
Immunization Registry for the State of Missouri

HL7 Immunization Message Validation **Release 1.0.4 – Published April 18, 2011**



Missouri Department of Health and Senior Services

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Revision History

Ver/Rel #	Issue Date	Author	Summary of Changes
R1.0.1	September 9, 2010	Tom Meeks	Insert details into process based on similar CDC processes.
R1.0.2	December 9, 2010	Tom Meeks	Change “certification” oriented languaging to “validation” throughout the document.
R1.0.3	February 24, 2011	Tom Meeks and Tom Rice	Minor editing changes to parallel changes to Implementation Guide.
R1.0.4	April 18, 2011	Tom Rice	Replace references to ShowMeVax with references to the Missouri Immunization Registry (Immunization Registry).

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The following narrative is organized into three sections:

- **Initial HL7 Message Validation** – provides the steps providers are to follow to establish interfaces with the production Missouri Immunization Registry (Immunization Registry).
- **Data Validation** – includes detail specifications regarding extracting data from the provider’s system which is evaluated by DHSS as part of the initial HL7 message validation process.
- **HL7 Message Revalidation** – describes the effort needed to revalidate a provider when either the provider is planning on an upgrade to their software that includes the interfaces to the Immunization Registry or when DHSS determines that the HL7 messages being transmitted by the provider contain an unacceptable level of errors.

Initial HL7 Message Validation

Each ***provider*** who seeks to establish interfaces with the Immunization Registry must first have their HL7 messages validated prior to the initiation of the process whereby the messages are applied directly to the production Immunization Registry. The following outlines the steps required to achieve initial HL7 message validation. Appendix A – Provider HL7 Message Validation Form incorporates these steps into a work plan based format which is used to track a provider’s progress toward achieving message validation.

Initiation

- a. Sign Memorandum of Agreement (MOA).
- b. Receive copy of HL7 Immunization Implementation Guide and Design document.
- c. Participate in HL7 Immunization Implementation Guide and Design document review with DHSS.
- d. Assist in the development of an implementation timetable (Appendix A – Provider HL7 Message Validation Form contains the framework for such a timetable). A number of factors will influence the duration of this effort, including: has the software used by the provider been validated previously for another provider, what is the quality of the data maintained by the provider, the number of other providers already scheduled for HL7 message validation testing.
- e. Assess whether to submit HL7 messages applying one Facility Id or multiple Ids (i.e., does the provider want to segregate immunization records by location?).

Validation

- f. Conduct pre-test data validation - provider submits two sequential files of existing patient and immunization data. A definition of these files is provided in the Data Validation section below.
- g. Create trial text formatted versions of VXQs and VXUs and email to DHSS for manual review. Whether this step is performed will be at the discretion of DHSS based on criteria similar to those listed in Step d.
- h. Revise implementation timetable from Step d based on the results of Steps f-g.
- i. Receive test environment configuration parameters from DHSS.
- j. Configure EHR test system to transmit messages to the Immunization Registry test environment.

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- k. Generate, receive and test transmission of HL7 via secured communications protocol.
 - Test secured transmission of VXQs as needed
 - Test secured transmission of VXUs
- l. Generate, receive and test HL7 immunization message content. Which messages are tested will vary based on whether the provider plans to issue only VXUs or VXUs and VXQs.
 - Test VXQ transmittal
 - Test VXR receipt
 - Test VXX receipt
 - Test QCK receipt
 - Test VXU transmittal
 - Test ACK receipt

Production Initiation

- m. Receive production environment configuration parameters from DHSS.
- n. Reconfigure provider EHR to transmit to the Immunization Registry production environment.
- o. Test loading of immunization history (shot records already stored in the provider's EHR database).
- p. Load immunization history.
- q. Initiate first production HL7 message - confirming results.
- r. Receive provider message validation signoff. This will be achieved when the provider receives a signed Provider HL7 Message Validation Form from DHSS.
- s. Existing Electronic Immunization Interfaces.
 - Assess whether to terminate/eliminate other existing immunization electronic interfaces.
 - Based on results of preceding step, terminate existing immunization electronic interfaces, if necessary.
- t. Transmit and monitor production messages.

