AIRA
AMERICAN IMMUNIZATION REGISTRY ASSOCIATION

IZ Gateway

HL7 Implementation Guide

9/24/2020 – Version 1.1

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Background

The Immunization (IZ) Gateway is a centralized technical infrastructure that facilitates the flow of immunization data through an intelligent message router. The IZ Gateway is sponsored by the Centers for Disease Control and Prevention (CDC) and led by the Department of Health and Human Services (HHS) Office of the Chief Technology Officer. The IZ Gateway is securely hosted on AWS through the Association of Public Health Laboratories (APHL) and does not save information centrally, but routes it securely among provider sites and immunization information systems (IIS).

Utilizing IZ Gateway functionality to relay vaccination information from one sending system to multiple IISs presents unique opportunities for data sharing as well as data exchange challenges. IISs are built to support the HL7 Version 2.5.1 standard. However, each jurisdiction's system has requirements that may vary slightly for HL7 field content and mapping, while still meeting standard requirements.

The IZ Gateway HL7 Version 2.5.1 Implementation Guide (IZIG) provides HL7 message content guidelines for successful processing through the IZ Gateway. All requirements and field-specific guidance in this document conform to CDC "HL7 Version 2.5.1: Implementation Guide for Immunization Messaging," Release 1.5 and Addendum. Where applicable, the IZIG applies additional segment and field comments, constraints, and guidance to ensure consistent and successful message processing between submitters and receivers through the IZ Gateway.

The content of this document applies to all HL7 data exchange partners through the IZ Gateway, including providers, IISs, and mass vaccination applications. The guidelines apply to all projects within the IZ Gateway Portfolio including Connect and Share. The IZIG will be updated as needed with additional guidance for the Access and Provider-Initiated Multi-Jurisdictional Data Exchange projects within the IZ Gateway.

The IZIG aims to support development and decision-making for provider and IIS COVID-19 vaccine reporting and general vaccine data exchange through the IZ Gateway. This document should be used by developers to shape HL7 message field content and for IIS processing settings or requirements. While every effort was made to incorporate potential field requirement variations, this document is not all inclusive of every requirement difference across systems. IIS-specific requirements may need to be accommodated by the sending system at the time of exchange for messages to process successfully. The IZ Gateway Onboarding Team will support evaluation and communication of IIS-specific requirements as needed. Jurisdiction-specific testing between provider sites and their associated IIS will still be needed and may necessitate further modifications.

The IZIG serves as a living document and will be updated monthly as data exchange through the IZ Gateway is operationalized and evaluated. The core requirements and structure of the HL7 fields will not change; certain content expectations may be updated to support IZ Gateway and COVID-19 data exchange. If a topic is not in scope but is related to HL7 message content guidance, the IZIG will link directly to the appropriate information.

Scope

In Scope

- VXU and QBP HL7 v2.5.1 content guidance for messages routed through the IZ Gateway
- Guidance on potential content variations and solutions for specific HL7 message fields
- Guidance for aligning HL7 message content with business rules across IISs efficiently
- Guidance for aligning HL7 message content with identified reporting requirements related to COVID-19 response efforts
- VXU examples, including Administered Vaccinations, Historical Vaccinations, Serology Immunity, Adverse Events, Refusals, and Contraindications
- QBP examples

Out of Scope

- Detailed, field-specific differences for each IIS
- Technical specifications/connection requirements and guidance
- Development requirements to meet HL7 message expectations
- Local or federal reporting requirements relevant to COVID-19 response and other vaccination reporting
- HL7 message onboarding, testing and evaluation steps and requirements prior to moving into production exchange
    - Link to onboarding documents will be provided in future IZIG versions.
- Guidance on submitting Serologic Evidence of Immunity
    - Link to COVID-19 serologic evidence of immunity guidance will be provided in future IZIG versions.
- Detailed guidance on submitting Adverse Events, Refusals, and Contraindications
    - See "List of Key HL7 Resources" for links to guidance.
- ACK and RSP guidance
    - See "List of Key HL7 Resources" for links to guidance.

List of Key HL7 Resources

HL7 Version 2.5.1 Implementation Guide for Immunization Messaging, Release 1.5 2018 Update

This document combines the original HL7 2.5.1 Release 1.5 Implementation Guide and Release 1.5 Addendum, as well as additional guidance published by the American Immunization Registry Association (AIRA). The purpose of this document is to provide a single document containing essential HL7 information, so that implementers and developers have a convenient single information source to work from.

