Immunizations Integration

Netsmart

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Functionality Overview

CareConnect enables the exchange of clinical information between and among providers involved in the care of a consumer and with other entities, such as Regional Health Information Organizations (RHIOs). CareConnect works with the Netsmart enterprise system to provide a secure way to exchange clinical and administrative information.

Methods Used for Data Transfer

- Authentication based on the certificate being applied (on CareRecord database server)
- Vendor to supply scripts for the stored procedure and CLR to push the data to the web service
- Internal / External firewall rules open for the CareConnect web services
- URL filtering to be enabled for CareConnect web service

Data Transfer Steps

1. Trigger in CareRecord database
2. Data is transferred to CareConnect
3. Data is then pushed to the immunization registry using an MLLP or SOAP web service

Support At Installation

- Support provided for installing certificates and binaries
- Support provided for running SQL Scripts and database table updates in Insight

Support Moving Forward

- CareConnect is updated in our data center when software updates are available because it is hosted.

Methods of Connection

- MLLP
- CDC SOAP - preferred

Example Immunization Update (HL7)

MSH|^~\&|DCBOH|DCBOH|GRITS|GRITS|20161111112958||VXU^V04^VXU_V04|1478
8853983297334|T|2.5.1|||NE|AL|||||Z34^CDCPHINVS

PID|1||123456^^^^PI^||SMITH^KRISTIN^||20041006||||^^^^|||||||||||||||||||

ORC|RE||12345|||||||||||||||||||

RXA|0|1|20041006|20041006|45^HepB-
Unspecified^CVX^HEPB^^WVGC|999||||^^^^|^^^^^^^^^^^^^^|||||||||||

OBX|1|NM|31044-1^Reaction^LN^^||10^^GRITS^^||||||F|||20000528|||||||||||

OBX|2|CE|64994-7^Vaccine Eligibility Code^LN^^||V00^^GRITS^^||||||F|||||||||||||

Example Immunization Query (HL7)

MSH|^~\&|DCBOH|DCBOH|GRITS|GRITS|20161111112932||QBP^Q11^QBP_Q11|147
88853728585234|T|2.5.1|||NE|AL|||||Z34^CDCPHINVS

QPD|Z34^REQUESTIMMUNIZATIONHISTORY^HL70471|1478885372859|6627005411
4^^^LR^LR|SMITH^KRISTIN^||20000528|F|193 Park Way^APT
401^WATERS^MA^01004|||||||||||

RCP|I|1^RD|R||||

VXU Message Structure

We support the VXU-Z22 message, which is used to send immunization history and will follow the format below:

Segment	Segment Name	Comments
MSH	Message Header	Required
PID	Patient Identification	Required
[PD1]	Patient Demographics	Optional
{[NK1]}	Next of Kin	Optional, may repeat
{[		
ORC	Common Order	Required
RXA	Pharmacy/Treatment Administration	Required
{[RXR]}	Pharmacy/Treatment Route	Optional, may repeat
{[OBX]}	Observation Result	Optional, may repeat
{[NTE]}	Notes and Comments	Optional, may repeat
]}		

Braces, {}, indicate that one or more of the enclosed group of segments may repeat, and brackets, [ ], indicate that the enclosed group of segments is optional. Note that segments may be nested within the braces and brackets. This will indicate that the nested segments are units within a subgroup of segments.

Segment Layouts – Column Headings

This section defines HL7 data segments supported in a results interface from a non-Netsmart system to the Netsmart v2.3 format.

Heading	Contents	Values
Seq.	HL7 Field Sequence	Begins with ’01’ for each segment.
Name	HL7 Field Name	Defined by HL7.
R/O	Field/Component	R - Required field C - Conditional O - Optional
Comment	Field Usage Comments	

NOTE: If a field is not included, it is not supported. An application enhancement would be required to add the additional data and would need to be part of a sanctioned product release.

If a field is marked as required and cannot be provided by the data provider, a formal HL7 configuration discussion will have to take place between Netsmart and the client because this will result in adverse effects being encountered within the product.

Control Segments

MSH – The Message Header segment defines the characteristics of the message and indicates the following:

- Sending Application
- Receiving Application
- Encoding Characters used as Delimiters
- Message Type being Transmitted (Specific HL7 message type and event triggering the message.)
    - The Type must be ‘VXU’ and sent by the source system.
    - The Event must be ‘V04’ and sent by the source system.

