



**MISSISSIPPI STATE DEPARTMENT OF HEALTH**

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**MISSISSIPPI IMMUNIZATION INFORMATION  
EXCHANGE HL7 Implementation Guide**

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Implementation Guide Version 3.2  
HL7 Version 2.5.1  
August, 2015

## I. Introduction to Interfacing with Mississippi's IIS, MIIX

The Implementation Guide is intended to provide the necessary information for the exchange of immunizations records between the Mississippi Immunization Information System, MIIX, and external health providers. It includes information on:

- Sending and receiving patient immunization histories
- Sending and receiving patient demographic information

This guide serves as an important tool for assuring accurate and timely communication between MIIX and health care providers. It contains acceptable code values to be used in the HL7 messages and defined the appropriate places to document MIIX business rules that are outside the standard HL7 message.

The registry's goal is to build an HL7 bidirectional real-time interface exchanging all possible vaccination data elements. If that is not possible up front, an interface must initially meet basic requirements and plan to work toward a more complete interface in the future. The IIS does focus on Meaningful Use (MU) requirements and strongly encourages all data elements required for MU certification to be included in an interface.

Mississippi utilizes an IWeb software application developed and supported by Scientific Technologies Corporation or STC ([www.stchome.com](http://www.stchome.com)). The HL7 interface supports the CDC standard immunization messages as described in the current CDC HL7 Implementation Guide for Immunization Messages. ***This guide addresses the Mississippi specific requirements and restrictions.*** The interface currently supports HL7 version 2.3.1 and HL7 version 2.5.1. MIIX will continue to support HL7 version 2.3.1 for **existing** interfaces. All **new** interfaces must conform to HL7 version 2.5.1. Any health care provider planning to attest for Meaningful Use Stage 2 must upgrade existing interfaces to HL7 version 2.5.1

## II. HL7 Messaging Notes

The IIS (MIIX) software:

- Accepts the following patient update messages: **VXU**
- Responds to immunization record query messages: **VXQ, QBP/RSP**

The following list includes messages segments that are required for the IIS (MIIX) Interface.

Segment	Notes
MSH	Header message that include critical information about the medical organization. MSH-11 should always contain 'P'.
PID	Patient identifying information

Segment	Notes
NK1	Patient next of kin information. Must be present for all patients under 19 years of age. Relationship must be GRD = Guardian, MTH = Mother, FTH = Father or PAR = Parent. These four relationships are the only accepted values.
PD1	Field 3 (PD1-3) of this segment contains the name and Id for the clinic location. This populates the patient demographics screen in MIIX.
PV1	Field 20 of the PV1 segment (PV1-20) contains the 'Financial Class' or VFC eligibility information. This information populates the VFC eligibility at the patient demographics level in MIIX (the IIS).
ORC	Common order segment.
RXA	This segment contains information about the vaccination given. It includes the code for the vaccine administered, the vaccine lot number, expiration date, and manufacturer. It identifies the vaccination as new or historical and provides an action code telling the IIS to add, update or delete the information from the IIS. It is not required if a vaccination was <b>NOT</b> given.
RXR	This segment contains the route and anatomical site of vaccine administration. It is required with every RXA segment.
OBX	Documents public or private vaccine supply source, VIS presentation and publication dates. OBX for VFC status is required for patients of <b>ALL</b> ages.

The IIS expects to receive HL7 messages formatted in accordance with the CDC specifications. All available segment components are expected in the message, even if the components are empty or null. Consider all components as required for inclusion in the message, even if you do not intend to send data in the component. Those components that must contain data are listed in the section titled **Required Fields (Segments and Components)** as "Required". If a provider sends a 'strongly recommended' data item, that item must be sent correctly and becomes required data, subject to the data quality threshold.

Also keep in mind that EHRs and HL7 interfaces are a rapidly changing environment. There will be updates and changes to the IIS interface requirements as the Centers for Medicaid and Medicare (CMS) criteria for Meaningful Use are moved forward. The Centers for Disease Control and Prevention (CDC) make changes to their HL7 specifications as requirements specific to the federal entitlement Vaccines for Children (VFC) Program occur. The Mississippi Immunizations Interoperability team is available to support your work and answer any questions related to HL7 interfaces you may have.

Mississippi has a lengthy waiting list or queue for interfacing with MIIX. If the interoperability team has completed one interface with a provider and the provider changes EHRs, the provider will go on the waiting list for a new HL7 interface project. The team is not immediately available to work on an interface with a provider based on a change in EHR.

If a provider is unable or unwilling to continuously monitor an interface once it has moved to the production environment and the interface is not performing or the data quality falls below the threshold, the MS State Department of Health reserves the right to terminate the interface.

