Immunization Patient Resources with Integrated Technology (ImmPRINT)

HL7 V 2.5.1

Master Guide

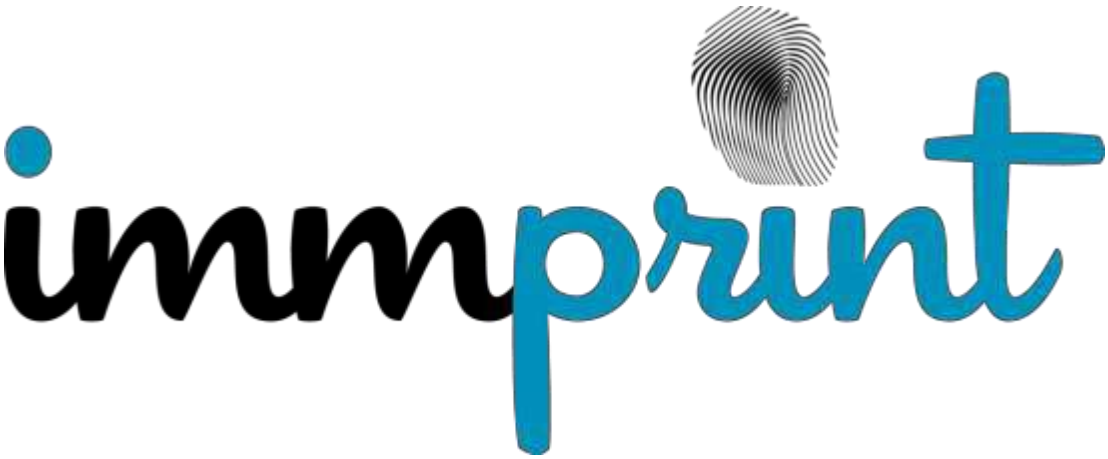


Table of Contents

Introduction	1
Purpose	1
HL7 Data Transmission	1
Real Time Message Processing (HL7 V 2.5.1) Flow Chart	2
Unsolicited Vaccination Record Update (VXU)	3
Acknowledgment Message (ACK)	4
Query Message Profile Type (QBP)	5
Patient Search Key Combinations for VXU and QBP	6
Response (RSP)-Segment Pattern Response (RSP^K11	6
HL7 Message Segments	9
Message Header Segment (MSH)	9
Patient Identification Segment (PID)	11
Patient Additional Demographics (PD1)	14
Next of Kin (NK1)	14
Order Request Segment (ORC)	17
Pharmacy/Treatment Administration Segment (RXA)	19
Pharmacy/Treatment Route (RXR)	21
Observation Result Segment (OBX)	22
Error Messages and Possible Solutions	23
Appendix: ImmPRINT Certificate of Immunization Web	25

Introduction

The Alabama Immunization Registry has made available an interactive user interface -ImmPRINT for authorized users to enter and update patient immunization records. ImmPRINT is a statewide population-based immunization registry system for all children born in Alabama since January 1, 1993. Vaccine histories are also available for patients of all ages if they have been to a county health department or see a private provider enrolled in ImmPRINT.

ImmPRINT supports CDC's National Center for Immunization and Respiratory Diseases (NCRID) goal to use HL7 for automated immunization data exchange. This document contains additional requirements for implementing immunization messaging using HL7 version 2.5.1 and it supplements CDC'S HL7 Version 2.5.1: Implementation Guide for Immunization Messaging.
https://www.cdc.gov/vaccines/programs/iis/technical-guidance/hl7.html
For more information on HL7, see http://www.hl7.org.

Purpose

The HL7 Master Guide for Immunization Messaging documented here, supports automated exchange of immunization data between the ImmPRINT and outside systems. This allows both the patient and immunization records to be available in both systems, to avoid the need to enter data twice. This document specifies how HL7 messages are constructed for the purposes of data exchange via HL7 interface with ImmPRINT.

HL7 Data Transmission

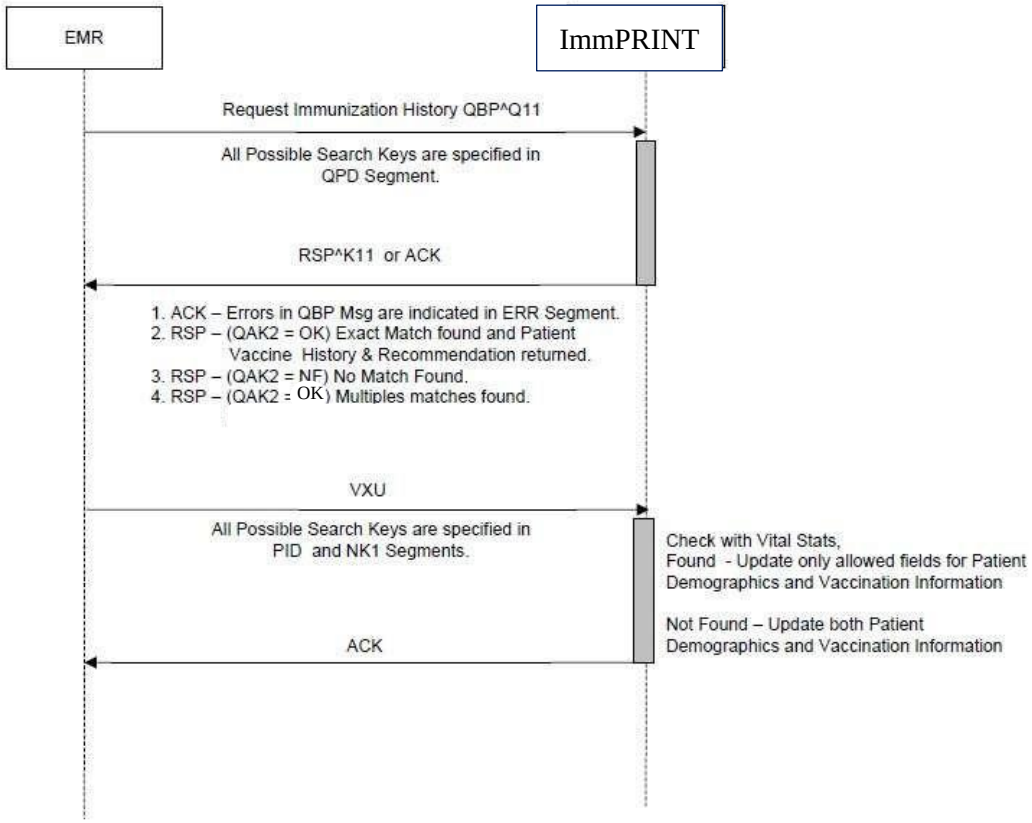
ImmPRINT supports two message types in HL7 data transmission: VXU and QBP.

