



**NHIIS**  
**Local Delta Implementation Guide**  
**HL7 2.5.1 Release 1.5**

NH Department of Health and Human Services  
Division of Public Health Services: Immunization Section

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## Change Log

The following table captures the progression of this document over time.

Version	Date	Description	Author
1.0	04/26/2021	Created the Delta guide for NHIIS	Alok Patra
1.1	07/28/2021	Updated the telecommunication equipment type for use code "NET"; and Added the Appendix C: Web service information for both QA and Production.	Alok Patra
1.2	03/24/2022	Following segment level changes: MSH-15 RE->R MSH-16 RE->R MSH-22 O->RE MSH-23 O->RE RXA-4 RE->O RXA-9 RE->R OBX-6 C(R/O)->X OBX-17 X-> C(RE/O) Updated notes in above segment level for clarification. Added additional tables in the appendices section along with a new supplementary section for Eligibility and funding source mapping.	Alok Patra

## Table of Contents

<b>Delta Guide: Important Notes</b> .....	<b>5</b>
<b>NHIS Required HL7 Segments for VXU</b> .....	<b>7</b>
<b>Segment-Specific Guidance</b> .....	<b>9</b>
MSH – Message Header Segment.....	9
PID – Patient Identifier Segment .....	10
PD1 – Patient Demographic Segment.....	11
NK1 – Next of Kin Segment.....	11
ORC – Order Request Segment.....	12
RXA – Pharmacy/Treatment Administration Segment .....	12
RXR – Pharmacy/Treatment Route Segment.....	13
OBX – Observation Result Segment.....	13
MSA – Message Acknowledgement Segment .....	15
ERR – Error Segment.....	15
ZSA – Custom Error Segment.....	15
<b>Appendices</b> .....	<b>16</b>
Appendix A: Code Tables .....	16
Appendix B: Sample Messages .....	26
Appendix C: Web Service .....	28

## List of Tables

<b>Table 1: NHIS Required VXU Segments</b> .....	<b>7</b>
<b>Table 2: MSH Segment Differences</b> .....	<b>9</b>
<b>Table 3: PID Segment Differences</b> .....	<b>10</b>
<b>Table 4: PD1 Segment Differences</b> .....	<b>11</b>
<b>Table 5: NK1 Segment Differences</b> .....	<b>11</b>
<b>Table 6: ORC Segment Differences</b> .....	<b>12</b>
<b>Table 7: RXA Segment Differences</b> .....	<b>12</b>
<b>Table 8: OBX Segment Differences</b> .....	<b>13</b>
<b>Table 9: ERR Segment Differences</b> .....	<b>15</b>
<b>Table 10: ZSA Segment Guidance</b> .....	<b>15</b>
<b>Table 11: Supported Values for User Defined Table 0001 – Sex</b> .....	<b>16</b>
<b>Table 12: Supported Values for User Defined Table 0005 – Race</b> .....	<b>16</b>
<b>Table 13: Supported Values for User Defined Table 0063 – Relationship Codes</b> .....	<b>17</b>
<b>Table 14: Supported Values for User Defined Table 0064 – Financial Class</b> .....	<b>18</b>
<b>Table 15: Supported Values for User Defined Table 0136 – Protection Indicator</b> .....	<b>18</b>
<b>Table 16: Supported Values for User Defined Table 0162 – Route of Administration</b> .....	<b>18</b>
<b>Table 17: Supported Values for User Defined Table 0163 – Administrative Site</b> .....	<b>19</b>
<b>Table 18: Supported Values for User Defined Table 0189 – Ethnic Group</b> .....	<b>20</b>
<b>Table 19: Supported Values for User Defined Table 0190 – Address Type</b> .....	<b>20</b>
<b>Table 20: Supported Values for User Defined Table 0203 – Identifier Type</b> .....	<b>20</b>
<b>Table 21: Supported Values for User Defined Table 0296 – Language</b> .....	<b>21</b>

<b>Table 22: Supported Values for User Defined Table 0323 – Action Code</b>	<b>21</b>
<b>Table 23: Supported Values for CDC-Defined Table NIP003 - Observation Identifiers</b>	<b>22</b>
<b>Table 24: Supplemental table for VFC Eligibility and Funding Source</b>	<b>24</b>
<b>Table 25: Supported Values for Value Set Name - Immunization Funding Source</b>	<b>25</b>

## Delta Guide: Important Notes

- All interfaces with NHIIS are expected to conform to the CDC/AIRA HL7 Version 2.5.1 Implementation Guide for Immunization Messaging, Release 1.5, 10/1/2014, Updated October 2018<sup>1</sup> (HL7 2.5.1 Implementation Guide). **The material that follows is intended as a supplement to the national HL7 2.5.1 Implementation Guide and lists ONLY the areas where NHIIS deviates from or elaborates on the information contained in the national implementation guidance.**<sup>2</sup>
- This Delta Guide is intended for technical groups from EMR (Electronic Medical Record) systems, EHR (Electronic Health Record) systems, and other state-level systems, etc., that will exchange HL7 messages with NHIIS. The reader of this guide should have a solid HL7 foundation and be fluent with the contents of the national **HL7 2.5.1 Implementation Guide**.
- **Definitions:**
  - **Jurisdictions:** New Hampshire
  - **Name of the Immunization Information System:** NHIIS
  - **Two-Character Jurisdiction IDs:** NH
  - **Immunization Information System Facility Codes:** NH0000
- **This document addresses only VXU messaging and includes specific guidance on the following segments:**
  - **MSH – Message Header Segment**
  - **PID – Patient Identifier Segment**
  - **PD1- Patient Identifier Segment**
  - **NK1 – Next of Kin Segment**
  - **ORC – Order Request Segment**
  - **RXA – Pharmacy/Treatment Administration Segment**
  - **RXR – Pharmacy/Treatment Route Segment**
  - **OBX – Observation Result Segment**
  - **NTE – Note Segment**
  - **MSA – Message Acknowledgement Segment**
  - **ERR – Error Segment**
  - **ZSA – Custom Error Segment**
- This document does **NOT** include guidance on the following messages segments. For more information refer to the **HL7 2.5.1 Implementation Guide**.
  - **BHS – Batch Header Segment**
  - **BTS – Batch Trailer Segment**
  - **FHS – File Header Segment**
  - **FTS – File Trailer Segment**

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<sup>1</sup> <https://repository.immregistries.org/resource/hl7-version-2-5-1-implementation-guide-for-immunization-messaging-release-1-5-1/>

<sup>2</sup> **DISCLAIMER:** The CDC has published a template document for a Local Implementation Guide. This document is heavily based on the CDC's Local Implementation Guide for HL7 2.5.1 Immunization Messaging, version 1.5. Much of the format and content of this document is based on the material found in the CDC's document including updates from the CDC Release 1.5 release.