NOTE: The MSH segment in the ACK (Acknowledgement) response will show the Sender and Receiver information in reverse (i.e. sender will be receiver and vice versa.)

The Encoding Characters are used to separate data field components, repeating data elements, and text control characters. They should be printable characters that will never be used in transmitted data, and are as follows:

- Field Separator: |
- Component Separator: ^
- Repetition Separator: ~
- Escape: \
- Sub-Component: &

MSH Seq	Name	R/O	Comments
01	Field separator	R	Field separator. Value required is "|" – ASCII(124)
02	Encoding Character	R	Used to separate data field components, repeating data elements, and text control characters. Must be printable characters that will never be included in transmitted data. Required values: Pos 1: Component Separator '^' - ASCII(94) Pos 2: Repetition Separator '~' - ASCII(126) Pos 3: Escape '\', ASCII(92) Pos 4: Sub-component '&'- ASCII(38).
03	Sending Application	R	
03.1	Namespace ID	R	This is the unique string value assigned by the HIE
04	Sending Facility	R	
04.1	Namespace ID	R	This is the unique string value assigned by the HIE
05	Receive Application	R	
05.1	Namespace ID	R	This is the unique string value assigned by the HIE
06	Receiving Facility	R	
06.1	Namespace ID	R	This is the unique string value assigned by the HIE
07	Date/Time of Message	R	System date and time the message was formatted in the sending placer system. Must be at least to the minute and include the time zone. Format: YYYYMMDDHHMM+/-ZZZZ
09	Message Type	R	Specific HL7 message type and event triggering the message.
09.1	Type	R	Value must = 'VXU' and must be sent by the source system
09.2	Event	R	Value must be 'V04' and sent by the source system

MSH Seq	Name	R/O	Comments
10	Message Control ID	R	Unique. Initiator generated. Responder returns sender value in ACK message in MSA:2. With acknowledgment messages, MSH:10 value may be identical to original sender value or may be a new unique value assigned by acknowledging system. Requests the client to append date/time to the message control ID if it is not unique prior to sending the message.
11 11.1	Processing ID Processing ID	R R	'P' = Production 'T' = Test
12	Version ID	R	HL7 version. Value = '2.5.1'.
13	Sequence Number	O	
14	Continuation Number	O	
15	Accept ACK Type	R	'NE' – Never
16	Application ACK Type	R	'AL' – Always
17	Country Code	O	HL7 table 0399 - Country code defined by ISO 3166 -1. If empty, assume USA.
18	Character Set	O	
19	Language of Message	O	'VXU'
20	Alternate Character Set Handling Scheme	O	
21	Message Profile Identifier	C	Required when Profile is being used or if MSH:9 is QBP or RSP. Profiles are used to explain grammar, syntax, and usage of messages. Must be: 'Z34^CDCPHINVS'

Listed below is the set of concepts that need to have a unique HIE domain set of values.

Field #	Name	Purpose
MSH:3.1	Sending Application.NameSpace ID	Used to determine the specific set of transformer methods to be performed by Vendor Product Interface to normalize to HL7 2.5.
MSH:4.1	Sending Facility.NameSpace ID	Used to determine the sending facility for subsequent routing of the acknowledgement message as well as identity of the sending facility in the receiving system.
MSH:5.1	Receiving Application.NameSpace ID	Used for possible routing
MSH:6.1	Receiving Facility.NameSpace ID	Used for basic routing within the Order Super Node.

PERSON SEGMENTS

PID – Patient demographics and the encounter associated with the message are identified in this **required** segment. Typically, this is patient information that is not likely to change. The Patient Identifier List section (PID:3) supports multiple repetitions, as well as the Patient Name List (PID:5), but the first must be the primary or legal name. Please **note** that only 1 ID per ID Type is allowed, and SSN (PID:19) has been removed (it should be included in the Identifier List- PID:3). This section can also include a RR retirement number.