VXU message type is used for sending patient data and immunizations. The supported response message type for VXU is ACK

QBP message is used to query for a patient's demographic, immunization and recommendation information (according to the ACIP schedule). ImmPRINT supports four query profile response messages: Z31, Z32. Z33, and Z42.

ImmPRINT uses SOAP web services as the transport mechanism.

Real Time Message Processing (HL7 V 2.5.1) Flow Chart



Unsolicited Vaccination Record Update (VXU)

Patient data and immunizations should be sent as a VXU message type. ImmPRINT requires a complete VXU message to be sent with all required fields populated to create a new record or update an existing record.
When a VXU message type is sent to ImmPRINT with no RXA segment, a check is done to verify if the patient exists in ImmPRINT. If the patient already exists in ImmPRINT, the demographic update will occur.

Example of a VXU Message

MSH|^~\&|1111|222|AL-IIS|AL-IIS|201302111401-0600|12345AB-CDA2-RRDF-66BF Z999XZXZWXYZA|VXU^V04^VXU_V04|1039874483.444788|P|2.5.1| | |ER|AL|USA| | | |Z22^CDCP HINVS
PID|1||90524^^^Vestavia Pediatrics^MR||COOK^REBECCA^LEIGH^^^^L||20061125|F||2106-3^White^CDCREC|2000 Rive View Dr^^Birmingham^AL^33333^USA^L||^PRN^PH^^^205^6001111||ENG^ENGLISH^HL70296||||||21 86-5^not Hispanic or Latino^CDCREC||Y|1|||||N
PD1||||CHU RO^CHU^RONNIE
NK1|1|COPELAND^JUDY^^^^^L|SPO^Spouse^HL70063|1314 MAYTON AVE^^DEMOPOLIS^AL^36732^USA^H|^PRN^PH^^1^334^2897028|||||||||||||||||||||||||||||
PV1|1|I|MICU^ICU5^1^BWH|U|||CHU RO^CHU^RONNIE|||MED||||||CHU RO^CHU^RONNIE|||V01|||||||||||||||||BW||IN|||201302111209-0600|||||||CHU RO^CHU^RONNIE
ORC|RE|416944|444788|||||201302111256|HSK2053^HEATHER^S||15999958^CHU^RONNIE||
RXA|0|1|20200514|20200514|00005-1971-01^pneumococcal conjugate PCV 13^NDC^133^pneumococcal conjugate PCV 13^CVX|.5|mL^mL^UCUM||00^NEW IMMUNIZATIONRECORD^NIP001|^Morehead^Barbara^^^^^^L|^^^20986||||ck0843|20220331|PFR^Pfizer, Inc^MVX|||CP|A
RXR|C28161^Intramuscular^NCIT|LD^Left Arm^HL70163

Acknowledgment Messages (ACK)
The ACK is used to acknowledge to the sender that a message has been received. When a VXU message is received successfully by ImmPRINT, a real- time acknowledgement message (ACK) with one MSA segment is sent to the message submitting entity.
ACK messages are also generated for message rejections and for informational error messages. When a VXU message is rejected by ImmPRINT, the ACK contains the MSH, MSA and ERR segments.

Example ACK Messages

Example 1: **ACK for a VXU Successfully Processed Message -No Errors or Warning**
MSH|^~\&|ImmPRINT|ImmPRINT|1111|22|20110008| | |ACK|201108291201|P| | | |NE|NE | | | | |Z23^CDCPHINVS
MSA|AA|73477|Message Successfully Processed.

Example 2: **ACK for Errors on Message Validation**
MSH|^~\&|ImmPRINT|ImmPRINT|1111|22|20110008||ACK|201108291201|P| | | |NE|NE | | | | |Z23^CDCPHINVS
MSA|AE|19970522MA53|
ERR||PID^5|101^required field missing^HL70357|E
ERR||RXA|100^required segment missing^HL70357|E

Example 3: **ACK for Errors on Message Validation (for 2.3.1 only - backward compatibility)**
MSH|^~\&|ImmPRINT|ImmPRINT|1111|22|20110008||ACK|201108291201|P| | | |NE|NE | | | | |Z23^CDCPHINVS
MSA|AE|19970522MA53|Message Rejection
ERR|MSH^1^3^1006&Required field missing&Symphonia Validation&&MSH/SendingApplication~MSH^1^4^1006&Required field missing&Symphonia Validation&&MSH/SendingFacility

Query Message Profile Types (QBP)

A provider organization will query ImmPRINT to obtain information for the query patient (i.e. send an HL7 2.5.1 QBP^Q11^QBP_Q11 message).

ImmPRINT supports two types of query message profiles:

- Z34-Request Complete Immunization History, and
- Z44- Request Evaluated Immunization History and Forecast.

Example of Z34 query profile (Request Complete Immunization History):

MSH|^~\&|1300|220|ImmPRINT|ImmPRINT|20091130000000|27FD4841-EED9-42CD-9A5A- 61751864049D |QBP^Q11^QBP_Q11|793543|P|2.5.1|||NE|||||Z34^CDCPHINVS
QPD|Z34^Request Immunization History^CDCPHINVS|37374859|123456^^^MYEHR^MR|Child^Bobbie^Q^^^^L|Que^Suzy^^^^^M|20050512|M|10 East MainSt^^Myfaircity^GA^^^L
RCP|I|5^RD&records&HL70126|R^real-time^HL70394

Example of Z44 query profile (Request Evaluated Immunization History and Forecast):

MSH|^~\&|1300|220|AL-IIS|AL-IIS|20140515001020|27FD4841-EED42CD9A5A61751864049D|QBP^Q11^QBP_Q11|793544|P|2.5.1|||ER|AL|||||Z44^CDCPHINVS

QPD|Z44^Request Evaluated History and Forecast^CDCPHINVS|37374860|123456^^^MYEHR^MR|Child^Bobbe^Q^^^^L|Que^Suzy^^^^^M|2005 0512|M|10 East Main St^^Myfaircity^GA^^^L
RCP|I|5^RD&records&HL70126|R^real-time

Note: EHRs are asked to send Query Request Messages for one patient at a time.