- This document does NOT include guidance on the following message segments used for bi-directional data exchange or query-only interfaces (QBP/RSP). For more information on establishing a bi-directional interface with NHIIS refer to the **NHIIS QBP Technical Specifications**:
  - QAK – Query Acknowledgement Segment
  - QPD – Query Parameter Definition
  - RCP – Response Control Parameter Segment
  
- The following segments are NOT supported by this HL7 interface:
  - DSC – Continuation Pointer Segment
  - EVN – Event Type Segment
  - GT1 – Guarantor Segment
  - IN1 – Insurance Segment
  - IN2 – Insurance Segment
  - IN3 – Insurance Segment
  - PV1 – Patient Visit Segment
  - PV2 – Patient Visit Segment
  - SFT – Software Segment
  - TQ1 – Timing/Quality Segment
  - TQ2 – Timing/Quality Segment
  
- NHIIS will evaluate all data in a message sent regardless of whether the data is used by the Immunization Information System or not. As a result, any non-NULL data provided in a message must be formatted correctly to avoid errors or warnings. Ideally, any fields not labeled as R, RE, C, or CE should be left blank and sent as null values (unless otherwise noted).

## NHIIS Required HL7 Segments for VXU

The table below displays all HL7 segments required or conditionally required for a VXU submission to NHIIS. For more detail about these segments refer to the tables in this document or the national **HL7 2.5.1 Implementation Guide**<sup>3</sup>.

*Table 1: NHIIS Required VXU Segments*

Segment	Element Name	Usage	Sequence
MSH	Field Separator	Required	MSH-1
MSH	Encoding Characters	Required	MSH-2
MSH	Sending Facility	Required	MSH-4
MSH	Receiving Facility	Required	MSH-6
MSH	Date and Time of Message	Required	MSH-7
MSH	Message Type	Required	MSH-9
MSH	Message Control ID	Required	MSH-10
MSH	Processing ID	Required	MSH-11
MSH	Version ID	Required	MSH-12
MSH	Message Profile Identifier	Required	MSH-21
PID	Set ID – PID	Required	PID-1
PID	Patient Identifier List	Required	PID-3
PID	Patient Name	Required	PID-5
PID	Mother’s Maiden Name	Required but can be empty	PID-6
PID	Date of Birth	Required	PID-7
PID	Administrative Sex	Required	PID-8
PID	Patient Race	Required	PID-10
PID	Patient Address	Required	PID-11
PID	Patient Phone	Required but can be empty	PID-13
PID	Ethnic Group	Required	PID-22
PID	Multiple Birth Indicator	Required but can be empty	PID-24
PID	Birth Order	Conditional (per PID-24) but can be empty	PID-25
PID	Patient Death Date	Required but can be empty	PID-29
PID	Patient Death Indicator	Conditional (per PID-29) but can be empty	PID-30
PD1	Protection Indicator	Required	PD1-12
PD1	Protection Indicator Effective Date	Conditional (per PD1-12)	PD1-13
NK1	Set ID-NK1	Required	NK1-1
NK1	Name	Required	NK1-2
NK1	Relationship	Required	NK1-3

<sup>3</sup> CDC/AIRA HL7 Version 2.5.1 Implementation Guide for Immunization Messaging, Release 1.5, 10/1/2014, Updated October 2018: <https://repository.immregistries.org/resource/hl7-version-2-5-1-implementation-guide-for-immunization-messaging-release-1-5-1/>

Segment	Element Name	Usage	Sequence
NK1	Phone	Required but can be empty	NK1-5
ORC	Order Control	Required	ORC-1
ORC	Filler Order Number	Required	ORC-3
ORC	Ordering Provider	Required (per RXA-9) but can be empty	ORC-12
RXA	Give Sub-IS Counter	Required	RXA-1
RXA	Administration Sub-ID Counter	Required	RXA-2
RXA	Date Start of Administration	Required	RXA-3
RXA	Administered Code	Required	RXA-5
RXA	Administered Amount	Required	RXA-6
RXA	Administered Units	Conditional (per RXA-6) but can be empty	RXA-7
RXA	Administered Information Source	Required	RXA-9
RXA	Administering Provider	Conditional (per RXA-9) but can be empty	RXA-10
RXA	Administered-at Location	Required (per RXA-9) but can be empty	RXA-11
RXA	Substance Lot Number	Required (per RXA-9) but can be empty	RXA-15
RXA	Substance Expiration Date	Conditional (per RXA-15) but can be empty	RXA-16
RXA	Substance Manufacturer Name	Required (per RXA-9) but can be empty	RXA-17
RXA	Substance Refusal Reason	Conditional (per RXA-20) but can be empty	RXA-18
RXA	Completion Status	Required	RXA-20
RXA	Action Code	Required	RXA-21
RXR	Route	Required	RXR-1
RXR	Site	Required (per RXR-1) but can be empty	RXR-2
OBX	Set ID	Required	OBX-1
OBX	Value Type	Required	OBX-2
OBX	Observation Identifier	Required	OBX-3
OBX	Observation Sub-ID	Required but can be empty	OBX-4
OBX	Observation Value	Required	OBX-5
OBX	Observation Result Status	Required	OBX-11
NTE	Comment	Required but can be empty	NTE-3



## Segment-Specific Guidance

The following tables detail **ONLY** the areas where NHIIS deviates from or elaborates on the information contained in the national HL7 2.5.1 Implementation Guide <sup>4</sup>.