**Sample HL7 Message**

**Child Immunization Record - VXU**

MSH|^~\&|Test EHR Application|ORG  
ID^NAME|||20150522120028||VXU^V04^VXU\_V04|0522120028|P|2.5.1  
PID|||16598-  
9^^^MR||LASTNAME^FIRSTNAME^MIDDLENAME^JR^^L||20100108|F|ALIASLASTNAME^FIR  
STNAME|2106-3^WHITE^HL70005|22 JAMES  
DR^^JACKSON^MS^39201^USA^M||^PRN^PH^^601^5550514~^NET^X.400^TBM098@GMAIL.  
COM|||||SSN|||2186-5^NOT HISPANIC^HL70121||N|  
PD1|||facility-name^facility-id|||||02^Reminder/Recall any method|||||A|||||  
NK1|1|LASTNAME^FIRSTNAME^^^L|MTH^MOTHER^HL70063|22 JAMES  
DR^^JACKSON^MS^39201^USA^L|PRN^PH^^601^5550514|||||  
NK1|2|LASTNAME^FIRSTNAME^^^L|FTH^FATHER^HL70063|22 JAMES  
DR^^JACKSON^MS^39201^USA^L|PRN^PH^^601^9994739|||||  
PV1|1|R|||||V02^20150218|||||  
ORC|RE||188554|||||^UNKNOWN^^^OE|  
RXA|0|1|20150522|20150522|120^DTaP-HIB-IPV^CVX|0.5|mL^milliliters^UCUM||00^New  
immunization  
record^NIP0001|6581^LASTNAME^FIRSTNAME^MIDDLENAME^MA^^^VEI|FACILITY  
NAME^^FACILITY-ID|||C4743AA|20160531|PMC^SANOFI PASTEUR^MVX|||CP|A  
RXR|IM^INTRAMUSCULAR^HL70162|LT^LEFT THIGH^HL70163  
OBX|0|CE|64994-7^VACCINE FUND PGM ELIG CAT^LN|1|V02^VFC eligible -  
Medicaid/Medicaid Managed Care^HL70064|||||F|||20150522|||VXC40^Eligibility captured at the  
immunization level^CDCPHINVS  
OBX|2|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|120^DTaP-HIB-  
IPV^CVX|||||F|||20120814|||  
OBX|3|TS|29768-9^DATE VACCINE INFORMATION STATEMENT  
PUBLISHED^LN|1|20070517|||||F|||20120702|||  
OBX|4|TS|29769-7^DATE VACCINE INFORMATION STATEMENT  
PRESENTED^LN|1|20150522|||||F|||20150522|||

**Adult Immunization Record - VXU**

MSH|^~\&|Test EHR Application|ORG  
ID^NAME|||20150522120028||VXU^V04^VXU\_V04|0522120028|P|2.5.1  
PID|||16598-  
9^^^MR||LASTNAME^FIRSTNAME^MIDDLENAME^JR^^L||19450108|F|ALIASLASTNAME^FIR  
STNAME|2106-3^WHITE^HL70005|22 JAMES  
DR^^JACKSON^MS^39201^USA^M||^PRN^PH^^601^5550514~^NET^X.400^TBM098@GMAIL.  
COM|||||SSN|||2186-5^NOT HISPANIC^HL70121||N|  
PD1|||facility-name^facility-id|||||02^Reminder/Recall any method|||||A|||||  
PV1|1|R|||||V01^20150218|||||  
ORC|RE||188554|||||^UNKNOWN^^^OE|  
RXA|0|1|20150522|20150522|52^Hep A^CVX|0.5|mL^milliliters^UCUM||00^New immunization  
record^NIP0001|6581^LASTNAME^FIRSTNAME^MIDDLENAME^MA^^^VEI|FACILITY  
NAME^^FACILITY-ID|||XYZ43AA|20160531|MSD^Merck and Co^MVX|||CP|A  
RXR|IM^INTRAMUSCULAR^HL70162|LT^LEFT THIGH^HL70163

OBX|0|CE|64994-7^VACCINE FUND PGM ELIG CAT^LN|1|V01^Not VFC  
 eligible^HL70064|||||F|||20150522||VXC40^Eligibility captured at the immunization  
 level^CDCPHINVS  
 OBX|2|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|52^Hep A^CVX|||||F|||20120814|||  
 OBX|3|TS|29768-9^DATE VACCINE INFORMATION STATEMENT  
 PUBLISHED^LN|1|20070517|||||F|||20120702|||  
 OBX|4|TS|29769-7^DATE VACCINE INFORMATION STATEMENT  
 PRESENTED^LN|1|20150522|||||F|||20150522|||

### Acknowledgement (ACK) Message

MIIX sets your HL7 account to “Always Acknowledge” every message received. An ACK message will be sent to your account. If clinic staff contacts the IIS and states that HL7 messages were sent to the Registry but they didn’t transfer, the IIS staff may refer the caller to their Information Technology staff and ask if an ACK was received. It is the responsibility of the provider to monitor these ACKs to verify if the record is rejected.

### Query Response (Bi-directional Interfaces)

MIIX will continue to accept VXQ (Vaccination Query) messages in HL7 version 2.3.1 interfaces. If a provider is submitting HL7 version 2.5.1, MIIX expects a QBP/RSP query message.

A query sent to MIIX will result in one of three possible responses:

- Query Acknowledgment No Match (QCK).
- Query Acknowledgment Possible Match (VXX). This returns maximum number requested and/or allowed. No immunization history returned.
- Query Acknowledgment Exact Match (VXR). Immunization history returned.

QBP/RSP – Consult the CDC’s HL7 2.5.1 Implementation Guide for Immunization Messaging details on the Query By Parameter found here:

<http://www.cdc.gov/vaccines/programs/iis/technical-guidance/downloads/hl7guide-1-5-2014-11.pdf>. The response differs from the QCK, VXX, and VXR.