Patient Search Key Combinations for VXU and QBP

- ImmPRINT ID Patient Registry ID
- Site ID, Local Chart Number, First Name, Last Name, Date of Birth
- First Name, Last Name, Date of Birth
- First Name, Last Name, Date of Birth, SSN
- First Name, Last Name, Date of Birth, SSN, Address, City

Note: Above are the initial query data element combinations that will be used as exact matches to locate patients within the registry. Entering the patient's EHR chart numbers into the registry will improve the performance of the messaging process. Additional search queries may be added in the future as identified.

Response (RSP) – Segment Pattern Response (RSP^K11)

ImmPRINT sends the RSP response message (using RSP^K11^RSP_K11 trigger) in response to the Query message.

The RSP^K11^RSP_K11 Response Message will contain the response profile identifier, which will identify the response profile information that will follow in the message.

Information sent in response messages:

- **Error in query message-** If query message is rejected, ImmPRINT acknowledges an error and will indicate an error in the response.
- **Multiple matches found-** ImmPRINT will return PID segments with associated NK1 segment for each potential match. ImmPRINT can send a maximum of ten matches in PID segments and no immunization history is returned.
- **No match found**- ImmPRINT will acknowledge no patient was found.
- **Complete Immunization History if exact match found**- ImmPRINT will return immunization history when exactly one high- confidence match is found.
- **Record is unavailable**- Record is unavailable will be sent as a response message for deceased patients. Providers should not alter the records. Deceased patients are identified by the death certificates only.

Examples of RSP Message

Z31 response profile (Multiple Match Found)

MSH|^~\&|AL-IIS|AL-IIS|1449|10741|20201210150134-0600||RSP^K11^RSP_K11|20201210150134|T|2.5.1|||NE|NE|||||Z31^CDCPHINVS
MSA|AA|20191018095719160001
QAK|XDOC-15023313|OK|Z34^Request Immunization History^CDCPHINVS
QPD|Z34^Request Immunization History^CDCPHINVS|XDOC-15023313|2105286^^^MR~2105286^^^MR|TEST^TEST||19960706|M
PID|1| |14080318^^^ALA^SR||TEST^TEST^^^^^L||19960706|F
PID|2| |14208482^^^ALA^SR||TEST^TEST^^^^^L||19960706|F
NK1|2|^H^^^^^L|MTH^Mother^HL70063

Z33 response profile (No Match Found)

MSH|^~\&|AL-IIS|AL-IIS|1449|10741|20201210150215-0600||RSP^K11^RSP_K11|20201210150215|T|2.5.1|||NE|NE|||||Z33^CDCPHINVS
MSA|AA|201302110955256765548O
QAK|XDOC-10583417|NF|Z34^Request Immunization History^CDCPHINVS
QPD|Z34^Request Immunization History^CDCPHINVS|37374859|123456^^^MYEHR^MR|Child^Bobbie^Q^^^^L|Que^Suzy^^^^^M|20050512|M|10 East MainSt^^Myfaircity^GA^^^L

Note: NF in the QAK-2 indicates that no match was found for the query criteria provided.

Z32 response profile (Return Complete Immunization History)

MSH|^~\&|AL-IIS|AL-IIS|1449|10741|20201214080207-0600||RSP^K11^RSP_K11|20201214080207|T|2.5.1|||NE|NE|||||Z32^CDCPHINVS
MSA|AA|20191018100636807002
QAK|XDOC-15023321|OK|Z34^Request Immunization History^CDCPHINVS
QPD|Z34^Request Immunization History^CDCPHINVS|XDOC-15023321|2105285^^^MR~2105285^^^MR|TEST^NEST^^^^^L||19960707|F|2345 Blvd^^Montgomery^AL^36104^^H
PID|1||2105285^^^MR~2105285^^^MR~14122710^^^ALA^SR~214515421^^^ALA^SS||TEST^NEST^^^^^L||19960707|F
ORC|RE||20191018^AL-IIS|
RXA|0|1|20171106|20171106|03^MMR^CVX|999|||01^Historical^NIP001||||||||||CP|A|
ORC|RE||20191018^AL-IIS|
RXA|0|1|20171113|20171113|03^MMR^CVX|999|||01^Historical^NIP001||||||||||CP|A|
ORC|RE||20191018^AL-IIS|
RXA|0|1|20171226|20171226|03^MMR^CVX|999|||01^Historical^NIP001||||||||||CP|A|

Z42 response profile (Return Evaluated History and Forecast):

