date VIS 2		
	Publication Date VIS 3		
	Publication Date VIS 4		
RXR-1	Route	✓	20%
RXR-2	Site	✓	20%
RXA-3	Vaccination Date	✓	100%
RXA-5	Vaccine Code CPT	✓ If no CVX code	100%
RXA-5	Vaccine Code CVX	✓ if no CPT code	100%
RXA-5	Vaccine Code PCI		
PV1-20	Vaccine Eligible VFC	✓	100%
RXA-15	Vaccine Lot Number	✓	100%
RXA-17	Vaccine Manufacturer	✓	100%
RXA-17	Vaccine Manufacturer Code	✓	100%
RXA-5	Vaccine Name	✓	100%
	Vaccine Publicly Supplied	✓	100%

2.5 Submitting HL7 Data

HL7 message files may be uploaded manually to MIIX or automatically via HTTPS. Applications that can generate a file or use TCP/IP but can't connect via HTTPS may install the HL7 Bridge on their local server to submit directly to MIIX.

If the file is automated, we request that they are sent nightly when MIIX is not generally in use. If it requires manual upload, once a week a staff member will need to generate a file from their application and upload it directly to the MIIX server. At least two people in an office should be trained to do this task so that there is no interruption of data flow to MIIX. This process takes about 5 minutes.

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

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

HL7 messages may be one at a time (one for every HTTPS request) or together as a batch. Batched messages do not require special separators or wrappers.

Response: MIIX always returns responses in HL7 format. Responses are returned based on how the account is configured in MIIX. The response configurations available are Always, Never, On Error (only for those messages are not accepted) or Determined by Message (Incoming request message indicates in the MSH segment whether to always, never or only on error).

The HL7 response can indicate any one of the following things:

- Authentication error - username and password are incorrect or account does not have permission to accept HL7
- Message parsing error – incoming messages do not conform to HL7 standards
- Message content error – incoming message is missing or incorrect information
- Message processing exception – incoming message has an unexpected problem
- Message accepted - data has been accepted and has been sent to deduplication
- Response to query – MIIX responds to query with query results

3.0 Resources

This immunization registry conforms to standards published by the CDC. For the latest code sets and standards please see:

<http://www.cdc.gov/vaccines/programs/iis/stds/standards.htm>

For more detailed information about how IWeb processes HL7 data please see the *IWeb HL7 Interface Specification Guide*.