Testing of evaluated vaccination queries (forecast) will include the ability to send and receive the data; however troubleshooting the consumption of the forecast by the provider’s EHR or the validity of the forecast is not the responsibility of MSDH. MIIX forecasting follows ACIP recommendations.

### Sample Query Messages and Response (Bi-directional Interfaces Only)

#### QBP – Query By Parameter

MSH|^~\&|TEST EHR APPLICATION|ORG  
 ID^NAME||MIIX|20150322034522|F19270|QBP^Q11^QBP\_Q11|296857|P|2.5.1|||||||  
 QPD|Z34^Request Immunization  
 History^HL70471|9879164||LASTNAME^FIRSTNAME^MIDDLENAME||20090912|F|13 5TH AVE  
 ^^JACKSON^MS^39503^USA^P^^HINDS|(601)555-9955^P^PH||  
 RCP||1^RD^HL70126|R^Real Time^HL70394

**Exact Match Returns**

MSH|^~\&|^MIIIX^^|TEST EHR APPLICATION|ORG  
ID^NAME^|20150322034528||RSP^K11^RSP\_K11|9151035002.100004742|P|2.5.1|||||||Z32^CD  
CPHINVS^^  
MSA|AA|296857||  
QAK|9879164||Z34^Request Immunization History^HL70471|  
QPD|Z34^Request Immunization  
History^HL70471|9879164||LASTNAME^FIRSTNAME^MIDDLENAME||20090912|F|13 5TH  
AVE^^JACKSON^MS^39201^USA^P|(601)555-9955|  
PID|1||3286035^^^SR~E1282012||LASTNAME^FIRSTNAME^MIDDLENAME^^^L||20090912|F|  
ALIASLASTNAME^FIRSTNAME|2054-5^Black or African-American^HL70005|13 5TH  
AVE^^JACKSON^MISSISSIPPI^39201^United States^M^^HINDS||((601)555-  
9955^^PH^^601^5559955^|||||||2186-5^not Hispanic or Latino^HL70189|||||||N|  
PD1||^SR|^SR|||||||02^Reminder/recall -any  
method^HL70215|||||^Active^HL70441|  
NK1|1|LASTNAME^FIRSTNAME|GRD^Guardian^HL70063||((601)555-  
9955^^PH^^601^5559955^  
PV1||R|||||||V02|  
ORC|RE||9986035.920.20091028|  
RXA|0|999|20091028|20091028|120^DTaP-Hib-IPV^CVX^90698^DTaP-Hib-  
IPV^CPT~920^DTaP/Hib/IPV^STC0292|999|||01^Historical information - source  
unspecified^NIP001||^FACILITY-NAME^^^15 MEDICAL  
BLVD^^JACKSON^MS^39201|||||||A|20150322034530|  
RXR|OTH^Other/Miscellaneous^HL70162|  
OBX|1|TS|29769-7^VIS Presentation Date^LN|1|20091028|||||F|  
OBX|1|CE|VFC-STATUS^VFC Status^STC|1|V01^Not VFC eligible^HL70064|||||F|||20091028|  
OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V01^Not VFC  
eligible^HL70064|||||F|||20091028||CVX40^per imm^CDCPHINVS|  
OBX|1|NM|1648-5^tuberculosis reaction wheal 3D post 5 TU ID^LN|1|||||F|  
ORC|RE||9986035.34.20110302|  
RXA|0|999|20110302|20110302|83^Hep A, ped/adol, 2 dose^CVX^90633^Hep A, ped/adol, 2  
dose^CPT~34^Hep A 2 dose - Ped/Adol^STC0292|999|||00^New immunization  
record^NIP001|21999^LASTNAME^FIRSTNAME^RN^^^SR~~~~21126^^^VE|^  
FACILITY-NAME^^^5008 ANY  
STREET^HATTIESBURG^MS^39401||||AHAVB461CA||SKB^GlaxoSmithKline^HL70227||||A|201  
50322034530|  
RXR|IM^Intramuscular^HL70162|RT^Right Thigh^HL70163|  
OBX|1|TS|29769-7^VIS Presentation Date^LN|1|20110302|||||F|  
OBX|1|CE|VFC-STATUS^VFC Status^STC|1|^Unknown^HL70064|||||F|||20110302|  
OBX|1|CE|64994-7^vaccine fund pgm elig  
cat^LN|1|^Unknown^HL70064|||||F|||20110302||CVX40^per imm^CDCPHINVS|  
OBX|1|NM|1648-5^tuberculosis reaction wheal 3D post 5 TU ID^LN|1|||||F|  
OBX|1|DT|29769-7^date vaccine information statement presented^LN|1|20110302|||||F|  
ORC|RE||9986035.62.20131101|  
RXA|0|999|20131101|20131101|111^influenza, live, intranasal^CVX^90660^influenza, live,  
intranasal^CPT~62^Influenza Nasal Spray^STC0292|.2|ML^mL^ISO+||00^New immunization  
record^NIP001||^FACILITY-NAME^^^5 MEDICAL  
BLVD^^JACKSON^MS^39201||||BK2022||MED^MedImmune,  
Inc.^HL70227||||A|20150322034530|  
RXR|IN^Intranasal^HL70162|