MSH|^~\&|AL-IIS|AL-IIS|1449|10741|20201210150043-0600||RSP^K11^RSP_K11|20201210150043|T|2.5.1|||NE|NE|||||Z42^CDCPHINVS
MSA|AA|201603020955256765548O
QAK|20160302095525|OK|Z44^Request Evaluated History and Forecast^CDCPHINVS
QPD|Z44^Request Evaluated History and Forecast^CDCPHINVS|201603021234|123456^^^MYEHR^MR|Child^Bobbie^Q^^^^L|Que^Suzy^^^^^M|20050512|M|10 East MainSt^^Myfaircity^GA^^^L
PID|1||123456^^^1677^MR||Child^Bobbie^Q^^^^L||20050512|F
ORC|RE||20160302^AL-IIS|
RXA|0|1|20150720|20150720|83^HEP A, PED/ADOL, 2 DOSE^CVX|999|||01^Historical^NIP001||||||||||CP|A|
OBX|1|CE|30956-7^vaccine type^LN|1|83^HEP A, PED/ADOL, 2 DOSE^CVX|||||F|
OBX|2|NM|30973-2^Dose number in series^LN|1|1|NA^NA^HL70353|||||F|
OBX|3|ID|59781-5^Dose Validity^LN|1|Y|||||F|
ORC|RE||20160302^AL-IIS|
RXA|0|1|20140826|20140826|08^HEP B, ADOLESCENT OR PEDIATRIC^CVX|999|||01^Historical^NIP001||||||||||CP|A|
OBX|1|CE|30956-7^vaccine type^LN|1|08^HEP B, ADOLESCENT OR PEDIATRIC^CVX|||||F|
OBX|2|NM|30973-2^Dose number in series^LN|1|1|NA^NA^HL70353|||||F|
OBX|3|ID|59781-5^Dose Validity^LN|1|Y|||||F| ORC|RE||9999^AL-IIS|
RXA|0|1|20160302|20160302|998^No vaccine administered^CVX|999|||||||||||NA|A|
OBX|1|CE|30979-9^Vaccine due next^LN|1|107^DTAP UNSPECIFIED FORMULATION^CVX|||||F|||20160302|
OBX|2|DT|30980-7^Date vaccine due^LN|1|20100816|||||F|||20160302|
OBX|3|NM|30973-2^Vaccine due next dose number^LN|1|1|NA^NA^HL70353|||||F|||20160302|
OBX|4|CE|59783-1^Status in immunization series^LN|1|LA13423-1^Overdue^LN|||||F|
OBX|5|CE|59779-9^Immunization Schedule Used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|||20160302|
OBX|6|CE|30979-9^Vaccine due next^LN|2|45^HEP B, UNSPECIFIED FORMULATION^CVX|||||F|||20160302|
OBX|7|DT|30980-7^Date vaccine due^LN|2|20140923|||||F|||20160302|
OBX|8|NM|30973-2^Vaccine due next dose number^LN|2|2|NA^NA^HL70353|||||F|||20160302|
OBX|9|CE|59783-1^Status in immunization series^LN|2|LA13423-1^Overdue^LN|||||F|
OBX|10|CE|59779-9^Immunization Schedule Used^LN|2|VXC16^ACIP^CDCPHINVS|||||F|||20160302|
OBX|11|CE|30979-9^Vaccine due next^LN|3|31^HEP A, PEDIATRIC, UNSPECIFIED FORMULATION^CVX|||||F|||20160302|
OBX|12|DT|30980-7^Date vaccine due^LN|3|20160120|||||F|||20160302|
OBX|13|NM|30973-2^Vaccine due next dose number^LN|3|2|NA^NA^HL70353|||||F|||20160302|
OBX|14|CE|59783-1^Status in immunization series^LN|3|LA13423-1^Overdue^LN|||||F|
OBX|15|CE|59779-9^Immunization Schedule Used^LN|3|VXC16^ACIP^CDCPHINVS|||||F|||20160302|

HL7 Message Segment Details

Table fields highlighted in **green** are required, **yellow** are required but may be empty, **purple** are conditional.

Usage: R = Required, RE = Required/Empty, O = Optional, HR = Highly Recommended, X = Not Supported, C(R/O) = Conditional (Required/Optional), C (RE/O) = Conditional (Required Empty/Optional)

Message Header Segment (MSH)

MSH is used to define the intent, source, destination, and some specifics of the syntax of a message.

MSH-3: Contact ImmPRINT to get the ID's for MSH3. E.g. 1010
MSH-4: Contact ImmPRINT to get the SITE_ID's for MSH4.E.g.579
MSH-5: Use "ImmPRINT" or "AL-IIS"
MSH-6: Use "ImmPRINT" or "AL-IIS"
MSH-8: This is a required field. Contact ImmPRINT to get unique GUID for Security.

MSH (Required Segment)					
HL7 Field	**Element Name**	**Data Type**	**ImmPRINT Usage**	**Description/Comment**	**Code Set**
MSH- 1	Field Separator	ST	R	The character to be used as the field separator for the rest of the message.	
MSH- 2	Encoding Characters	ST	R	Four characters in the following order: Component separators, repetition separator, escape character, and subcomponent separator. The values are ^~\&	
MSH- 3	Sending Application	HD	R	Instance name of the EHR product where the data originated	
MSH- 4	Sending Facility	HD	R	ImmPRINT assigned value indicating the facility sending the message	
MSH-5	Receiving Application	HD	R	Always use ImmPRINT or AL-IIS	
MSH-6	Receiving Facility	HD	R	Always use ImmPRINT or AL-IIS	

MSH- 7	Date/Time of Message	TS	R	Date and time when message was created or transmitted.	
MSH- 8	Security	ST	R	This is a required field. Contact ImmPRINT to get unique GUID for Security.	
MSH- 9	Message Type	MSG	R		
MSH- 10	Message Control ID	ST	R	Common reference identifier for a message between the sender and receiver which identifies the message.	
MSH-11	Processing ID	PT	R		
MSH-12	Version ID	VID	R	HL7 Version	
MSH-13	Sequence Number	NM	O		
MSH-14	Continuation Pointer	ST	O		
MSH-15	Accept Acknowledgement Type	ID	R	ImmPRINT accepts "AL" or "NE" only	Hl7 Defined Table 0155
MSH-16	Application Acknowledgment Type	ID	R	ImmPRINT accepts "AL" or "NE" only	
MSH-17	Country Code	ID	O		
MSH-18	Character Set	ID	O		
MSH-19	Principal Language of	CE	O		
MSH-20	Alternate Character Set Handling Scheme	ID	O		
MSH-21	Message Profile Identifier	EI	R		

Example:
MSH|^~\&|1111|222|AL-IIS|AL-IIS|201302111401-0600|12345AB-CDA2-RRDF-66BF Z999XZXZWXYZA||VXU^V04^VXU_V04|1039874483.444788|P|2.5.1|||ER|AL|USA||||Z22^CDCPHINVS

Patient Identifier Segment (PID)

PID is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information.

PID-3: It is repetitive field. Sub-components 1 (ID) and 5 (Identifier Type Code) are required. Patient Identification number is specified in Sub-component 1 (ID) and Identifier Type Code can be SR – State ImmPRINT ID, MR- Medical Record Number, SS- Social Security. All other ID's will be ignored.