Data Validation

The purpose of this section is to provide the design specifications for the routine that will be used to validate the quality of a healthcare provider's automated patient and immunization data. This routine is run prior to testing the processing of HL7 transactions between the provider and DHSS (See Step f – Validation, provided above). This program analyzes the contents of a number of immunization data elements as defined below. The steps in this routine include:

Validation

- a. Provider program generates two extract files. One file will contain a set of patients and the second will contain the immunization records for the same patients. DHSS anticipates receiving all active immunization records the provider has within their system.

- b. Transmit the two files to DHSS. The mechanism used for this transmittal will depend on the combined size of the files and the appropriate data security available.
- c. DHSS processes the two files, validating the data provided.
- d. DHSS generates a report that specifies which records contain data fields that fail one or more validation checks, and why they failed.
- e. DHSS transmits validation report to provider.
- f. Provider staff corrects immunization data on its system.
- g. Repeat Steps a – f until validation report contains an acceptable level of errors.

Data Conversion

- h. This same data extract routine will be used to convert existing provider records as part of the initial Immunization Registry data load by providers whose system does not include a mechanism for transmitting existing records in HL7 format.

Data Extracts

The formats of the two extract files produced by the provider are provided below. The key factor of the two file formats is the inclusion of the provider’s patient identifier as the first element on each file. The provider’s patient identifier will be used by DHSS to reconnect the patient and their corresponding immunization records. The definition of these items is as specified in the HL7 Immunization Implementation Guide and Design document as defined for the VXU - Unsolicited Vaccination Record Update (VXU) message. The two record definitions are provided below.

General Specifications

<ul style="list-style-type: none"> • CSV format. It is <u>preferred</u> that the two files be generated using the comma separated value (CSV) format. If not in CSV format, provider is to indicate format used to create the file.
<ul style="list-style-type: none"> • Remove Embedded Commas. If the files are generated in CSV format, remove all embedded commas (e.g., address lines, names, etc.).
<ul style="list-style-type: none"> • All Fields. It is preferred that all the fields be included in the submitted files, even if they are blank/null – particularly if the data is submitted in CSV format. If fields are omitted, please provide a list of those omitted.
<ul style="list-style-type: none"> • Field Sequence. It is preferred that the data elements be submitted in the sequence specified. If not in the specified sequence, a definition of the format used will need to be submitted in addition to the data.
<ul style="list-style-type: none"> • Non-HL7 Codes. As part of the implemented interfaces, certain fields (e.g., Race, Ethnic Group, etc.) require the use of HL7 specific codes. These fields are marked as such in the following definitions. If as part of this validation, non-HL7 codes are supplied, the provider is to submit a translation/definition of their non-HL7 codes used (e.g., Race: W = White, B = Black/African American, etc.)

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Patient Record Definition

Related HL7 Field #	Element Name	Comments
PID		
PID-3	Provider Patient Identifier	
PID-3	Patient DCN	Same as Medicaid Number
PID-5	Patient First Name	
PID-5	Patient Middle Name	
PID-5	Patient Last Name	
PID-6	Mother's Maiden Name	Last name only
PID-7	Patient Date/Time of Birth	
PID-8	Patient Sex	
PID-10	Patient Race	
PID-11	Patient Address Line 1	
PID-11	Patient Address Line 2	
PID-11	Patient City	
PID-11	Patient State	
PID-11	Patient Zip	Up to 9 digits
PID-11	Patient Birth Place - State	
PID-11	Patient Birth Place - Country	
PID-13	Patient Home Phone Number	
PID-22	Patient Ethnic Group	
PID-24	Patient Multiple Birth	
PID-25	Patient Birth Order	
NK1	NK = Responsible Party	
NK1-2	NK First Name	
NK1-2	NK Middle Name	
NK1-2	NK Last Name	
NK1-3	NK Relationship to Patient	
NK1-4	NK Address Line 1	
NK1-4	NK Address Line 2	
NK1-4	NK City	
NK1-4	NK State	
NK1-4	NK ZIP	Up to 9 digits
NK1-5	NK Phone Number	
NK1-16	NK Date of Birth	
NK1-33	NK DCN	Same as Medicaid Number
PV1		
PV1-2	Patient Class	
PV1-20	Financial Class	