### MSH – Message Header Segment

Note: NHIIS does not support optional fields in the MSH segment – leave “optional” fields blank when sending messages to NHIIS (MSH-8, 13-14, 17-20, and 24-25).

Table 2: MSH Segment Differences

SEQ	LEN	Data	CDC IG Cardinality	IIS Cardinality	Value Set	Element Name	CDC IG Usage	IIS Usage	Constraint
3	20	HD	[0..1]	[1..1]		Sending Application	RE	RE	NHIIS will not load this value. Populate with name of EHR software or leave field blank.
4		HD	[0..1]	[1..1]		Sending Facility	RE	R	NHIIS requires a valid Sending Facility code in every HL7 message. NHIIS HL7 staff will provide Sending Facility code(s) once a project has started.
5		HD	[0..1]	[1..1]		Receiving Application	RE	RE	NHIIS will not load this value. The only acceptable value is: <b>NHIIS</b> or leave field blank.
6		HD	[0..1]	[1..1]		Receiving Facility	RE	R	NHIIS covers the entire State of New Hampshire; the only appropriate Receiving Facility code is: <b>NHIIS</b>
11	3	PT	[1..1]	[1..1]	0103	Processing ID	R	R	NHIIS will accept a “P” in MSH 11 during data quality testing.
15		ID	[1..1]	[0..1]	0155	Accept Acknowledgement Type	R	R	Must send “NE”
16	2	ID	[1..1]	[0..1]	0155	Application Acknowledgement Type	R	R	Must send AL

<sup>4</sup> CDC/AIRA HL7 Version 2.5.1 Implementation Guide for Immunization Messaging, Release 1.5, 10/1/2014, Updated October 2018: <https://repository.immregistries.org/resource/hl7-version-2-5-1-implementation-guide-for-immunization-messaging-release-1-5-1/>

SEQ	LEN	Data	CDC IG Cardinality	IIS Cardinality	Value Set	Element Name	CDC IG Usage	IIS Usage	Constraint
21		EI	[0..*]	[0..1]		Message Profile Identifier	R	R	NHIIS expects a value of <b>Z22^CDCPPHINVS</b> for all incoming VXU messages.
22		XON	[0..1]	[0..1]		Responsible Sending Organization	RE	RE	Contact NHIIS staff for assistance in obtaining permission to send data on behalf of other facilities. Otherwise leave field blank.
23		XON	[0..1]	[0..1]		Responsible Receiving Organization	RE	RE	To be used in conjunction with MSH-22. The only appropriate Receiving Organization code is: <b>NHIIS</b> . Otherwise leave field blank.

## PID – Patient Identifier Segment

Note: NHIIS does not support most of the optional fields in the PID segment – leave “optional” fields blank when sending messages to NHIIS (PID-14, 16-18, 23, 26-28, and 31-39). **Exception for PID-15 which is desired and should be submitted in accordance with the national HL7 2.5.1 Implementation Guide<sup>5</sup>.**

*Table 3: PID Segment Differences*

SEQ	LEN	Data Type	CDC IG Cardinality	IIS Cardinality	Value Set	Element Name	CDC IG Usage	IIS Usage	Constraint
3		CX	[1..*]	[1..*]	0203	Patient Identifier List	R	R	Refer to Table 14 for Identifier Type codes supported in NHIIS. NHIIS does not accept Social Security Numbers.
6		XPN	[0..1]	[0..1]		Mother’s Maiden Name	RE	RE	NHIIS expects the Name Type component to be “M” if any value is supplied in the incoming message. Example:  FAIRY^^^^^^M

<sup>5</sup> CDC/AIRA HL7 Version 2.5.1 Implementation Guide for Immunization Messaging, Release 1.5, 10/1/2014, Updated October 2018: <https://repository.immregistries.org/resource/hl7-version-2-5-1-implementation-guide-for-immunization-messaging-release-1-5-1/>

SEQ	LEN	Data Type	CDC IG Cardinality	IIS Cardinality	Value Set	Element Name	CDC IG Usage	IIS Usage	Constraint
11		XAD	[0..*]	[0..*]	0190	Patient Address	RE	R	Refer to Table 13 for Address Type codes supported in NHIIS. For Zip codes, NHIIS supports either 5-digits format (#####) or 5-4 digits format (#####-####).
13		XTN	[0..*]	[0..*]	0201	Phone Number - Home	RE	RE	Do not send fake phone numbers (i.e., 000^0000000). NHIIS expects 10 digits (area code + 7-digit number). If no phone number, leave entire field blank.

## PD1 – Patient Demographic Segment

The PD1 segment contains patient demographic information that may change from time to time. There are three primary uses for the PD1 segment in Immunization Messages. These include indicating whether the person wants his/her data protected, whether the person wants to receive recall/reminder notices, and the person's current status in the registry. However, the only use currently supported by NHIIS is to indicate whether the person wants his/her data protected.

*Table 4: PD1 Segment Differences*

SEQ	LEN	Data Type	CDC IG Cardinality	IIS Cardinality	Value Set	Element Name	CDC IG Usage	IIS Usage	Constraint
12		ID	[0..1]	[0..1]	0136	Protection Indicator	RE	R	Must send the protection indicator with every message
13		DT_T	[0..1]	[0..1]		Protection Indicator Effective Date	C (RE/X)	R	must send the Protection Indicator Effective Date with every message

## NK1 – Next of Kin Segment

NK1 entries are processed into Patient Contacts. This is required when the patient is less than 18 years old. For above 18 years old, the HL7 data partner will send this information when available.

Note: NHIIS does not support most of the optional fields in the NK1 segment – leave “optional” fields blank when sending messages to NHIIS (NK1-6 through NK1-39).

*Table 5: NK1 Segment Differences*

SEQ	LEN	Data Type	CDC IG Cardinality	IIS Cardinality	Value Set	Element Name	CDC IG Usage	IIS Usage	Constraint
2		XPN	[1..*]	[1..2]	0200	Name	R	R	If the Name Type code is left blank, it will be defaulted to legal name.

