

North Dakota Immunization Information System (NDIIS)

Real-time HL7 Transfer Specification Version 2.5.1 Release 1.5

Updated: January 2023

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Introduction

The North Dakota Immunization Information System (NDIIS) provides HL7 real-time bidirectional messaging service using the CDC HL7 version 2.5.1 Release 1.5 Implementation Guide for Immunization Messaging and its published addendum. Providers who already store and process immunization data in their own electronic health record (EHR) systems will be able to submit and receive client and immunization data via HL7 messaging, eliminating the need to enter data into both the NDIIS and the provider's EHR. HL7 real-time data exchange system requirements for providers include the following.

- Ability to create and consume HL7 version 2.5.1 release 1.5 messages in accordance with this NDIIS HL7 Real-time transfer specification, and complete the associated onboarding certification process.
- Ability to transport messages securely using an approved protocol (e.g., SOAP/HTTPS).
- Ability to correct messages with errors and resend the corrected messages.

Scope of this Document

NDIIS supports a specific subset of HL7 messages pertaining to client and vaccination information. The CDC Implementation Guide (see References section) provides technical details. Please refer to this guide for message, segment, and field technical information. This document provides NDIIS implementation information and example messages.

Real-time Processing

1. Providers must be able to transmit messages to and receive messages from the NDIIS messaging system. Providers are responsible for obtaining or developing client software for sending and receiving messages.
2. Provider connectivity to the test and production environments will be coordinated during the NDIIS On-boarding process.
3. The NDIIS Technical Staff will work with providers to test message transport and formatting using the NDIIS test environment.

References

The HL7 Version 2.5.1 Implementation Guide for Immunization Messaging, Release 1.5, 10/1/2014 and addendum, are available at the following links.

<https://www.cdc.gov/vaccines/programs/iis/technical-guidance/downloads/hl7guide-1-5-2014-11.pdf>

<https://www.cdc.gov/vaccines/programs/iis/technical-guidance/downloads/hl7guide-addendum-7-2015.pdf>

NDIIS follows these implementation guides and supports the Centers for Disease Control's (CDC) and American Immunization Registry Association (AIRA) goal of HL7 uniformity.

NDIIS interoperability documentation is available on the North Dakota Department of Health web site.

<https://www.hhs.nd.gov/immunizations/ndiis/interoperability>

Information for the HL7 standard can be found at <http://www.hl7.org>

Interoperability Steps with NDIIS

The NDIIS prioritizes immunization site connections based on volume of immunizations administered and the readiness of the provider Electronic Health Record (EHR) system to connect based on North Dakota specifications and requirements.

1. Review your EHR compliance with the NDIIS messaging system requirements.
 - The full technical specifications for HL7 immunization messaging can be found on our interoperability web site.
2. Determine how you'd like your EHR to connect to the NDIIS for immunization messaging.
 - Direct connection between your EHR and the NDIIS via SOAP web services transport; or
 - Connect to the NDIIS via the North Dakota Health Information Network (NDHIN). For this connection, you can choose either a VPN or SOAP web services connection to the NDHIN which will act as a pass-through forwarding your messages to the NDIIS.
3. Complete and submit required forms.
 - For "direct connections" to the NDIIS:
 - NDIIS Registration of Intent form
 - NDIIS Interoperability Roles and Responsibilities Matrix
 - NDIIS Interoperability Memorandum of Understanding (MOU)
 - For connections via the NDHIN:
 - NDHIN Participation Agreement
 - NDHIN Business Associate Agreement
 - Both of these forms can be found on the NDHIN web site at <http://www.ndhin.org/>
 - NDIIS Registration of Intent form

- NDIIS Interoperability Roles and Responsibilities Matrix
 - ❖ *The NDIIS team works very closely with the NDHIN team and will begin working with providers once their connection with the NDHIN is established.*
 - ❖ *Upon completion of the required documents, providers will be placed in queue for connecting.*
4. Validate the certified EHR captures the required fields.
 5. Validate the certified EHR contains the required Vaccine Eligibility and Vaccine Funding Source codes.
 - See the [VFC Eligibility Codes](#) table
 - See the [Funding Source Codes](#) table
 6. Content validation – Content validation will need to occur with the NDIIS vendor.
 - Complete Initial On-Boarding Questionnaire
 - Review Connectivity and Security Information
 - Confirm Unsolicited Update/Acknowledgement Message Use and Review Examples
 - Confirm Query/Response Message Use and Review Examples
 - Discuss Required Field Mapping
 - Review Testing Process
 - Confirm NDC Code Usage
 - Verify Defined Fields
 - Map Provider Sites
 7. Testing
 - Being able to utilize aged production data for this testing is a best practice and a lesson learned from previous connections. User acceptance testing should occur with staff who have knowledge of and experience working with the NDIIS (i.e., immunization data entry staff, immunization nurses, etc.)
 8. Go-Live
 - Prior to go-live, the provider site must complete a NDIIS HL7 Responsibilities and Contact Information Form and send to the NDIIS Manager. This form assigns your provider staff to monitor the data feed and correct errors. NDIIS staff use information from this form to coordinate training sessions.