PID-5: Last name and First name are required in the first two components. First or Last Name with less than 2 Characters will result in Message rejection.
PID-7: DOB is specified as follows – YYYYMMDD
PID-11: Address is required. Incomplete address and State Abbreviation with more than 2 Characters will result in Message rejection.
PID-13: Home Phone Number. ImmPRINT accepts only PRN and WPN values in component 2. ImmPRINT will use the 6th 7th 8th and 9th components for specification of area code, phone number, extension and text, respectively. Otherwise, ImmPRINT will assume that the phone number is specified in the first component.
PID-19: "-"symbols are not allowed. SSN more than 9 Characters will result in Message rejection

PID (Required Segment)					
HL7 Field	**Element Name**	**Data Type**	**ImmPRINT Usage**	**Description/ Comment**	**Code Set**
PID-1	Set ID - PID	SI	R		
PID-2	Patient ID	CX	X		
PID-3	Patient Identifier List	CX	R	Provider identification number for Patient.	
PID-4	Alternate Patient ID	CX	X	Insurance Policy ID for HEDIS Reports	
PID-5	Patient Name	XPN	R	Last name and First name are required in the first two components. First or Last Name with less than 2 Characters will result in Message rejection.	
PID-6	Mother's Maiden Name	XPN	RE		
PID-7	Date of Birth	TS	R	Format is specified as – YYYYMMDD	
PID-8	Administrative Sex	IS	R	M or F only	
PID-9	Patient Alias	XPN	X		
PID-10	Race	CE	RE (HR)	This field refers to the patient's race. ImmPRINT will process the first Race in the list of repeating Races; all others will be ignored.	Refer to Table CDCREC-Race listed under this segment table.

PID-11	Patient Address	XAD	R	Entire address should be concatenated into one line: street, city, state, zip code.	
PID-12	County Code	IS	X	County belongs in address field	
PID-13	Phone Number – Home	XTN	RE	Maximum 4 repeats are supported.	
PID-14	Phone Number – Business	XTN	O		
PID-15	Primary Language	CE	O		HL70296
PID-16	Marital Status	CE	O		
PID-17	Religion	CE	O		
PID-18	Patient Account Number	CX	O		
PID-19	SSN Number - Patient	ST	RE		
PID-20	Driver's License Number – Patient	DLN	X		
PID-21	Mother's Identifier	CX	X		
PID-22	Ethnicity	CE	RE (HR)		Refer to Table CDCREC-Ethnic Group listed user this segment table.
PID-23	Birth Place	ST	O		
PID-24	Multiple Birth Indicator	ID	RE	This field indicates whether the patient was part of a multiple birth	HL7 0136
PID-25	Birth Order	NM	C(RE/O)	When a patient was part of a multiple birth, a value (number) indicating the patient's birth order is entered.	
PID-26	Citizenship	CE	O		
PID-27	Veterans Military Status	CE	O		
PID-28	Nationality	CE	O		
PID-29	Patient Death Date and Time	TS	X	ImmPRINT receives death certificates	
PID-30	Patient Death Indicator	ID	X		
PID-31	Identity Unknown Indicator	ID	O		

PID-32	Identity Reliability Code	IS	O		
PID-33	Last Update Date/Time	TS	O		
PID-34	Last Update Facility	HD	O		
PID-35	Species Code	CE	O		
PID-36	Breed Code	CE	O		
PID-37	Strain	ST	O		
PID-38	Production Class Code	CE	O		
PID-39	Tribal Citizenship	CWE	O		

Example:

PID|1||90524^^^Vestavia Pediatrics^MR||COOK^REBECCA^LEIGH^^^^L||20061125|F||2106-3^White^CDCREC|2000 Rive View Dr^^Birmingham^AL^33333^USA^L||^PRN^PH^^^205^6001111||ENG^ENGLISH^HL70296||||||2 186-5^not Hispanic or Latino^CDCREC||Y|1|||||N

CDCREC-Race
User-defined Table 0005 – Race
Use in PID-10 (Race)

US Race codes	Description
1002-5	American Indian or Alaska Native
2028-9	Asian
2076-8	Native Hawaiian or Other Pacific Islander
2054-5	Black or African-American
2106-3	White
2131-1	Other Race
<empty field> <blank>	Unknown/undetermined

CDCREC-Ethnic Group
Use in PID-22 (Ethnicity)

US Ethnicity codes	Description
2135-2	Hispanic or Latino
2186-5	Not Hispanic or Latino
<empty field> <blank>	Unknown

PD1 - Patient Demographic

Patient Additional Demographic segment contains demographic information that is more likely to change about the patient.

PD1 (Optional Segment)					
HL7 Field	**Element Name**	**Data Type**	**ImmPRINT Usage**	**Description/Comment**	**Code Set**
PD1-1	Living Dependency	IS	O		
PD1-2	Living Arrangement	IS	O		
PD1-3	Patient Primary Facility	XON	O		
PD1-4	Patient Primary Care Provider name & ID No.	XCN	X		
PD1-5	Student Indicator	IS	O		
PD1-6	Handicap	IS	O		
PD1-7	Living Will Code	IS	O		
PD1-8	Organ Donor Code	IS	O		
PD1-9	Separate Bill	ID	O		
PD1-10	Duplicate Patient	CX	O		
PD1-11	Publicity Code	CE	O		
PD1-12	Protection Indicator	ID	O		
PD1-13	Protection Indicator Effective Date	DT	O		
PD1-14	Place of Worship	XON	O		
PD1-15	Advance Directive Code	CE	O		
PD1-16	Immunization Registry Status	IS	RE		HL70441
PD1-17	Immunization Registry Status Effective Date	DT	C(RE/X)	If the Immunization Registry status is MOGE then the effective date can be sent	
PD1-18	Publicity Code Effective Date	DT	O		
PD1-19	Military Branch	IS	O		
PD1-20	Military Rank/Grade	IS	O		
PD1-21	Military Status	IS	O		

NK1- Next of Kin/Associated Parties

Next of Kin/Associated Parties segment contains information about the patient's next of kin and other associated or related parties.