4		XAD	[0..*]	[0..*]		Address	RE	X	NHIIS does not track addresses for patient contacts. Leave field blank.
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## ORC – Order Request Segment

Note: NHIIS does not support optional fields in the ORC segment – leave “optional” fields blank when sending messages to NHIIS (ORC-4-9, 11, 13-16, and 18-31).

*Table 6: ORC Segment Differences*

SEQ	LEN	Data Type	CDC IG Cardinality	IIS Cardinality	Value Set	Element Name	CDC IG Usage	IIS Usage	Constraint
2		EI	[0..1]	[0..1]		Placer Order Number	RE	X	NHIIS will not load this value. Leave field blank.
3		EI	[1..1]	[1..1]		Filler Order Number	R	R	The identifier included in the incoming message will be stored in the database with this vaccination. It will not be visible on the direct entry user interface.  This is the unique identifier of the sending system in a given transaction. Use of this foreign key will allow the initiating system to accurately identify a previously sent immunization record and facilitate the accurate update or deletion of that record.
10		XCN	[0..1]	[0..1]		Entered By	RE	RE	Required if RXA 9.1 is valued 00.
12		XCN	[0..1]	[0..1]		Ordering Provider	C(RE/O)	RE	Use a Medical License Number or preferably an NPI as the identifier in this field.
17		CE	[0..1]	[0..0]		Entering Organization	RE	X	NHIIS does not support this field. Leave field blank.

## RXA – Pharmacy/Treatment Administration Segment

Note: NHIIS does not support optional fields in the RXA segment – leave “optional” fields blank when sending messages to NHIIS (RXA-4, 8, 12-14, 19, and 22-26).

*Table 7: RXA Segment Differences*

SEQ	LEN	Data Type	CDC IG Cardinality	IIS Cardinality	Value Set	Element Name	CDC IG Usage	IIS Usage	Constraint
4		TS	[0..1]	[0..1]		Date/Time End of Administration	O	O	If RXA-4 is populated, then it SHALL be the same as Start time RXA-3.
9		CE	[0..*]	[0..1]	NIP 001	Administration Notes	C(R/O)	R	To indicate the source of the record, NHIIS expects the following values: <b>For administered doses:</b>  00^NEW IMMUNIZATION RECORD^NIP001  <b>For historical doses:</b>  01^HISTORICAL INFORMATION - SOURCE UNSPECIFIED^NIP001
10		XCN	[0..1]	[0..1]		Administering Provider	C(RE/O)	C(RE/O)	NHIIS would prefer an NPI as the identifier in this field. A Medical License Number is also acceptable.
11		LA2	[0..1]	[0..1]		Administered-at Location	C(RE/O)	RE	If RXA-9 is "00^New immunization", send NHIIS HL7 Facility Code in component 4 " ^^^NHXXXX ". The Facility Code in RXA-11.4 should match the Facility Code in MSH-4. If RXA-9 is anything other than "00^New Immunization", leave field blank.

## RXR – Pharmacy/Treatment Route Segment

Note: NHIIS does not support optional fields in the RXR segment – leave “optional” fields blank when sending messages to NHIIS (RXR-3-6).

## OBX – Observation Result Segment

Note: NHIIS does not support optional fields in the OBX segment – leave “optional” fields blank when sending messages to NHIIS (OBX-7-10, 12-13, 15-16, and 18-25). **See Table 17 for the list of acceptable OBX-3 and OBX-5 values to be used when reporting newly administered immunizations to NHIIS.**

*Table 8: OBX Segment Differences*

SEQ	LEN	Data Type	CDC IG Cardinality	IIS Cardinality	Value Set	Element Name	CDC IG Usage	IIS Usage	Constraint
6		CE	[0..1]	[0..1]	UCUM	Units	C(R/O)	X	NHIIS will not load this value. Leave field blank.

SEQ	LEN	Data Type	CDC IG Cardinality	IIS Cardinality	Value Set	Element Name	CDC IG Usage	IIS Usage	Constraint
11	1	ID	[1..1]	[1..1]	0085	Observation Result Status	R	R	NHIIS will not load this value. NHIIS will process as 'F'.
14		TS	[1..1]	[1..1]		Date/Time of the Observation	RE	RE	NHIIS will not load this value. Leave field blank.
17		CE	[0..1]	[0..0]		Observation Method	C(RE/O)	C(RE/O)	If OBX-3.1 is valued "64994- 7"

## MSA – Message Acknowledgement Segment

Note: NHIIS will not include optional or “X” fields in the MSA segment (MSA-3 through MSA-6). These fields will be blank when returned from NHIIS.

## ERR – Error Segment

Note: NHIIS will not leverage the following ERR segments: ERR-1, ERR-5, ERR-6, and ERR-9 through ERR-12. These fields will be blank when returned from NHIIS.

*Table 9: ERR Segment Differences*

SEQ	LEN	Data Type	CDC IG Cardinality	IIS Cardinality	Value Set	Element Name	CDC IG Usage	IIS Usage	Constraint
7	2048	TX	[0..1]	[0..0]		Diagnostic Information	O	O	The Immunization Information System will populate this field with the full error warning message when ERR-8 exceeds 250 characters.
8	250	TX	[0..1]	[0..0]		User Message	RE	O	The Immunization Information System will indicate the specific error or warning message in this field.

## ZSA – Custom Error Segment

NHIIS leverages a ZSA segment to convey custom acknowledgement codes that provide greater visibility to the quality of the message. Custom messages are returned in the ZSA segment of the ACK message. Note: the ZSA segment is not referenced in the national HL7 2.5.1 implementation guidance. The NHIIS does not expect the sender to consume the ZSA segment. Most parsers will skip the processing of this segment.