Once you have successfully completed the NDIIS interoperability on-boarding process with 100% of your test messages passing without error, connection can be moved to production.

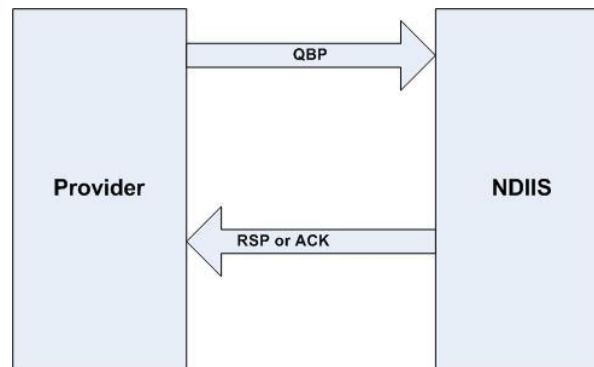
Real-time HL7 Messages

The supported HL7 messages are listed below.

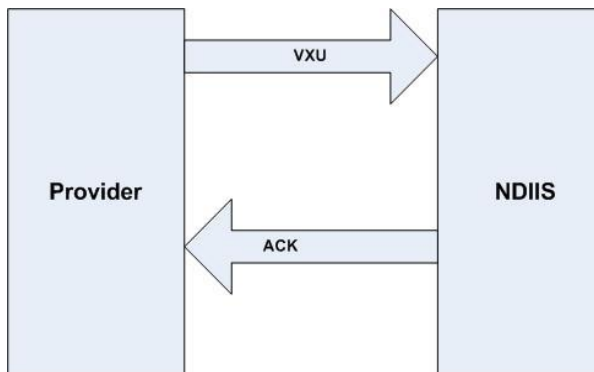
- QBP Query by Parameter.
- RSP Respond to QBP message.
- VXU Unsolicited Vaccination Record Update.
- ACK General Acknowledgment, Indicates NDIIS Received the Message but there was an Error.

The data exchanges are illustrated below.

QBP



VXU



Message Structure

Note: HL7 optional segments are indicated by square brackets, [], and repeatable segments are indicated by curly braces, { }. NDIIS required segment names are bolded.

QBP/RSP Messaging

Message Type: **Query**

Query Statement ID: **Z34**

Message Name: **Request Complete Immunization History**

Query Grammar			
Segment	Segment Name	Usage	Comment
MSH	Message Header Segment	R	
QPD	Query Parameter Definition	R	
RCP	Response Control Parameter	R	

Example (all examples in this document relate to fictitious patients).

```
MSH|^~\&|EHRsystem|272727|ND0000|NDIIS|20170515001020-0500||QBP^Q11^QBP_Q11|793543|P|2.5.1|||ER|AL||||Z34^CDCPHINVS
QPD|Z34^Request Immunization
History^CDCPHINVS|37374859|123456^^EHRsystem^MR|Doe^John^P^^^L|Doe^Mary^^^M|20050511|M|123 Testing
Way^Fargo^ND^^L
RCP||10^RD&records&HL70126
```

Message Type: **Query**

Query Statement ID: **Z44**

Message Name: **Request Evaluated Immunization History and Forecast**

Query Grammar			
Segment	Segment Name	Usage	Comment
MSH	Message Header Segment	R	
QPD	Query Parameter Definition	R	
RCP	Response Control Parameter	R	

Example.

MSH|^~\&|EHRsystem|272727|ND0000|NDIIS|20140515001020-0500||QBP^Q11^QBP_Q11|793543|P|2.5.1|||ER|AL||||Z44^CDCPHINVS
 QPD|Z44^Request Evaluated History and
 Forecast^CDCPHINVS|37374859|123456^^EHRsystem^MR|Doe^John^P^^^L|Doe^Mary^^^M|20050511|M|123 Testing
 Way^^Fargo^ND^^L
 RCP||1^RD&Records&HL70126

Message Type: **Response**

Query Statement ID: **Z31**

Message Name: **Return List of Candidates**

<i>Response Grammar</i>			
Segment	Segment Name	Usage	Comment
MSH	Message Header Segment	R	
MSA	Query Parameter Definition	R	
[ERR]	Response Control Parameter	RE	Populated if errors exist
QAK	Query Acknowledgement Segment	R	
QPD	Query Parameter Definition	R	
{		R	Begin Patient Identifier
PID	Patient Identifier Segment	R	
[PD1]	Patient Demographic Segment	RE	
[{{NK1}}	Next of Kin Segment	O	End Patient Identifier
}		R	

Example.

