

# North Carolina HL7 Version 2.5.1 Local Implementation Guide

## Specifications for Submission of VXUs and QBPs to the North Carolina Immunization Registry (NCIR)

North Carolina Department of Health and Human Services  
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## Version history

Version	Date	Notes
v1.0	June 2022	Initial version of NCIR implementation guide using AIRA Local IG template.
V1.1	Sep 2023	Local usage of RXA-10 changed from X to RE. Financial Class table updated.
V1.2	Jan 2024	Added Bridge Related Funding
V1.3a	Jan 2024	Removed Max Deletion by Org
V1.4a	Feb 2024	Removed Max Deletion by Org Statement again

## Introduction

### Purpose

This Local Implementation Guide is designed to serve as a companion to the National [HL7 Version 2.5.1 Implementation Guide for Immunization Messaging, Release 1.5 and Addendum](#) (National IG) to support immunization data exchange with the North Carolina immunization information system (IIS), the North Carolina Immunization Registry (NCIR). Specifically, this guide constrains elements listed with an “optional” usage in the National IG and indicates local differences in usage requirements to support submission of unsolicited vaccination record updates (VXU messages) and query by parameter (QBP messages) to the IIS. For additional detail on interpretation of usage designations, see [Appendix A](#).

This Local IG also specifies:

- Message types/profiles and functions supported by the IIS.
- Messaging requirements for submission of unsolicited vaccination record updates (VXU messages) to the IIS.
- Messaging requirements for submission of query by parameter messages (QBP messages) to the IIS.
- Information on acknowledgement (ACK) messaging from the IIS.
- Local value sets used to support HL7 messaging with the IIS.

This Local IG is intended to serve as a reference for provider organization representatives and EHR/technical representatives in establishing a data interface with the IIS. It also serves as an ongoing reference to support ongoing monitoring and troubleshooting of production data interfaces.

### About the IIS

The [North Carolina Immunization Registry \(NCIR\)](#), is a secure, web-based clinical tool which is the official source for North Carolina immunization information. The IIS operates as a mandated participation system for residents across the lifespan. Reporting immunizations to the IIS is required among select organizations. Additional notes on these policies are provided in Table 1.

**Table 1. IIS policies and notes related to HL7 data exchange.**

	<b>Policy</b>	<b>Local notes</b>
Patient Participation	Mandatory participation	<p>The North Carolina Department of Health and Human Services operates NCIR as a mandatory participation IIS under the Department’s public health authority.</p> <p>PD1-12, protection indicator, is ignored. NCIR will default this value to “N” for VXU submissions.</p>
Provider Organization Reporting	Mandated reporting for select providers	<p>Organizations participating in NCIR are required to report immunization information to the IIS within 24 hours of administration, per the NCIR Agreement.</p> <p>Pharmacies are required to report immunization information to the IIS within 72 hours of administration per state law <a href="#">G.S. 90-85.15B(c)</a>.</p> <p>Organizations participating in the North Carolina Immunization Program (NCIP), <a href="https://immunization.dph.ncdhhs.gov/providers/nci-requirements.htm">https://immunization.dph.ncdhhs.gov/providers/nci-requirements.htm</a>, are required to participate in NCIR to report doses administered with dose-level eligibility using the OBX segment and Financial Class Codes (User-defined Table 0064), manage public and private vaccine inventory, and to support vaccine borrowing and replacement.</p>

### Onboarding for data exchange with the IIS

To establish a data exchange interface with the IIS, organizations must complete the following steps:

1. Enroll in NCIR at: <https://ncir.ncdhhs.gov>, to gain access to the system.
2. Register for data exchange on the **North Carolina Division of Public Health Promoting Interoperability Program Registration of Intent Site** at: <https://ncdphmeaningfuluse.org/>, to indicate your desire to interface with NCIR.
3. Work with the NCIR team to complete the IIS onboarding process to set up and test an interface between a health IT system and NCIR.

## Contact

Direct questions about HL7 messaging requirements and data exchange to the NCIR Help Desk at: [ncirdataexchange@dhhs.nc.gov](mailto:ncirdataexchange@dhhs.nc.gov).

## Supported Message Types/Profiles and Functions

Specific messaging types and profiles supported by the IIS are detailed in Tables 2 and 3.

**Table 2. Messages accepted by the IIS in data exchange with provider organizations**

Message type	Message profile	Description	Accepted by the IIS?	Local notes
VXU	Z22	Add	Yes	
		Update	Yes	Processed in the same manner as an Add. Updates are only processed for vaccinations initially reported by the same organization.
		Delete	Yes	Deletes are only processed for vaccinations initially reported by the same organization.
VXU	Z22	Administered dose(s)	Yes	
		Partially administered dose(s)	Yes	
		Historical dose(s)	Yes	
		Vaccination(s) with VIS(s)	Yes	
		Refusal(s)	Yes	
		Contraindication(s)	Yes	
		Immunity/immunities	Yes	
		Adverse event(s)	Yes	
Patient with no vaccinations	Yes			

QBP	Z34	Request complete immunization history	<b>Yes</b>	NCIR will respond with a Z32 RSP.
QBP	Z44	Request evaluated immunization history and forecast	<b>Yes</b>	NCIR will respond with a Z42 RSP.

**Table 3. Messages returned by the IIS in data exchange with provider organizations**

Message type	Message profile	Description	Returned by the IIS?	Local notes
ACK	Z23	Acknowledgement	<b>Yes</b>	
RSP	Z32/Z42	Vaccination event(s)	<b>Yes</b>	
		Partially administered dose(s)	<b>Yes</b>	
		Vaccination(s) with VIS(s)	<b>Yes</b>	
		Refusal(s)	<b>Yes</b>	
		Contraindication(s)	<b>Yes</b>	
		Immunity/immunities	<b>Yes</b>	
		Adverse event(s)	<b>Yes</b>	
		Patient with no vaccinations	<b>Yes</b>	
RSP	Z31	Return message indicating candidate list of potential matches was found	<b>Yes</b>	NCIR will return in response to a Z34 QBP. NCIR will return a maximum of 20 candidates. Multiple potential matches are not returned in response to a Z44 query.

RSP	Z33	Return message indicating a patient match could not be found	<b>Yes</b>	NCIR will return in response to a Z34 and Z44 QBP when there are no patient matches found or when there are too many potential matches found.
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## Delta Summary – Differences from the National IG

### Summary of local differences for VXU messaging

Tables 4 and 5 below provide a snapshot summary of local requirements for VXU messaging with the IIS. These tables highlight segment- and field-level elements where usage is constrained<sup>1</sup> or where usage is relaxed.<sup>2</sup> Optional elements in the National IG constrained to not supported locally (O->X) are omitted, for brevity. Additionally, certain elements that do not impact interoperability are also omitted from this analysis, including PID-1, NK1-1, and OBX-1. Other elements indicated as not supported locally (Local Usage of "X") are ignored by NCIR.

**Table 4. List of segment-level usage differences from the National IG for VXU messaging**

Segment	National IG Usage	Local Usage	Local Notes
Order Group	RE	R	Order group must be present in a VXU message submitted to NCIR. NCIR will reject a VXU message that does not contain an RXA segment. Note: A future NCIR data exchange update will relax this requirement to RE.

**Table 5. List of field-level usage differences from the National IG for VXU messaging**

Segment	Seq	Element Name	National IG Usage	Local Usage	Local Notes
MSH	4	Sending Facility	RE	R	Shall be the NCIR "short name" (e.g., NCIR-SHORT-ORG) for the facility reporting the immunization (owning organization). This value will be provided by NCIR staff as part of the onboarding process.
MSH	5	Receiving Application	RE	X	

<sup>1</sup> RE->R, O->RE, O->R

<sup>2</sup> R->RE, R->X, RE->X

MSH	6	Receiving Facility	RE	R	Shall be "NCIR." If value other than "NCIR", the message is rejected with the error: "MSH-6: Message not intended for NCIR."
PID	3	Patient Identifier List	R	RE	NCIR prohibits use of SSN as a patient identifier.
PID	15	Primary Language	O	RE	
NK1	20	Primary Language	O	RE	
NK1	22	Publicity Code	O	RE	
ORC	2	Placer Order Number	RE	X	
RXA	4	Date/Time End of Administration	O	RE	If populated, shall be the same as start time (RXA-3).
RXA	10	Administering Provider	C(RE/O) if RXA-9 is "00" and RXA-20 is "CP" or "PA" otherwise O	C(R/O) if RXA-9 is "00" and RXA-20 is "CP" or "PA" otherwise X	
RXA	21	Action Code	R for historical vaccine	RE for historical vaccine	
OBX	17	Observation Method	C(RE/O) If OBX-3.1 is "64994-7" then RE, otherwise O	C(R/X) If OBX-3.1 is "64994-7" then R, otherwise X	The field must contain value VXC40 or VXC41

Summary of local differences for QBP messaging

Tables 6, 7, and 8 below provide a snapshot summary of local requirements for QBP messaging with the IIS. These tables highlight segment- and field-level elements where usage is constrained<sup>3</sup> or where usage is relaxed.<sup>4</sup> Optional elements in the National IG constrained to not supported locally (O->X) are omitted, for brevity. Other elements indicated as not supported locally (Local Usage of "X") are ignored by NCIR.

**Table 6. List of segment-level usage differences from the National IG for QBP messaging**

Segment/Group	National IG Usage	Local Usage	Local Notes
None			

**Table 7. List of field-level usage differences from the National IG for QBP messaging, request complete immunization history (Z34)**

Segment	Seq	Element Name	National IG Usage	Local Usage	Local Notes
MSH	4	Sending Facility	RE	R	Shall be the NCIR "short name" (e.g., NCIR-SHORT-ORG) for the facility submitting the query. This value will be provided by NCIR staff as part of the onboarding process.
MSH	5	Receiving Application	RE	X	
MSH	6	Receiving Facility	RE	R	Shall be "NCIR." If value other than "NCIR", the message is rejected with the error: "MSH-6: Message not intended for NCIR."
QPD	4	Patient Name	RE	R	
QPD	6	Patient Date of Birth	RE	R	
QPD	9	Patient Home Phone Number	RE	X	

<sup>3</sup> RE->R, O->RE, O->R

<sup>4</sup> R->RE, R->X, RE->X

RCP	1	Query Priority	RE	R	
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**Table 8. List of field-level usage differences from the National IG for QBP messaging, request evaluated immunization history and forecast (Z44)**

Segment	Seq	Element Name	Nat'l IG Usage	Local Usage	Local Notes
MSH	4	Sending Facility	RE	R	Shall be the NCIR "short name" (e.g., NCIR-SHORT-ORG) for the facility submitting the query. This value will be provided by NCIR staff as part of the onboarding process.
MSH	5	Receiving Application	RE	X	
MSH	6	Receiving Facility	RE	R	Shall be "NCIR." If value other than "NCIR", the message is rejected with the error: "MSH-6: Message not intended for NCIR."
QPD	4	Patient Name	RE	R	
QPD	6	Patient Date of Birth	RE	R	
QPD	9	Patient Home Phone Number	RE	X	
RCP	1	Query Priority	RE	R	

## VXU Messaging

Use the following specifications to produce VXU messages in compliance with IIS HL7 messaging requirements.

### Local VXU segment requirements

Table 9 details segment-level requirements for VXU messaging. Local usage is only noted where it is different from the National IG. Elements indicated as not supported locally (Local Usage of “X”) are ignored by NCIR.

**Table 9. List of local VXU segment requirements<sup>5</sup>**

Segment	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance	Local Usage*	Local Conformance Notes
MSH – Message Header Segment	[1..1]	R	Every message begins with an MSH	R	
SFT – Software Segment	[0..*]	O		X	
PID – Patient Identifier Segment	[1..1]	R	Every VXU has one PID segment	R	
PD1 – Patient Demographic Segment	[0..1]	RE	Every PID segment in VXU may have one or less PD1 segment	O	
NK1 – Next of Kin	[0..*]	RE	The PID segment in a VXU may have zero or more NK1 segments	R	NCIR accepts up to 4 NK1 segments
Begin patient visit group	[0..1]	O		X	

<sup>5</sup> Derived from Table 5-1, VXU Segment Usage in the National IG.

PV1 – Patient Visit	[1..1]	R		X	
PV2 – Patient Visit Additional Information	[0..1]	O		X	
End patient visit group					
Begin insurance group	[0..1]	O	May not repeat	X	
IN1 – Insurance Segment	[1..1]	R		X	
IN2 – Insurance Additional Information	[0..1]	O		X	
IN3 – Insurance Additional Information Certification	[0..1]	O		X	
End insurance group					
Begin order group	[0..*]	RE	Each VXU may have zero or more Order groups	R	NCIR requires at least one RXA per VXU.
ORC – Order Request Segment	[1..1]	R	The order group in a VXU must have one ORC segments	R	
RXA – Pharmacy/Treatment Administration	[1..1]	R	Each ORC segment in a VXU must have one RXA segment. Every RXA requires an ORC segment	R	
RXR – Pharmacy/Treatment Route	[0..1]	RE	Every RXA segment in a VXU may have zero or one RXR segments	RE	

Begin observation group	[0..*]	RE	Every RXA segment in a VXU may have zero or more observation groups	RE	RXA without Zero OBX will result in DEDUCT ERROR. Immunization will be accepted.
OBX – Observation Segment	[0..1]	R		RE	
NTE – Note Segment	[0..1]	O	Every OBX segment in a VXU may have zero or one NTE segment	X	
End observation group					
End order group					

\*Only noted if usage differs from the National IG.

### Local VXU field requirements by segment

The following tables detail field-level requirements for VXU messaging, presented by segment. Local usage is only noted where it is different from the National IG. Elements indicated as not supported locally (Local Usage of “X”) are ignored by NCIR.