*Table 10: ZSA Segment Guidance*

SEQ	LEN	Data Type	CDC IG Cardinality	IIS Cardinality	Value Set	Element Name	CDC IG Usage	IIS Usage	Constraint
1		CE	[1..1]	[1..1]		Custom Acknowledgement Code	O	R	The ZSA-1.1 field shall be an AA, AE, AR, AF, AW, or AI.  The ZSA-1.2 field provides additional text explaining the ZSA-1.1 code.
2		CX	[0..1]	[0..1]		Message Identifier List	O	O	The ZSA-2.1 contains the message identifier
3		CX	[0..1]	[0..1]		Patient Identifier List	O	O	The ZSA-3.1 contains the patient identifier
4		CX	[0..1]	[0..1]		Actions Performed List	O	O	The ZSA-4.1 contains the actions performed

# Appendices

## Appendix A: Code Tables

Unless otherwise noted, NHIIS supports and leverages the value sets laid out in the HL7 2.5.1 Implementation Guide<sup>6</sup>, Appendix A: Code Tables (Page 1). The following tables detail ONLY the tables where NHIIS deviates from or elaborates on the code sets contained in the national HL7 2.5.1 Implementation Guide.

### User Defined Table 0001 – Sex

NHIIS supports the Sex/Gender codes listed in the table below. Use in PID-8.

*Table 11: Supported Values for User Defined Table 0001 – Sex*

Value	Description
F	Female
M	Male
U	Unknown
X	Non-Binary

### User Defined Table 0005 – Race

NHIIS supports the following Race codes listed in the table below. Use in RXA-10.

*Table 12: Supported Values for User Defined Table 0005 – Race*

HL7 Value	Description
1002-5	American Indian or Alaska Native
2028-9	Asian
2054-5	Black or African-American
2076-8	Native Hawaiian or Other Pacific Islander
2131-1	Other Race
2106-3	White
UNK	Not Reported/Unknown

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<sup>6</sup> CDC/AIRA HL7 Version 2.5.1 Implementation Guide for Immunization Messaging, Release 1.5, 10/1/2014, Updated October 2018: <https://repository.immregistries.org/resource/hl7-version-2-5-1-implementation-guide-for-immunization-messaging-release-1-5-1/>



## User Defined Table 0063 – Relationship codes

These codes are used in NK1-3

*Table 13: Supported Values for User Defined Table 0063 – Relationship Codes*

<b>HL7 Code</b>	<b>Description</b>
CGV	CAREGIVER
PAR	PARENT
BRO	BROTHER
DAU	DAUGHTER
EMP	EMPLOYER
EXF	EXTENDED FAMILY
FND	FRIEND
FCH	FOSTER CHILD
FTH	FATHER
GCH	GRANDCHILD
GDA	GRANDDAUGHTER
GFA	GRANDFATHER
FMO	GRANDMOTHER
GRP	GRANDPARENT
GSO	GRANDSON
GUA	GUARANTOR
GRD	GUARDIAN
MTH	MOTHER
OTH	OTHER
DOM	PARTNER
PAR	PARENT
SEL	SELF
SIS	SISTER
SON	SON
SPO	SPOUSE
SCH	STEPCHILD
SIB	SIBLING
UNK	UNKNOWN

## User Defined Table 0064 – Financial Class

NHIS supports the subset of Financial Class codes listed in the table below. Use in OBX-5 for VFC Eligibility at the dose administered level (i.e., vaccine) when OBX-3 has a value of 64994-7. The IIS prevents both vaccine- and patient-level financial eligibility from being set for patients who are not eligible for those categories based on their age.

**Table 14: Supported Values for User Defined Table 0064 – Financial Class**

Value	Description	Comment
V01	Not VFC Eligible (Less than 19)	Client is less than 19 years of age and does not qualify for VFC because they do not have one of the statuses below.
V02	VFC Eligible – Medicaid/ Medicaid Managed Care	Client is currently on Medicaid or Medicaid managed care and < 19 years old and the vaccine administered is eligible for VFC funding.
V03	VFC Eligible – Uninsured	Client does not have private insurance coverage and < 19 years old and the vaccine administered is eligible for VFC Funding.
V04	VFC Eligible – American Indian/Alaskan Native	Client is a member of a federally recognized tribe and < 19 years old and the vaccine administered is eligible for VFC Funding.
V05	VFC Eligible – Underinsured At FQHC	Client has insurance that partially covers vaccines received on visit and so is eligible for VFC coverage at a Federally Qualified Health Center. The client must be receiving the immunizations at the FQHC and < 19 years old and the vaccine administered is eligible for VFC Funding.
V23	317	Client is eligible to receive vaccines under the state immunization policy and the vaccine administered is eligible for 317 funding.
V25	Privately Insured (19 and Older)	Client is 19 years of age or older and has private health insurance.

## HL7 Table 0136- Yes/No Indicator

These codes are used in PID-24, PID-30 and PD1-12

**Table 15: Supported Values for User Defined Table 0136 – Protection Indicator**

HL7 Value	Description
Y	Yes
N	No
Empty	Make no changes to the record in NHIS

## HL7 Table 0162 – Route of Administration

These codes are used in RXR-1. NHIS also supports NCIT (National Cancer Institute Thesaurus) codes.

**Table 16: Supported Values for User Defined Table 0162 – Route of Administration**

HL7 Code	Description	NCIT Code
ID	Intradermal	C38238
IM	Intramuscular	C28161
IV	Intravenous	C38276
NS	Nasal	C38284
PO	Oral	C38288
SC	Subcutaneous	C38299
TD	Transdermal	C38305

## HL7 Table 0163 – Administrative Site

These codes are used in RXR-2. The HL7 data exchange partners can leave this field blank when a vaccine is administered via Oral or Nasal route

*Table 17: Supported Values for User Defined Table 0163 – Administrative Site*

HL7 Code	Description
ID	Intradermal
IM	Intramuscular
IV	Intravenous
NS	Intranasal
LA	Left Arm
LD	Left Deltoid
LLFA	Left Lower Forearm
LT	Left Thigh
LG	Left Upper Outer Quadrant Gluteous
LVL	Left Vastus Lateralis
RA	Right Arm
RD	Right Deltoid
RLFA	Right Lower Forearm
RT	Right Thigh
RG	Right Upper Outer Quadrant Gluteous
RVL	Right Vastus Lateralis
IN	Intranasal
INTRA	Intranasal
NA	Intranasal
LALT	Left Anterior Lateral Thigh
LAT	Left Anterior Thigh
LF	Left Forearm
LLT	Left Lateral Thigh
LPUA	Left Outer Aspect Upper Arm
LUA	Left Upper Arm
RALT	Right Anterior Lateral Thigh
RAT	Right Anterior Thigh
RFA	Right Forearm
RLT	Right Lateral Thigh
RPUA	Right Outer Aspect Upper Arm
RUA	Right Upper Arm

## HL7 Table 0189 – Ethnic Group

NHIS supports the following Ethnic Group codes listed in the table below. Use in PID-22.