OBX|1|TS|29769-7^VIS Presentation Date^LN|1|20131101|||||F|  
OBX|1|CE|VFC-STATUS^VFC Status^STC|1|V01^Not VFC eligible^HL70064|||||F|||20131101|  
OBX|1|CE|64994-7^vaccine fund pgm elig cat^LN|1|V01^Not VFC  
eligible^HL70064|||||F|||20131101|||CVX40^per imm^CDCPHINVS|  
OBX|1|NM|1648-5^tuberculosis reaction wheal 3D post 5 TU ID^LN|1|||||F|  
OBX|1|DT|29769-7^date vaccine information statement presented^LN|1|20131101|||||F|

### Query - VXQ

MSH|^~\&|TEST EHR APPLICATION|ORG-  
ID^NAME|||20150522114651||VXQ^V01^VXQ\_V01|0522114651|P|2.5.1|||||  
QRD|20150522114651|R||0522114651|||100^RD|16^LASTNAME^FIRSTNAME^MIDDLENAME^  
~~~~~MR^VXI^VACCINE INFORMATION^HL70048|SIIS|  
QRF||||~20150108~~~~LASTNAME^FIRSTNAME^~~~LASTNAME^FIRSTNAME^~|

### One Possible Match Returns

MSH|^~\&|^|^|^TEST EHR APPLICATION^^|ORG-  
ID^NAME^|20150522114650||VXX^V02|5178619339.100012361|P|2.5.1|  
MSA|AA|0522114651||  
QRD|20150522114651|R||0522114651|||100^RD|16^LASTNAME^FIRSTNAME^MIDDLENAME^  
~~~~~MR|VXI^Vaccine Information^HL70048|^SIIS|  
QRF|STC-SIIS|||~20150108~~~~LASTNAME^FIRSTNAME~~~LASTNAME^FIRSTNAME|  
PID|1||4365306^^^SR~16599^^^MR||LASTNAME^FIRSTNAME^MIDDLENAME^^^L||2015010  
8|F||2106-3^White^HL70005|22 MAIN ST^JACKSON^MISSISSIPPI^39201^United  
States^M^HINDS|(601)555-9914^PH^^601^5559914^|||||||||||||N|  
NK1|1|LASTNAME^FIRSTNAME|GRD^Guardian^HL70063|(601)555-  
9914^PH^^601^5559914^|

### No Match Returns

MSH|^~\&|^|^|^TEST EHR APPLICATION^^|ORG-  
ID^NAME^|20150522083642||QCK^|5367843175.100002642|P|2.5.1|  
MSA|AA||0522114651|No patients found for this query|  
QAK|0522083643|NF|

### Exact Match Returns

MSH|^~\&|^|^|^TEST EHR APPLICATION^^|ORG-  
ID^NAME^|20150522114651||VXR^V03|9936282891.100006502|P|2.5.1|  
MSA|AA|0522114651||  
QRD|20150522114651|R||0522114651|||100^RD|10912^LASTNAME^FIRSTNAME^MIDDLENA  
ME^~~~~~SR|VXI^Vaccine Information^HL70048|^SIIS|  
QRF|STC-  
SIIS|||~19980501~~~~LASTNMAE^FIRSTNAME^MIDDLENAME~~~LASTNAME^FIRSTNAME^  
MIDDLENAME|  
PID|1||1091268^^^SR~5168^^^MR||LASTNAME^FIRSTNAME^MIDDLENAME^^^L||19980501|  
M||2106-3^White^HL70005|14 ELM ST^JACKSON^MISSISSIPPI^39201^United  
States^M^HINDS|(601)555-9984^PH^^601^5559984^|||||||||||||N|

PD1|||FACILITY-NAME^~~~~SR|^~~~~SR|||||02^Reminder/recall -any  
 method^HL70215|||A^Active^HL70441|  
 NK1|1|LASTNAME^FIRSTNAME^MIDDLENAME|GRD^Guardian^HL70063||((601)555-  
 9984^PH^^601^5559984^|  
 PV1||R|||||||V01|  
 ORC|RE||1091268.20.19980720|  
 RXA|0|999|19980720|19980720|20^DTaP^CVX^90700^DTaP, 5 pertussis  
 antigens^CPT~20^DTaP^STC0292|999|||01^Historical information - source  
 unspecified^NIP001|^FACILITY-NAME^FACILITY-  
 ADDRESS^JACKSON^MS^39201|||||A|20150522094009|  
 RXR|OTH^Other/Miscellaneous^HL70162|  
 OBX|1|TS|29769-7^VIS Presentation Date^LN|1|||||F|  
 OBX|1|CE|VFC-STATUS^VFC Status^STC|1|^Unknown^HL70064|||||F|||19980720|  
 OBX|1|CE|64994-7^vaccine fund pgm elig  
 cat^LN|1|^Unknown^HL70064|||||F|||19980720|||CVX40^per imm^CDCPHINVS|  
 OBX|1|NM|1648-5^tuberculosis reaction wheal 3D post 5 TU ID^LN|1|||||F|  
 ORC|RE||1091268.20.19980921|  
 RXA|0|999|19980921|19980921|20^DTaP^CVX^90700^DTaP, 5 pertussis  
 antigens^CPT~20^DTaP^STC0292|999|||01^Historical information - source  
 unspecified^NIP001|^FACILITY-NAME^FACILITY-  
 ADDRESS^JACKSON^MS^39201|||||A|20150522094009|  
 RXR|OTH^Other/Miscellaneous^HL70162|  
 OBX|1|TS|29769-7^VIS Presentation Date^LN|1|||||F|  
 OBX|1|CE|VFC-STATUS^VFC Status^STC|1|^Unknown^HL70064|||||F|||19980921|  
 OBX|1|CE|64994-7^vaccine fund pgm elig  
 cat^LN|1|^Unknown^HL70064|||||F|||19980921|||CVX40^per imm^CDCPHINVS|  
 OBX|1|NM|1648-5^tuberculosis reaction wheal 3D post 5 TU ID^LN|1|||||F|