#### MSH – Message Header Segment

**Table 10. Local MSH field-level requirements for VXU messaging<sup>6</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Field Separator	[1..1]	R	Shall be valued “ ”	R	
2	Encoding Characters	[1..1]	R	Shall be valued “^~\&”	R	
3	Sending Application	[0..1]	RE	See HL70361	O	

<sup>6</sup> Derived from Table 5-4, Message Header Segment and accompanying notes in the National IG.

4	Sending Facility	[0..1]	RE	See HL70362	R	Shall be the NCIR “short name” (e.g., NCIR-SHORT-ORG) for the facility reporting the immunization (owning organization).
5	Receiving Application	[0..1]	RE	See HL70361	RE	
6	Receiving Facility	[0..1]	RE	See HL70362	R	Shall contain “NCIR”
7	Date/Time of Message	[1..1]	R		R	ERR MSH-7 Date/Time Required. Immunization will be accepted.
8	Security	[0..1]	O		O	
9	Message Type	[1..1]	R	Shall contain the constant value “VXU^V04^VXU_V04”	R	
10	Message Control ID	[1..1]	R		R	Message will be rejected without Message Control ID
11	Processing ID	[1..1]	R		R	Shall contain “P”
12	Version ID	[1..1]	R	Shall be valued “2.5.1”	R	
13	Sequence Number	[0..1]	O		X	
14	Continuation Pointer	[0..1]	O		X	
15	Accept Acknowledgment Type	[1..1]	R	See HL70155	RE	Shall contain “ER”
16	Application Acknowledgment Type	[1..1]	R	See HL70155	RE	Shall contain “AL”
17	Country Code	[0..1]	O		X	
18	Character Set	[0..1]	O		X	
19	Principal Language of Message	[0..1]	O		X	
20	Alternate Character Set Handling Scheme	[0..1]	O		X	

21	Message Profile Identifier	[1..*]	R	One occurrence shall contain the constant value "Z22^CDCPHINVS"	RE	
22	Sending Responsible Organization	[0..1]	RE		O	If populated, shall contain the NCIR short name used in MSH-4.
23	Receiving Responsible Organization	[0..1]	RE		O	If populated, shall contain "NCIR"

\*Only noted if usage differs from the National IG.

*VXU MSH notes*

- MSH-4: NCIR staff will provide the Sending Facility (MSH-4) value during onboarding process. If the field is blank, send an error message and reject the message: "MSH-4: Sending Facility missing."
- MSH-6: If value other than "NCIR", the message is rejected with the error: "MSH-6: Message not intended for NCIR."
- MSH-7: A warning will be returned if MSH-7 is an invalid date or the date is missing: "MSH-7: Date/Time required or invalid." A warning will also be returned if date is a future date: "MSH-7 Date/Time of Message is a future date."
- MSH-9: If field is missing or invalid (values other than the ones specified above), reject the message and send an error message: "MSH-9: Required field. Please enter valid values."
- MSH-10: If field is empty, the message will be rejected and an error message will be sent: "MSH-10: Message Control-id missing."
- MSH-11: If not "P" or if the field is blank, the transaction will be rejected and an error message returned: "MSH-11: Processing Id missing or invalid."
- MSH-12: If there is no version number found in the MSH segment, the file will not be processed. The error message: "File Rejected. MSH-12: Version Id missing." will be returned. If MSH-12 is valued but not 2.5.1, an Error message will be sent: "MSH-12: The HL7 Version specified in field 12 of the MSH segment in this HL7 file is not supported for this organization."
- MSH-15: If the field is empty, NCIR will default to ER. If a value other than ER is sent, a warning message will be provided: "MSH-15 Accept Acknowledgement Type [insert sent value] is not valid. Defaulted to ER.". If MSH-15 value is blank, a warning message will be provided: "MSH-15 Accept Acknowledgement Type value ER is required."

- MSH-16: If field is empty, NCIR will default to AL. If value other than AL, a warning message will be sent: “MSH-16 Application Acknowledgement Type [insert sent value] is not valid. Defaulted to AL.”. If MSH-16 is blank, a warning message will be provided: “MSH-16 Application Acknowledgement Type value AL is required”.
- MSH-21: If the field is blank or it has a different value than the one accepted, the message will be rejected and an error sent: “MSH-21: Message Profile Identifier missing or invalid.”
- MSH-22: Use the NCIR short name of the organization (e.g., NCIR-SHORT-ORG) in MSH-22 Component 1. NCIR will provide the NCIR short name at the time of onboarding. If MSH-22 is populated, but does not match MSH-4 (sending facility), an error message is shown with the message rejected: “ERR| |MSH^1^22^^^|207^Application internal error^HL70357^^^|E| | |MSH-22 Sending Responsible Organization [insert sent value] does not match MSH-4 Sending Facility.| | | | |”.

*VXU MSH example*

```
MSH|^~\&|NCIR-SHORT-ORG|NCIR-SHORT-ORG||NCIR|20121212100101-0500||VXU^V04^VXU_V04|1|P|2.5.1|||ER|AL|||Z22^CDCPHINVS|NCIR-SHORT-ORG|NCIR
```

PID – Patient Identifier Segment

**Table 11. Local PID field-level requirements for VXU messaging<sup>7</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Set ID - PID	[1..1]	R	Shall contain the value “1”	RE	
3	Patient Identifier List	[1..*]	R		RE	See accepted identifier values in User-defined Table 0203, <a href="#">Appendix B</a> .
5	Patient Name	[1..*]	R		R	
6	Mother's Maiden Name	[0..1]	RE		O	
7	Date/Time of Birth	[1..1]	R		R	

<sup>7</sup> Derived from Table 5-11, Patient Identifier Segment and accompanying notes in the National IG.

8	Administrative Sex	[1..1]	R	See User-Defined Table 0001	RE	See accepted values in User-defined Table 0001, <a href="#">Appendix B</a> .
10	Race	[0..*]	RE	See CDCREC	O	See accepted values in User-defined Table 0005, <a href="#">Appendix B</a> .
11	Patient Address	[0..*]	RE		O	Shall indicate “M” for address type. Shall indicate North Carolina County code; see User-defined Table 0289 – County/parish for accepted county codes <a href="#">Appendix B</a> .
13	Phone Number - Home	[0..*]	RE		O	Shall indicate “PRN” for telecommunication use code.
14	Phone Number - Business	[0..*]	O		X	
15	Primary Language	[0..1]	O		RE	Use <a href="#">ISO Table 0639</a> .
16	Marital Status	[0..1]	O		X	
17	Religion	[0..1]	O		X	
18	Patient Account Number	[0..1]	O		X	
22	Ethnic Group	[0..1]	RE	See CDCREC	O	See accepted values in Table CDCREC – Ethnic Group, <a href="#">Appendix B</a> .
23	Birth Place		O		X	
24	Multiple Birth Indicator	[0..1]	RE		O/RE	RE only when applicable else O

25	Birth Order	[0..1]	C(RE/O)	If PID-24 is valued "Y," then RE; otherwise, O	O/RE	RE only when value in 24 is RE else O
26	Citizenship	[0..*]	O		X	
27	Veterans Military Status	[0..1]	O		X	
28	Nationality	[0..1]	O		X	
29	Patient Death Date and Time	[0..1]	C(RE/X)	If PID-30 is valued "Y," then R; otherwise, X	RE	
30	Patient Death Indicator	[0..1]	RE	See HL70136	O	
31	Identity Unknown Indicator	[0..1]	O		X	
32	Identity Reliability Code	[0..*]	O		X	
33	Last Update Date/Time	[0..1]	O		X	
34	Last Update Facility	[0..1]	O		X	
35	Species Code	[0..1]	O		X	
36	Breed Code	[0..1]	O		X	
37	Strain	[0..1]	O		X	
38	Production Class Code	[0..2]	O		X	
39	Tribal Citizenship	[0..*]	O		X	

\*Only noted if usage differs from the National IG.

#### VXU PID notes

- PID-3:
  - Sub-components 1 (ID), 4 (Assigning Authority/Table 0363) and 5 (Identifier Type Code/Table 0203) are required in the PID-3 field.
  - A provider organization can send two different identifiers: their EMR system's Chart Number, and/or Group Chart Number if available.
    - If chart number is sent in subcomponent 1, use PI in subcomponent 5.
    - If group chart number is sent in subcomponent 1, use PT in subcomponent 5.

- Submit Provider's NCIR-SHOR-ORG for subcomponent 4 (Assigning Authority). This is the same value provided for use with MSH-4.
- PID-5:
  - NCIR will reject a client record with 'NO FIRST NAME' entered as the first name.
  - If field is empty or first name or last name is found in the NCIR junk names table, message will be rejected and the following error message will be returned: "PID-5: Patient name required".
  - If multiple names are provided, the name other than legal name will be ignored (only the first three components are used by NCIR: Last Name^First Name^Middle Name).
- PID-6: If Mother's Maiden Name is not provided and the incoming record is a new client or an existing client without Mother's maiden name, NCIR will return the following warning message: "PID-6: Please provide mother's maiden name. Field is used in matching process when no other client identifier supplied. " **Note: This warning is not returned if NCIR has Mother's Maiden Name already from another source.**
- PID-7:
  - If client matches to an existing client and incoming birth date > existing immunization date on the client, NCIR will return an error message and pend incoming client for later review.
  - If incoming birth date > any of the incoming dose date, NCIR will reject the transaction with the following error message: "PID-7: DOB is later than immunization date. Transaction rejected"
  - If field is missing or invalid, NCIR will reject the transaction with the following error message: "PID-7: Date of birth invalid or missing."
- PID-8: If blank or a value other than F, M, or U, NCIR will default to U and return the following warning message: "PID-8: Invalid value. If Blank - Defaulted to U".
- PID-11:
  - The county field (PID-11.9) is used as County of residence. If county code (PID-11.9- HL70289 table) is not valid, send warning message, "PID-11: County code invalid. Code ignored." If client resides within the state, submit the county using 0289 table values. If person resides out of state, use ZZ999 for county. A blank or empty value in county field translates to "unknown".
  - If client is 18 years or older and neither NK1 or PID-11/PID-13 is populated, the following warning is returned. "Contact address and/or phone number required. Please send address and/or phone number."
  - If State (PID-11.4) is invalid, the following warning message is returned "PID-11.4 Invalid state code (XX). No value stored."

- If Address type (PID-11.7) is not 'M', the following warning message is returned: "PID-11: Invalid Address Type: <address type>. Defaulting to M."
- PID-13:
  - If PID-13.2 (Telecommunication use code) is not a valid value from the HL7 0201 table, NCIR will return the following warning message: "PID-13: INVALID TELECOMMUNICATIONS USE CODE".
  - If PID-13.2 (Telecommunication use code) is not PRN, NCIR will return the following warning message and ignore phone number: "PID-13: NCIR only accepts PRN (Primary residence number), PHONE NUMBER IGNORED".
  - If PID-13.2 (Telecommunication use code) is PRN and PID-13.7 (Local Number) is missing, NCIR will return the following warning message: "PID-13: Phone number missing or invalid".
  - If PID-13.6 (Area/City Code) is nonblank value but is not numeric, NCIR will return the following warning message: "PID-13: Phone number missing or invalid".
  - If PID-13.7 (Local Number) is nonblank value but is not numeric, NCIR will return the following warning message: "PID-13: Phone number missing or invalid".
  - Use 'PH' for PID-13.3 (Telecommunication equipment type).
- PID-22: If incoming value does not conform to HL7 table CDCREC, NCIR will default to Unknown and return the following warning message: "PID-22: Invalid value." If blank, NCIR will default to "Unknown."
  - The IIS allows CDCREC and HL70189 for PID-22.3 (Name of Coding System).
- PID-24: If value other than Y, N, or empty, NCIR will ignore the value and return the following warning message: "PID-24: Multiple Birth Indicator invalid. Field is ignored."
- PID-25: If PID-24 field is set to Y and PID-25 is not populated, NCIR will return the following warning message: "PID-25: Client born in a multiple birth. Field must be populated."
- PID-29: If death date is sent but the Patient Indicator in PID-30 is not set to Y, NCIR will default the Patient Death indicator to Y, reflect the deceased status of the patient in all organizations and send the following warning message: "PID-30: Death date is present. Patient Death indicator defaulted to Y."
- PID-30: If death date is missing but PID-30 is populated with Y, the deceased status of the patient will be reflected in all organizations and the following warning message returned: "PID-29: No Death Date is provided."

*VXU PID example*

PID|1||1234567890^^^PI^||Last Name^First Name^Middle Name^^^^L^|Last Name^First Name^Middle Name^^^^|20110219|F||2106-3^White^HL7005|||^PRN^PH^ncirxyz@yourorg.com^^919^5551234^^|2186-5^Not Hispanic or Latino^HL70189||N|1||||N||||

PD1 – Patient Demographic Segment

**Table 12. Local PD1 field-level requirements for VXU messaging<sup>8</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Living Dependency	[0..*]	O		X	
2	Living Arrangement	[0..1]	O		X	
3	Patient Primary Facility	[0..0]	O		X	
5	Student Indicator	[0..1]	O		X	
6	Handicap	[0..1]	O		X	
7	Living Will Code	[0..1]	O		X	
8	Organ Donor Code	[0..1]	O		X	
9	Separate Bill	[0..1]	O		X	
10	Duplicate Patient	[0..*]	O		X	
11	Publicity Code	[0..1]	RE	See HL70215	O	
12	Protection Indicator	[0..1]	RE	See HL70136	O	Shall be "N" if submitted
13	Protection Indicator Effective Date	[0..1]	C(RE/X)	If PD1-12 is valued then RE; otherwise, X	RE	
14	Place of Worship	[0..*]	O		X	
15	Advance Directive Code	[0..*]	O		X	

<sup>8</sup> Derived from Table 5-10, Patient Demographic Segment and accompanying notes in the National IG.