NIST Immunization Test Suite

Supports a range of testing in support of the immunization community, including transport and messaging

CDC Website: Code Sets

Includes up-to-date CVX, MVX, NDC Crosswalk, VIS, and CPT code tables

Guidance on Detailed Message Structure and the Use of Specific LOINC Codes

This document contains best practice recommendations from AIRA's Standards and Interoperability Steering Committee (SISC) and CDC on how to structure and populate VXU and RSP messages using specific LOINC codes to include observations such as patient immunity, refusals, indications/contraindications, and adverse reactions.

National Set of Error Codes

Materials that outline the creation, management, and use of national-level error codes as well as catalog additional application error codes

Guidance on Unit of Sale/Unit of Use Lot Numbers

This guidance clarifies the process and sets expectations for management of varied vaccine lot numbers and shares the results of a survey of vaccine manufacturers about their practices in assigning Unit of Sale and Unit of Use lot numbers using a pattern, where present. This document was drafted and reviewed jointly by AIRA's SISC and CDC.

Guidance on Indicating Preferable and Contraindicated Vaccines

This document outlines an approach to specify preferred or contraindicated vaccine types in a response message.

Guidance for HL7 Acknowledgement Messages to Support Interoperability

Clarification on implementation methods in an effort to point all IISs toward common, standardized ACK messaging

Guidance for HL7 RSP Messages to Support Interoperability

This guidance document seeks to clarify how to populate the Acknowledgment Code (MSA-1), the Query Response Status (QAK-2) and the Error Severity (ERR-4) to ensure that all values are in agreement and are appropriate for the outcomes of the initial message processing.

General Guidance for HL7 Messages Transmitted through the IZ Gateway

Facility Mapping

The HL7 2.5.1 parent organization/facility site mapping standard is:

MSH-4: Sending Facility: The identifier of the organization that connects to the IIS and submits the record

MSH-22: Sending Responsible Organization: The identifier of the organization that originated and is accountable for the record content.

RXA-11.4: Administered-at Location: The facility name/identifier of the facility that administered the immunization — this information may not be available for a historical dose.

There are IIS-specific facility mapping field content requirements for successful mapping that meet standard requirements. Sending systems must populate Organization/Facility Mapping fields in accordance with IIS "locally defined codes". The facility mapping process will be completed during provider onboarding to an IIS through the IZ Gateway and will be facilitated by the IZ Gateway Onboarding Team.

The provider is responsible for providing an organization and facility list and registering with the IIS during onboarding. The IIS will provide and manage organization/facility mapping values as applicable for a provider (MSH-4, MSH-22, RXA-11.4, ORC-17, and/or PID-3.4). The provider is then responsible for populating the required fields in the HL7 message to ensure successful message processing and organization/facility mapping. This mapping is essential for clinic-level vaccination reporting and inventory management through the IIS.

Other Facility Mapping Considerations for Providers:

- The SOAP Facility ID —if required by the IIS —may or may not be the same as an IIS provided HL7 identifier value (e.g., MSH-4 or MSH-22).
- MSH-4, MSH-22, and RXA-11.4 values may or may not be the same as a clinic's VFC PIN or VTrckS ID. These values must be identified by the receiving IIS.
- Sub-components may impact successful message processing and mapping (for example, populating MSH-22.1 vs. MSH-22.10). Sub-component values will be identified by the receiving IIS during onboarding.
- Some IIS may require specific clinic-level values in ORC-17 and/or PID-3.4.

MSH-3 (Sending Application), **MSH-5** (Receiving Application), and **MSH-6** (Receiving Facility) values also determine successful HL7 message routing for many IISs. If required, these values will be provided by the IIS during onboarding.

Tables with examples of common IIS facility mapping requirements for Connect are provided in Appendix C.

Processing ID

(MSH-11)

For HL7 message testing during the onboarding process, some IISs require a MSH-11=T (Training) or MSH-11=D (Debugging). Others require MSH-11=P (Production). Test messages from the sending system will need to be adjusted to accommodate the local IIS requirements for MSH-11 if the incorrect value prevents the test message from processing.

The value "P" shall always be used for data exchange in production.

Patient Identifier

(PID-3)

PID-3 must be populated with the patient's Medical Record Number (MR). PID-3.1 must be populated with the unique medical record number for the patient at the submitting facility, and PID-3.5 must be populated with the value "MR." Other patient identification values that may have issues processing successfully by some states, including State Registry ID (SR), Patient Identifier (PI), Birth File Number (BR), Social Security Number (SSN), and Driver's License Number (DLN), must not be sent. Do not send PID-3 field repetitions with additional patient identifiers. The patient ID should be unique across time and reusable with each subsequent message with the IIS.