*Table 18: Supported Values for User Defined Table 0189 – Ethnic Group*

HL7 Value	Description
2135-2	Hispanic or Latino
2186-5	Not Hispanic or Latino
U	Unknown

## HL7 Table 0190 – Address Type

NHIS supports the subset of Address Types listed in the table below. Use in all XAD data types; including PID-11.

*Table 19: Supported Values for User Defined Table 0190 - Address Type*

Value	Description	Comment
BDL	Birth Delivery Location	City and State portions will be loaded into the Birth City and Birth State fields
BR	Residence at Birth	Loaded as the Patient's Physical address
C	Current or Temporary	Loaded as the Patient's Mailing address
H	Home	Loaded as the Patient's Physical address
L	Legal	Loaded as the Patient's Mailing address
M	Mailing	Loaded as the Patient's Mailing address
N	Birth (nee)	City and State portions will be loaded into the Birth City and Birth State fields
P	Permanent	Loaded as the Patient's Physical address

## HL7 Table 0203 – Identifier Type

NHIS supports the subset of Identifier Types listed in the table below. Use in all CX, XCN type codes; including PID-3 and RXA-10.

*Table 20: Supported Values for User Defined Table 0203 - Identifier Type*

Value	Description	Comment
BR	Birth IIS Number	Used to match to the patient's Birth Certificate ID field in NHIS. <i>NOTE: This identifier should be only be used by Vital Records system submitting birth data to the NHIS via HL7. Other external system types should <b>not use</b> this identifier type!</i>
MA	Patient's Medicaid Number	
MC	Patient's Medicare Number	
MD	Medical License Number	Used in RXA-10 to identify the healthcare provider that administered a vaccination. NHIS will look up the MD from the users table.
MR	Medical Record Number	Will be associated to the patient records in NHIS as a local identifier associated with the clinic tied to the Facility Code in the incoming message.
NPI	National Provider Identifier	Used in RXA-10 to identify the healthcare provider that administered a vaccination. NHIS will look up the NPI from the users table.
SR	State IIS ID	The Patient ID associated to this patient in NHIS. The value must contain only numeric digits.
SS	Social Security Number	<b>NHIS does not accept SSN.</b>

## User-defined Table 0296 – Language

NHIS supports the Language Codes listed in the table below. Use in PID-15 (optional).

*Table 21: Supported Values for User Defined Table 0296 – Language*

Description	Value		
Arabic	ARA	Karen	KAR
Armenian	ARM	Korea	KOR
Catalan/Valencian	CAT	Lao	LAO
Central Khmer	KHM	Myanmar (Burmese)	MYA
Chinese (Mandarin)	CHI	Other	OTH
Croatian	HRV	Persian	PER
Danish	DAN	Polish	POL
English	ENG	Portuguese	POR
French	FRE	Russian	RUS
German	GER	Sign Languages	SGN
Gujarati	GUJ	Somali	SOM
Haitian/Haitian Creole	HAT	Spanish/Castilian	SPA
Hebrew	HEB	Swahili	SWA
Hindi	HIN	Tagalog	TGL
Hmong	HMN	Tigrinya	TIR
Japanese	JPN	Vietnamese	VIE

## HL7 Defined Table 0323 – Action Code

NHIS supports the Action Codes listed in the table below. Use in RXA-21.

*Table 22: Supported Values for User Defined Table 0323 – Action Code*

Value	Description	Comment
A	Add/Insert	
D	Delete	The Immunization Information System will only process a delete if the sending facility is the owning' clinic of the administered vaccination.
U	Update	
X	No change	

## CDC Defined NIP003 – Observation Identifiers (LOINC)

NHIS supports the subset of Observation Identifiers (LOINC Codes) listed in the table below. Use in OBX-3 and OBX-5.

**Table 23: Supported Values for CDC-Defined Table NIP003 - Observation Identifiers**

LOINC Code (OBX-3.1)	Description (OBX-3.2)	HL7 Code (OBX-5)
64994-7	Vaccine Funding Program Eligibility	<p>NHIS only accepts the following values for Vaccine Funding Program Eligibility (see also Table 11):</p> <p>V01^Not VFC Eligible (Less than 19)  V02^VFC Eligible - Medicaid/Medicaid Managed Care  V03^VFC Eligible – Uninsured  V04^VFC Eligible - American Indian/Alaska Native  V05^VFC Eligible - Underinsured At FQHC  V23^317  V25^Privately Insured (19 and Older)</p> <p>Corresponding observation value code table value set to use for OBX-5 is HL70064. If RXA-9.1 (Administration Note.code) is “00” then the message SHALL include an OBX segment associated with the RXA where OBX-3.1 shall equal “64994-7”. This OBX will indicate the Patient Eligibility Category for Vaccine Funding Program.</p>
30963-3	Vaccine Funding Source	<p>NHIS only accepts the following values for Vaccine Funding Source (see also Table 18):</p> <p>VXC51^Pediatric Blended (public funding source)  PHC70^Private (private funding source)  317^317 (public funding source)  VXC50^Pandemic (public funding source)</p> <p>Corresponding observation value code table value set to use for OBX-5 is Value Set OID - 2.16.840.1.114222.4.11.3287. Value Set Code: PHVS_ImmunizationFundingSource_IIS.</p>
30956-7	Vaccine Type	<p>The most current list of CVX codes can be found at: <a href="http://www2a.cdc.gov/vaccines/iis/iisstandards/vaccine_s.asp?rpt=cvx">http://www2a.cdc.gov/vaccines/iis/iisstandards/vaccine_s.asp?rpt=cvx</a></p>
69764-9	VIS Document Type	<p>Type of VIS presented on the vaccination edit screen when using the VIS scanned bar code.</p> <p>Corresponding observation value code table value set to use for OBX-5 is Value Set OID: 2.16.840.1.114222.4.11.6041. Value Set Code: PHVS_VISBarcodes_IIS.</p>