16	Immunization Registry Status	[0..1]	RE	See HL70441	RE	See accepted values in User-defined Table 044, <a href="#">Appendix B.</a>
17	Immunization Registry Status Effective Date	[0..1]	C(RE/X)	If the PD1-16 field is valued then RE; otherwise, X	O	
18	Publicity Code Effective Date	[0..1]	C(RE/X)	If the PD1-11 field is valued then RE; otherwise, X	O	
19	Military Branch	[0..1]	O		X	
20	Military Rank/Grade	[0..1]	O		X	
21	Military Status	[0..1]	O		X	

\*Only noted if usage differs from the National IG.

*VXU PD1 notes*

- PD1-11: Submit 02 if client is not deceased; 01 if client is deceased. Use NK1 to set preferences as NCIR does not set these notices at client level.
- PD1-12: Value: "N". Any other value is ignored and NCIR will default to "N", returning the following warning message: "PD1-12: Protection indicator defaulted to N".
- PD1-16: If this field is empty or invalid, NCIR will default the client status to Active and return the following warning message: "PD1-16: Required field. <> is an invalid value. Defaulted to A." If P is provided, client deceased status will reflect in all organizations.

*VXU PD1 example*

PD1|||||||02|N||||A|20121218134335|

NK1 – Next of Kin Segment

**Table 13. Local NK1 field-level requirements for VXU messaging<sup>9</sup>**

<sup>9</sup> Derived from Table 5-5, Next of Kin Segment, and accompanying notes in the National IG.

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance / Value Set	Local Usage*	Local Conformance Notes
1	Set ID - NK1	[1..1]	R		O	
2	Name	[1..*]	R		RE	The first instance is the legal name and is required. Shall indicate "L" for name type code.
3	Relationship	[1..1]	R	See HL70063	RE	See accepted values in User-defined Table 0063, <a href="#">Appendix B</a> .
4	Address	[0..*]	RE		RE	The first instance shall be the primary address. Shall indicate "M" for address type.
5	Phone Number	[0..*]	RE		RE	The first instance shall be the primary phone number. Shall indicate "PRN" for telecommunication use code.
6	Business Phone Number	[0..1]	O		X	
7	Contact Role	[0..1]	O		X	
8	Start Date	[0..1]	O		X	
9	End Date	[0..1]	O		X	
10	Next of Kin / Associated Parties Job Title	[0..1]	O		X	
11	Next of Kin / Associated Parties Job Code/Class	[0..1]	O	See HL70327	X	

12	Next of Kin / Associated Parties Employee Number	[0..1]	O		X	
13	Organization Name - NK1	[0..*]	O		X	
14	Marital Status	[0..1]	O		X	
15	Administrative Sex	[0..1]	O	See User-Defined Table 0001	X	
16	Date/Time of Birth	[0..1]	O		X	
17	Living Dependency	[0..*]	O		X	
18	Ambulatory Status	[0..*]	O		X	
19	Citizenship	[0..*]	O		X	
20	Primary Language	[0..1]	O		RE	See accepted values in User-Defined Table 0296, Appendix B.
21	Living Arrangement	[0..1]	O		X	
22	Publicity Code	[0..1]	O		RE	
23	Protection Indicator	[0..1]	O		X	
24	Student Indicator	[0..1]	O		X	
25	Religion	[0..1]	O		X	
26	Mother's Maiden Name	[0..*]	O		X	
27	Nationality	[0..1]	O		X	
28	Ethnic Group	[0..*]	O		X	
29	Contact Reason	[0..*]	O		X	

30	Contact Person's Name	[0..*]	O		X	
31	Contact Person's Telephone Number	[0..*]	O		X	
32	Contact Person's Address	[0..*]	O		X	
33	Next of Kin/Associated Party's Identifiers	[0..*]	O		X	
34	Job Status	[0..1]	O		X	
35	Race	[0..*]	O		X	
36	Handicap	[0..1]	O		X	
37	Contact Person Social Security Number	[0..1]	O		X	
38	Next of Kin Birth Place	[0..1]	O		X	
39	VIP Indicator	[0..1]	O		X	

\*Only noted if usage differs from the National IG.

*VXU NK1 notes*

- NK1-1: If more than 4 responsible persons are sent in inbound, only 4 NK1 segments will be accepted and a warning message will be generated: "NK1: Only up to 4 responsible persons accepted."
- NK1-2:
  - Populate NK1-2.7 with Name Type Code L. Missing or invalid Name Type Code will return a warning.
  - If name is provided without address or phone number, reject segment and send error message: "NEITHER ADDRESS, NOR TELEPHONE SPECIFIED. NK1 SEGMENT IGNORED."
- NK1-3: If no relationship or invalid relationship, NCIR will default to Unknown and send warning message: "NK1-3: Relationship missing or invalid. Defaulted to "Unknown."
- NK1-4:
  - If empty, NCIR will return a warning message.

- NCIR will accept up to 4 responsible persons. NCIR accepts street address, other designation, city, state, zip, address type and county in the XAD data type. Please provide at least one responsible person for each client with address and/or phone number. Always send address and phone number every time even if only one of them is changed.
- If county code (NK1-4.9 - HL70289 table) is not valid, NCIR returns error message, "NK1-4: County code invalid. Code ignored. If client resides within the state, submit the county of the responsible person using 0289 table values. If the responsible person resides out of state, use ZZ999 for county. A blank or empty value in county field translates to "unknown".
- If State (NK1-4.4) is invalid, the following warning message is returned "NK1-4 Invalid state code (XX). No value stored."
- Use 'M' for Address type (NK1-4.7 - HL70190 table). If Address type is not 'M' or 'P', the following warning message is returned: "NK1-4: Invalid Address Type: <address type>. Defaulting to M."
- NK1-5:
  - If PRN is specified in component 2 (telecommunication use code (ID) from table 0201) NCIR will use the 6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, and 9<sup>th</sup> components for specification of area code, phone number, extension, and text, respectively.
  - If NK1-5.2 (Telecommunication use code) is not a valid value from the HL7 0201 table, NCIR will return the following warning message: "NK1-5: INVALID TELECOMMUNICATIONS USE CODE, PHONE NUMBER IGNORED".
  - If NK1-5.2 (Telecommunication use code) is not PRN, NCIR will return the following warning message and ignore submitted phone number: "NK1-5: NCIR only accepts PRN (Primary residence number), PHONE NUMBER IGNORED".
  - If NK1-5.2 (Telecommunication use code) is PRN and NK1-5.7 (Local Number) is missing, NCIR will return the following warning message: "NK1-5: Phone number missing or invalid".
  - If NK1-5.6 (Area/City Code) is a non-blank value but is not numeric, NCIR will return the following warning message: "NK1: Phone number missing or invalid".
  - If NK1-5.7 (Local Number) is a non-blank value but is not numeric, NCIR will return the following warning message: "NK1: Phone number missing or invalid".
  - Use 'PH' for NK1-5.3 (Telecommunication equipment type) .
- NK1-20: If a value not in table 0296 is submitted, NCIR will default to "English" and return the following warning message: "NK1-20: Primary language of responsible person <resp person> defaulted to English."
- NK1-22:

- NCIR will recognize “01” to indicate no recall/reminder notices or “02” recall/reminder notices are sent.
- If client is deceased, irrespective of what is sent, NCIR will default to 01.
- If client not deceased and no value is provided or the value is invalid, NCIR will default to “02.”
- If the name, address and phone number are not provided, reject segment and send error message: “NEITHER LAST NAME, ADDRESS, NOR TELEPHONE SPECIFIED. NK1 SEGMENT IGNORED”.

*VXU NK1 example*

```
NK1|1|LAST^FIRST^MIDDLE^^^^L^|MTH^MOTHER^HL70063^^^|1234 W MAIN ST^^ANYTOWN^NC^27850
^^M^^NC091^^^|PRN^PH^^^919^5551234^^||||||||||||||||ENG^English||02||||||||||||||||
```

ORC – Order Request Segment

**Table 14. Local ORC field-level requirements for VXU messaging<sup>10</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Order Control	[1..1]	R	Shall contain the value “RE”	O	
2	Placer Order Number	[0..1]	RE		X	
3	Filler Order Number	[1..1]	R	If RXA-20 is valued “NA” or “RE” then ORC-3.1 SHALL be valued “9999”	R	RSP msg displays AE. ORC3 value Empty or Null: Immunization rejected.
4	Placer Group Number	[0..1]	O		X	
5	Order Status	[0..1]	O		X	
6	Response Flag	[0..1]	O		X	
8	Parent	[0..1]	O		X	
9	Date/Time of Transaction	[0..1]	O		X	

<sup>10</sup> Derived from Table 5-9, Common Order Segment and accompanying notes in the National IG.

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10	Entered By	[0..1]	RE		O	
11	Verified By		O		X	
12	Ordering Provider	[0..1]	C(RE/O)	If the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" then RE; otherwise, O	C(RE/X)	
13	Enterer's Location	[0..1]	O		X	
14	Call Back Phone Number	[0..2]	O		X	
15	Order Effective Date/Time	[0..1]	O		X	
16	Order Control Code Reason	[0..1]	O		X	
17	Entering Organization	[0..1]	RE	See HL70362	O	
18	Entering Device	[0..1]	O		X	
19	Action By	[0..*]	O		X	
20	Advanced Beneficiary Notice Code	[0..1]	O		X	
21	Ordering Facility Name	[0..*]	O		X	
22	Ordering Facility Address	[0..*]	O		X	
23	Ordering Facility Phone Number	[0..*]	O		X	
24	Ordering Provider Address	[0..*]	O		X	
25	Order Status Modifier	[0..1]	O		X	
26	Advanced Beneficiary Notice Override Reason	[0..1]	O		X	

27	Filler's Expected Availability Date/Time	[0..1]	O		X	
28	Confidentiality Code	[0..1]	O		X	
29	Order Type	[0..1]	O		X	
30	Enterer Authorization Mode	[0..1]	O		X	
31	Parent Universal Service Identifier	[0..1]	O		X	

\*Only noted if usage differs from the National IG.

*VXU ORC notes*

- ORC-3:
  - NCIR will store the value at the immunization level and use the Filler Order Number to pull the immunization associated with it.
  - If value is missing, NCIR will not process the immunization and send error message "ORC-3: Filler Order Number missing."
- ORC-17: If sent, value is stored at the immunization level along with ORC-3, ORC-10, and ORC-12 if applicable.

*VXU ORC example*

Example 1: immunization from inventory

```
ORC|RE||1|||||^Entered by Last^Entered by First^^^^^^Name type code| |^Clinician Last^Clinician First^^^^^^Name type code| || |NCIR-SHORT-ORG^^^^|
```

Example 2: historical immunization

```
ORC|RE||1|
```

Example 3: refusal:

```
ORC|RE||9999|
```

### RXA – Pharmacy/Treatment Administration Segment

The RXA segment is used to convey information about administered immunizations, historical immunizations, patient refusals, vaccine contraindications, and indicate when there is a patient-level observation. Field-level usage requirements within the RXA segment often vary depending on what information is being conveyed. This variation results in numerous conditional usage designations and conditional predicates, as noted in the National IG. To clarify RXA field-level usage requirements for submission to the IIS, the conditional usage requirements were flattened. Tables 15 through 19 below present RXA field-level requirements by use case:

- Table 15: Administered Immunization
- Table 16: Historical Immunization
- Table 17: No Vaccination: Refusal
- Table 18: No Vaccination: Specific Vaccine Contraindication
- Table 19: No Vaccination: Patient-Level Observation

### RXA – Pharmacy/Treatment Administration Segment – Administered Immunization

**Note: RXA field-level usage requirements have been flattened; the RXA field-level requirements below are specific to submission of administered immunizations.** RXA field-level requirements to convey a newly administered dose of vaccine, i.e., a dose administered by the organization that is reporting this dose. Where the first occurrence of RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA" and RXA-5.1 is not valued "998."

**Table 15. Local RXA field-level requirements for an *administered immunization* in VXU messaging<sup>11</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Give Sub-ID Counter	[1..1]	R	Shall be "0"	O	
2	Administration Sub-ID Counter	[1..1]	R	Shall be "1"	O	
3	Date/Time Start of Administration	[1..1]	R		R	RSP msg displays AE.

<sup>11</sup> Derived from Table 5-12, Pharmacy/Treatment Administration and accompanying notes in the National IG.

						<p>RXA-03: VACCINE ADMINISTRATION START DATE IS A REQUIRED FIELD</p> <p>OBX-05: Eligibility code and verification date only accepted when submitting corresponding inventory RXA/immunizations for those dates. Eligibility ignored.</p> <p>[Immunization not saved]</p>
4	Date/Time End of Administration	[0..1]	O		RE	<p>Shall be the same as Start time (RXA-3) if submitted</p>
5	Administered Code	[1..1]	R	See CVX, NDC	R	<p>RSP msg displays AE. RXA05 segment does not contain any valid data.</p> <p>OBX-05: Eligibility code and verification date only accepted when submitting corresponding inventory RXA/immunizations for those dates. Eligibility ignored.</p> <p>[Immunization not saved]</p> <p>NDC must be submitted for administered immunizations, with/without CVX.</p>
6	Administered Amount	[1..1]	R		RE	<p>DEDUCT ERROR - Administered amount are</p>

						required: Immunization processed as Owned Non-deducting.  "999" will not be acceptable for administered shots
7	Administered Units	[0..1]	R	See UCUM	RE	DEDUCT ERROR. Administered Units are required. Dose set to owned non-deducting
8	Administered Dosage Form		O		X	
9	Administration Notes	[1..*]	R	Shall be "00" for an administered vaccine	RE	If RXA-9 is empty, the immunization will be saved as historical immunization.  OBX-05: Eligibility code and verification date only accepted when submitting corresponding inventory RXA/immunizations for those dates. Eligibility ignored.
10	Administering Provider	[0..1]	RE		R	If populated, shall indicate name type code "N"
11	Administered-at Location	[0..1]	RE		RE	DEDUCT ERROR. SITE ID IS REQUIRED FOR INVENTORY DEDUCTION. Immunization

						processed as Owned Non-deducting
12	Administered Per (Time Unit)	[0..1]	O		X	
13	Administered Strength	[0..1]	O		X	
14	Administered Strength Units	[0..1]	O		X	
15	Substance Lot Number	[0..*]	R		RE	DEDUCT ERROR. Lot Number is a required field for inventory deduction. Immunization processed as Owned Non-deducting. Required for inventory deduction
16	Substance Expiration Date	[0..1]	RE		RE	DEDUCT WARNING - Vaccine Lot Expiration Date Invalid If the lot number is populated, this field should be valued
17	Substance Manufacturer Name	[0..1]	R	See MVX	RE	(Inventory) - Empty Manufacture Id Detected Required for inventory deduction
18	Substance/Treatment Refusal Reason	[0..0]	X		X	
19	Indication	[0..*]	O		X	
20	Completion Status	[0..1]	RE	Shall be "CP" or "PA"	RE	

						RXA-9.1 [00] is not valid when RXA-20 is not CP or PA  If this field is not populated, it is assumed to be CP or complete
21	Action Code - RXA	[1..1]	R	See HL70323	RE	RXA-21 Action Code is required. Defaulted to A
22	System Entry Date/Time	[0..1]	O		X	
23	Administered Drug Strength Volume	[0..1]	O		X	
24	Administered Drug Strength Volume	[0..1]	O		X	
25	Administered Barcode Identifier	[0..1]	O		X	
26	Pharmacy Order Type	[0..1]	O		X	

\*Only noted if usage differs from the National IG.