| Outcome of Query   | Response   |
|--|--|
| No match found   | Response indicates that message was successfully processed and that no clients matched the criteria that were sent in the query.   |
| Exactly one high confidence match found                                      | Response includes a complete immunization history as specified in CDC's Profile, <i>Return Immunization History</i> .  |
| At least one lower confidence match is found, but <= maximum number allowed. | Response returns one PID with associated PD1 and NK1 segments for each potential match. No immunization history is returned.<br><br>See CDC's Profile <i>Return Candidate List</i> .   |
| More than the maximum number allowed is found.                               | Response indicates that the message was successfully processed, but that too many potential matches were found.<br><br>The maximum number allowed is the lower of the maximum number requested and the maximum number that the receiving system will return. |



| Outcome of Query                                 | Response  |
|--|---|
| Message is not well formed and has fatal errors. | Response indicates that the message was not successfully processed and may indicate errors. |

### Query Requesting Forecast Information

MSH|^~\&|EHR|10025^CLINICNAME||MIIX|20150323164929|329889176|QBP^Q11^QBP\_Q11|1661|P|2.5.1|||||||  
 QPD|Z34^Request Immunization  
 History^HL70471|5522||LASTNAME^FIRSTNAME||20010414|F|171 TAFFY  
 LANE^ANYCITY^MS^39998^USA^P||  
 RCP||1^RD^HL70126|R^Real Time^HL70394

### Returned with Evaluated Immunization History and Forecast

MSH|^~\&|^MIIX^|EHR^|10025^CLINICNAME^|20150323164938||RSP^K11^RSP\_K11|3035391860.100044440|P|2.5.1|||||||Z32^CDCPHINVS^|  
 MSA|AA|1661||  
 QAK|5522||Z34^Request Immunization History^HL70471|  
 QPD|Z34^Request Immunization  
 History^HL70471|5522||LASTNAME^FIRSTNAME||20010414|F|171 TAFFY  
 LANE^ANYCITY^MS^39998^USA^P|  
 PID|1||3779906^SR~~~~8500083^MR||LASTNAME^FIRSTNAME^L||20010414|F|LA  
 STNAME^FIRSTNAME|2106-3^White^HL70005|171 TAFFY  
 LANE^ANYCITY^MISSISSIPPI^39998^United States^M^COUNTY|||||||2186-5^not Hispanic  
 or Latino^HL70189|||||N|  
 PD1||^SR|^SR|||||02^Reminder/recall -any  
 method^HL70215||||A^Active^HL70441|  
 PV1||R|  
 ORC|RE||3779906.624.20150225|  
 RXA|0|999|20150225|20150225|140^Influenza, seasonal, injectable, preservative  
 free^CVX^90656^Influenza, seasonal, injectable, preservative  
 free^CPT~624^STC0292|.5|ML^mL^ISO+||00^New immunization  
 record^NIP001|||||666468||PMC^sanofi pasteur^HL70227|||A|20150323164941|  
 RXR|IM^Intramuscular^HL70162|  
 OBX|1|TS|29769-7^VIS Presentation Date^LN|1|20150225|||||F|  
 OBX|1|CE|VFC-STATUS^VFC Status^STC|1|^Unknown^HL70064|||||F||20150225|  
 OBX|1|CE|64994-7^vaccine fund pgm elig  
 cat^LN|1|^Unknown^HL70064|||||F||20150225||CVX40^per imm^CDCPHINVS|  
 OBX|1|DT|29769-7^date vaccine information statement presented^LN|1|20150225|||||F|  
 ORC|RE||9999|  
 RXA|0|999|20150323164938|20150323164938|998^no vaccine  
 administered^CVX|0|||||||NA||20150323164941|  
 RXR|OTH^Other/Miscellaneous^HL70162|  
 OBX|1|CE|30956-7^vaccine type^LN|1|45^HepB^CVX|||||F|  
 OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|  
 OBX|1|NM|30973-2^Dose number in series^LN|1|1|||||F|  
 OBX|1|TS|30980-7^Date vaccination due^LN|1|20010414|||||F|  
 OBX|1|TS|30981-5^Earliest date to give^LN|1|20010414|||||F|  
 OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21210414|||||F|