PID Seq.	Name	R/O	Comments
01	Set ID- PID	R	Begins at 1, Increments by 1
03	Patient Identifier List	R	Supports multiple repetitions (CX List). Only 1 ID per ID Type allowed. The first must contain the sending facility assigned MRN.
03.1	Patient ID	R	
03.4.1	Namespace ID	O	This is the unique string value assigned by the HIE.
03.4.2	Universal ID	C	Used when the HIE has defined the OID requirements.
03.4.3	Universal ID Type	C	Value is “ISO” when a Universal ID is in scope.

PID Seq.	Name	R/O	Comments
03.5	Identifier Type	R	Refer to HL7 Table 0203 - Identifier type. • When a number that is not necessarily unique within an Assigning Authority the value must be “MR” for Medical record number. • When a number that is unique to a patient within an Assigning Authority, the value must be ‘PI’ for Patient Internal identifier.
05	Patient Name List	R	Supports multiple repetitions. First repetition must be the primary or legal name. Only 1 ID per ID Type allowed.
05.1	Family Name	R	
05.2	Given Name	R	
05.3	Second and Further Given Names or Initials Thereof	O	
05.4	Suffix	O	
05.5	Prefix	O	
05.6	Degree	O	
05.7	Name Type Code	C	Required if multiple names are sent. Refer to HL7 Table 0200 - Name Type.
06	Mother’s Maiden Name	O	
06.1	Family Name	O	
07	Date of Birth	R	
08	Gender	R	Must contain one of the following values of: User-defined Table 0001 - Administrative Sex

Value	Description
F	Female
M	Male
O	Other
U	Unknown

<table>
<tr><th>PID Seq.</th><th>Name</th><th>R/O</th><th>Comments</th></tr>
<tr><td>10</td><td>Race</td><td>R</td><td>Suggested User-defined Table 0005 - Race<table><tr><th>Value</th><th>Description</th><th>Comment</th></tr><tr><td>1002-5</td><td>American Indian or Alaska Native</td><td></td></tr><tr><td>2028-9</td><td>Asian</td><td></td></tr><tr><td>2054-5</td><td>Black or African American</td><td></td></tr><tr><td>2076-8</td><td>Native Hawaiian or Other Pacific Islander</td><td></td></tr><tr><td>2106-3</td><td>White</td><td></td></tr><tr><td>2131-1</td><td>Other Race</td><td></td></tr></table></td></tr>
<tr><td>11</td><td>Patient Address</td><td>R</td><td></td></tr>
<tr><td>11.1</td><td>Street Address (Address Line 1)</td><td>R</td><td></td></tr>
<tr><td>11.2</td><td>Other Designation (Address Line 2)</td><td>O</td><td></td></tr>
<tr><td>11.3</td><td>City</td><td>R</td><td></td></tr>
<tr><td>11.4</td><td>State</td><td>R</td><td></td></tr>
<tr><td>11.5</td><td>ZIP Code</td><td>R</td><td></td></tr>
<tr><td>11.6</td><td>Country</td><td>R</td><td></td></tr>
<tr><td>11.7</td><td>Type</td><td>O</td><td></td></tr>
<tr><td>11.9</td><td>County/Parish</td><td>O</td><td></td></tr>
<tr><td>13</td><td>Home Phone Number</td><td>R</td><td>First instance should be the primary</td></tr>
<tr><td>14</td><td>Business Phone Number</td><td>O</td><td>First instance should be the primary</td></tr>
<tr><td>15</td><td>Language – Patient</td><td>O</td><td></td></tr>
<tr><td>16</td><td>Marital Status</td><td>O</td><td></td></tr>
<tr><td>17</td><td>Religion</td><td>O</td><td></td></tr>
</table>

PID Seq.	Name	R/O	Comments
18	Patient Account Number	C	
18.1	Patient Account Number	C	If required by the sending system, then one Patient Account ID must be included. The first must contain the sending facility Assigned Account or Visit ID.
18.4.1	Namespace ID	R	This is the unique string value assigned by the HIE. When it is the sending facility Assigned Visit ID, this should be the sending facility value.
18.4.2	Universal ID	C	Used when the HIE has defined the OID requirements.
18.4.3	Universal ID Type	C	Value is “ISO” when a Universal ID is in scope.
18.5	Identifier Type	R	Refer to HL7 Table 0203 - Identifier type. • When an identifier that is unique to an account within the Assigning Authority is used, the value must be “AN” for Account number
22	Ethnic Group	R	User-Defined table 0189 – Ethnic Group
23	Birth Place	O	
24	Multiple Birth Indicator	R	Y, N, or empty (used for twins)
25	Birth Order	C	If PID:24 is Y, 1 for first born, 2 for second, etc.
26	Citizenship	O	
27	Veterans Military Status	O	
28	Nationality	O	
29	Patient Death Date/Time	C	If PID:20 is Y
30	Patient Death Indicator	R	Whether patient is deceased or not