Immunization Record Definition

Related HL7 Field #	Element Name	Comments
RXA		
PID-3	Provider Patient Identifier	Same as in the Patient Record Definition
RXA-3	Date/Time Start of Admin	Service Date
RXA-5	Administered Code	CVX or CPT → CVX preferred
RXA-9	Administration Notes – Information/data Source	Administered by Provider vs. Administered by another party (historical)
RXA-10	Administering Provider Name	Name
RXA-15	Substance Lot Number	
RXA-17	Substance Manufacturer Code	
RXR		
RXR-1	Route	Preferred to be HL7 Codes (See HL7 Table 0162)
RXR-2	Site	Preferred to be HL7 Codes (See HL7 Table 0163)

HL7 Message Revalidation

Each provider is responsible for ensuring that data transmitted remains in compliance with data transmission requirements tested and confirmed during the initial HL7 Message Validation.

- a. Notify DHSS of pending upgrade to provider software that impacts HL7 content and generation.
- b. Repeat Steps f – 1, under the heading of “Initial HL7 Message Validation” above.
- c. DHSS may request **revalidation** of a given provider if the Immunization Registry encounters a significant number of processing errors in handling the HL7 messages transmitted by the provider.

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Appendix A - Provider HL7 Message Validation Form

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<u>Provider:</u>	<u>Contact:</u>	
<u>Address:</u>	<u>Phone:</u>	
<u>Description</u>	<u>Planned Compl. Date</u>	<u>Approved</u>
<u>Initiation</u>		
a. Sign Memorandum of Agreement (MOA).		
b. Receive copy of HL7 Immunization Implementation Guide and Design document.		
c. Participate in HL7 Immunization Implementation Guide and Design document review with DHSS.		
d. Assist in the development of an implementation timetable (this form contains the framework for such a timetable). A number of factors will influence the duration of this effort, including: has the software used by the provider been validated previously for another provider, what is the quality of the data maintained by the provider, the number of other providers already scheduled for HL7 message validation testing.		
e. Assess whether to submit HL7 messages applying one Facility Id or multiple Ids (i.e., does the provider want to segregate immunization records by location?).		
<u>Validation</u>		
f. Conduct pre-test data validation - provider submits two sequential files of existing patient and immunization data. A definition of these files is provided in the Data Validation section.		
g. Create trial text formatted versions of VXQs and VXUs and email to DHSS for manual review. Whether this step is performed will be at the discretion of DHSS based on criteria similar to those listed in Step d.		
h. Revise implementation timetable from Step d based on the results of Steps f-g.		
i. Receive test environment configuration parameters from DHSS.		
j. Configure EHR test system to transmit messages to the Immunization Registry test environment.		
k. Generate, receive and test transmission of HL7 via secured communications protocol.		
<ul style="list-style-type: none"> • Test secured transmission of VXQs as needed • Test secured transmission of VXUs 		
l. Generate, receive and test HL7 immunization message content. Which messages are tested will vary based on whether the provider plans to issue only VXUs or VXUs and VXQs.		

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State of Missouri - Immunization Registry Provider HL7 Message Validation Form		
<u>Provider:</u>	<u>Contact:</u>	
<u>Address:</u>	<u>Phone:</u>	
<u>Description</u>	<u>Planned Compl. Date</u>	<u>Approved</u>
<ul style="list-style-type: none"> • Test VXQ transmittal • Test VXR receipt • Test VXX receipt • Test QCK receipt • Test VXU transmittal • Test ACK receipt 		
<u>Production Initiation</u>		
m. Receive production environment configuration parameters from DHSS.		
n. Reconfigure provider EHR to transmit to the Immunization Registry production environment.		
o. Test loading of immunization history (shot records already stored in the provider's EHR database).		
p. Load immunization history.		
q. Initiate first production HL7 message - confirming results.		
r. Receive provider validation signoff. This will be achieved when the provider receives a signed Provider HL7 Message Validation Form from DHSS.		
s. Existing Electronic Immunization Interfaces. <ul style="list-style-type: none"> • Assess whether to terminate/eliminate other existing immunization electronic interfaces. • Based on results of preceding step, terminate existing immunization electronic interfaces, if necessary. 		
t. Transmit and monitor production messages.		
<u>Signoff</u>		
<u>BIAA Representative:</u>	<u>Date:</u>	