OBX|1|TS|59778-1^Date dose is overdue^LN|1|20010714|||||F|  
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|||||F|  
ORC|RE||9999|  
RXA|0|999|20150323164938|20150323164938|998^no vaccine  
administered^CVX|0|||||||||NA||20150323164941|  
RXR|OTH^Other/Miscellaneous^HL70162|  
OBX|1|CE|30956-7^vaccine type^LN|1|89^POLIO^CVX|||||F|  
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|  
OBX|1|NM|30973-2^Dose number in series^LN|1|1|||||F|  
OBX|1|TS|30980-7^Date vaccination due^LN|1|20010614|||||F|  
OBX|1|TS|30981-5^Earliest date to give^LN|1|20010526|||||F|  
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21210414|||||F|  
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20010714|||||F|  
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|||||F|  
ORC|RE||9999|  
RXA|0|999|20150323164938|20150323164938|998^no vaccine  
administered^CVX|0|||||||||NA||20150323164941|  
RXR|OTH^Other/Miscellaneous^HL70162|  
OBX|1|CE|30956-7^vaccine type^LN|1|85^HepA^CVX|||||F|  
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|  
OBX|1|NM|30973-2^Dose number in series^LN|1|1|||||F|  
OBX|1|TS|30980-7^Date vaccination due^LN|1|20020414|||||F|  
OBX|1|TS|30981-5^Earliest date to give^LN|1|20020414|||||F|  
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21210414|||||F|  
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20030414|||||F|  
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|||||F|  
ORC|RE||9999|  
RXA|0|999|20150323164938|20150323164938|998^no vaccine  
administered^CVX|0|||||||||NA||20150323164941|  
RXR|OTH^Other/Miscellaneous^HL70162|  
OBX|1|CE|30956-7^vaccine type^LN|1|3^MMR^CVX|||||F|  
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|  
OBX|1|NM|30973-2^Dose number in series^LN|1|1|||||F|  
OBX|1|TS|30980-7^Date vaccination due^LN|1|20020414|||||F|  
OBX|1|TS|30981-5^Earliest date to give^LN|1|20020414|||||F|  
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21210414|||||F|  
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20020814|||||F|  
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|||||F|  
ORC|RE||9999|  
RXA|0|999|20150323164938|20150323164938|998^no vaccine  
administered^CVX|0|||||||||NA||20150323164941|  
RXR|OTH^Other/Miscellaneous^HL70162|  
OBX|1|CE|30956-7^vaccine type^LN|1|21^VARICELLA^CVX|||||F|  
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|  
OBX|1|NM|30973-2^Dose number in series^LN|1|1|||||F|  
OBX|1|TS|30980-7^Date vaccination due^LN|1|20020414|||||F|  
OBX|1|TS|30981-5^Earliest date to give^LN|1|20020414|||||F|  
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21210414|||||F|  
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20020814|||||F|  
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|||||F|  
ORC|RE||9999|