<b>29768-9</b>	VIS Published Date	This value represents the date the presented VIS was published. The most current list of Vaccine Information Statement publication dates can be found at: <a href="https://www.cdc.gov/vaccines/hcp/vis/current-vis.html">https://www.cdc.gov/vaccines/hcp/vis/current-vis.html</a> .
<b>29769-7</b>	VIS Presented Date	This value represents the date the document was presented to the patient/responsible person and is typically the same date as the Date of Administration for the vaccination.
<b>30944-3</b>	Precaution/Contraindication/Allergy/ Risk Expiration Date	Allergy/Risk Expiration Date
<b>30945-0</b>	Vaccination contraindication/ precaution	Corresponding observation value code table value set to use for OBX-5 is Value Set OID: 2.16.840.1.114222.4.11.3288. Value Set Code: PHVS_VaccinationContraindication_IIS.  Contact NHIIS staff for a list of codes currently supported in NHIIS.
<b>30946-8</b>	Precaution/Contraindication/Allergy/ Risk Effective Date	Allergy/Risk Effective Date

## Supplemental Information

NHIS recommends to use the following table for VFC Eligibility and Funding Sources mapping

**Table 24: Supplemental table for VFC Eligibility and Funding Source**

VFC Eligibility		Funding source		When to use?
<b>V01</b>	Not VFC Eligible	VXC50	Pandemic/Public Funds	Use this combination <b>for all Covid Vaccines regardless of age and funding source</b>
<b>V01</b>	Not VFC Eligible	VXC51	Pediatric/Public VFC	Use this combination for all patients <b>less than 19 years old who don't meet any of the criteria outlined for V02 through V05.</b>
<b>V02</b>	VFC Eligible – Medicaid/Medicare Managed Care	VXC51	Pediatric/Public VFC	Use this combination for all patients <b>less than 19 years old who have Medicaid</b>
<b>V03</b>	VFC Eligible – Uninsured	VXC51	Pediatric/Public VFC	Use this combination for all patients <b>less than 19 years old who are uninsured</b>
<b>V04</b>	VFC Eligible – American Indian or Alaska Native	VXC51	Pediatric/Public VFC	Use this combination for all patients <b>less than 19 years old who are members of a federally recognized tribe (American Indian/Alaskan Native)</b>
<b>V05</b>	VFC Eligible – Federally Qualified Health Center Patient or Underinsured	VXC51	Pediatric/Public VFC	Use this combination for patients <b>less than 19 years old who received vaccine at a FQHC</b>
<b>V23</b>	Uninsured/Under-insured Adult	317	Adult/Public Funds	Use this combination for patients who are <b>19 or older and qualify for state funded vaccines</b> unless Covid vaccine in which case they should use V01 and VXC50
<b>V25</b>	Privately Insured (19 and Older)	PHC70	Adult/Private Funds	Use this combination for patients who are <b>19 and older and have private insurance.</b> Unless Covid vaccine in which case they should use V01 and VXC50



**For all newly administered vaccines (RXA-9 valued “00”) – NHIS expects the following OBX Segments/LOINC Codes:**

64994-7^VACCINE FUNDING PROGRAM ELIGIBILITY  
30963-3^VACCINE FUNDING SOURCE  
30956-7^VACCINE TYPE  
29768-9^DATE VACCINE INFORMATION STATEMENT PUBLISHED  
29769-7^DATE VACCINE INFORMATION STATEMENT PRESENTED

**OR**

64994-7^VACCINE FUNDING PROGRAM ELIGIBILITY  
30963-3^VACCINE FUNDING SOURCE  
69764-9^VIS DOCUMENT TYPE  
29769-7^DATE VACCINE INFORMATION STATEMENT PRESENTED

### Value Set Name – Immunization Funding Source

NHIS supports the subset of Immunization Funding Source codes listed in the table below. Use in OBX-5 when OBX-3 has a value of 30963-3. NHIS will insert the data on the vaccination edit screen under funding source for the associated vaccine.

*Table 25: Supported Values for Value Set Name - Immunization Funding Source*

Value	Description	Fund Type
VXC51	Pediatric Blended	Public Funds
PHC70	Private	Private Funds
317	317	Public Funds
VXC50	Pandemic	Public Funds

### Value Set Name – Vaccination Contraindications

NHIS supports the ability to submit vaccine contraindications/precautions in conjunction with OBX-3 and OBX-5. For those wanting to implement this functionality, please contact the NHIS for a list of currently supported codes.

## Appendix B: Sample Messages

### Vaccine Newly Administered & Historical

```
MSH|^~\&||NH9999|NHIIS|NHIIS|20160106165800070+0000||VXU^V04^VXU_V04|20210205NH0000
01|P|2.5.1|||||||Z22^CDCPHPHINVS|||
PID|1||1234567^MR||LASTNAME^FIRST^M^L|FAIRY^M|19411002|F||2028-
9^ASIAN^HL70005|123 ELM ST^CONCORD^NH^03301^M^123 ELM ST^ CONCORD
^NH^03301^P||^PRN^PH^603^2586457~^NET^X.400^Test@gmail.com||ENG^ENGLISH^HL70296|
|||||2186-5^NOT-HISPANIC OR LATINO^CDCREC|||||||
NK1|1|LASTNAME^FIRST^L|SPO^SPOUSE^HL70063||^PRN^PH^603^777222
ORC|RE||2623980^EHR|||||||^ORDERINGLASTNAME^FIRST^L^MD|
RXA|0|1|20160105||33^PNEUMOCOCCAL POLYSACCHARIDE PPV23^CVX|0.5|ML^UCUM| |00^NEW
IMMUNIZATION
RECORD^NIP001|^ADMINISTERINGLASTNAME^FIRST^L^RN|^NH9999|||L024129|201701
21|MSD^MERCK AND CO., INC.^MVX||CP|A|
RXR|C28161^Intramuscular^NCIT|LD^Left Deltoid^HL70163|
OBX|1|CE|64994-7^VACCINE FUND PGM ELIG CAT^LN|1|V01^NOT VFC ELIGIBLE^HL70064|||||F|
OBX|2|CE|30963-3^VACCINE FUNDING SOURCE^LN|2|PHC70^PRIVATE FUNDS^CDCPHINVS|||||F|
OBX|3|CE|30956-7^VACCINE TYPE^LN|3|33^PNEUMOCOCCAL POLYSACCHARIDE PPV23^CVX|||||F|
OBX|4|TS|29768-9^DATE VACCINE INFORMATION STATEMENT PUBLISHED^LN|3|20091006|||||F|
OBX|5|TS|29769-7^DATE VACCINE INFORMATION STATEMENT PRESENTED^LN|3|20160105|||||F|
ORC|RE||9999^EHR|||||||
RXA|0|1|20070824||85^HEP A, UNSPECIFIED FORMULATION^CVX|999||01^HISTORICAL
INFORMATION - SOURCE UNSPECIFIED^NIP001|||||||CP|A|
```