NK1(Optional Segment)					
HL7 Field	**Element Name**	**Data Type**	**ImmPRINT Usage**	**Description/Comment**	**Code Set**
NK1-1	Set ID - NK1	SI	R	This field contains the number that identifies this transaction.	
NK1-2	Name	XPN	R	This field contains the name of the next of kin or associated party. Only Mother's and Father's info will be updated in ImmPRINT.	HL70200 - Name Type for valid values
NK1-3	Relationship	CE	R	This field contains the personal relationship that the next of kin/associated party has to the patient.	Refer to table HL70063 - relationship listed under this segment.
NK1-4	Address	XAD	RE	ImmPRINT does not capture this info.	
NK1-5	Phone Number	XTN	RE	ImmPRINT does not capture this info.	
NK1-6	Business Phone Number	XTN	O		
NK1-7	Contact Role	CE	O		
NK1-8	Start Date	DT	O		
NK1-9	End Date	DT	O		
NK1-10	Next of Kin / Associated	ST	O		
NK1-11	Next of Kin / Associated Parties	JCC	O		
NK1-12	Next of Kin / Associated Parties Employee	CX	O		
NK1-13	Organization Name - NK1	XON	O		
NK1-14	Marital Status	CE	O		
NK1-15	Administrative Sex	IS	O	M or F only	
NK1-16	Date/Time of Birth	TS	O		
NK1-17	Living Dependency	IS	O		
NK1-18	Ambulatory Status	IS	O		
NK1-19	Citizenship	CE	O		
NK1-20	Primary Language	CE	O		
NK1-21	Living Arrangement	IS	O		

NK1-22	Publicity Code	CE	O		
NK1-23	Protection Indicator	ID	O		
NK1-24	Student Indicator	IS	O		
NK1-25	Religion	CE	O		
NK1-26	Mother's Maiden Name	XPN	O		
NK1-27	Nationality	CE	O		
NK1-28	Ethnic Group	CE	O		
NK1-29	Contact Reason	CE	O		
NK1-30	Contact Person's Name	XPN	O		
NK1-31	Contact Person's Telephone Number	XPN	O		
NK1-32	Contact Person's Address	XAD	O		
NK1-33	Next of Kin/Associated	CX	O		
NK1-34	Job Status	IS	O		
NK1-35	Race	CE	O		
NK1-36	Handicap	IS	O		
NK1-37	Contact Person Social Security Number	ST	O		
NK1-38	Next of Kin Birth Place	ST	O		
NK1-39	VIP Indicator	IS	O		

Example:
NK1|1|Cok^Jan^^^^^L|MTH^Mother^HL70063|2000 Rive View Dr
^^Birmingham^AL^33333^^L|^PRN^PH^^^205^6001111|||||||||S|F|19590510||||||||||||||||||

User-defined Table 0063 – Relationship

Use in NK1-3

Value	Description
BRO	Brother
CGV	Care giver
CHD	Child
FCH	Foster Child
FTH	Father
GRD	Guardian
GRP	Grandparent
MTH	Mother
OTH	Other
PAR	Parent
SCH	Stepchild
SEL	Self
SIB	Sibling
SIS	Sister
SPO	Spouse

Order Request Segment (ORC)

Common Order Segment is used to transmit fields that are common to all orders (all types of services that are requested). While not all immunizations recorded in an immunization message are able to be associated with an order, each RXA must be associated with one ORC, with a unique value in field ORC-3 (Filler Order Number) for that RXA, based on the HL7 2.5.1 standard.

ORC-12: Use 1st component for NPI number, components 2 – 7 to record the name & designation and "**NPI**" in the 13th component. Encountered doses with no NPI numbers will result in dose rejection. For historical doses it can be null.

ORC (Required Segment) Each RXA needs to be preceded by ORC Segment					
HL7 Field	**Element Name**	**Data Type**	**ImmPRINT Usage**	**Description/Comment**	**Code Set**
ORC-1	Order Control	ID	R		
ORC-2	Placer Order Number	EI	RE		
ORC-3	Filler Order Number	EI	R		
ORC-4	Placer Group Number	EI	O		
ORC-5	Order Status	ID	O		
ORC-6	Response Flag	ID	O		
ORC-7	Quantity/Timing	TQ	X		
ORC-8	Parent	EIP	O		
ORC-9	Date/Time of Transaction	TS	O		
ORC-10	Entered By	XCN	RE		
ORC-11	Verified By	XCN	O		
ORC-12	Ordering Provider	XCN	C(RE/O)	Use 1st component for NPI number, components 2 – 7 to record the name & designation and "**NPI**" in the 13th component. Encountered doses with no NPI numbers will result in dose rejection. For historical doses it can be null.	
ORC-13	Enterer's Location	PL	O		
ORC-14	Call Back Phone Number	XTN	O		
ORC-15	Order Effective Date/Time	TS	O		
ORC-16	Order Control Code Reason	CE	O		
ORC-17	Entering Organization	CE	RE		
ORC-18	Entering Device	CE	O		
ORC-19	Action By	XCN	O		
ORC-20	Advanced Beneficiary Notice Code	CE	O		
ORC-21	Ordering Facility Name	XON	O		
ORC-22	Ordering Facility Address	XAD	O		
ORC-23	Ordering Facility Phone Number	XTN	O		
ORC-24	Ordering Provider Address	XAD	O		
ORC-25	Order Status Modifier	CWE	O		

ORC-26	Advanced Beneficiary Notice Override Reason	CWE	O		
ORC-27	Filler's Expected Availability Date/Time	TS	O		
ORC-28	Confidentiality Code	CWE	O		
ORC-29	Order Type	CWE	O		
ORC-30	Enterer Authorization Mode	CNE	O		
ORC-31	Parent Universal Service identifier	CWE	O		
Example: ORC|RE|416944|444788||||||1000^test^test^test^^^^^The Children's Hospital||1111111111^Test^Judy^T^^^^^^^^^NPI|||||100^Test Medical Group||||TEST Medical					

Pharmacy/Treatment Administration Segment (RXA)

RXA segment carries pharmacy administration data. This segment is a child of an ORC segment, which a repeating segment in the VXU messages. Because ORC can repeat, an unlimited number of vaccinations may be included in a message.