*VXU RXA notes – administered immunization*

- RXA-3:
  - If vaccination date is before DOB, an error message will be sent out and the segment will be ignored.
  - If vaccination date is after death date, an error message will be sent out and the segment will be ignored.
  - If incoming dose is before both incoming DOB and existing DOB, an error message will be sent out and the segment will be ignored.
- RXA-5:
  - Administered dose (inventory dose) requires a Package or Unit National Drug Code (NDC) in either triplet, with or without an alternate value, in order to deduct from inventory.
    - The IIS also accepts Vaccine Trade Name (VTN) along with NDC codes.

- The segment will be rejected, and an error message sent out if:
  - a) The value in RXA-5 is invalid (e.g. not a valid CVX code or NDC/VTN code missing for inventory/non-deducting doses): "RXA-5: Administered code invalid or missing."
  - b) Value in first triplet does not correspond to value in the second triplet: "RXA-5: Administered code invalid or missing."
- RXA-9: For administered vaccine, send "00" followed by a description and coding system "NIP001". If other than "00" sent, an error message will be generated: "RXA-9: Administration Notes invalid or missing."
- RXA-10: If it is an inventory dose and RXA-10 is missing, NCIR returns a warning message.
- RXA-11: For an administered inventory dose, the location is specified in the fourth component (facility) of RXA-11 field. Within the fourth component, the first sub-component is used to identify the location. For an inventory dose, provide the string "SITE-" followed by site id where the dose was administered. Refer to example below for inventory dose. NCIR will provide the site id's in your organization as part of the onboarding process.  
Example 1 – Inventory: |^^^SITE-99999^^^^^^^^^^^^^^|
- RXA-20: If this field is not populated, it is assumed to be CP or complete.
- RXA-21:
  - For both add or update of record, specify A for add. NCIR will add or update depending on whether record exists or not.
  - To delete an existing immunization in NCIR specify a value of "D". In addition to requiring that the owning org of the incoming transaction own the existing immunization.
  - A warning will be returned if RXA-21 is not populated and RXA-5 is not 998.

*VXU RXA example – administered immunization*

RXA|0|1|20160512|20160512|48^Hib-PRP-T^CVX^49281-0545-05^^NDC|0.5|ML^MILLILITERS^UCUM||00^New Immunization^^^|12345^Clinician Last^Clinician First^|^^^SITE-12345|||testlot1|20151226|MSD||CP|A| | | |

RXA – Pharmacy/Treatment Administration Segment – Historical Immunization

**Note: RXA field-level usage requirements have been flattened; the RXA field-level requirements below are specific to submission of historical immunizations.** RXA field-level requirements to convey historical immunization information, i.e., a record of a vaccine dose from another source. Where the first occurrence of RXA-9.1 is not valued "00" and RXA-20 is valued "CP" or "PA" or Empty and RXA-5.1 is not valued "998."

**Table 16. Local RXA field-level requirements for a *historical immunization* in VXU messaging<sup>12</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Give Sub-ID Counter	[1..1]	R	Shall be "0"	O	
2	Administration Sub-ID Counter	[1..1]	R	Shall be "1"	O	
3	Date/Time Start of Administration	[1..1]	R		R	
4	Date/Time End of Administration	[0..1]	O		RE	If populated, this should be the same as Start time (RXA-3)
5	Administered Code	[1..1]	R	See CVX, NDC	R	CVX Code is strongly preferred when NDC or vaccine trade name is unknown.
6	Administered Amount	[1..1]	R	Shall be "999" when unknown	RE	
7	Administered Units	[0..1]	X	Not required when RXA-6 is valued "999"	RE	
8	Administered Dosage Form	[0..1]	O		X	
9	Administration Notes	[1..*]	R	Shall contain "01" – "08" (from NIP001); shall not be valued "00"	R	Shall contain "01" for historical dose
10	Administering Provider	[0..1]	O		RE	
11	Administered-at Location	[0..1]	O		X	

<sup>12</sup> Derived from Table 5-12, Pharmacy/Treatment Administration and accompanying notes in the National IG.

12	Administered Per (Time Unit)	[0..1]	O		X	
13	Administered Strength	[0..1]	O		X	
14	Administered Strength Units	[0..1]	O		X	
15	Substance Lot Number	[0..*]	O		X	
16	Substance Expiration Date	[0..1]	O		X	
17	Substance Manufacturer Name	[0..1]	O	See MVX	X	
18	Substance/Treatment Refusal Reason	[0..0]	X		X	
19	Indication	[0..*]	O		X	
20	Completion Status	[0..1]	RE	Shall be "CP" or "PA"	RE	Shall be valued "CP", "PA" or "DE"
21	Action Code - RXA	[1..1]	R	See HL70323	RE	
22	System Entry Date/Time	[0..1]	O		X	
23	Administered Drug Strength Volume	[0..1]	O		X	
24	Administered Drug Strength Volume	[0..1]	O		X	
25	Administered Barcode Identifier	[0..1]	O		X	
26	Pharmacy Order Type	[0..1]	O		X	

\*Only noted if usage differs from the National IG.

*VXU RXA notes – historical immunization*

- RXA-3:
  - If vaccination date is before DOB, an error message will be sent out and the segment will be ignored.
  - If vaccination date is after death date, an error message will be sent out and the segment will be ignored.
  - If incoming dose is before both incoming DOB and existing DOB, an error message will be sent out and the segment will be ignored.
  - If a historical dose with estimated dose date, populate RXA-20 with DE to indicate estimated date in RXA-3
- RXA-6: If a historical dose has a value different than "999" or missing, NCIR returns a warning message and defaults to "999".
- RXA-9: For historical dose, send "01" followed by a description and coding system "NIP001". If other than "01" sent, an error message will be generated: "RXA-9: Administration Notes invalid or missing."
- RXA-20: If blank, NCIR will default to CP.
- RXA-21:
  - For both add or update of record, specify A for add. NCIR will add or update depending on whether record exists or not.
  - To delete an existing immunization in NCIR specify a value of "D". A warning will be returned if RXA-21 is not populated and RXA-5 is not 998.

*VXU RXA example – historical immunization*

RXA|0|1|20110607|20110607|20^DTaP^CVX^Certiva^^VTN|999|||01^Historical^^^^^^^||||||||CP|A|

RXA – Pharmacy/Treatment Administration Segment – No Vaccination: Refusal

**Note: RXA field-level usage requirements have been flattened; the RXA field-level requirements below are specific to submission of no vaccination: refusal.** RXA field-level requirements to convey information about a vaccine refusal, i.e., where RXA-5 indicates the refused vaccine, RXA-20 is "RE" and RXA-18 contains a coded refusal reason.

**Table 17. Local RXA field-level requirements for no vaccination: refusal in VXU messaging<sup>13</sup>**

<sup>13</sup> Derived from Table 5-12, Pharmacy/Treatment Administration and accompanying notes in the National IG.

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Give Sub-ID Counter	[1..1]	R	Shall be "0"	O	
2	Administration Sub-ID Counter	[1..1]	R	Shall be "1"	O	
3	Date/Time Start of Administration	[1..1]	R		R	
4	Date/Time End of Administration	[0..1]	O		RE	
5	Administered Code	[1..1]	R	Shall contain the NOS CVX code for the refused vaccine	R	
6	Administered Amount	[1..1]	R	Shall be "999"	RE	
7	Administered Units	[0..0]	X		RE	
8	Administered Dosage Form	[0..1]	O		X	
9	Administration Notes	[1..*]	O		X	
10	Administering Provider	[0..1]	O		X	
11	Administered-at Location	[0..1]	O		X	
12	Administered Per (Time Unit)	[0..1]	O		X	
13	Administered Strength	[0..1]	O		X	
14	Administered Strength Units	[0..1]	O		X	
15	Substance Lot Number	[0..*]	O		X	
16	Substance Expiration Date	[0..1]	O		X	

17	Substance Manufacturer Name	[0..1]	O	See MVX	X	
18	Substance/Treatment Refusal Reason	[1..1]	R	See NIP002		If the Completion status is RE, then this shall be populated. Shall be "00" if parental decision and "01" if religious exemption and "03" if patient refusal
19	Indication	[0..*]	O		X	
20	Completion Status	[0..1]	RE	Shall be valued "RE"	RE	
21	Action Code - RXA	[1..1]	R	See HL70323	RE	
22	System Entry Date/Time	[0..1]	O		X	
23	Administered Drug Strength Volume	[0..1]	O		X	
24	Administered Drug Strength Volume	[0..1]	O		X	
25	Administered Barcode Identifier	[0..1]	O		X	
26	Pharmacy Order Type	[0..1]	O		X	

\*Only noted if usage differs from the National IG.

*VXU RXA notes – no vaccination: refusal*

- RXA-3:
  - If refusal date is before DOB, an error message will be sent out and the segment will be ignored.
  - If refusal date is after death date, an error message will be sent out and the segment will be ignored.
  - If refusal date is before both incoming DOB and existing DOB, an error message will be sent out and the segment will be ignored.
- RXA-6:

- If value different than "999" or missing, NCIR returns a warning message and defaults to "999".
- RXA-18: NCIR accepts two types of Substance Refusal Reason from CDC defined NIP002 table: parental refusal (00) and religious exemption (01).
  - The other values 02 and 03 are not accepted by the IIS.

*VXU RXA example – no vaccination: refusal*

```
RXA|0|1|20120828|20120828|03^MMR^CVX^^^|999|||||||00^parent refusal^NIP002||RE|A|
RXA|0|1|20120828|20120828|03^MMR^CVX^^^|999|||||||01^Religious Exemption^NIP002||RE|A|
```

RXA – Pharmacy/Treatment Administration Segment – No Vaccination: Specific Vaccine Contraindication

**Note: RXA field-level usage requirements have been flattened; the RXA field-level requirements below are specific to submission of no vaccination: specific vaccine contraindication.** RXA field-level requirements to convey information about a contraindication to a specific vaccine; i.e., where RXA-5 indicates the specific contraindicated vaccine and RXA-20 is “NA”. Note, when an RXA is used to indicate no vaccination: specific vaccine contraindication, an OBX should indicate the contraindication.

**Table 18. Local RXA field-level requirements for no vaccination: specific vaccine contraindication in VXU messaging<sup>14</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Give Sub-ID Counter	[1..1]	R	Shall be “0”	O	
2	Administration Sub-ID Counter	[1..1]	R	Shall be “1”	O	
3	Date/Time Start of Administration	[1..1]	R		R	
4	Date/Time End of Administration	[0..1]	O		RE	
5	Administered Code	[1..1]	R	Shall indicate contraindicated vaccine	R	

<sup>14</sup> Derived from Table 5-12, Pharmacy/Treatment Administration and accompanying notes in the National IG.

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6	Administered Amount	[1..1]	R	Shall be "999"	RE	
7	Administered Units	[0..0]	X			
8	Administered Dosage Form	[0..1]	O		X	
9	Administration Notes	[1..*]	O		X	
10	Administering Provider	[0..1]	O		X	
11	Administered-at Location	[0..1]	O		X	
12	Administered Per (Time Unit)	[0..1]	O		X	
13	Administered Strength	[0..1]	O		X	
14	Administered Strength Units	[0..1]	O		X	
15	Substance Lot Number	[0..*]	O		X	
16	Substance Expiration Date	[0..1]	O		X	
17	Substance Manufacturer Name	[0..1]	O	See MVX	X	
18	Substance/Treatment Refusal Reason	[0..0]	X			
19	Indication	[0..*]	O		X	
20	Completion Status	[0..1]	RE	Shall be valued "NA"		
21	Action Code - RXA	[1..1]	R	See HL70323	RE	
22	System Entry Date/Time	[0..1]	O		X	
23	Administered Drug Strength Volume	[0..1]	O		X	

24	Administered Drug Strength Volume	[0..1]	O		X	
25	Administered Barcode Identifier	[0..1]	O		X	
26	Pharmacy Order Type	[0..1]	O		X	

\*Only noted if usage differs from the National IG.