### VIS for Multi Antigen Vaccines

For a combination vaccine such as Pediarix (DTaP-HepB-IPV) – if a separate VIS is given for each vaccine, there needs to be 3 OBX segments for each vaccine component:

```
OBX|1|CE|30956-7^Vaccine Type^LN|1|107^DTaP, UF^CVX|||||F|
OBX|2|DT|29768-9^Date Vaccine Information Statement Published^LN|1|20070517|||||F|
OBX|3|DT|29769-7^Date Vaccine Information Statement Presented^LN|1|20141203|||||F|
OBX|4|CE|30956-7^Vaccine Type^LN|2|45^Hep B, UF^CVX|||||F|
OBX|5|DT|29768-9^Date Vaccine Information Statement Published^LN|2|20120202|||||F|
OBX|6|DT|29769-7^Date Vaccine Information Statement Presented^LN|2|20141203|||||F|
OBX|7|CE|30956-7^Vaccine Type^LN|3|89^Polio, UF^CVX|||||F|
OBX|8|DT|29768-9^Date Vaccine Information Statement Published^LN|3|20111108|||||F|
OBX|9|DT|29769-7^Date Vaccine Information Statement Presented^LN|3|20141203|||||F|
```

### VIS for Multi Antigen Vaccine by VIS Bar Code

```
OBX|1|CE|69764-9^Vaccine Information Statement Document
Type^LN|1|253088698300003511070517^DTaP VIS^cdcgs1vis|||||F|
OBX|2|DT|29769-7^Date Vaccine Information Statement Presented^LN|1|20141203|||||F|
OBX|3|CE|69764-9^Vaccine Information Statement Document
Type^LN|2|253088698300005911120202^Hepatitis B VIS^cdcgs1vis|||||F|
OBX|4|DT|29769-7^Date Vaccine Information Statement Presented^LN|2|20141203|||||F|
```

OBX|5|CE|69764-9^Vaccine Information Statement Document  
Type^LN|3|253088698300017211111108^Polio VIS^cdcgs1vis|||||F  
OBX|6|DT|29769-7^Date Vaccine Information Statement Presented^LN|3|20141203|||||F

### Vaccine Refusal

The following is a sample RXA segment:

*RXA|0|1|20091010|20091010|107^DTAP-NOS^CVX|999|00^Parental  
refusal^NIP002||RE|A*

### Deleting a Vaccination

Below is a sample message showing the minimum segments that need to be contained in a delete immunization message. You can only delete an immunization that you first reported.

Initial report of an immunization:

*RXA|0|1|20150113150100|20150113150100|133^Pneumococcal conjugate vaccine, 13 valent,  
IM^CVX|0.5|mL^^UCUM||00^New immunization record^NIP001|  
NPI#^ADMINISTERINGLASTNAME^FIRST^^^^^^L^^^NPI|^^^  
NHFACILITYCODE|000000|M35761|20170531000000|PFR^Pfizer, Inc^MVX||CP|A|20160113150100*

What you would need to submit to delete a vaccination from that patient:

*RXA|0|1|20150113150100|20150113150100|133^Pneumococcal conjugate vaccine, 13 valent,  
IM^CVX|0.5|mL^^UCUM||00^New immunization record^NIP001||^^^  
NHFACILITYCODE|000000||CP|D|20160113150100*

## Appendix C: Web Service

The IMS Web Service provides a standard mechanism for the transfer of information between NHIS and HL7 data exchange partners.

### NHIS QA Environment:

To test this service, you will need to create a client and use it to call the service. You can do this using the svcutil.exe tool from the command line with the following syntax:

```
svcutil.exe https://nhiis-qa.dhhs.nh.gov/hl7engine\_qa/Cdc.aspx?WSDL
```

This will generate a configuration file and a code file that contains the client class. Add the two files to your client application and use the generated client class to call the Service. For example:

#### C#

```
class Test
{
    static void Main()
    {
        HelloClient client = new HelloClient();

        // Use the 'client' variable to call operations on the
service.
        // Always close the client.
        client.Close();
    }
}
```

#### Visual Basic

```
Class Test
    Shared Sub Main()
        Dim client As HelloClient = New HelloClient()
        ' Use the 'client' variable to call operations on the service.

        ' Always close the client.
        client.Close()
    End Sub
End Class
```

## NHIS Production Environment:

To test this service, you will need to create a client and use it to call the service. You can do this using the svcutil.exe tool from the command line with the following syntax.

```
svcutil.exe https://nhis-prod.dhhs.nh.gov/hl7engine/Cdc.aspx?WSDL
```

This will generate a configuration file and a code file that contains the client class. Add the two files to your client application and use the generated client class to call the Service. For example:

### C#

```
class Test
{
    static void Main()
    {
        HelloClient client = new HelloClient();

        // Use the 'client' variable to call operations on the
        service.

        // Always close the client.
        client.Close();
    }
}
```

### Visual Basic

```
Class Test
    Shared Sub Main()
        Dim client As HelloClient = New HelloClient()
        ' Use the 'client' variable to call operations on the service.

        ' Always close the client.
        client.Close()
    End Sub
End Class
```