MSH|^~\&|ND0000|NDIIS|EHRsystem|272727|20091105100020-
 0500||RSP^K11^RSP_K11|37374859|P|2.5.1|||NE|NE||||Z31^CDCPHINVS|A_Clinic^SOME_SYSTEM^^^X68&&^AN^^A_Clinic1234^
 MSA|AA|793543
 QAK|37374859|OK|Z34^Request Immunization History^CDCPHINVS

QPD|Z34^Request Immunization
 History^CDCPHINVS|37374859|123456^^^EHRsystem^MR|Doe^John^P^^^L|Doe^Mary^^^M|20050511|M|123 Testing
 Way^Fargo^ND^^L
 PID|1||99445566^^^NDIIS^SR||Doe^John^^^L||20050511|M
 NK1|1|Child^Susan^^^L|MTH^Mother^HL70063|432 Test Ave^^Warwick^MA^02452^USA^L
 PID|2||123456^^^NDIIS^SR||Doe^John^^^L||20050511|M

Message Type: **Response**
 Query Statement ID: **Z32**
 Message Name: **Return Complete Immunization History**

Response Grammar			
Segment	Segment Name	Usage	Comment
MSH	Message Header Segment	R	
MSA	Query Parameter Definition	R	
[ERR]	Response Control Parameter	RE	Populated if errors exist
QAK	Query Acknowledgement Segment	R	
QPD	Query Parameter Definition	R	
PID	Patient Identifier Segment	R	
[PD1]	Patient Demographic Segment	RE	
[{NK1}]	Next of Kin Segment	RE	
[PV1]	Patient Visit Segment	O	
[IN1]	Insurance Segment	O	
{		RE	
ORC	Order Request Segment	R	Required if client has immunization records in RXA segment. One ORC for each RXA.
RXA		R	Pharmacy/Treatment Administration Segment
[RXR]		RE	Pharmacy/Treatment Route Segment
{		RE	Begin Observation

OBX		R	Observational Result Segment
[NTE]		RE	Note Segment
	}}		End Observation
	}}		

Example.

```
MSH|^~\&|ND0000|NDIIS|EHRsystem|272727|20091130020020-
0500||RSP^K11^RSP_K11|7731029|P|2.5.1|||NE|NE||||Z32^CDCPHINVS|Clinic
B^^^1.2.3.5&&^AN^^1234^|A_Clinic^SOME_SYSTEM^^272727&&^AN^^C8887^
MSA|AA|793543
QAK|37374859|OK|Z34^Request Immunization History^CDCPHINVS
QPD|Z34^Request Immunization History^CDCPHINVS|37374859||Doe^John^P^^^L|Doe^Jane^^^M|20050511|M|123 Testing
Way^Fargo^ND^^L
PID|1||123456^^EHRsystem^MR~987633^^MYIIS^SR||Doe^John^P^^^L|Doe^Mary^^^M|20070706|M||111 Test
Street^Fargo^ND^58103^USA^L
PD1|||||||||N|20091130
NK1|1|Doe^Mary^^^L|MTH^Mother^HL70063
ORC|RE||142324567^YOUR_EHR|||||^Olson^Pat|^Smith^Sarah^^^^^^^^^^^^^^^^MD
RXA|0|1|20120814||140^Influenza, seasonal, injectable, preservative free^CVX|0.5|mL^MilliLiter [SI Volume Units]^UCUM||00^New
immunization record^NIP001|7832-1^Lutz^Alan^N^^^48474^^PRN|^272727|||Z0860BB|20121104|CSL^CSL Behring^MVX|||CP|A
```

Message Type: **Response**
Query Statement ID: **Z33**
Message Name: **Return Response with No Matches**

<i>Response Grammar</i>			
Segment	Segment Name	Usage	Comment
MSH	Message Header Segment	R	
MSA	Query Parameter Definition	R	
[ERR]	Response Control Parameter	RE	Populated if errors exist
QAK	Query Acknowledgement Segment	R	
QPD	Query Parameter Definition	R	

Example.

```
MSH|^~\&|ND0000|NDIIS|EHRsystem|272727|20091130020020-
0500||RSP^K11^RSP_K11|7731029|P|2.5.1|||NE|NE|||Z33^CDCPHINVS|A_System^SOME_SYSTEM^^^1.2.3.5&&^AN^^A_Syst1234^|
A_Clinic^SOME_SYSTEM^^^X68&&^AN^^A_Clinic1234^
MSA|AA|793543
QAK|37374859|TM|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 Testing
St^^Myfaircity^GA^^L
```