*VXU RXA notes – no vaccination: specific vaccine contraindication*

- Within an Immunization Event (Contraindicated) Order Segment Group, RXA-5 shall indicate the contraindicated vaccine and RXA-20 shall be NA, indicating that a dose was not administered. Patient-level contraindication to vaccination can also be messaged; see Table 20 below for specifications. In either case, an OBX is also expected.
- Parent refusals and religious exemption are sent in an RXA segment. Client comments (contraindications, immunity, reactions, and special indications) are sent in an OBX segment. Since the OBX requires a corresponding RXA, client comments can be submitted by using the “No Vaccine Administered” RXA.
- RXA-5:
  - The vaccine that was offered should be recorded in RXA-5. Do not record contraindications, immunities or reactions in this field or if the dose was administered to the client.
  - In cases where a client has no dose history, but does have a client comment (i.e., Allergy), use the following: Client comments can be sent without a dose like the following example where ‘CCYYMMDD’ represent the current date:  
 RXA|0|1|CCYYMMDD|CCYYMMDD|998^No Vaccine Administered^CVX|999|||^No vaccine Administered^^
- RXA-6: If RXA-5.1 is 998, RXA-6 Administered Amount shall be 999. Else a warning will be returned.

*VXU RXA example – no vaccination: specific vaccine contraindication*

In the following example, ‘CCYYMMDD’ represents the current date:

RXA|0|1|CCYYMMDD|CCYYMMDD|998^No Vaccine Administered^CVX|999|||

RXA–Pharmacy/Treatment Administration Segment – No Vaccination: Patient-Level Observation

**Note: RXA field-level usage requirements have been flattened; the RXA field-level requirements below are specific to submission of no vaccination: patient-level observation.** RXA field-level requirements to convey information about a patient-level observation (no vaccination); i.e., where RXA-5.1 is valued “998” and RXA-20 is “NA”. Note, when an RXA is used to indicate no vaccination: patient-level observation, an OBX should follow.

**Table 19. Local RXA field-level requirements for no vaccination: patient-level observation in VXU messaging<sup>15</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Give Sub-ID Counter	[1..1]	R	Shall be “0”	O	
2	Administration Sub-ID Counter	[1..1]	R	Shall be “1”	O	
3	Date/Time Start of Administration	[1..1]	R		R	
4	Date/Time End of Administration	[0..1]	O		X	
5	Administered Code	[1..1]	R	Shall contain “998”	R	
6	Administered Amount	[1..1]	R	Shall be “999”	RE	
7	Administered Units	[0..0]	X		X	
8	Administered Dosage Form	[0..1]	O		X	
9	Administration Notes	[1..*]	O		X	
10	Administering Provider	[0..1]	O		X	
11	Administered-at Location	[0..1]	O		X	

<sup>15</sup> Derived from Table 5-12, Pharmacy/Treatment Administration and accompanying notes in the National IG.

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12	Administered Per (Time Unit)	[0..1]	O		X	
13	Administered Strength	[0..1]	O		X	
14	Administered Strength Units	[0..1]	O		X	
15	Substance Lot Number	[0..*]	O		X	
16	Substance Expiration Date	[0..1]	O		X	
17	Substance Manufacturer Name	[0..1]	O	See MVX	X	
18	Substance/Treatment Refusal Reason	[0..0]	X		X	
19	Indication	[0..*]	O		X	
20	Completion Status	[0..1]	RE	Shall be valued "NA"	RE	
21	Action Code - RXA	[1..1]	R	See HL70323	RE	
22	System Entry Date/Time	[0..1]	O		X	
23	Administered Drug Strength Volume	[0..1]	O		X	
24	Administered Drug Strength Volume	[0..1]	O		X	
25	Administered Barcode Identifier	[0..1]	O		X	
26	Pharmacy Order Type	[0..1]	O		X	

\*Only noted if usage differs from the National IG.

*VXU RXA notes – no vaccination: patient-level observation*

- Within a Patient Observation Order Segment Group, RXA-5.1 shall be the CVX code 998 and RXA-20 shall be NA. An OBX should follow.

*VXU RXA example – no vaccination: patient-level observation*

In the following example, 'CCYYMMDD' represents the current date:

RXA|0|1|CCYYMMDD|CCYYMMDD|998^No Vaccine Administered^CVX|999|||

RXR – Pharmacy/Treatment Route Segment

**Table 20. Local RXR field-level requirements in VXU messaging<sup>16</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance / Value Set	Local Usage*	Local Conformance Notes
1	Route	[1..1]	R	See NCIT	RE	RXR-1: Valid Route was not provided
2	Administration Site	[0..1]	RE	See HL70163	RE	RXR-2: Valid Administration Site was not provided
3	Administration Device	[0..1]	O		X	
4	Administration Method	[0..1]	O		X	
5	Routing Instruction	[0..1]	O		X	
6	Administration Site Modifier	[0..1]	O		X	

\*Only noted if usage differs from the National IG.

*VXU RXR notes*

- RXR-1:

<sup>16</sup> Derived from Table 5-13, Pharmacy/Treatment Route Segment and accompanying notes in the National IG.

- For inventory (administered) dose, provide the route of administration in this field. If incoming inventory immunization contains a missing or invalid Route, NCIR returns a Warning response: “RXR-1: Route missing or invalid”.
- RXR-2:
  - For administered (inventory) dose
    - If RXR-1 Route field is C38288/PO (by mouth/oral), RXR-2 Body Site will be defaulted to mouth regardless of what value may be populated in RXR-2
    - If incoming immunization contains a missing or invalid Administration Site
      - a) Return a Warning response that a valid Administration Site was not provided
      - b) Process Immunization as inventory
      - c) Record Administration Site “Unknown” with the immunization

*VXU RXR example*

RXR| IM^Intramuscular^HL70162|LA^Left Arm^HL70163|||

OBX – Observation Result Segment

**Table 21. Local OBX field-level requirements in VXU messaging<sup>17</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Set ID - OBX	[1..1]	R	Shall be valued sequentially starting with the value “1” within a message	RE	
2	Value Type	[1..1]	R	See HL70125 (constrained)	RE	CE, NM, DT, or TS
3	Observation Identifier	[1..1]	R	See NIP003	RE	
4	Observation Sub-ID	[1..1]	R	Shall be a positive integer	RE	
5	Observation Value	[1..1]	R		RE	

<sup>17</sup> Derived from Table 5-7, Observation Segment and accompanying notes in the National IG.

6	Units	[0..1]	C(R/O)	If OBX-2 is valued "NM" then R, otherwise O	C(R/X)	
7	References Range	[0..1]	O		X	
8	Abnormal Flags	[0..*]	O		X	
9	Probability	[0..1]	O		X	
10	Nature of Abnormal Test	[0..*]	O		X	
11	Observation Result Status	[1..1]	R	Shall contain the value "F"	O	
12	Effective Date of Reference Range Values	[0..1]	O		X	
13	User Defined Access Checks	[0..1]	O		X	
14	Date/Time of the Observation	[0..1]	RE		RE	Required for certain observations
15	Producer's Reference	[0..1]	O		X	
16	Responsible Observer	[0..*]	O		X	
17	Observation Method	[0..1]	C(RE/O)	If OBX-3.1 is "64994-7" then RE, otherwise O; See PNHV_FundingEligibilityObsMethod_IIS	C(R/X)	Constrained to VXC40 or VXC41
18	Equipment Instance Identifier	[0..*]	O		X	
19	Date/Time of the Analysis	[0..1]	O		X	
23	Performing Organization Name	[0..1]	O		X	
24	Performing Organization Address	[0..1]	O		X	

25	Performing Organization Medical Director	[0..1]	O		X	
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\*Only noted if usage differs from the National IG.

*VXU OBX notes*

- OBX-2:
  - NCIR accepts CE, TS, NM, DT
  - If field is missing or invalid, reject message and send error: "OBX-2: Value Type missing or invalid."
- OBX-3:
  - If not a valid value or empty field, NCIR returns an error message and reject the segment with message: "Invalid OBX segment. OBX-3 Observation Id missing or invalid."
  - For each administered vaccine (state, privately or bridge funded), an OBX segment carrying vaccine funding information (state supplied, privately purchased or bridge funded) is required. That is, OBX segment with OBX-3 = 30963-3 and OBX-5 = state supplied (VXC1 or VXC2), privately purchased (PHC70) or bridge funded (VXC52) is required.
  - For each state supplied vaccine administered, eligibility code is also required. Eligibility code is exchanged using an OBX segment (OBX-3 = 64994-7). If multiple state supplied doses were administered on a given day, then each RXA segment must be accompanied by an OBX segment carrying its eligibility code. The set of valid NCIR eligibility code is provided in the table below corresponding to OBX-3 value of 64994-7. For privately purchased vaccine, eligibility code is optional and may be sent along with each dose and will be stored if sent.
  - For each bridge funded vaccine, three eligibility codes are NC state approved, V03, V04 and V05. However, for bridge funded vaccines, NCIR will accept eligibility codes other than V03, V04 and V05 if sent through data exchange. Eligibility code is exchanged using an OBX segment (OBX-3 = 64994-7). If multiple state supplied doses were administered on a given day, then each RXA segment must be accompanied by an OBX segment carrying its eligibility code.
  - For each administered vaccine (state supplied, privately purchased or bridge funded), provide VIS published date and VIS presented date using an OBX segment. An OBX segment before the VIS dates identifies the vaccine component for which the VIS dates apply. The OBX-3 value used to identify the vaccine varies

based on whether the vaccine is single antigen or combo vaccine as noted below. For an example of submitting VIS dates for single antigen and combo vaccine, refer above under OBX segment.

- For Single antigen and Combination vaccines: Use OBX-3 value of 30956-7 (Vaccine Type) to identify a single antigen vaccine for which the VIS applies. This is followed by an OBX segment where OBX-3 value of 29769-7 is submitted for VIS presented date and a segment where OBX-3 value of 29768-9 is submitted for VIS published date and all three OBX segments share the same OBX-4 value grouping the segments. If the number of VIS submitted is less than required for the vaccine given, a warning will be returned.
- Alternatively, the Global Document Type Identifier (GDTI), may be submitted to report VIS. Each VIS Date in a Combination Vaccine should be identified individually. To submit VIS data using GDTI, submit OBX-3 value of 69764-9 to identify the vaccine and VIS publication date, followed by OBX-3 29769-7 for VIS presentation date. The GDTI is a 24-digit text string; values are listed in HL7 table 0396 and sent with coding system CDCPHINVS.

Example: GDTI segment

OBX|1|CE|69764-9^Document

Type^LN|1|253088698300012711120420^MMR^CDCPHINVS|||||F|||20091010

- OBX-4: If missing, a warning is returned.
- OBX-5:
  - If invalid or field is empty, reject the message and send an error message.
  - Reporting dose-level eligibility for a funding program: If the value of OBX-3.1 is '64994-7' and the value of OBX-2 is 'CE' then the value of OBX-5.1 shall be one of codes listed in User-Defined Table 0064, Financial Class. See [Appendix B](#) for accepted financial class codes.
  - Reporting VIS information: If the value of OBX-3.1 is '30956-7' and the value of OBX-2 is 'CE' then the value of OBX-5.1 shall be one of codes listed in the Value Set: CVX
  - Reporting bar-coded VIS information: If the value of OBX-3.1 is '69764-9' and the value of OBX-2 is 'CE' then the value of OBX-5.1 shall be one of codes listed in the Value Set: PHVS\_VISBarcodes\_IIS
- OBX-14: This is a required field for certain observations. When required, populate it with observation date, else the segment will be rejected without this field.
  - If OBX-14 is missing, or if OBX-14 is before the client birth date, then the message will be rejected with the error: "OBX-14: Required field. Enter valid date."
  - The following OBX-3 Observation scenarios require an Observation Date in OBX-14:

- a) 31044-1^Reaction^LN
  - b) 29768-9^DATE VACCINE INFORMATION STATEMENT PUBLISHED^LN
  - c) 29769-7^DATE VACCINE INFORMATION STATEMENT PRESENTED^LN
  - d) 30945-0^Vaccination contraindication/precaution^LN^^
  - e) 59784-9^Disease with presumed immunity^LN^^
  - f) 64994-7^vaccine fund pgm elig cat^LN
- OBX-17: If OBX-3 is 64994-7, field must contain value VXC40 or VXC41.

*VXU OBX example – dose-level funding eligibility*

OBX|3|CE|64994-7^vaccine  
fund pgm elig cat^LN|1|V02^Medicaid^HL70064|||||F|||20130401|||VXC41^per visit^CDCPHINVS

*VXU OBX example – Bridge funded vaccine, dose-level funding eligibility*

OBX|1|CE|30963-3^VACCINE PURCHASED WITH^LN|1|VXC52^Public non-  
VFC^CDCPHINVS^^||||||F|||20231101|||||||

OBX|2|CE|64994-7^Vaccine fund pgm elig cat^LN|2|V03^Not Insured^HL70064|||||F|||20231101|||VXC41^per  
visit^CDCPHINVS||||||

*VXU OBX example – with VIS information*

OBX|1|CE|30956-7^Vaccine Type^LN|1|03^MMR^CVX|||||F|||20120223  
OBX|2|TS|29768-9^VIS Publication Date^LN|1|20080110|||||F|||20120223  
OBX|3|TS|29769-7^VIS Presentation Date^LN|1|20091010|||||F|||20120223

*VXU OBX example – reaction to vaccination*

OBX|1|CE|31044-1^Reaction^LN|2|39579001^Anaphylaxis^CDCPHINVS^^||||||F|||20100101|

*VXU OBX example – contraindication against vaccination*

OBX|1|CE|30945-0^Contraindication^LN|1|91930004^Allergy Egg^SCT^^||||||F|||20100101|

*VXU OBX example – disease with presumed immunity*

OBX|1|CE|59784-9^Disease with  
 presumed immunity^LN^^^|4|371111005^Immunity: Measles^SCT^^^| || || |F| || |20121219| || || |20201231| || || |

## QBP Messaging

Use the following specifications to produce QBP messages in compliance with NCIR HL7 messaging requirements.

### Local QBP segment requirements

Table 22 details segment-level requirements for QBP messaging. Local usage is only noted where it is different from the National IG. Elements indicated as not supported locally (Local Usage of “X”) are ignored by NCIR.