PD1 – This is the patient demographics section that is used to update patient information, privacy, and whether contact is allowed or not. For immunizations, this section is used to indicate whether data should be protected, whether the individual wants to receive recall or reminder notices, and the individual’s current status in the immunization registry.

PD1 Seq.	Name	R/O	Comments
01	Living Dependency	O	
02	Living Arrangement	O	
03	Patient Primary Facility	O	“Primary Care” healthcare facility selected by patient.
04	Patient Primary Care Provider Name & ID No.	O	
05	Student Indicator	O	
06	Handicap	O	
07	Living Will Code	O	
08	Organ Donor Code	O	
09	Separate Bill	O	
10	Duplicate Patient	O	
11	Publicity Code	R	How the individual wishes to be contacted in a reminder or recall situation. User-Defined Table 0215 – Publicity Code
12	Protection Indicator	R	Indicates whether an individual’s information may be shared. In 2.5.1, Y – must be protected. N/empty – Can be shared. Values meant the opposite in version 2.3
13	Protection Indicator Effective Date	C	Only required if PD1:12 is populated
14	Place of Worship	O	
15	Advance Directive Code	O	
16	Immunization registry Status	R	User-Defined Table 0441 – Immunization Registry Status. Indicates whether the patient is active or not, this can differ among systems. Patient could be inactive in provider system, but active in the Public Health Jurisdiction. In this case, the provider would indicate that the patient was inactive in this field in the message that they send, while the IIS would indicate that the patient was active here in the messages that they send.
17	Immunization Registry Status Effective Date	C	Only required if PD1:16 is populated
18	Publicity Code Effective Date	C	Only required if PD1:11 is populated

PD1 Seq.	Name	R/O	Comments
19	Military Branch	O	
20	Military Rank/Grade	O	
21	Military Status	O	

NK1 – This is the Next of Kin segment that may either repeat for multiple parties or not be included at all. It is used to identify any parties associated with the patient in separate NK1 segments.

NK1 Seq.	Name	R/O	Comments
01	Set ID	R	Begins at 1, Increments by 1
02	Name	R	First instance must be the patient's legal name
03	Relationship	R	User-Defined Table 0063 – Relationship
04	Address	R	First instance must be the primary/mailing, may repeat using the repeat delimiter
05	Phone Number	R	First instance must by the primary, may repeat using the repeat delimiter
06	Business Phone Number	O	First instance must be the primary, may repeat using the repeat delimiter
07	Contact Role	O	
08	Start Date	O	
09	End Date	O	
10	Next of Kin/Associated Parties Job Title	O	
11	Next of Kin/Associated Parties Job Code/Class	O	
12	Next of Kin/Associated Parties Employee Number	O	
13	Organization Name	O	
14	Marital Status	O	