Message Type: **Response**

Query Statement ID: **Z42**

Message Name: **Return Evaluated Immunization History and Forecast**

Response Grammar			
Segment	Segment Name	Usage	Comment
MSH	Message Header Segment	R	
MSA	Query Parameter Definition	R	
[ERR]	Response Control Parameter	RE	Populated if errors exist
QAK	Query Acknowledgement Segment	R	
QPD	Query Parameter Definition	R	
PID	Patient Identifier Segment	R	
{		R	
ORC	Order Request Segment	O	Required if client has immunization records in RXA segment. One ORC for each RXA.
RXA		R	Pharmacy/Treatment Administration Segment
[RXR]		RE	Pharmacy/Treatment Route Segment
{		R	Begin Observation

OBX		R	Observational Result Segment
	}}		End Observation
}}			

Example.

```

MSH|^~\&|ND0000|NDIIS|EHRsystem|272727|20180207020020-
0500||RSP^K11^RSP_K11|7731029|P|2.5.1|||NE|NE||||Z42^CDCPHINVS|A_Clinic^SOME_SYSTEM^^^272727&&^AN^^^A_Clinic1234^
MSA|AA|793543
QAK|37374859|OK|Z44^Request Evaluated History and Forecast^CDCPHINVS
QPD|Z44^Request Evaluated History and Forecast^CDCPHINVS|37374859||Child^Bobbie^Q^^^^L|Que^Suzy^^^^M|20050512|M|10 East
Test St^Myfaircity^GA^^L
PID|1||123456^^^MYEHR^MR~987633^^^MYIIS^SR||Child^Robert^Q^^^^L|Que^Suzy^^^^M|20070706|M||432 Test Street
Ave^^Warwick^MA^02452^USA^L
ORC|RE||197027^DCS|||||^Clerk^Myron||^Pediatric^MARY^^^^^^L^^^^^^^MD
RXA|0|1|20050514|20050514|08^Hep B, adolescent or pediatric^CVX|0.5|mL^UCUM||00^new immunization
record^NIP001|^Sticker^Nurse|^DCS_DC||||4433b2a||PMC^sanofi^MVX|||CP|A
RXR|C28161^IM^NCIT^IM^IM^HL70162|
OBX|1|CE|59779-9^Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F||20090415
ORC|RE||0000388353^NDIIS|||||
RXA|0|1|20180207|20180207|998^No Vaccine Administered^CVX|999|||||
RXR|^HL70162
OBX||TS|30956-7^vaccine type^LN|1|62^HPV^CVX|||||F||20180207
OBX||CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F||20180207
OBX||DT|30980-7^Date vaccination due^LN|1|20160512|||||F||20180207
OBX||DT|59777-3^Latest date to give vaccine^LN|1|20320511|||||F||20180207
OBX||DT|30981-5^Earliest date to give^LN|1|20140512|||||F||20180207
OBX||NM|30973-2^Dose number in series^LN|1|1|||||F||20180207
ORC|RE||0000388353^NDIIS|||||
RXA|0|1|20180207|20180207|998^No Vaccine Administered^CVX|999|||||
RXR|^HL70162
OBX||TS|30956-7^vaccine type^LN|1|33^PPV^CVX|||||F||20180207
OBX||CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F||20180207
OBX||DT|30980-7^Date vaccination due^LN|1|20710512|||||F||20180207
OBX||DT|59777-3^Latest date to give vaccine^LN|1|21250512|||||F||20180207
OBX||DT|30981-5^Earliest date to give^LN|1|20710512|||||F||20180207
OBX||NM|30973-2^Dose number in series^LN|1|1|||||F||20180207