**Table 22. List of local QBP segment requirements for query ID Z34 and query ID Z44<sup>18</sup>**

Segment	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
MSH – Message Header Segment	[1..1]	R		R	
SFT – Software Segment	[0..*]	O		X	
QPD – Query Parameter Definition	[1..1]	R		R	

<sup>18</sup> Derived from Table 7-3, Request Complete Immunization History and Table 11-4, Request Evaluated Immunization History and Forecast in the National IG.

RCP – Response Control Parameter	[1..1]	R		R	
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\*Only noted if different from the National IG.

Local QBP: Z34 field requirements by segment (Request complete immunization history)

The following tables detail field-level requirements for QBP messaging, in particular, the Z34 profile, presented by segment. Local usage is only noted where it is different from the National IG. Elements indicated as not supported locally (Local Usage of “X”) are ignored by NCIR.

MSH – Message Header Segment

**Table 23. Local MSH field-level requirements for QBP messaging, request complete immunization history (Z34)<sup>19</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Field Separator	[1..1]	R	Shall be “ ”	R	
2	Encoding Characters	[1..1]	R	Shall be “^~\&”	R	
3	Sending Application	[0..1]	RE		O	
4	Sending Facility	[0..1]	RE		R	Shall contain a valid NCIR-provided value
5	Receiving Application	[0..1]	RE		O	
6	Receiving Facility	[0..1]	RE		R	Shall contain “NCIR”
7	Date/Time of Message	[1..1]	R	The degree of precision must be at least to the second, (format YYYYMMDDHHMMSS+/-ZZZZ)	RE	
8	Security	[0..1]	O		X	
9	Message Type	[1..1]	R	Shall be “QBP^Q11^QBP_Q11”	R	

<sup>19</sup> Derived from Table 7-4, MSH Specification for Request Complete Immunization History in the National IG.

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10	Message Control ID	[1..1]	R		R	
11	Processing ID	[1..1]	R		R	Shall be "P"
12	Version ID	[1..1]	R	Shall be "2.5.1"	R	
13	Sequence Number	[0..1]	O		X	
14	Continuation Pointer	[0..1]	O		X	
15	Accept Acknowledgment Type	[1..1]	R	Shall be "ER"	RE	
16	Application Acknowledgment Type	[1..1]	R	Shall be "AL"	RE	
17	Country Code	[0..1]	O		X	
18	Character Set	[0..1]	O		X	
19	Principal Language of Message	[0..1]	O		X	
20	Alternate Character Set Handling Scheme	[0..1]	O		X	
21	Message Profile Identifier	[1..*]	R	Shall be "Z34^CDCPHINVS"	RE	
22	Sending Responsible Organization	[0..1]	RE		O	
23	Receiving Responsible Organization	[0..1]	RE		O	

\*Only noted if usage differs from the National IG.

*QBP (Z34) MSH notes*

- MSH-4: Contact NCIR staff for value of MSH-4, provided as part of the onboarding process. This must be the owning organization.
  - If the field is blank, send an error message and reject with the message: "MSH-4: Sending Facility missing."

- MSH-6: When sending query to NCIR, use "NCIR." If value other than "NCIR", the message will be rejected with error: "MSH-6: Message not intended for NCIR."
- MSH-7: A warning will be returned if MSH-7 is an invalid date or the date is missing: "MSH-7: Date/Time required or invalid.". Warning will be returned if date is a future date: "MSH-7 Date/Time of Message is a future date."
- MSH-9: Value accepted is QBP^Q11^QBP\_Q11. If field is missing or invalid, reject the message and send an error message: "MSH-9: Required field. Please enter valid values".
- MSH-10: If field is empty, the message will be rejected and an error message will be sent: "MSH-10: Message Control-id missing."
- MSH-11: For incoming messages, the value in this field must always be "P". If not "P" or if the field is blank, reject transaction and send an error message: "MSH-11: Processing Id missing or invalid."
- MSH-12: If there is no version number found in the MSH segment, or the value is not 2.5.1, the file will not be processed, and an Error message will be sent: "MSH-12: The HL7 Version specified in field 12 of the MSH segment in this HL7 file is not supported for this organization."
- MSH-15: NCIR requires a value of ER.
- MSH-16: Constrained to AL (Always). If field is empty, NCIR will default to AL. If value other than AL, a warning message will be sent: "MSH-16 Application Acknowledgement Type [insert sent value] is not valid. Defaulted to AL.". If MSH-16 is blank, a warning message will be provided: "MSH-16 Application Acknowledgement Type value AL is required".
- MSH-21: The value accepted in this field is Z34^CDCPHINVS. If the field is blank or it has a different value than the one accepted, the message will be rejected and an error sent: "MSH-21: Message Profile Identifier missing or invalid."

#### *QBP (Z34) MSH Example*

```
MSH|^~\&|NCIR-SHORT-ORG|NCIR-SHORT-ORG||NCIR|20121212100101-0500||QBP^Q11^QBP_Q11|1|P|2.5.1|||ER|AL|||Z34^CDCPHINVS|NCIR-SHORT-ORG|NCIR
```

#### QPD – Query Parameter Definition

**Table 24. Local QPD field-level requirements for QBP messaging, request complete immunization history (Z34)<sup>20</sup>**

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<sup>20</sup> Derived from Table 7-5, QPD Input Parameter Specification, Table 7-6 QPD Input Parameter Field Description and Commentary and accompanying notes in the National IG.

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Message Query Name	[1..1]	R	Shall be "Z34^Request Immunization History^CDCPHINVS" OR Z44^Request Immunization History^HL70471	R	
2	Query Tag	[1..1]	R		R	
3	Patient List	[0..*]	RE		RE	Shall contain identifier value "PI", "SR", "PT" or "MR"
4	Patient Name (PID-3)	[0..1]	RE		R	Shall contain name type code" L"
5	Patient Mother Maiden Name (PID-6)	[0..1]	RE		O	
6	Patient Date of Birth (PID-7)	[0..1]	RE		R	
7	Patient Sex (PID-8)	[0..1]	RE	See HL70001	RE	
8	Patient Address (PID-11)	[0..1]	RE		O	
9	Patient Home Phone (PID-13)	[0..1]	RE		X	
10	Patient Multiple Birth Indicator (PID-24)	[0..1]	RE	See HL70136	O	
11	Patient Birth Order (PID-25)	[0..1]	RE		O	
12	Client Last Updated Date	[0..1]	O		X	
13	Client Last Update Facility	[0..1]	O		X	

\*Only noted if usage differs from the National IG.

*QBP (Z34) QPD notes*

- QPD-3: NCIR will use the provided patient identifier list value to match a candidate record. NCIR organization chart # or NCIR secondary chart # may be provided in this field to identify a client. Use PI or MR for providing NCIR organization chart #, PT for NCIR secondary chart # and/or SR to provide NCIR client id (if known), Refer to example above. If QPD-3 is blank or invalid, a warning is returned: "QPD-3: Patient Identifier type of PI, SR, PT or MR required". Note: The NCIR organization chart # and NCIR secondary chart # are stored for a client when a VXU transaction for the client is sent or when the user enters the client directly in the NCIR. If no match is found based on chart # or secondary chart #, other values (like Name, DOB) will be used to identify the client. The NCIR client id is unique identifier assigned by NCIR and may also be used if your system stores it after the first retrieval from the NCIR.
- QPD-4: Last name and first name are required in the first two components.
- QPD-10: Use Y to indicate that the client was born in a multiple birth, or N, if client was not born in a multiple birth.
- QPD-11: Use 1 for the first born, 2 for the second, etc.

*QBP (Z34) QPD Example*

QPD|Z34^Request Immunization

History^HL70471|QUERY\_TAG|99999999^SR~88888888^PI~77777777^PT^|CLIENT^FIRST^MIDDLE^^^  
 ^|MAIDEN^MOTHERS^^^|20130315|F|1234 MICHIGAN AVE^^RALEIGH^NC^27615^^M^^^|Y|1|

RCP – Response Control Parameter

**Table 25. Local RCP field-level requirements for QBP messaging, request complete immunization history (Z34)<sup>21</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Query Priority	[0..1]	RE	Shall be "I"	RE	"I" is defaulted when missing or invalid; and query is processed.

<sup>21</sup> Derived from Table 7-7, Response Control Parameter, and corresponding notes in the National IG.

2	Quantity Limited Request	[0..1]	RE	See HL70126	O	
3	Response Modality		O		X	
4	Execution and Delivery Time		O		X	
5	Modify Indicator		O		X	
6	Sort-by Field		O		X	
7	Segment Group Inclusion		O		X	

\*Only noted if usage differs from the National IG.

*QBP (Z34) RCP notes*

- RCP-1: Immediate priority is expected.
- RCP-2:
  - This field may contain a maximum number of records that may be returned. The first component contains the count and the second contains “RD” for records.
  - If RCP-2.1 has a value less or equal to 20, NCIR may send candidates up to this number.
  - If RCP-2.1 has a value greater than 20, then NCIR system may return a maximum of 20 candidates.
  - Error message sent if RCP-2.2 field is invalid: RCP-2.2: Required field missing or invalid value. Defaulted to RD.

*QBP (Z34) RCP Example*

RCP|1|20^RD|R|||

*Local QBP: Z44 field requirements by segment (Request evaluated immunization history and forecast)*

The following tables detail field-level requirements for QBP messaging, in particular, the Z44 profile, presented by segment. Local usage is only noted where it is different from the National IG. Elements indicated as not supported locally (Local Usage of “X”) are ignored by NCIR.

MSH – Message Header Segment

**Table 26. Local MSH field-level requirements for QBP messaging, request evaluated immunization history and forecast (Z44)<sup>22</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Field Separator	[1..1]	R	Shall be “ ”	R	
2	Encoding Characters	[1..1]	R	Shall be “^~\&”	R	
3	Sending Application	[0..1]	RE		O	
4	Sending Facility	[0..1]	RE		R	Shall contain a valid NCIR-provided value
5	Receiving Application	[0..1]	RE		O	
6	Receiving Facility	[0..1]	RE		R	Shall contain “NCIR”
7	Date/Time of Message	[1..1]	R	The degree of precision must be at least to the second, (format YYYYMMDDHHMMSS+/-ZZZZ)	RE	ERR: MSH-7: Date/Time required or invalid
8	Security	[0..1]	O		X	
9	Message Type	[1..1]	R	Shall be “QBP^Q11^QBP_Q11”	R	
10	Message Control ID	[1..1]	R		R	Shall be “1”
11	Processing ID	[1..1]	R		R	Shall be “P”
12	Version ID	[1..1]	R	Shall be “2.5.1”	R	
13	Sequence Number	[0..1]	O		X	
14	Continuation Pointer	[0..1]	O		X	

<sup>22</sup> Derived from Table 11-6, MSH Specifications for Requested Evaluated History and Forecast Immunization History Query and accompanying notes in National IG.

15	Accept Acknowledgment Type	[1..1]	R	Shall be "ER"	RE	MSH-15 Accept Acknowledgment Type value ER is required
16	Application Acknowledgment Type	[1..1]	R	Shall be "AL"	RE	MSH-16 Application Acknowledgment Type value AL is required
17	Country Code	[0..1]	O		X	
18	Character Set	[0..1]	O		X	
19	Principal Language of Message	[0..1]	O		X	
20	Alternate Character Set Handling Scheme	[0..1]	O		X	
21	Message Profile Identifier	[1..*]	R	Shall be "Z44^CDCPHINVS"	RE	MSH-21 Message Profile Identifier Z22^CDCPHINVS is required.
22	Sending Responsible Organization	[0..1]	RE		O	
23	Receiving Responsible Organization	[0..1]	RE		O	

\*Only noted if usage differs from the National IG.

*QBP (Z44) MSH notes*

- MSH-4: Contact NCIR staff for value of MSH-4, provided as part of the onboarding process. This must be the owning organization.
  - If the field is blank, send an error message and reject with the message: "MSH-4: Sending Facility missing."
- MSH-6: When sending query to NCIR, use "NCIR." If value other than "NCIR", the message will be rejected with error: "MSH-6: Message not intended for NCIR."
- MSH-7: A warning will be returned if MSH-7 is an invalid date or the date is missing: "MSH-7: Date/Time required or invalid.". Warning will be returned if date is a future date: "MSH-7 Date/Time of Message is a future date."

- MSH-9: Value accepted is QBP^Q11^QBP\_Q11. If field is missing or invalid, reject the message and send an error message: “MSH-9: Required field. Please enter valid values”.
- MSH-10: If field is empty, the message will be rejected and an error message will be sent: “MSH-10: Message Control-id missing.”
- MSH-11: For incoming messages, the value in this field must always be “P”. If not “P” or if the field is blank, reject transaction and send an error message: “MSH-11: Processing Id missing or invalid.”
- MSH-12: If there is no version number found in the MSH segment, or the value is not 2.5.1, the file will not be processed and an Error message will be sent: “MSH-12: The HL7 Version specified in field 12 of the MSH segment in this HL7 file is not supported for this organization.”
- MSH-15: NCIR requires a value of ER.
- MSH-16: Constrained to AL (Always). If field is empty, NCIR will default to AL. If value other than AL, a warning message will be sent: “MSH-16 Application Acknowledgement Type [insert sent value] is not valid. Defaulted to AL.”. If MSH-16 is blank, a warning message will be provided: “MSH-16 Application Acknowledgement Type value AL is required”.
- MSH-21: The value accepted in this field is Z44^CDCPHINVS. If the field is blank or it has a different value than the one accepted, the message will be rejected, and an error sent: “MSH-21: Message Profile Identifier missing or invalid.”