<table>
<tr><th>NK1 Seq.</th><th>Name</th><th>R/O</th><th>Comments</th></tr>
<tr><td>15</td><td>Gender</td><td>O</td><td>Must contain one of the following values of: User-defined Table 0001 - Administrative Sex
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>F</td><td>Female</td></tr>
<tr><td>M</td><td>Male</td></tr>
<tr><td>O</td><td>Other</td></tr>
<tr><td>U</td><td>Unknown</td></tr>
</table></td></tr>
<tr><td>16</td><td>Date/Time of Birth</td><td>O</td><td></td></tr>
<tr><td>17</td><td>Living Dependency</td><td>O</td><td></td></tr>
<tr><td>18</td><td>Ambulatory Status</td><td>O</td><td></td></tr>
<tr><td>19</td><td>Citizenship</td><td>O</td><td></td></tr>
<tr><td>20</td><td>Primary language</td><td>O</td><td></td></tr>
<tr><td>21</td><td>Living Arrangement</td><td>O</td><td></td></tr>
<tr><td>22</td><td>Publicity Code</td><td>O</td><td>How the individual wishes to be contacted in a reminder or recall situation. User-Defined Table 0215 – Publicity Code</td></tr>
<tr><td>23</td><td>Protection Indicator</td><td>O</td><td>Indicates whether an individual’s information may be shared. In 2.5.1, Y – must be protected. N/empty – Can be shared. Values meant the opposite in version 2.3</td></tr>
<tr><td>24</td><td>Student Indicator</td><td>O</td><td></td></tr>
<tr><td>25</td><td>Religion</td><td>O</td><td></td></tr>
<tr><td>26</td><td>Mother’s Maiden Name</td><td>O</td><td></td></tr>
<tr><td>27</td><td>Nationality</td><td>O</td><td></td></tr>
<tr><td>28</td><td>Ethnic Group</td><td>O</td><td>User-Defined table 0189 – Ethnic Group</td></tr>
<tr><td>29</td><td>Contact Reason</td><td>O</td><td></td></tr>
<tr><td>30</td><td>Contact Person’s Name</td><td>O</td><td></td></tr>
<tr><td>31</td><td>Contact Person’s Telephone Number</td><td>O</td><td></td></tr>
<tr><td>32</td><td>Contact Person’s Address</td><td>O</td><td></td></tr>
<tr><td>33</td><td>Next of Kin/Associated Parties Identifiers</td><td>O</td><td></td></tr>
<tr><td>34</td><td>Job Status</td><td>O</td><td></td></tr>
</table>

<table>
<tr><th>NK1 Seq.</th><th>Name</th><th>R/O</th><th>Comments</th></tr>
<tr><td>35</td><td>Race</td><td>O</td><td>Suggested User-defined Table 0005 - Race
<table>
<tr><th>Value</th><th>Description</th><th>Comment</th></tr>
<tr><td>1002-5</td><td>American Indian or Alaska Native</td><td></td></tr>
<tr><td>2028-9</td><td>Asian</td><td></td></tr>
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<tr><td>2076-8</td><td>Native Hawaiian or Other Pacific Islander</td><td></td></tr>
<tr><td>2106-3</td><td>White</td><td></td></tr>
<tr><td>2131-1</td><td>Other Race</td><td></td></tr>
</table></td></tr>
<tr><td>36</td><td>Handicap</td><td>O</td><td></td></tr>
<tr><td>37</td><td>Contact Person’s SSN</td><td>O</td><td></td></tr>
<tr><td>38</td><td>Next of Kin Birth Place</td><td>O</td><td></td></tr>
<tr><td>39</td><td>VIP Indicator</td><td>O</td><td></td></tr>
</table>

IMMUNIZATION SEGMENTS

ORC – This is the order request, which is a required field. It is used to transmit fields that are common to all orders. Each RXA segment must be associated with 1 ORC segment.

ORC Seq.	Name	R/O	Comments
01	Order Control	R	Value = “RE”
02	Placer Order Number	R	
02.1	Entity Identifier	R	
02.2	Namespace ID	R	
02.3	Universal ID	C	Used when the HIE has defined the OID requirements
02.4	Universal ID Type	C	Value is “ISO” when a Universal ID is in scope.

ORC Seq.	Name	R/O	Comments
03	Filler Order Number	R	
03.1	Entity Identifier	R	'9999' If the immunization was refused.
03.2	Namespace ID	R	Unique ID of Immunization sending system
03.3	Universal ID	C	Used when the HIE has defined the OID requirements
03.4	Universal ID Type	C	Value is "ISO" when a Universal ID is in scope.
04	Placer Group Number	C	
04.1	Entity Identifier	R	
04.2	Namespace ID	R	
04.3	Universal ID	C	Used when the HIE has defined the OID requirements
04.4	Universal ID Type	C	Value is "ISO" when a Universal ID is in scope.
05	Order Status	O	
06	Response Flag	O	
08	Parent	O	
09	Date of Transaction	O	
10	Entered By	R	
11	Verified By	O	
12	Ordering Provider	R	Leave field empty if the immunization record is transcribed from a historical record.
12.1	Doctor ID	R	
12.2	Last Name	R	
12.3	First Name	O	
12.4	Middle Name	O	
12.5	Prefix	O	
12.6	Suffix	O	
12.7	Degree	O	
12.8	Source Table	R	See PV1:7.8 for requirements