```

ORC|RE||0000388353^NDIIS|||||||
RXA|0|1|20180207|20180207|998^No Vaccine Administered^CVX|999|||||||
RXR|^HL70162
OBX||TS|30956-7^vaccine type^LN|1|121^Zoster^CVX|||||F||20180207
OBX||CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F||20180207
OBX||DT|30980-7^Date vaccination due^LN|1|20650512|||||F||20180207
OBX||DT|59777-3^Latest date to give vaccine^LN|1|21250512|||||F||20180207
OBX||DT|30981-5^Earliest date to give^LN|1|20650512|||||F||20180207
OBX||NM|30973-2^Dose number in series^LN|1|1|||||F||20180207
ORC|RE||0000388353^NDIIS|||||||
RXA|0|1|20180207|20180207|998^No Vaccine Administered^CVX|999|||||||
RXR|^HL70162
OBX||TS|30956-7^vaccine type^LN|1|88^Influenza^CVX|||||F||20180207
OBX||CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F||20180207
OBX||DT|30980-7^Date vaccination due^LN|1|20170801|||||F||20180207
OBX||DT|59777-3^Latest date to give vaccine^LN|1|21250512|||||F||20180207
OBX||DT|30981-5^Earliest date to give^LN|1|20170801|||||F||20180207
OBX||NM|30973-2^Dose number in series^LN|1|1|||||F||20180207
ORC|RE||0000388353^NDIIS|||||||
RXA|0|1|20180207|20180207|998^No Vaccine Administered^CVX|999|||||||
RXR|^HL70162
OBX||TS|30956-7^vaccine type^LN|1|114^MCV4^CVX|||||F||20180207
OBX||CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F||20180207
OBX||DT|30980-7^Date vaccination due^LN|1|20160512|||||F||20180207
OBX||DT|59777-3^Latest date to give vaccine^LN|1|20270511|||||F||20180207
OBX||DT|30981-5^Earliest date to give^LN|1|20160512|||||F||20180207
OBX||NM|30973-2^Dose number in series^LN|1|1|||||F||20180207
ORC|RE||0000388353^NDIIS|||||||
RXA|0|1|20180207|20180207|998^No Vaccine Administered^CVX|999|||||||
RXR|^HL70162
OBX||TS|30956-7^vaccine type^LN|1|115^Td/Tdap^CVX|||||F||20180207
OBX||CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F||20180207
OBX||DT|30980-7^Date vaccination due^LN|1|20120512|||||F||20180207
OBX||DT|59777-3^Latest date to give vaccine^LN|1|21250512|||||F||20180207
OBX||DT|30981-5^Earliest date to give^LN|1|20120512|||||F||20180207
OBX||NM|30973-2^Dose number in series^LN|1|1|||||F||20180207
ORC|RE||0000388353^NDIIS|||||||
RXA|0|1|20180207|20180207|998^No Vaccine Administered^CVX|999|||||||
RXR|^HL70162

OBX||TS|30956-7^vaccine type^LN|1|164^Meningococcal B^CVX|||||F||20180207
OBX||CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F||20180207
OBX||DT|30980-7^Date vaccination due^LN|1|20210512|||||F||20180207
OBX||DT|59777-3^Latest date to give vaccine^LN|1|20290511|||||F||20180207
OBX||DT|30981-5^Earliest date to give^LN|1|20210512|||||F||20180207
OBX||NM|30973-2^Dose number in series^LN|1|1|||||F||20180207
ORC|RE||0000388353^NDIIS|||||
RXA|0|1|20180207|20180207|998^No Vaccine Administered^CVX|999|||||
RXR|^HL70162
OBX||TS|30956-7^vaccine type^LN|1|133^PCV^CVX|||||F||20180207
OBX||CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F||20180207
OBX||DT|30980-7^Date vaccination due^LN|1|20700512|||||F||20180207
OBX||DT|59777-3^Latest date to give vaccine^LN|1|21250512|||||F||20180207
OBX||DT|30981-5^Earliest date to give^LN|1|20700512|||||F||20180207
OBX||NM|30973-2^Dose number in series^LN|1|1|||||F||20180207
ORC|RE||0000388353^NDIIS|||||
RXA|0|1|20180207|20180207|998^No Vaccine Administered^CVX|999|||||
RXR|^HL70162
OBX||TS|30956-7^vaccine type^LN|1|45^HEP B^CVX|||||F||20180207
OBX||CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F||20180207
OBX||DT|30980-7^Date vaccination due^LN|1|20050612|||||F||20180207
OBX||DT|59777-3^Latest date to give vaccine^LN|1|21250512|||||F||20180207
OBX||DT|30981-5^Earliest date to give^LN|1|20050611|||||F||20180207
OBX||NM|30973-2^Dose number in series^LN|1|2|||||F||20180207
ORC|RE||0000388353^NDIIS|||||
RXA|0|1|20180207|20180207|998^No Vaccine Administered^CVX|999|||||
RXR|^HL70162
OBX||TS|30956-7^vaccine type^LN|1|10^POLIO^CVX|||||F||20180207
OBX||CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F||20180207
OBX||DT|30980-7^Date vaccination due^LN|1|20050712|||||F||20180207
OBX||DT|59777-3^Latest date to give vaccine^LN|1|20230511|||||F||20180207
OBX||DT|30981-5^Earliest date to give^LN|1|20050623|||||F||20180207
OBX||NM|30973-2^Dose number in series^LN|1|1|||||F||20180207
ORC|RE||0000388353^NDIIS|||||
RXA|0|1|20180207|20180207|998^No Vaccine Administered^CVX|999|||||
RXR|^HL70162
OBX||TS|30956-7^vaccine type^LN|1|03^MMR^CVX|||||F||20180207
OBX||CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F||20180207
OBX||DT|30980-7^Date vaccination due^LN|1|20060512|||||F||20180207