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RXA|0|999|20150323164938|20150323164938|998^no vaccine
administered^CVX|0|||||||||||||NA||20150323164941|
RXR|OTH^Other/Miscellaneous^HL70162|
OBX|1|CE|30956-7^vaccine type^LN|1|115^Td^CVX|||||F|
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|
OBX|1|NM|30973-2^Dose number in series^LN|1|1|||||F|
OBX|1|TS|30980-7^Date vaccination due^LN|1|20080414|||||F|
OBX|1|TS|30981-5^Earliest date to give^LN|1|20080414|||||F|
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21210414|||||F|
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20080514|||||F|
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|||||F|
ORC|RE||9999|
RXA|0|999|20150323164938|20150323164938|998^no vaccine
administered^CVX|0|||||||||||||NA||20150323164941|
RXR|OTH^Other/Miscellaneous^HL70162|
OBX|1|CE|30956-7^vaccine type^LN|1|137^HPV^CVX|||||F|
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|
OBX|1|NM|30973-2^Dose number in series^LN|1|1|||||F|
OBX|1|TS|30980-7^Date vaccination due^LN|1|20120414|||||F|
OBX|1|TS|30981-5^Earliest date to give^LN|1|20100414|||||F|
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21010414|||||F|
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20140414|||||F|
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|||||F|
ORC|RE||9999|
RXA|0|999|20150323164938|20150323164938|998^no vaccine
administered^CVX|0|||||||||||||NA||20150323164941|
RXR|OTH^Other/Miscellaneous^HL70162|
OBX|1|CE|30956-7^vaccine type^LN|1|147^MENING^CVX|||||F|
OBX|1|CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|
OBX|1|NM|30973-2^Dose number in series^LN|1|1|||||F|
OBX|1|TS|30980-7^Date vaccination due^LN|1|20120414|||||F|
OBX|1|TS|30981-5^Earliest date to give^LN|1|20120414|||||F|
OBX|1|TS|59777-3^Latest date next dose should be given^LN|1|21210414|||||F|
OBX|1|TS|59778-1^Date dose is overdue^LN|1|20140414|||||F|
OBX|1|CE|59783-1^Status in immunization series^LN|1|P^Past Due^STC0002|||||F|

```

The forecast information will only be returned in cases of an exact match with the IIS.

### **Sending HL7 Messages**

HL7 message files may be submitted automatically via HTTPS in a near real-time manner. When the sending application submits an HL7 message through the Mississippi HIE, MS-HIN to MIIIX via an HTTPS post command, it must have the following fields:

- USERID – assigned by the Interoperability Administrator.
- PASSWORD – assigned by the Interoperability Administrator.
- MESSAGEDATA – the HL7 message(s).

HL7 messages may be sent one at a time (one for every HTTPS request) or together as a batch or group. Batch or grouped messages do not require special separators or wrappers. MIIIX always returns responses in HL7 format (ACK). Responses are returned based on the account configuration in MIIIX. The response configurations available are Always, Never, On Error

(only for those messages that are not accepted), or Determined by Message (the incoming request message indicates in the MSH segment whether to respond Always, Never or Only On Error).

The HL7 response can indicate any one of the following:

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

### Specific Requirements for Interfaces

To successfully implement an interface to MIIX it is important to include specific vaccine information in HL7 messages.

- VFC (Vaccines for Children) status is required (PV1-20 for patient level and OBX-5 for vaccine level).
- Current CVX/CPT coding is critical – no codes set inactive by CDC or codes for unspecified vaccines are acceptable. The MIIX team strongly recommends providers subscribe to email updates on CVX/CPT codes from the CDC.  
<http://www2a.cdc.gov/vaccines/IIS/IISStandards/vaccines.asp?rpt=cvx>
- Lot number and vaccine manufacturer, utilizing the MVX codes from the CDC, are critical to ensure accurate inventory values. The MVX code sent by the provider in an HL7 message must match exactly the code in MIIX for the provider's inventory (if recorded in MIIX). The MIIX team strongly recommends providers subscribe to email updates on MVX codes from the CDC.  
<http://www2a.cdc.gov/vaccines/IIS/IISStandards/vaccines.asp?rpt=mvx>

The provider must monitor changes to the vaccine supply, including the introduction of new vaccines and vaccine coding changes. CVX coding submitted through HL7 messages must match the vaccine products administered at the provider's location. **Current coding must be in place in HL7 messaging before the interface moves to the MIIX production system.**

## VFC (Vaccines for Children) Status

To submit VFC (Vaccines for Children) status via HL7 messaging, a code indicating eligible or ineligible must be submitted for all patients using the table below:

| VFC Code | VFC Status   |
|----------|--|
| V01      | Not VFC eligible. Must be sent via OBX segment for all patients in this category receiving a vaccination |
| V02      | VFC eligible – Medicaid/Medicaid Managed Care  |
| V03      | VFC eligible - Uninsured   |
| V04      | VFC eligible – American Indian/Alaska Native   |
| V05      | VFC eligible – Federally Qualified Health Center Patient/Underinsured                                    |
| V06      | CHIP patient   |

## Race and Ethnic Group

CDC strongly recommends immunization information systems (IIS) collect Race and Ethnicity data on all patient records. MIIX requires a race code be submitted in HL7 data. If possible, Ethnicity data should also be submitted in HL7 data. Only the current CDC values for HL7 version 2.5.1 are acceptable. Deprecated (outdated) values will not be accepted. If you are unable to submit current values, leave the appropriate segments empty but **note: Race code (current values) must be submitted to MIIX.**

| US Race Codes | Description                      |
|---------------|----------------------------------|
| 1002-5        | American Indian or Alaska Native |
| 2028-9        | Asian                            |

| <b>US Race Codes</b> | <b>Description</b>   |
|----------------------|--|
| 2076-8               | Native Hawaiian or Other Pacific Islander  |
| 2054-5               | Black or African-American  |
| 2106-3               | White  |
| 2131-1               | Other Race (should be avoided or very limited use; make a specific race selection when possible) |
| <empty field>        | Unknown/undetermined (Avoid unless EHR defaults to Other in the interface)                       |

| <b>US Ethnicity Codes</b> | <b>Description</b>     |
|---------------------------|------------------------|
| 2135-2                    | Hispanic or Latino     |
| 2186-5                    | Not Hispanic or Latino |
| <empty field>             | Unknown (Avoid)        |

### Required Fields (Segments and Components)

| <b>DATA FIELD</b>                  | <b>REQUIRED, RECOMMENDED, ACCEPTED, IGNORED</b> | <b>HL7 SEGMENT</b> | <b>COMMENTS</b>                                      |
|------------------------------------|---|--------------------|--|
| <b>Patient Fields</b>              |   |                    |  |
| Patient Id (Medical Record Number) | Required  | PID-3              | This field should not contain Social Security Number |
| First Name                         | Required  | PID-5              |  |

| <b>DATA FIELD</b> | <b>REQUIRED, RECOMMENDED, ACCEPTED, IGNORED</b> | <b>HL7 SEGMENT</b> | <b>COMMENTS</b>  |
|-------------------|---|--------------------|--|