ORC Seq.	Name	R/O	Comments
13	Enterer's Location	O	
14	Call Back Phone Number	O	May not be accepted by most sending systems.
15	Order Effective Date	O	
16	Order Control Code Reason	O	
17	Entering Organization	O	
18	Entering Device	O	
19	Action By	O	
20	Advanced Beneficiary Notice Code	O	
21	Ordering Facility Name	O	Extended Name/ID No. for Organization, Organization Sub Unit that is sending the immunization
22	Ordering Facility Address	O	
23	Ordering Facility Phone Number	O	
24	Ordering Provider Address	O	
25	Order Status Modifier	O	
26	Advanced Beneficiary Notice Override Reason	O	
27	Filler's Expected Availability Date/Time	O	
28	Confidentiality Code	O	'R' – Restricted if special privacy rules apply. Only applies if the patient specifically states that they want the information confidential.
29	Order Type	O	
30	Enterer Authorization Mode	O	
31	Parent Universal Service Identifier	O	

RXA – This is a required child segment of the ORC. It may repeat for an unlimited number of vaccines, but must be preceded by an ORC.

RXA Seq.	Name	R/O	Comments
01	Given Sub-ID Counter	R	'0' – Used to match RXA and RXR
02	Administration Sub-ID Counter	R	'1' – Used to track multiple RXA segments under 1 ORC segment. Dose number goes in the OBX
03	Date/Time Start of Administration	R	Can be used in cases where vaccine has not been administered – patient refused or forecasting the next dose. Use the date of refusal or forecasted date in those cases
04	Date/Time End of Administration	R	Same as RXA:3
05	Administered Code	R	CVX code is required for meaningful use, other codes won't be part of conformance testing. Used to identify the medical substance being administered.
06	Administered Amount	R	Units are in RXA:7, '999' if amount information isn't collected
07	Administered Units	R	If RXA:6 is not populated, use '999'
08	Administered Dosage Form	O	
09	Administration Notes	C	Required if RXA:20 is CP or PR. Conveys whether the immunization is historical or was given by the provider. Other uses will need to be specified locally.
09.1	Information Source Code	C	
09.2	Free Text	C	
09.3	Code System Name	C	'NIP001'
10	Administering Provider	R	Vaccinator name
11	Administered Location	R	Name of Clinic/Site
11.1	Identifier	R	If populated, 11.2 and 11.3 are not
11.2	OID	O	If populated, 11.3 is as well.
11.3	Universal ID	O	Value is "ISO" when a Universal ID is in scope.
11.4	Facility Name	R	
12	Administered Per (Time Unit)	O	
13	Administered Strength	O	

RXA Seq.	Name	R/O	Comments
14	Administered Strength Units	O	
15	Substance Lot Number	C	Required if RXA:9 is '00' Leave empty if the record is historical. Identifies the number printed on the label, first repetition should be the vaccine itself.
16	Substance Expiration Date	C	Required if RXA:15 is populated. Leave empty if the record is historical. Format: YYYYMM
17	Substance Manufacturer Name	C	Required if RXA:9 is '00' – MVX value set
18	Substance/Treatment Refusal Reason	C	Required if RXA:20 is 'RE'
19	Indication	O	
20	Completion Status	R	'RE' - Dose was successfully given. If dose was not completely administered or wasn't potent, this field can be used to label the immunization.
21	Action Code – RXA	R	Action expected by the sending system – can facilitate an update or deletion of records. Assumed to be 'A' for add if the field is empty. 'U' indicates that a change is being made to a previously sent immunization record.
22	System Entry Date/Time	O	Date/Time in originating system
23	Administered Drug Strength Volume	O	
24	Administered Drug Strength Volume Units	O	
25	Administered Barcode Identifier	O	
26	Pharmacy Order Type	O	

RXR – This is an optional segment that may repeat. It is used to convey information regarding alternative combinations of routes, sites, administration devices, and administrative methods that were used for that particular immunization.