*QBP (Z44) MSH example*

MSH|^~\&|NCIR-SHORT-ORG|NCIR-SHORT-ORG||NCIR|20121212100101-0500||QBP^Q11^QBP\_Q11|1|P|2.5.1|||ER|AL|||Z44^CDCPHINVS|NCIR-SHORT-ORG|NCIR

QPD – Query Parameter Definition

**Table 27. Local QPD field-level requirements for QBP messaging, request evaluated immunization history and forecast (Z44)<sup>23</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
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<sup>23</sup> Derived from Table 11-7, QPD Input Parameter Specification and 11-8, QPD Input Parameter Field Description and Commentary in the National IG and accompanying notes.

1	Message Query Name	[1..1]	R	Shall be "Z44^Request Evaluated History and Forecast^CDCPHINVS" OR Z44^Request Immunization History^HL70471	R	
2	Query Tag	[1..1]	R		R	
3	Patient List	[0..*]	RE		RE	Shall contain identifier value "PI", "SR", "PT" or "MR"
4	Patient Name (PID-3)	[0..1]	RE		R	Shall contain name type code "L"
5	Patient Mother Maiden Name (PID-6)	[0..1]	RE		O	
6	Patient Date of Birth (PID-7)	[0..1]	RE		R	
7	Patient Sex (PID-8)	[0..1]	RE		RE	
8	Patient Address (PID-11)	[0..1]	RE		O	
9	Patient Home Phone (PID-13)	[0..1]	RE		X	
10	Patient Multiple Birth Indicator (PID-24)	[0..1]	RE		O	
11	Patient Birth Order (PID-25)	[0..1]	RE		O	
12	Client Last Updated Date	[0..1]	O		X	
13	Client Last Update Facility	[0..1]	O		X	

\*Only noted if usage differs from the National IG.

*QBP (Z44) QPD notes*

- QPD-3: NCIR will use the provided patient identifier list value to match a candidate record. NCIR organization chart # or NCIR secondary chart # may be provided in this field to identify a client. Use PI or MR for providing NCIR organization chart #, PT for NCIR secondary chart # and/or SR to provide NCIR client id (if known), Refer to example above. If QPD-3 is blank or invalid, a warning is returned: “QPD-3: Patient Identifier type of PI, SR, PT or MR required”. Note: The NCIR organization chart # and NCIR secondary chart # are stored for a client when a VXU transaction for the client is sent or when the user enters the client directly in the NCIR. If no match is found based on chart # or secondary chart #, other values (like Name, DOB) will be used to identify the client. The NCIR client id is unique identifier assigned by NCIR and may also be used if your system stores it after the first retrieval from the NCIR.
- QPD-4: Last name and first name are required in the first two components. If the Name Type Code component is included, use L-Legal.
- QPD-10: Use Y to indicate that the client was born in a multiple birth, or N, if client was not born in a multiple birth.
- QPD-11: Use 1 for the first born, 2 for the second, etc.

*QBP (Z44) QPD example*

QPD|Z44^Request Immunization  
 History^HL70471|QUERY\_TAG|99999999^SR^~88888888^PI^~77777777^PT^|CLIENT^FIRST^MIDDLE^  
 ^|MAIDEN^MOTHERS^|20130315|F|1234 MICHIGAN AVE^^RALEIGH^NC^27615^^M^^|Y|1|

RCP – Response Control Parameter

**Table 28. Local RCP field-level requirements for QBP messaging, request evaluated immunization history and forecast (Z44)<sup>24</sup>**

Seq	Element Name	Nat'l IG Cardinality	Nat'l IG Usage	Nat'l IG Conformance/ Value Set	Local Usage*	Local Conformance Notes
1	Query Priority	[0..1]	RE	Shall be "I"	RE	"I" is defaulted when missing or invalid; and query is processed.

<sup>24</sup> Derived from Table 11-9, RCP Response Control Parameter Field Description and Commentary and accompanying notes in the National IG.

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2	Quantity Limited Request	[0..1]	RE	See HL70126	O	
3	Response Modality		O		X	
4	Execution and Delivery Time		O		X	
5	Modify Indicator		O		X	
6	Sort-by Field		O		X	
7	Segment Group Inclusion		O		X	

\*Only noted if usage differs from the National IG.

*QBP (Z44) RCP notes*

- RCP-1: Immediate priority is expected.

## ACK Messaging from the IIS

This section provides general information on what to expect in ACK messaging from the IIS. The ACK message is used to acknowledge receipt and processing of a submitted VXU message. It is also used to acknowledge and respond to queries (QBP messages) that cannot be processed to support response (RSP) messaging.

Within an ACK message, review MSA-1 for a summary indication of the IIS processing response and sender follow-up expectations; see Table 29 for detail. Review ERR segment(s) within the ACK for further detail on error location (ERR-2), error severity (ERR-4), application error code (ERR-5) and locally indicated error message (ERR-8).

**Table 29. ACK message interpretation and sender follow-up expectations**

MSA-1 Value	Description	National IG Description	ERR Segment(s) and ERR-4 Severity	Interpretation of IIS Response	Sender Follow-up Expectation
AA	Application acknowledgement : accept	Message accepted and processed.	No ERR segments	Message accepted.	No action needed.
			ERR segment(s) with severity of ' <b>I</b> ' for <b>information</b> . (No severity 'W' or 'E' errors).	Message accepted with returned information.	Review information returned.
AE	Application acknowledgement : error	Message accepted and processed, and errors are being reported.	At least one ERR segment with severity of ' <b>W</b> ' for <b>warning</b> . (No severity 'E' errors.)	Message accepted but there may be issues. These may include non-fatal errors with potential for loss of data.	Take action to correct issue(s) in sending system.*
			At least one ERR segment with severity of ' <b>E</b> ' for <b>error</b> .	Message and/or data rejected. The IIS rejected data that it views as important.	Take action to correct issue(s) in sending system and resubmit.*

AR	Application acknowledgement : reject	<p>Message rejected due to:</p> <ul style="list-style-type: none"> <li>• unsupported message type</li> <li>• unsupported event code</li> <li>• unsupported processing ID</li> <li>• unable to process for reasons unrelated to format or content</li> </ul>	At least one ERR segment with severity of 'E' for <b>error</b> , with 1 of 4 conditions specified.	Message rejected. The message was not processed.	Take action to correct issue(s) in sending system and resubmit.*
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\*If the cause of the issue is determined to be the sending system. In some cases, the issue may be due to the IIS; work with IIS staff to identify the cause of the issue and appropriate next steps.

*ACK examples*

Successful message: MSA|AA|1

Warning message: ERR||PD1^1^16^1^0^0|102^Data type error^HL70357^^^|W|||PD1-16: Defaulted to A.||||

Error Message: ERR||PID^1^7^1^2^0|102^Data type error^HL70357^^^|E|||PID-7: Date of birth invalid or missing.||||

Application Error: ERR||207^Application Internal Error^HL70357^^^|W|207.5^DateInvalid^HL70533|||OBX-5 The VIS publication date was not found for this vaccine or vaccine group. No data saved.|||||

## Appendices

## Appendix A. Usage Designations

**Table 30. Usage designations to support sending application conformance<sup>25</sup>**

Symbol	Definition	Implementation Requirement	Operation Requirement
R	Required	The sending application SHALL implement 'R' elements.	The sending application SHALL populate 'R' elements with a non-empty value.
RE	Required but may be empty	The sending application SHALL implement 'RE' elements.	The sending application SHALL populate 'RE' elements with a non-empty value if there is relevant data.
C(a/b)	Conditional	An element with a conditional usage code has an associated condition predicate that determines the operational requirements (usage code) of the element. If the condition predicate associated with the element is true, follow the rules for a which shall be one of "R", "RE", "O" or "X": If the condition predicate associated with the element is false, follow the rules for b which shall be one of "R", "RE", "O" or "X". a and b can be valued the same.	
X	Not supported	The sending application (or as configured) SHALL NOT implement 'X' elements.	The sending application SHALL not populate 'X' elements.
O	Optional (usage is not defined)	None. The usage indicator for this element has not been defined. NOTE: While the National IG indicates 'O' elements, these have been further constrained and specified at the local level in this Local IG.	

<sup>25</sup> Derived from Table 3-2, Sending Application Conformance in the National IG.

## Appendix B. Key Local Values and Codes

The following tables provide information about key values and codes accepted by the IIS as well as additional information about IIS processing and use of these values/codes.

### Identifier type – User-defined Table 0203

Use in PID-3 and QPD-3 to denote patient identifier type.

**Table 29. Identifier values<sup>26</sup>**

Value	Nat'l Description	Saved/stored by IIS?	Local Notes
MR	Medical record number	Yes	Use to indicate patient's EMR chart number.
PI	Patient internal identifier	Yes	Use to indicate patient's EMR chart number.
SR	State registry ID	Yes	Use in queries to indicate patient's NCIR ID, if known.
PT	Patient external identifier	Yes	Use to indicate patient's EMR Group Chart Number.

### Administrative sex – User-defined Table 0001

Use in PID-8 to reflect self-reported gender.

**Table 30. Administrative sex values<sup>27</sup>**

Value	Nat'l Description	Saved/stored by IIS?	Local Notes
F	Female	Yes	
M	Male	Yes	
U	Unknown/ Undifferentiated	Yes	An empty field will also be defaulted to unknown/undifferentiated.

<sup>26</sup> See User-defined Table 0203 – Identifier type within Appendix A of the National IG.

<sup>27</sup> See User-defined Table 0001 – Sex within Appendix A of the National IG.

Race – User-defined Table 0005

Use in PID-10 to indicate patient race.

**Table 31. Race values<sup>28</sup>**

Value	Nat'l Description	Saved/stored by IIS?	Local Notes
1002-5	American Indian or Alaska Native	Yes	
2028-9	Asian	Yes	
2076-8	Native Hawaiian or Other Pacific Islander	Yes	
2054-5	Black or African American	Yes	
2106-3	White	Yes	
2131-1	Other Race	Yes	
<empty>	Unknown/undetermined		An empty field will be saved as unknown/undetermined.

County/parish – User-defined Table 0289

Use in PID-11 to indicate North Carolina County code.

**Table 32. County values**

Value	Nat'l Description	Saved/stored by IIS?	Local Notes
NC001 or 37001	Alamance	Yes	
NC003 or 37003	Alexander	Yes	
NC005 or 37005	Alleghany	Yes	
NC007 or 37007	Anson	Yes	
NC009 or 37009	Ashe	Yes	

<sup>28</sup> See User-defined Table 0001 – Sex within Appendix A of the National IG.

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NC011 or 37011	Avery	<b>Yes</b>	
NC013 or 37013	Beaufort	<b>Yes</b>	
NC015 or 37015	Bertie	<b>Yes</b>	
NC017 or 37017	Bladen	<b>Yes</b>	
NC019 or 37019	Brunswick	<b>Yes</b>	
NC021 or 37021	Buncombe	<b>Yes</b>	
NC023 or 37023	Burke	<b>Yes</b>	
NC025 or 37025	Cabarrus	<b>Yes</b>	
NC027 or 37027	Caldwell	<b>Yes</b>	
NC029 or 37029	Camden	<b>Yes</b>	
NC031 or 37031	Carteret	<b>Yes</b>	
NC033 or 37033	Caswell	<b>Yes</b>	
NC035 or 37035	Catawba	<b>Yes</b>	
NC037 or 37037	Chatham	<b>Yes</b>	
NC039 or 37039	Cherokee	<b>Yes</b>	
NC041 or 37041	Chowan	<b>Yes</b>	
NC043 or 37043	Clay	<b>Yes</b>	
NC045 or 37045	Cleveland	<b>Yes</b>	
NC047 or 37047	Columbus	<b>Yes</b>	
NC049 or 37049	Craven	<b>Yes</b>	
NC051 or 37051	Cumberland	<b>Yes</b>	
NC053 or 37053	Currituck	<b>Yes</b>	
NC055 or 37055	Dare	<b>Yes</b>	
NC057 or 37057	Davidson	<b>Yes</b>	
NC059 or 37059	Davie	<b>Yes</b>	
NC061 or 37061	Duplin	<b>Yes</b>	
NC063 or 37063	Durham	<b>Yes</b>	
NC065 or 37065	Edgecombe	<b>Yes</b>	

NC067 or 37067	Forsyth	<b>Yes</b>	
NC069 or 37069	Franklin	<b>Yes</b>	
NC071 or 37071	Gaston	<b>Yes</b>	
NC073 or 37073	Gates	<b>Yes</b>	
NC075 or 37075	Graham	<b>Yes</b>	
NC077 or 37077	Granville	<b>Yes</b>	
NC079 or 37079	Greene	<b>Yes</b>	
NC081 or 37081	Guilford	<b>Yes</b>	
NC083 or 37083	Halifax	<b>Yes</b>	
NC085 or 37085	Harnett	<b>Yes</b>	
NC087 or 37087	Haywood	<b>Yes</b>	
NC089 or 37089	Henderson	<b>Yes</b>	
NC091 or 37091	Hertford	<b>Yes</b>	
NC093 or 37093	Hoke	<b>Yes</b>	
NC095 or 37095	Hyde	<b>Yes</b>	
NC097 or 37097	Iredell	<b>Yes</b>	
NC099 or 37099	Jackson	<b>Yes</b>	
NC101 or 37101	Johnston	<b>Yes</b>	
NC103 or 37103	Jones	<b>Yes</b>	
NC105 or 37105	Lee	<b>Yes</b>	
NC107 or 37107	Lenoir	<b>Yes</b>	
NC109 or 37109	Lincoln	<b>Yes</b>	
NC111 or 37111	McDowell	<b>Yes</b>	
NC113 or 37113	Macon	<b>Yes</b>	
NC115 or 37115	Madison	<b>Yes</b>	
NC117 or 37117	Martin	<b>Yes</b>	
NC119 or 37119	Mecklenburg	<b>Yes</b>	
NC121 or 37121	Mitchell	<b>Yes</b>	