RXA-3: Date the vaccine was given. ImmPRINT does not utilize any time component.
RXA-5: For CVX Codes 1 to 9, key it with a prefix 0. E.g. CVX Code for MMR is "03" and not just "3".
RXA-11: For encountered doses, send Site ID (same as MSH4) in RXA 11-4.
For Historical doses, it will be null.
RXA-15: The maximum length for Lot numbers is 10.
RXA-17: ImmPRINT does not support repetition of this field.
Note: Don't use '&' symbol in RXA/SubstanceManufacturerName/Text as it is a HL7 encoding character. Each RXA must be preceded by an ORC segment.

RXA (Required Segment) **Each RXA needs to be associated with an ORC Segment**					
HL7 Field	**Element Name**	**Data Type**	**ImmPRINT Usage**	**Description/Comment**	**Code Set**
RXA-1	Give Sub-ID Counter	NM	R		
RXA-2	Administration Sub-ID Counter	NM	R		
RXA-3	Date/Time Start of Administration	TS	R	Date the vaccine was given. ImmPRINT does not utilize any time component	
RXA-4	Date/Time End of Administration	TS	O		

RXA-5	Administered Code	CE	R	NDC codes are 11 digits and it should include hyphens and must be in 5-4-2 format to be acceptable.	CVX /NDC
RXA-6	Administered Amount	NM	R	Dose size, numeric volume	
RXA-7	Administered Units	CE	C(R/O)	Is required if RXA-6 is present	UCUM
RXA-8	Administered Dosage Form	CE	O		
RXA-9	Administration Notes	CE	R	ImmPRINT uses the first component of this field to indicate the source of information for this immunization record or, more generically, whether the immunization being reported has just been administered (new) or came from other records (historical).	NIP001
RXA-10	Administering Provider	XCN	C(RE/O)		
RXA-11	Administered - at Location	LA-2	C(RE/O)	For encountered doses, send Site ID (same as MSH4) in RXA 11-4. For Historical doses, it will be null.	
RXA-12	Administered Per (Time Unit)	ST	O		
RXA-13	Administered Strength	NM	O		
RXA-14	Administered Strength Units	CE	O		
RXA-15	Substance Lot Number	ST	C(R/O)	Required for administered vaccinations (RXA-9 = 00) or encountered shots. The maximum length for Lot numbers is 10. Multiple Lot numbers must be separated by component separator.	
RXA-16	Substance Expiration	TS	C(RE/O)	Required for encountered shots	
RXA-17	Substance Manufacturer Name	CE	C(R/O)	Required for encountered shots. ImmPRINT does not support repetition of this field. Note: Don't use '&' symbol in RXA/Substance Manufacturer Name/Text as it is a HL7 encoding character.	MVX
RXA-18	Substance/Treatment Refusal Reason	CE	C(R/O)	If this field is populated, then RXA20 is 'RE'	NIP002

RXA-19	Indication	CE	O		
RXA-20	Completion Status	ID	RE		HL70322
RXA-21	Action Code - RXA	ID	RE	This field provides a method of communicating whether a vaccination is new (code A) or correcting vaccination information previously transmitted to ImmPRINT, either by updating incorrect or missing information (code U) or by deleting the vaccination altogether (code D).	HL70323
RXA-22	System Entry Date/Time	TS	O		
RXA-23	Administered Drug Strength Volume	NM	O		
RXA-24	Administered Drug Strength Volume Units	CWE	O		
RXA-25	Administered Barcode Identifier	CWE	O		
RXA-26	Pharmacy Order Type	ID	O		

Example:
RXA|0|1|20200514|20200514|00005-1971-01^pneumococcal conjugate PCV 13^NDC^133^pneumococcal conjugate PCV 13^CVX|.5|mL^mL^UCUM||00^NEW IMMUNIZATIONRECORD^NIP001|^Morehead^Barbara^^^^^^^L|^^^20986||||ck0843|20220331|PFR^Pfizer, Inc^MVX|||CP|A

RXR – Pharmacy/Treatment Route Segment

The Pharmacy/Treatment Route segment contains the alternative combination of route, site, administration device, and administration method that are prescribed as they apply to an order.

RXR (Conditional)					
HL7 Field	**Element Nam**	**Data Type**	**ImmPRINT Usage**	**Description/Comment**	**Code Set**
RXR-1	Route	CE	RE		NCIT
RXR-2	Administration Site	CWE	RE		HL70163
RXR-3	Administration Device	CE	O		
RXR-4	Administration Method	CWE	O		
RXR-5	Routing Instruction	CE	O		
RXR-6	Administration Site Modifier	CWE	O		

Example:
RXR|C28161^Intramuscular^NCIT|LD^Left Arm^HL70163

Observation Result Segment (OBX)

The Observation/Result segment has many uses. It carries observations about the object of its parent segment. In VXU, this segment is associated with the RXA or immunization record.
The basic format is a question (OBX-3) and an answer (OBX-5). The data type for the answer/value in OBX-5 is indicated in OBX-2. If multiple OBX segments are needed to communicate a concept, these are grouped by having a common value in the Observation Sub- ID (OBX-4).

Note: The OBX segment is a required segment for VFC providers.
ImmPRINT accepts only one reaction per vaccine. If there are many reactions only the first one will be considered.