RXR Seq.	Name	R/O	Comments
01	Route	R	User-Defined Table 0162 – Route of Administration. Will change based on HITSP, so systems should be prepared to accept HL7 or FDA codes.
02	Administration Site	R	
03	Administration Device	O	
04	Administration Method	O	
05	Routing Instruction	O	
06	Administration Site Modifier	O	

OBX – This is an optional segment that may repeat. They are observations from the immunization, referencing the RXA segment. It is typically in a Q (OBX:3) & A (OBX:5) format, utilizing the Ask at Order Entry (AOE) questions. The Value Type (OBX:2) can be 'NM' for numeric or 'ST' for string.

OBX Seq.	Name	R/O	Comments
01	Set ID- OBX	R	Begins at 1, Increments by 1
02	Value Type	R	Allowable Fields: NM - Numeric ST – String
03	Observation Identifier	R	See OBR:4 for coding requirements
03.1	Test Code	R	
03.2	Test Code Description	R	
03.3	Coding Scheme	R	
03.4	Alternate Test Code	C	
03.5	Alternate Code Description	C	
03.6	Alternate Coding Scheme	C	
04	Observation Sub-ID	R	Used to group related OBX segments
05	Observation Value	R	Contains an answer to an AOE question (OBX:3) in the format from OBX:2

OBX Seq.	Name	R/O	Comments
06	Units	C	Units for OBX:5, use NA if no units of measure apply. Required if OBX:2 is NM or SN
11	Observation Result Status	R	'F' - Final
14	Date/Time of the Observation	R	
17	Observation Method	C	If OBX:3 = "64994-7" value set will be CDCPHINVS. "-7" is a LOINC* meaning "funding program eligibility." This field is used to distinguish between eligibility captured at the visit vs. immunization event level.

***LOINC –** Logical Observation Identifiers Names and Codes Committee

NTE – This is an optional segment that may repeat. It is used to send notes or comments in relation to the OBX segment for a specific immunization.

NTE Seq.	Name	R/O	Comments
01	Set ID – NTE	R	Begins at 1, Increments by 1 – Sequence ID
02	Source of Comment	R	Must be values with "C"
03	Comment	R	
04	Comment Type	O	

OBX Utilization

Documentation – Vaccine Information Statements (VIS) are required for the following vaccines:

- Diphtheria
- Tetanus
- Pertussis
- Measles
- Mumps
- Rubella
- Polio
- Hepatitis A
- Hepatitis B
- Haemophilus Influenzae Type B (Hib)
- Influenza
- Pneumococcal Conjugate
- Meningococcal
- Rotavirus
- Human Papillomavirus
- Varicella (Chicken Pox)

The table below holds the information that will need to be submitted in separate OBX segments under one RXA segment. Patient Eligibility is required if the associated RXA:9 is '00.' VIS Document Type and VIS Delivery Date must exist together with the same OBX:4 value. If the VIS Vaccine Type is submitted in an OBX, then the VIS Version Date and VIS Delivery Date must also be submitted with the same values in OBX:4.

Core Data Element	Description	Identifier (OBX:3)	Value Set (OBX:5)
Patient Eligibility Category for Vaccine Funding Program	Funding program that should pay for a given immunization. This is determined based on characteristics of the patient and type of vaccine administered.	64994-7	HL70064
VIS Document Type	Vaccine Type	69764-9	cdcgi1vis
VIS Version Date	Date presented VIS was published	29768-9	
VIS Vaccine Type		30956-7	CVX
VIS Delivery Date	Date the document was presented to the patient/responsible party	29769-7	

Evaluations – These OBX segments will hold information about the dose(s) that were given, and will be included with the first RXA segment sent in the message. The recommended structure for an evaluation is found in the table below. If it is a combination vaccine, the group of OBX segments will repeat for each vaccine (highlighted in green.)

Segment	Segment Name	Comments
{[		
ORC	Common Order	Required
RXA	Pharmacy/Treatment Administration	Required
{[RXR]}	Pharmacy/Treatment Route	Optional, may repeat
{OBX}	Vaccine Group	Required
{OBX}	The Schedule	Required
{[OBX]}	Series Name	Optional
{OBX}	Ordinal Position in Primary Series	Required
{[OBX]}	Dose Validity	Optional
{[OBX]}	Number of Doses in Primary Series	Optional
{[OBX]}	Series Status	Optional
{[OBX]}	Reason Code	Optional
{[NTE]}	Notes and Comments	Optional, may repeat
]}		

The table below holds further specification on the OBX segments being utilized.