OBX||DT|59777-3^Latest date to give vaccine^LN|1|21250512|||||F|||20180207
OBX||DT|30981-5^Earliest date to give^LN|1|20060512|||||F|||20180207
OBX||NM|30973-2^Dose number in series^LN|1|1|||||F|||20180207
ORC|RE||0000388353^NDIIS|||||
RXA|0|1|20180207|20180207|998^No Vaccine Administered^CVX|999|||||
RXR|^HL70162
OBX||TS|30956-7^vaccine type^LN|1|21^VARICELLA^CVX|||||F|||20180207
OBX||CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|||20180207
OBX||DT|30980-7^Date vaccination due^LN|1|20060512|||||F|||20180207
OBX||DT|59777-3^Latest date to give vaccine^LN|1|20650511|||||F|||20180207
OBX||DT|30981-5^Earliest date to give^LN|1|20060512|||||F|||20180207
OBX||NM|30973-2^Dose number in series^LN|1|1|||||F|||20180207
ORC|RE||0000388353^NDIIS|||||
RXA|0|1|20180207|20180207|998^No Vaccine Administered^CVX|999|||||
RXR|^HL70162
OBX||TS|30956-7^vaccine type^LN|1|85^HEP A^CVX|||||F|||20180207
OBX||CE|59779-9^Immunization Schedule used^LN|1|VXC16^ACIP^CDCPHINVS|||||F|||20180207
OBX||DT|30980-7^Date vaccination due^LN|1|20060512|||||F|||20180207
OBX||DT|59777-3^Latest date to give vaccine^LN|1|20240511|||||F|||20180207
OBX||DT|30981-5^Earliest date to give^LN|1|20060512|||||F|||20180207
OBX||NM|30973-2^Dose number in series^LN|1|1|||||F|||20180207

VXU/ACK Messaging

Message Type: **VXU**

Query Statement ID: **Z22**

Message Name: **Send Unsolicited Immunization Update using a VXU**

VXU Grammar			
Segment	Segment Name	Usage	Comment
MSH	Message Header Segment	R	
PID	Patient Identifier Segment	R	
PD1		RE	
NK1		RE	
PV1		O	
{		RE	
ORC	Order Request Segment	R	The order group in a VXU must have at least one ORC segment.
RXA		R	Pharmacy/Treatment Administration Segment
[RXR]		RE	Pharmacy/Treatment Route Segment
}		R	Begin Observation
OBX		R	Observational Result Segment
}			End Observation
}			

VXU Example 1. Medicaid VFC eligibility, Federally funded vaccine. (note the use of NDC code in RXA-5).

```
MSH|^~\&|EHRsystem|272727|ND0000|NDIIS|20120701082230-0500||VXU^V04^VXU_V04|38882|P|2.5.1|||ER|AL|||Z22^CDCPHINVS
PID|1||C48473635^^SDRT^MR||Doe^Jane^Betty^^L|Mother^Susan^^^M|20070705|F||2076-8^Native Hawaiian or Other Pacific
Islander^CDCREC|123 Testing St^Fargo^ND^58103^USA^L|^PRN^PH^^701^7675534|||||2186-5^non Hispanic or Latino^CDCREC
PD1|||||||02^Reminder/Recall - any method^HL70215||||A|20120701|20120701
NK1|1|Mother^Susan^^^L|MTH^Mother^HL70063|555 Testing Way^Fargo^ND^58103^USA^L|^PRN^PH^^701^7675534
```


ORC|RE||383722 ^NDA|||||26255^Tester^Deb^T^M^M^DD-383766^PRN||373625^Testing^James^M^M^M^DD-383788^L^M^ND
 RXA|0|1|20120814||00006-4681-00^M-M-R II^NDC|0.5|mL^MilliLiter [SI Volume Units]^UCUM||00^New immunization
 record^NIP001|6609-1^LastName^FirstName^M|^M^M^M^ DD-383788^PRN|^M^272727||||H83736|20131001|MSD^Merck and Co,
 Inc^MVX|||CP|A
 RXR|C28161^Intramuscular^NCIT|LD^Left Arm^HL70163
 OBX|1|CE|64994-7^Vaccine funding program eligibility category^LN|1|V02^VFC eligible-Medicaid
 ^HL70064|||||F|||20120701||VXC40^Eligibility captured at the immunization level^CDCPHINVS
 OBX|2|CE|30963-3^Vaccine purchased with^LN||VXC50^Public Funds^ CDCPHINVS|||||F|||20120701
 OBX|3|CE|30956-7^vaccine type^LN|2|03^MMR ^CVX|||||F
 OBX|4|TS|29768-9^Date vaccine information statement published^LN|2|20120702|||||F
 OBX|5|TS|29769-7^Date vaccine information statement presented^LN|2|20120814|||||F

VXU Example 2. Not VFC eligible, Privately funded vaccine. (note the use of NDC code in RXA-5).