| Last Name         | Required  | PID-5              |  |
| Middle Name       | Recommended                                     | PID-5              |  |
| Suffix            | Required in a suffix field                      | PID-5              |  |
| Date of Birth     | Required  | PID-7              |  |
| Gender            | Required  | PID-8              |  |
| Alias First Name  | Recommended                                     | PID-9              |  |
| Alias Last Name   | Recommended                                     | PID-9              |  |
| Birth File Number | Accepted  | PID-3              |  |
| Birth Multiple    | Recommended                                     | PID-24             |  |
| Birth Order       | Recommended                                     | PID-25             |  |
| Race              | Required  | PID-10             | Use current standard code set per current CDC Implementation Guide 2.5.1   |
| Ethnicity         | Required  | PID-22             | Use current standard code set per current CDC Implementation Guide 2.5.1<br>Regard as Required but may be Empty (RE) |
| Facility Name     | Required  | PD1-3.1            |  |
| Facility Id       | Required  | PD1-3.3            |  |

| <b>DATA FIELD</b>                                     | <b>REQUIRED, RECOMMENDED, ACCEPTED, IGNORED</b> | <b>HL7 SEGMENT</b> | <b>COMMENTS</b>   |
|---|---|--------------------|---|
| Eligible VFC (at demographic level)                   | Required  | PV1-20             |   |
| Address Street & City                                 | Required  | PID-11             | Entire street address should be concatenated into one line. The address must include: street, city, state, zip code |
| Address State   | Required  | PID-11             |   |
| Address Zip   | Required  | PID-11             |   |
| Phone   | Required  | PID-13             |   |
| Email   | Recommended                                     | PID-13             |   |
| <b>VACCINATION FIELDS</b>                             |   |                    |   |
| Vaccine Name  | Required  | RXA-5              |   |
| Vaccine Code CVX                                      | Required (for MU)                               | RXA-5              | CVX vaccine codes are required for Meaningful Use. Both CVX and CPT codes can be submitted                          |
| Vaccine Code CPT                                      | Required if no CVX code                         | RXA-5              | CPT vaccine codes can be accepted if CVX codes cannot be provided, but do not meet Meaningful Use requirements      |
| Vaccination Administration Date                       | Required  | RXA-3              |   |
| Vaccinator (administering provider)                   | Recommended                                     | RXA-10             |   |
| Vaccine Lot Number                                    | Required – Administered vaccines                | RXA-15             |   |
| Vaccine Manufacturer Name                             | Required – Administered vaccines                | RXA-17             |   |
| Vaccine Manufacturer Code (only current MVX accepted) | Required – Administered vaccines                | RXA-17             |   |



| <b>DATA FIELD</b>                                      | <b>REQUIRED, RECOMMENDED, ACCEPTED, IGNORED</b> | <b>HL7 SEGMENT</b> | <b>COMMENTS</b>   |
|--|---|--------------------|---|
| Vaccine expiration date                                | Recommended                                     | RXA-16             |   |
| Vaccine Eligible VFC Code                              | Required  | OBX-3 and OBX-5    | See <a href="#">VFC (Vaccines For Children) Status</a> earlier in this guide. |
| Administration Notes: Historical vs Administered (new) | Required  | RXA-9              | Historical coded 01, New coded 00   |
| Action Code  | Recommended                                     | RXA-21             | A = Add<br>U = Update<br>D = Delete<br>Will default to Add if left empty.     |
| Administered Amount (dose size, numeric volume)        | Required  | RXA-6              |   |
| Route of Administration                                | Required  | RXR-1              |   |
| Anatomical Site of Administration                      | Required  | RXR-2              |   |
| VIS Presentation Date                                  | Recommended                                     | OBX                |   |
| VIS Publication Date                                   | Recommended                                     | OBX                |   |
| Facility ID  | Required  | RXA-11.4           |   |
| Facility Name  | Required  | RXA 11.1           |   |
| Facility Address                                       | Accepted  | RXA-11             |   |
| <b>GUARDIAN FIELDS</b>                                 |   |                    |   |
| First Name   | Required  | NK1-2              | Only required for < 19 years old  |

| DATA FIELD   | REQUIRED, RECOMMENDED, ACCEPTED, IGNORED   | HL7 SEGMENT | COMMENTS                        |
|--------------|--|-------------|---------------------------------|
| Last Name    | Required   | NK1-2       | Only required for <19 years old |
| Phone        | Recommended  | NK1-5       |                                 |
| Relationship | Required to be coded as GRD, MTH, FTH, PAR. If populated with any other value, the guardian name info will be ignored. | NK1-3       |                                 |

#### Tips for a Successful Implementation of an Interface

| Message Segment | Recommendation  |
|-----------------|---|
| MSH-4.1         | The Organization Id will be provided by the Interoperability administrator.   |
| MSH-11          | The processing id is always 'P' even when submitting messages to the testing server.                                |
| NK1-2           | Next of kin name.<br>Correct submission format:<br>LASTNAME^FIRSTNAME^MIDDLENAME (or initial)^SUFFIX                |
| NK1-3           | Next of kin relationship code. Accepted values:<br>FTH – Father<br>GRD – Guardian<br>MTH – Mother<br>PAR – Parent   |
| PID-3           | The identifier code should always be 'MR'.  |
| PD1-11          | Publicity code identifies Reminder Recall method. If submitted, the correct value is 02^Reminder/Recall any method. |

| Message Segment | Recommendation   |
|-----------------|--|
| PV1-20          | Required for all patients. A valid code for MS must be submitted for patients under 19 to complete the VFC Profile. V00 is not accepted and should not be submitted.                       |
| OBX-3           | 64994-7 – code used for VFC eligibility status<br>30963-3 – code used for Vaccine funding source<br>29768-9 – code used for VIS publication date<br>29769-7 – code used for VIS given date |
| OBX-5           | For OBX-3 value of 64994-7 see <a href="#">VFC (Vaccines For Children) Status</a> earlier in this guide.   |
| QBP/RSP         | Query required for HL7 version 2.5.1   |
| RXA-5           | Administered code.<br>CVX, CPT or both are expected.   |
| RXA-6           | Dosage of vaccine given. Numeric value.  |
| RXA-11          | Administered location. Correct submission format for HL7 2.5.1:<br>Facility Name^^Facility ID  |
| RXA-10          | Vaccinator.<br>Correct submission would include:<br>RXA10.1 – ID<br>RXA10.2 – Last name<br>RXA10.3 – First name<br>RXA10.4 – Middle name/initial (optional)<br>RXA10.5 - Credential        |