Data Element	Description	Identifier (OBX:3)	R/O
Vaccine Group/Family	Identifies which diseases are expected to be prevented by the completion of this series.		R
Single Vaccine		30956-7	
Combination Vaccine		38890-0	
The Schedule	Identifies the standards used.	59779-9	R
Series Name	Name of the specific set of doses and recommendations that were used to evaluate this dose and make recommendations.	59780-7	O
Ordinal Position in Primary Series	Indicates which dose in a series that this immunization fulfills.	30973-2	R
Dose Validity	Indicates whether this dose was given appropriately for this series in the given schedule.	59781-3	O
Number of Doses in Primary Series	Indicates how many appropriately given doses are required to meet the goals of this series. If doses can be skipped because of the patient's age, the number will reflect the adjusted amount.	59782-3	O
Series Status	Indicates the status of the client's progress toward meeting the goals of the series selected. Complete, Overdue, In Progress, etc	59783-1	O
Reason Code	Indicates why a dose is not valid or that the recommendation was changed because of a special circumstance.	30982-3	O
Next Dose Forecast			R
Earliest Next Dose Due	Earliest date that the next dose can be given	30981-5	
Recommended Next Dose Due	Date that the next dose is recommended to be given	30980-7	
Latest Next Dose Due	Latest date that the next dose can be given	59777-3	
Next Dose Overdue	Date that the next dose will be overdue	59778-1	

Recommendations – These OBX segments will hold information about the doses that still need to be given, and will be found with the second RXA of the message. The structure for the recommendations section is as follows:

Segment	Segment Name	Comments
{[		
ORC	Common Order	Required
RXA	Pharmacy/Treatment Administration	Required
{[RXR]}	Pharmacy/Treatment Route	Optional, may repeat
{OBX}	Vaccine Group	Required
{OBX}	The Schedule	Required
{[OBX]}	Series Name	Optional
{OBX}	Ordinal Position in Primary Series	Required
{[OBX]}	Number of Doses in Primary Series	Optional
{OBX}	Earliest Next Dose Due	Required
{OBX}	Recommended Next Dose Due	Required
{OBX}	Latest Next Dose Due	Required
{OBX}	Next Dose Overdue	Required
{[OBX]}	Series Status	Optional
{[OBX]}	Reason Code	Optional
{[NTE]}	Notes and Comments	Optional, may repeat
]}		

Message Acknowledgement Structure

An ACK message is sent by the receiving system to notify the sender that the message was received. It will also alert the sender to any errors that were encountered when processing the message.

Segment	Segment Name	Comments
MSH	Message Header	Required
MSA	Message Acknowledgement	Required
{[ERR]}	Error Segment	Optional, May Repeat

Control Segments

MSH – The message header will be the same as in the VXU, except that MSH:9.3 (Message Type) will be 'ACK'

MSA – The message acknowledgement identifies the receiver's response to the query.

MSA Seq.	Name	R/O	Comments
01	Acknowledgement Code	R	HL7 Table 0008 – Acknowledgement Code (AA – normal response, AE, AR – incorrect sequence number)
02	Message Control ID	R	Allows sending system to associate this response with the message for which it is intended. Echoes the Message Control ID sent in MSH:10 in the QBP.
04	Expected Sequence Number	O	If the wrong sequence number was sent, the correct number will be listed here. -1 can be sent to resynchronize sequence numbers. After that, they must increment by one until -1 is sent again.

ERR – The error segment will list any errors that occurred when the message was processed. It will repeat for each error that was encountered or be left out if there were no errors at all.

ERR Seq.	Name	R/O	Comments
02	Error Location	O	Identifies the location in QBP with the error, warning, or message. Can be empty if the location isn't meaningful (i.e. not able to be parsed.)
03	HL7 Error Code	R	HL7 Table 0357 – Message Error Condition Codes

Date	Modification	Modified By
1/9/2017	Initial Draft	Kayla Rowton

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