MSH|^~\&|EHRsystem|272727|ND0000|NDIIS|20120701082240-0500||VXU^V04^VXU_V04|38883|P|2.5.1|||ER|AL||||Z22^CDCPHINVS
 PID|1||C48473635^SDRT^MR||Doe^Jane^Betty^M^L|Mother^Susan^M^M^M|20070705|F||2076-8^Native Hawaiian or Other Pacific
 Islander^CDCREC|123 Testing St^Fargo^ND^58103^USA^L|^PRN^PH^M^701^7675534|||||2186-5^non Hispanic or Latino^CDCREC
 PD1|||||02^Reminder/Recall - any method^HL70215|||||A|20120701|20120701
 NK1|1|Mother^Susan^M^M^L|MTH^Mother^HL70063|555 Testing Way^Fargo^ND^58103^USA^L|^PRN^PH^M^701^7675534
 ORC|RE||383722 ^NDA|||||26255^Tester^Deb^T^M^M^DD-383766^PRN||373625^Testing^James^M^M^M^DD-383788^L^M^ND
 RXA|0|1|20120814||33332-0010-01^Influenza, seasonal, injectable, preservative free^NDC|0.5|mL^MilliLiter [SI Volume
 Units]^UCUM||00^New immunization record^NIP001|6609-1^LastName^FirstName^M|^M^M^M^ DD-
 383788^PRN|^M^272727||||Z0860BB|20121104|CSL^CSL Behring^MVX|||CP|A
 RXR|C28161^Intramuscular^NCIT|LD^Left Arm^HL70163
 OBX|1|CE|64994-7^Vaccine funding program eligibility category^LN|1|V01^Not VFC Eligible ^HL70064|||||F|||20120701||VXC40^Eligibility
 captured at the immunization level^CDCPHINVS
 OBX|2|CE|30963-3^Vaccine purchased with^LN||PHC70^Private Funds^ CDCPHINVS|||||F|||20120701
 OBX|3|CE|30956-7^vaccine type^LN|2|88^Influenza, unspecified formulation^CVX|||||F
 OBX|4|TS|29768-9^Date vaccine information statement published^LN|2|20120702|||||F
 OBX|5|TS|29769-7^Date vaccine information statement presented^LN|2|20120814|||||F

VXU Example 3. Historical vaccine. (note the use of CVX code in RXA-5 when RXA-9 indicates historical immunization)

MSH|^~\&|EHRsystem|272727|ND0000|NDIIS|20120701082220-0500||VXU^V04^VXU_V04|38881|P|2.5.1|||ER|AL||||Z22^CDCPHINVS
 PID|1||C48473635^SDRT^MR||Doe^Jane^Betty^M^L|Mother^Susan^M^M^M|20070705|F||2076-8^Native Hawaiian or Other Pacific
 Islander^CDCREC|555 Testing Way^Fargo^ND^58103^USA^L|^PRN^PH^M^701^7675534|||||2186-5^non Hispanic or Latino^CDCREC
 PD1|||||02^Reminder/Recall - any method^HL70215|||||A|20120701|20120701
 NK1|1|Mother^Susan^M^M^L|MTH^Mother^HL70063|555 Testing Way^Fargo^ND^58103^USA^L|^PRN^PH^M^701^7675534

ORC|RE||383722 ^NDA|||||26255^Tester^Deb^T^DD-383766^PRN||373625^Testing^James^DD-383788^L^ND
 RXA|0|1|20100714||115^Tdap^CVX|999|ml^MilliLiter [SI Volume Units]^UCUM||01^Historical immunization record^NIP001|
 |^272727|||||CP|A

Message Type: **ACK**
 Query Statement ID: **Z23**
 Message Name: **Return an Acknowledgement**

<i>Acknowledgement Grammar</i>			
Segment	Segment Name	Usage	Comment
MSH	Message Header Segment	R	
MSA	Query Parameter Definition	R	
[{ERR}]	Error Segment	RE	Included if there are errors.

Example 1. Send acknowledgement of success.

MSH|^~\&|ND0000|NDIIS|EHRsystem|272727|201706040000||ACK^V04^ACK|1234567|P|2.5.1
 MSA|AA|9299381

Example 2. Send acknowledgement of message rejection due to processing error.

MSH|^~\&|ND0000|NDIIS|EHRsystem|272727|201706040000||ACK^V04^ACK|13434534|P|2.5.1|||
 MSA|AE|9299381
 ERR||PID^1^5|101^required field missing^HL70357|E|7^required data missing^HL70533|||Patient name is required

Example 3. Send acknowledgement of application message rejection error.

MSH|^~\&|ND0000|NDIIS|EHRsystem|272727|201706040000||ACK^V04^ACK|12343467|P|2.5.1|||
 MSA|AR|9299381
 ERR||MSH^1^12|203^unsupported version id^HL70357|E|||Unsupported HL7 Version ID—Message rejected

Administration Site (RXR-2)

The NDIIS supports the standard HL7 code set for vaccine administration site as defined in the HL7 implementation guide.