PID-3.4 (Assigning Authority) is required by some IISs. If required by the IIS for mapping, this value will be assigned by the IIS during onboarding.

For data exchange through IZ Gateway SHARE (IIS-IIS), PID-3.1 should be populated with the value of the patient's IIS ID, but PID-3.5 must be populated with the value "MR.". This is because the receiving IIS will have an existing SR (State Registry ID) or LR (Local Registry ID) for the patient, and sending an external SR may result in merging, deduplication, or other patient record update issues. The sending IIS is acting as a provider organization in this exchange and, therefore, it is best to identify this field as the Medical Record Number.

Eligibility + Funding Source Mapping

(OBX Segment)

The July 2015 addendum to the HL7 v2.5.1: Implementation Guide for Immunization Messaging, Release 1.5. has the most up-to-date accepted values for Patient Eligibility Status (User-Defined Table 0064) and Immunization Funding Source (CDCPHINVS). Do not use table values from the original HL7 v2.5.1 November 2014 release.

September 2020: Stakeholders are currently making decisions about IZ Gateway provider and COVID-19 response eligibility and funding source matching. Guidance is not yet

complete on this subject. Future versions of the IZIG will provide clear guidance for mapping existing eligibility and funding source codes as they relate to COVID-19 response.

Vaccine Code Reporting for Administered and Historical Vaccinations

(RXA-5)

Administered Immunizations

The default recommended option is CVX code in the first triplet, followed by NDC as the second triplet.

NDC code alone and NDC code followed by CVX code may also be accepted by IISs. At this time, not all IISs can accept NDC alone; therefore, it is not recommended to submit NDC codes alone.

September 2020: For COVID-19 response, NDC codes may not yet be available and may need to be submitted as CVX code alone for administered vaccines.

Historical Immunizations

RXA-5 must be populated with the CVX code alone.

Patient Address

(PID-11)

Address Reporting from Mass Vaccinators (e.g., public health popups, homeless population vaccination)

Address is required when available. However, missing address fields for COVID-19 response efforts may result in unknown address. IISs should be aware so organization-level requirements for address fields can be updated. If partial address information is available, for example only zip code, this information should be sent.

Address Reporting from Prisons and Long-Term Care Facilities

Address is required when available. The same address or no address may be submitted for multiple patients who are living in the same facility. IISs should be aware of potential merging issues and adjust settings accordingly.

Address Reporting for IZ Gateway SHARE

Patient Address information may be outdated or more complete than existing IIS information in historical VXUs. IISs should be aware of variations in data accuracy and adjust organization-level address reporting expectations and business processing rules accordingly.

Next of Kin

(NK1)

All codes from User-Defined Table 0063 can be accepted. If the contact relationship is unknown or unclear, temporary or emergency contact next of kin information may be submitted for COVID-19 response with a relationship of OTHER (OTH).

NK1 Data for SHARE

Next of Kin information may be outdated or more complete than existing IIS information in historical VXUs coming from another IIS. IISs should be aware of variations in data accuracy.

Race and Ethnicity

(PID-10 and PID-22)

Submission of race and ethnicity data whenever possible is encouraged to allow for analyses that address health equity, identify disparities and support patient matching.

Consent

(PD1)

Policies around opt-in/opt-out and other consent requirements are jurisdiction specific. This segment is required in jurisdictions where required by law. Specific requirements will be communicated to providers when onboarding with an IIS via the IZ Gateway to ensure compliance with jurisdictional consent laws.

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Submitting Serologic Evidence of Immunity

Serologic Evidence of Immunity reporting is out of scope for this document. A link to guidance will be provided in future versions of the IZIG.

VXU Message Guidance Tables

The following tables consolidate VXU segment and field standard requirements per the HL7 v2.5.1 standard. Comments specific to IZ Gateway data exchange are noted in these tables. Reference the HL7 v2.5.1: Implementation Guide for Immunization Messaging, Release 1.5. for additional definitions, requirements (e.g., field type and length), code tables, and other details.

Sending Application Conformance Requirements

Symbol	Definition	Implementation	Operation Requirement
R	Required	The application SHALL implement "R" elements.	The sending application SHALL populate "R" elements with a non-empty value.
RE	Required but may be empty	The application SHALL implement "RE" elements.	The application SHALL populate "RE" elements with a non-empty value if there are 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 in this guide	The application (or as configured) SHALL NOT implement "X" elements.	The application SHALL NOT populate "X" elements.