OBX (Conditional)					
HL7 Field	**Element Name**	**Data Type**	**ImmPRINT Usage**	**Description/Comment**	**Code Set**
OBX-1	Set ID – OBX	SI	R		
OBX-2	Value Type	ID	R	Data type for value in OBX-5	
OBX-3	Observation Identifier	CE	R	Adverse Reaction, VIS, and VFC eligibility. This indicates what this observation refers to. It poses the question that is answered by OBX-5.	NIP003
OBX-4	Observation Sub-ID	ST	R		
OBX-5	Observation Value	Varies	R	This answers the question posed by OBX-3.	Varies
OBX-6	Units	CE	C(R/O)	If OBX-2(Value Type) is valued "NM" or "SN".	UCUM/HL70
OBX-7	References Range	ST	O		
OBX-8	Abnormal Flags	IS	O		
OBX-9	Probability	NM	O		
OBX-10	Nature of Abnormal Test	ID	O		
OBX-11	Observation Result Status	ID	R		
OBX-12	Effective Date of Reference Range	TS	O		
	Values				
OBX-13	User Defined Access Checks	ST	O		
OBX-14	Date/Time of the Observation	TS	RE		
OBX-15	Producer's Reference	CE	O		
OBX-16	Responsible Observer	XCN	O		

OBX-17	Observation Method	CE	X	ImmPRINT does not capture this information. VFC eligibility is captured by OBX-3 and OBX-5.	CDCPHINVS
OBX-18	Equipment Instance Identifier	EI	O		
OBX-19	Date/Time of the Analysis	TS	O		
OBX-20	Reserved for harmonization with V2.6		X		
OBX-21	Reserved for harmonization with V2.6		X		
OBX-22	Reserved for harmonization with V2.6		X		
OBX-23	Performing Organization Name	XON	O		
OBX-24	Performing Organization Address	XAD	O		
OBX-25	Performing Organization Medical Director	XCN	O		

Example:

Vaccine Program Eligibility (Use for VFC eligibility)

OBX|1|CE|64994-7^Vaccine funding program eligibility category^LN|1|V01^Not VFC eligible^HL70064||||||F|||20170629|||VXC40^Eligibility captured at the immunization level^CDCPHINVS||||||| **VIS**

OBX |1|CE|30956-7^vaccine type^LN|1|08^Hepatitis B^CVX||||||F|

OBX |2|TS|29768-9^VIS Publication Date^LN|1|20120202||||||F|||20140528 OBX |3|TS|29769-7^VIS Presentation Date^LN|1|20140528||||||F|||20140528

Adverse Reaction

OBX|4|CE|31044-1^Reaction^LN|1|60728008^Abdominal swelling^CD:707278||||||F|||20130531

Disease with Presumed Immunity

OBX|1|CE|59784-9^Disease with presumed immunity^LN|1|76902006||||||F

Error Messages and Possible Solutions

Error Type	Code	Description	Cause and Possible Solution
Warning	5000	Vaccine accepted but is not within acceptable age	
Security Errors	20200	Security credentials are Invalid and Access Denied	Please Contact ImmPRINT Support: ImmPRINT@adph.state.al.us
System Errors	20401	Fatal Error	
	20402	Database Server is Down. Please try again later	
	20403	Fatal Error - No running communication point is configured to process this request.	

Technical Error	20301	Message Validation Failed	Check the ACK Message and ERR Segment to find Validation Errors. Example: Field value not found in validation table, Field too long, required field missing etc.
Data Errors	20302	Patient Name is Invalid	Check the Patient's Name specified in PID 5
	20303	Patient DOB is Invalid	Check the Patient's Date of Birth specified in PID 7 - Date Time of Birth.
	20319	Patient SSN is Invalid	Check the SSN specified in PID 19 - SSN Number – Patient
	20305	Mother DOB is Invalid	Check the Mother's Date of Birth specified in NK1 16 - Date Time of Birth
	20306	Father DOB is Invalid	Check the Father's Date of Birth specified in NK1 16 - Date Time of Birth
	20307	Vaccine(CVX Code) does not exist in AL-IIS	Check the CVX Code specified in RXA 5 - Administered Code/Identifier
	20308	Vaccination Date is Invalid	Check the Vaccination Date specified in RXA 3 - Date/Time Start of Administration/Time
	20309	Vaccination Date cannot be greater than Current Date	Check the Vaccination Date specified in RXA 3 – DateTimeStartOfAdministration.
	20310	Vaccination Date cannot be less than DOB	Check the Vaccination Date specified in RXA 3 – DateTimeStartOfAdministration.
	20312	CVX Code is Invalid	Check the CVX Code specified in RXA 5 - Administered Code/Identifier
	20313	NPI number is missing	NPI number is missing in ORC 12 - OrderingProvider/Identifier
	20314	NPI number is Invalid	Check the NPI specified in ORC 12 - OrderingProvider/Identifier
	20315	MVX Code is missing	MVX Code is missing in RXA 17.
	20318	LOT number is missing	Lot Number is missing in RXA 15 and Substance Expiration date is missing in RXA 16
	20320	Inactive Vaccine	Vaccine was inactive during the vaccination date.
	20323	CVX/MVX/Brand Mismatch	Check mapping product names to CVX and MVX codes.
	20311	CVX code is missing	If RXA-5.1 is null and RXA-5.3 has CVX.
	20326	NDC Code is Invalid	If RXA-5.1 is null and RXA-5.3 has NDC.
	20327	CVX/NDC Mismatch	Check CVX codes and NDC mapping.
	20328	CVX/NDC Code Missing	If RXA-5.3 has neither CVX nor NDC.
	20329	CVX/MVX Mismatch	Check CVX and MVX code mapping
QBP Errors/Responses	20304	Patient Registry ID and Demographics does not match with Data in the Registry	If unsure of Patient Registry ID search by First Name, Last Name, Date of Birth, SSN, Address, City
	20101	No Match Found. Refine Search Criteria	ImmPRINT will acknowledge if no patient was found
	20102	Multiple Matches Found.	ImmPRINT will return PID segment with associated NK1 segment for each potential match. No immunization history is returned.
	20104	The patient record is unavailable	Record is unavailable will be sent as a response message for deceased patients

APPENDIX: ImmPRINT Certificate of Immunization (COI)

ImmPRINT allows sites to access and print COIs from within the EHR by passing necessary parameters. Vendors need to contact ImmPRINT for Login Id and Password. This will allow providers to print ADPH approved COIs from their EHR.

Steps:

1. After you receive credentials, go to https://siis.state.al.us/ImmPRINTWebServices/ImmPRINTWS.aspx

2. Submit the following information as parameters in querystring:
    - Loginid
    - Password
    - Firstname
    - Lastname
    - chartnbr
    - dob
    - MSH3
    - MSH4
    - page (Use COI as the value for the parameter "page")

Technical Support Contact
immprint@adph.state.al.us
1-800-469-4599

http://www.alabamapublichealth.gov/immunization/immprint.html