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NC123 or 37123	Montgomery	<b>Yes</b>	
NC125 or 37125	Moore	<b>Yes</b>	
NC127 or 37127	Nash	<b>Yes</b>	
NC129 or 37129	New Hanover	<b>Yes</b>	
NC131 or 37131	Northampton	<b>Yes</b>	
NC133 or 37133	Onslow	<b>Yes</b>	
NC135 or 37135	Orange	<b>Yes</b>	
NC137 or 37137	Pamlico	<b>Yes</b>	
NC139 or 37139	Pasquotank	<b>Yes</b>	
NC141 or 37141	Pender	<b>Yes</b>	
NC143 or 37143	Perquimans	<b>Yes</b>	
NC145 or 37145	Person	<b>Yes</b>	
NC147 or 37147	Pitt	<b>Yes</b>	
NC149 or 37149	Polk	<b>Yes</b>	
NC151 or 37151	Randolph	<b>Yes</b>	
NC153 or 37153	Richmond	<b>Yes</b>	
NC155 or 37155	Robeson	<b>Yes</b>	
NC157 or 37157	Rockingham	<b>Yes</b>	
NC159 or 37159	Rowan	<b>Yes</b>	
NC161 or 37161	Rutherford	<b>Yes</b>	
NC163 or 37163	Sampson	<b>Yes</b>	
NC165 or 37165	Scotland	<b>Yes</b>	
NC167 or 37167	Stanly	<b>Yes</b>	
NC169 or 37169	Stokes	<b>Yes</b>	
NC171 or 37171	Surry	<b>Yes</b>	
NC173 or 37173	Swain	<b>Yes</b>	
NC175 or 37175	Transylvania	<b>Yes</b>	
NC177 or 37177	Tyrrell	<b>Yes</b>	

NC179 or 37179	Union	<b>Yes</b>	
NC181 or 37181	Vance	<b>Yes</b>	
NC183 or 37183	Wake	<b>Yes</b>	
NC185 or 37185	Warren	<b>Yes</b>	
NC187 or 37187	Washington	<b>Yes</b>	
NC189 or 37189	Watauga	<b>Yes</b>	
NC191 or 37191	Wayne	<b>Yes</b>	
NC193 or 37193	Wilkes	<b>Yes</b>	
NC195 or 37195	Wilson	<b>Yes</b>	
NC197 or 37197	Yadkin	<b>Yes</b>	
NC199 or 37199	Yancey	<b>Yes</b>	
ZZ998 or 37998	Unknown	<b>Yes</b>	
ZZ999 or 37999	Out of State	<b>Yes</b>	

### Ethnic Group – CDCREC

Use in PID-22 to indicate ethnic group.

**Table 33. Ethnic group values<sup>29</sup>**

<b>Value</b>	<b>Nat'l Description</b>	<b>Saved/stored by IIS?</b>	<b>Local Notes</b>
2135-2	Hispanic or Latino	<b>Yes</b>	
2186-5	Not Hispanic or Latino	<b>Yes</b>	
<empty>	Unknown	<b>Yes</b>	An empty field will be saved as unknown. Unrecognized values will also be defaulted to unknown.

<sup>29</sup> See CDCREC – Ethnic Group within Appendix A of the National IG.

Immunization registry status – User-defined Table 0441

Use in PD1-16 to identify the status of the patient in relation to the sending provider organization.

**Table 34. Immunization registry status values<sup>30</sup>**

Value	Nat'l Description	Saved/stored by IIS?	Local Notes
A	Active	<b>Yes</b>	
I	Inactive - Unspecified	<b>Yes</b>	
L	Inactive – Lost to follow-up (cannot contact)	<b>No</b>	Not supported.
M	Inactive – Moved or gone elsewhere (transferred)	<b>No</b>	Not supported.
P	Inactive – Permanently inactive (do not re-activate or add new entries to this record)	<b>Yes</b>	If P is submitted, client status will reflect deceased for all organizations.
U	Unknown	<b>No</b>	Not supported.

Language – User-defined Table 0296

Use in PID-15 and NK1-20 to indicate Primary Language.

**Table 35. Primary Language values<sup>31</sup>**

Value	Nat'l Description	Saved/stored by IIS?	Local Notes
ENG	English	<b>Yes</b>	
HMN	Hmong	<b>Yes</b>	
SOM	Somali	<b>Yes</b>	

<sup>30</sup> See User-defined Table 0441 – immunization registry status within Appendix A of the National IG.

<sup>31</sup> See User-defined Table 0296 – Language within Appendix A of the National IG.

SPA	Spanish	Yes	
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### Relationship – User-defined Table 0063

Use in NK1-3 to indicate relationship of the responsible person to the patient.

**Table 36. Relationship values<sup>32</sup>**

Value	Nat'l Description	Saved/stored by IIS?	Local Notes
BRO	Brother	Yes	
CGV	Care giver	No	Not supported.
CHD	Child	Yes	
FCH	Foster child	Yes	
FTH	Father	Yes	
GRD	Guardian	Yes	
GRP	Grandparent	Yes	
MTH	Mother	Yes	
OTH	Other	Yes	
PAR	Parent	Yes	
SCH	Stepchild	Yes	
SEL	Self	Yes	
SIB	Sibling	Yes	
SIS	Sister	Yes	
SPO	Spouse	Yes	
UNK	Unknown	Yes	

<sup>32</sup> See User-defined Table 0063 – Relationship within Appendix A of the National IG.

Financial class – User-defined Table 0064

Use in OBX-5 to indicate eligibility for a funding program at the dose administered level.

**Table 37. Financial class codes**<sup>33</sup>

Code	Nat'l Label	Nat'l Description	Saved/ stored by IIS?	Local Notes
V01	Not VFC eligible	Client does not qualify for VFC because they do not have one of the statuses below (V02-V05).	<b>No</b>	Not currently supported. Future NCIR data exchange update.
V02	VFC eligible – Medicaid/ Medicaid Managed Care	All of the following are true: <ul style="list-style-type: none"> <li>• Client is currently eligible for Medicaid or Medicaid managed care</li> <li>• Client is &lt; 19 years old</li> <li>• The type of vaccine administered is eligible for VFC funding</li> </ul>	<b>Yes</b>	
V03	VFC eligible - uninsured	All of the following are true: <ul style="list-style-type: none"> <li>• Client does not have health insurance</li> <li>• Client is &lt; 19 years old</li> <li>• The type of vaccine administered is eligible for VFC funding</li> </ul>	<b>No</b>	
V04	VFC eligible – American Indian/ Alaskan Native	All of the following are true: <ul style="list-style-type: none"> <li>• Client is a member of a federally recognized tribe</li> <li>• Client is &lt; 19 years old</li> <li>• The type of vaccine administered is eligible for VFC funding</li> </ul>	<b>Yes</b>	

<sup>33</sup> See User-defined Table 0064 – Financial class within Appendix A of the National IG.

V05	VFC eligible – underinsured at FQHC/RHC/ deputized provider	<p>All of the following are true:</p> <ul style="list-style-type: none"> <li>• Client has insurance but insurance does not cover vaccines, limits the vaccines covered or caps vaccine coverage at a certain amount</li> <li>• Client is receiving care at an FQHC, RHC or deputized provider</li> <li>• Client is &lt; 19 years old</li> <li>• The type of vaccine administered is eligible for VFC funding</li> </ul>	<b>No</b>	Not supported.
V07	VFC eligible - Local-specific eligibility		<b>Yes</b>	
V22	CHIP	Client is eligible for the CHIP program, a separate state health insurance that is NOT a Medicaid expansion program	<b>Yes/No</b>	
V23	317, Bridge Funded	Client is eligible to receive vaccines under the state/program immunization policy and the vaccine administered is eligible for 317 funding.	<b>Yes</b>	V23 eligibility will also be used to represent all bridge funded vaccines in a back-end table.
V24	Medicare	Client is enrolled in Medicare	<b>Yes/No</b>	
V25	State program eligibility	Client is eligible for a state vaccine program	<b>Yes/No</b>	
NCA01	Insured	n/a	<b>Yes</b>	
NCA02	Underinsured (No FQHC/RHC)	n/a	<b>Yes</b>	
NCA03	North Carolina Health Choice	n/a	<b>Yes</b>	

NCA04	Title X Uninsured Unaccompanied Minor	n/a	<b>Yes</b>	
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# Appendix C. Sample Messages

## Sample VXU messages

### Administered

MSH|^~\&|COUNTY HD|NCIR-SHORT-ORG||IIS|NCIR|20220315100101-0500||VXU^V04^VXU\_V04|1|P^|2.5.1|||ER|AL|||Z22^CDCPHINVS|PID|1||202^^^NCIR-SHORT-ORG^MR^|PATIENT^BART^A^^^L^|TESTER^CAROL^^^M^|20211231|M||2028-9^ASIAN^HL70005|||2186-5^Not Hispanic or Latino^CDCREC|||PD1|||02^Reminder/Recall - any method^HL70215|N|||A|20220315|||NK1|1|TESTER^CAROL^A^^^L^|MTH^MOTHER^HL70063^^^|52MAIN^^Anycity^NC^27850^USA^L|^PRN^PH^^608^2246872^^|ENG^English||02|YORC|RE||IZ-783274^NDA||RXA|0|1|20220315||21^Varicella^CVX^00006-4827-00^Varicella Live^NDC|1.0|mL^MilliLiter [UniSI Volume ts]^UCUM||00^NewImmunization^NIP001|^Clinician^Kevin^^^L^^^|^^22046|||testlot1|20251226|MSD^Merck^MVX|||CP|A|||RXR|C38238^Intramuscular^NCIT|LA^Left Arm^HL70163|||OBX|1|CE|30963-3^Vaccine purchased with^LN|1|VXC50^State Funds^CDCPHINVS|||F||20220315|OBX|2|CE|64994-7^Vaccine fund pgm elig cat^LN|2|V02^Medicaid^HL70064|||F||20220315||VXC41^per visit^CDCPHINVS|||OBX|3|CE|30956-7^VACCINE TYPE^LN|3|21^Varicella^CVX|||F||20220315|||OBX|4|TS|29768-9^DATE VACCINE INFORMATION STATEMENT PUBLISHED^LN|3|20210806|||F||20220315|||OBX|5|TS|29769-7^DATE VACCINE INFORMATION STATEMENT PRESENTED^LN|3|20220315|||F||20220315|||

Historical

MSH|^~\&|COUNTY HD|NCIR-SHORT-ORG|IIS|NCIR|20220315100101-0500|VXU^V04^VXU\_V04|1|P^|2.5.1|||ER|AL|||Z22^CDCPHINVS|PID|1||202^^^NCIR-SHORT-ORG^MR^|PATIENT^BART^A^^^L^|TESTER^CAROL^A^^^M^|20211231|M||2028-9^ASIAN^HL70005|||2186-5^Not Hispanic or Latino^CDCREC|PD1|||02^Reminder/Recall - any method^HL70215|N|||A|20220315|||NK1|1|TESTER^CAROL^A^^^L^|MTH^MOTHER^HL70063^^|52MAIN^^Anycity^NC^27850^USA^L|^PRN^PH^^608^2246872^^|ENG^English||02|Y|ORC|RE||IZ-783274^NDA|RXA|0|1|20220315||21^Varicella^CVX|999||01^Historical^NIP001||CP|A|||

Sample QBP messages

Request complete immunization history (Z-34)

MSH|^~\&|NCIR-SHORT-ORG|NCIR-SHORT-ORG|NCIR|NCIR|202203151001||QBP^Q11^QBP\_Q11|1|P^|2.5.1|||ER|AL|||Z34^CDCPHINVS QPD|Z34^Request Immunization History^CDCPHINVS|1234567890|99999^^^MYEHR^MR|PATIENT^BART^A^^^L^|TESTER^CAROL^A^^L^|20211231|M||RCP||2^RD&records&HL70126|R

Request evaluated immunization history and forecast (Z-44)

MSH|^~\&|NCIR-SHORT-ORG|NCIR-SHORT-ORG|NCIR|NCIR|202203151001||QBP^Q11^QBP\_Q11|1|P^|2.5.1|||ER|AL|||Z44^CDCPHINVS QPD|Z44^Request Evaluated History and Forecast^CDCPHINVS|1234567890|99999^^^MYEHR^MR|PATIENT^BART^A^^^L^|TESTER^CAROL^A^^^L^|20211231|M||RCP||2^RD&records&HL70126|R

## Appendix D. National Immunization Data Exchange Resources

### Guidance, specifications, and codes

- [IIS Technical Guidance: HL7 Implementation](#)  
CDC webpage listing key resources for HL7 immunization messaging, including:
  - [HL7 Version 2.5.1 Implementation Guide for Immunization Messaging, Release 1.5, 2018 Update](#)
  - CDC and AIRA Standards and Interoperability Committee (SISC) guidance on HL7 immunization messages
  - National Institute of Standards and Technology (NIST) tools, including the [Immunization Test Suite](#)
- [IIS Technical Guidance: Transport \(SOAP\)](#)  
CDC webpage with information and specifications for using Simple Object Access Protocol (SOAP) web services to support transport of immunization data via HL7 messaging.
- [Immunization Data Code Sets](#)  
CDC webpage with current immunization-related code sets from the CDC. Included CVX codes, MVX codes, NDC crosswalk tables, and more. Subscribe to receive updates when codes are updated.

### Training and education

- [Technical Assistance Training Videos](#)  
Short videos from AIRA explaining several technical aspects of IIS and immunization data exchange, including Transport 101, SOAP WSDL 101, and NIST Test Suite.
- [IIS Learning Hub](#)  
Trainings, learning solutions and resources from the Public Health Informatics Institute for public health staff and partners supporting and using IIS. Includes eLearning modules on Fundamentals of IIS (addressing interoperability and HL7) and Advanced HL7. Also includes Quick Reference Guides on [Breaking Down an HL7 Message](#), [HL7 Messaging Acronyms](#), [HL7 Message Profiles](#), and [HL7 Conformance Specification Parameters](#).