VXU Message Segment Requirements and Order

Segment	Usage	Cardinality	Comment
MSH	R	[1..1]	Every message begins with an MSH segment.
PID	R	[1..1]	Every VXU has one PID segment.
PD1	RE	[0..1]	The PID segment in a VXU message may have zero or one PD1 segment(s).

NK1	RE	[0..*]	The PID segment in a VXU message may have zero or more NK1 segment(s).
{[Begin Order Group	RE	[0..*]	Each VXU may have zero or more order groups.
ORC	R	[1..1]	Required for each RXA segment. Each VXU message may have one or more order group(s).
RXA	R	[1..1]	Each RXA segment requires an ORC segment.
RXR	RE	[0..1]	Each RXA segment in a VXU message may have zero or one RXR segment(s).
OBX	RE	[0..*]	Four or five OBX segments are required when reporting an administered vaccine.
End Order Group]}			

MSH Segment

Field		Usage	Cardinality	CDC 2.5.1 IG Notes	IZ Gateway IG Notes	Code Table
MSH-1	Field Separator	R	[1..1]	Shall be valued "|"		
MSH-2	Encoding Characters	R	[1..1]	Shall be valued "^~\&"		
MSH-3	Sending Application	RE	[0..1]	Uniquely identifies the sending application. The value is locally defined and assigned by the IIS.	Value supplied by the receiving IIS	
MSH-4	Sending Organization	RE	[0..1]	Identifies the organization responsible for the operations of the sending application. Locally defined codes accommodate local needs.	Value supplied by the receiving IIS. See Facility Mapping Guidance for more detail.	
MSH-5	Receiving Application	RE	[0..1]	Uniquely identifies the receiving application.	Value supplied by the receiving IIS	

MSH-6	Receiving Facility	RE	[0..1]	Identifies the organization responsible for the operations of the receiving application. Locally defined codes will accommodate local needs.	Value supplied by the receiving IIS	
MSH-7	Date and Time of Message	R	[1..1]	Date/time that the sending system created the message. The degree of precision must be to the second and include time zone. Format with time zone: YYYYMMDDHHMMSS+/-ZZZZ		
MSH-9	Message Type	R	[1..1]	Shall be valued "VXU^V04^VXU_V04"		
MSH-10	Message Control ID	R	[1..1]	The identifier assigned by the sending application (MSH-3) that uniquely identifies a message instance. This identifier is unique within the scope of the sending facility (MSH-4), sending application (MSH-3), and the YYYYMMDD portion of message date (MSH-7).		
MSH-11	Processing ID	R	[1..1]	Used to define how to process the message	Value must be "P" for production. For guidance on value variation for testing during onboarding, see Processing ID Guidance.	HL7 Table 0103
MSH-12	Version ID	R	[1..1]	Shall be valued "2.5.1"		
MSH-15	Accept Acknowledgement	RE	[1..1]	Shall be valued "ER"		

	Type					
MSH-16	Application Acknowledgement Type	RE	[1..1]	Shall be valued "AL"		
MSH-21	Message Profiler Identifier	R	[1..*]	Shall be valued "Z22^CDCPHINVS"		
MSH-22	Sending Responsible Organization	RE	[0..1]	Business organization that originated and is accountable for the content of the message	Value supplied by the receiving IIS. See Facility Mapping Guidance for more detail.	
MSH-23	Receiving Responsible Organization	RE	[0..1]	Business organization that is the intended receiver of the message and is accountable for acting on the data conveyed by the transaction.	Usually empty. If required, value supplied by the receiving IIS. See Facility Mapping Guidance for more detail.	

Example MSH segment from provider organization AIRA Org on August 5, 2016, at 5:10am time zone UTC-06:00.

***BOLD** values are supplied by the receiving IIS. May be empty for some IISs.*

MSH|^~\&|**SENDINGAPP**|**AIRAORG**|**RECEIVINGAPP**|**RECEIVINGFAC**|20160805102500-0600||VXU^V04^VXU_V04|1cuA.01.01.3n|P|2.5.1|||ER|AL|||||Z22^CDCPHINVS|**AIRAORGRESPONSIBLE**

PID Segment

Field		Usage	Cardinality	CDC 2.5.1 IG Notes	IZ Gateway IG Notes	Code Table
PID-1	Set ID	R	[1..1]	Shall be valued "1"		