HL7-defined table 0163	Description
LT	Left Thigh
LA	Left Arm
LD	Left Deltoid
LG	Left Gluteous Medius
LVL	Left Vastus Lateralis
LLFA	Left Lower Forearm
RA	Right Arm
RT	Right Thigh
RVL	Right Vastus Lateralis
RG	Right Gluteous Medius
RD	Right Deltoid
RLFA	Right Lower Forearm

The NDIIS has two additional local codes to support documenting nose and mouth as an administration site for vaccines with an oral or intranasal administration route.

NDIIS Local Code	Description	Use
MO	Mouth	Value can be sent in RXR-2 when administration route is indicated as "PO"
NO	Nose	Value can be sent in RXR-2 when administration route is indicated as "NS"

NDC Codes

All successful HL7 messages for administered (not historical) vaccines must contain a valid NDC code. A CVX code may be sent in addition to the NDC. Messages for administered vaccines sent to the NDIIS with just a CVX will still be processed but will result in the NDIIS returning an ACK with Error back to the EHR. The NDIIS can accept a Unit of Sale or Unit of Use NDC in an 11-digit format (with or without the dashes) or a 10-digit format (with the dashes).

For a complete list of valid NDCs, please visit the [CDC Code Set web site](#).

NDIIS VFC vaccine accountability

All ND providers receiving publicly funded vaccine (i.e., State) through the VFC or other state or federally funded vaccine program must send dose-level VFC eligibility and vaccine funding source for every dose of administered vaccine.

Two OBX segments are utilized to transmit the information as shown in the following examples.

Example 1: Not VFC eligible, Privately funded vaccine.

```
OBX|1|CE|64994-7^Vaccine funding program eligibility category^LN|1|V01^Not VFC  
Eligible^HL70064|||||F|||20140714|||VXC40^Eligibility captured at the immunization level^CDCPHINVS|||||||  
OBX|2|CE|30963-3^Vaccine purchased with^LN||PHC70^Private Funds^HL70396|||||F|||20140714|||||||
```

Example 2: VFC eligible, Publicly funded vaccine.

```
OBX|1|CE|64994-7^Vaccine funding program eligibility category^LN|1|V02^VFC eligible - Medicaid/Medicaid Managed  
Care^HL70064|||||F|||20141027|||VXC40^Eligibility captured at the immunization level^CDCPHINVS|||||||  
OBX|2|CE|30963-3^Vaccine purchased with^LN||VXC50^Public Funds^HL70396|||||F|||20141027|||||||
```

Vaccine Borrow-Return (ND only).

Administering a vaccination from a private lot for a VFC eligible patient, or administering a vaccination from a public lot for a VFC not-eligible patient will trigger a borrow event in the NDIIS.

VFC Eligibility

Dose level Vaccines for Children (VFC) Eligibility field is a required field for all dose records submitted to the NDIIS. VFC Eligibility will identify the patient's eligibility to receive a dose of publicly funded vaccine. This is required for all provider sites, regardless of if the provider participates in the North Dakota VFC Program. The VFC Eligibility code is held in OBX-5.1.

The table below reflects the VFC Eligibility codes to be utilized in the HL7 message.

Code	Label	Definition
V01	Not VFC eligible	Client does not qualify for VFC because they do not have one of the status below (V02-05)
V02	VFC eligible – Medicaid/Medicaid Managed Care	All of the following are true: <ul style="list-style-type: none"> • Client is currently eligible for Medicaid or Medicaid Managed Care • Client is < 19 years old • The type of vaccine administered is eligible for VFC funding
V03	VFC eligible – Uninsured	All of the following are true: <ul style="list-style-type: none"> • Client does not have health insurance • Client is < 19 years old • The type of vaccine administered is eligible for VFC funding
V04	VFC eligible – American Indian/Alaska native	All of the following are true: <ul style="list-style-type: none"> • Client is a member of a federally recognized tribe • Client is < 19 years old • The type of vaccine administered is eligible for VFC funding
V05	VFC eligible – underinsured at FQHC/RHC/deputized provider	All of the following are true: <ul style="list-style-type: none"> • Client has insurance but insurance does not cover vaccines, limits the vaccines covered or caps vaccine coverage at a certain amount • Client is receiving care at an FQHC, RHC or deputized provider • Client is < 19 years old • The type of vaccine administered is eligible for VFC funding
V25	State program eligibility	Client is eligible for a state vaccine program

* Unknown VFC eligibility is not an accepted value.

Funding Source

Funding source is a required field for all administered doses submitted to the NDIIS. This will identify the immunization as publicly funded or privately purchased vaccine. Funding source cannot be inferred based on VFC eligibility. Funding Source code is held in the OBX-5. The table below reflects the funding source codes to be utilized in the HL7 message.

Code	Label	Definition
PHC70	Private	Vaccine stock used was privately purchased
VXC50	Public	Vaccine stock used was publicly funded

*** Unknown Funding Source is not an accepted value.**