PID-3	Patient Identifier List		R	[1..*]	The identifier(s) used by the healthcare facility to uniquely identify a patient	Recommended to only send one identifier, MR. See Patient Identifier Guidance for more detail.	HL7 Table 0203
	PID-3.1	ID Number				ID should be unique across time for the patient and reusable with each subsequent message with the IIS.	
	PID-3.4	Assigning Authority				Value may be supplied by the receiving IIS. May be empty.	
	PID-3.5	Identifier Type				Populate with the value "MR."	
PID-5	Patient Name		R	[1..*]	The names of the patient. The primary or legal name of the patient is reported first.	More than one repetition may not be processed by all IISs.	HL7 Table 0200
	PID-5.1	Last Name					
	PID-5.2	First Name					
	PID-5.3	Middle Name or Initial				Important for deduplication in many systems	
	PID-5.4	Suffix				May be empty	
	PID-5.7	Name Type Code			The name type code in PID-5.7 should be "L" for Legal.		
PID-6	Mother's Maiden Name		RE	[0..1]	The family name under which the mother was born (i.e., before marriage).	Important for deduplication in many systems. Collection and submission of data element are recommended.	HL7 Table 0200

	PID-6.1	Last Name					
	PID-6.2	First Name					
	PID-6.7	Name Type Code				PID-6.7 name type code value should be “M” for Maiden.	
PID-7	Date of Birth		R	[1..1]	The patient’s date and time of birth	Use format YYYYMMDD	
PID-8	Administrative Sex		R	[0..1]	The patient’s sex.		User-Defined Table 0001
PID-10	Race		RE	[0..*]	The patient’s race.	Collection and submission of this data element are recommended. More than one repetition may not be processed by all IISs.	User-defined Table 0005
	PID-10.1	Identifier					
	PID-10.2	Text					
	PID-10.3	Coding System			Value must be “CDCREC”		
PID-11	Patient Address		RE	[0..*]	The mailing address of the patient	Address sometimes required by IIS for record processing. More than one repetition may not be processed by all IISs.	HL7 Table 0190
	PID-11.1	Street Address					
	PID-11.2	Other Designation					

	PID-11.3	City					
	PID-11.4	State					
	PID-11.5	Zip or Postal Code					
	PID-11.6	Country					
	PID-11.7	Address Type					
PID-13	Phone Number		RE	[0..*]	The patient's personal phone numbers	More than one repetition may not be processed by all IISs.	
	PID-13.2	Telecommunication Use Code					HL7 Table 0201
	PID-13.3	Telecommunication Equipment Type					HL7 Table 0202
	PID-13.6	Area Code					
	PID-13.7	Phone Number					
PID-19	SSN Patient		X	[0..0]		DO NOT SEND	
PID-22	Ethnic Group		RE	[0..1]	Further defines the patient's ancestry.	Collection and submission of this data element are recommended.	CDCREC
	PID-22.1	Identifier					
	PID-22.2	Text					
	PID-22.3	Coding System			Value must be "CDCREC"		

PID-24	Multiple Birth Indicator	RE	[0..1]	Indicates whether the patient was part of a multiple birth		HL7 Table 0136
PID-25	Birth Order	C (RE/O)	[0..1]	When a patient was part of a multiple birth, a value (number) indicating the patient's birth order is entered in this field. If PID-24 is populated, then this field should be populated.		
PID-29	Patient Death Date	C (RE/X)	[0..1]	The date and time at which the patient death occurred	Use format YYYYMMDD.	
PID-30	Patient Death Indicator	RE	[0..1]	Indicates whether the patient is deceased		HL7 Table 0136

Example PID segment for the patient Kyoko Sawyer Pecos born on July 25, 2015, female, white, and not Hispanic or Latino, with a medical record number of 1234 and a mother whose maiden name is Valisa Marion.

BOLD *values may be supplied by the receiving IIS and required to be submitted by the sender. If not supplied by the IIS, can be identified by the sender.*

PID|1||1234^^^**AIRA**^MR||Pecos^Sawyer^Kyoko^^^^L|Marion^Valisa^^^^^M|20150725|F||2106-3^White^CDCREC|350 Greene Cir^^Little Lake^MI^49833^USA^P||^PRN^PH^^^906^3464569|||||||||2186-5^not Hispanic or Latino^CDCREC||N|||||N

PD1 Segment

Field	Usage	Cardinality	CDC 2.5.1 IG Notes	IZ Gateway IG Notes	Code Table

PD1-11	Publicity Code		RE	[0..1]	In the context of immunization messages, this refers to how a person wishes to be contacted in a reminder or recall situation.		User-Defined Table 0215
	PD1-11.1	Identifier					
	PD1-11.2	Text					
	PD1-11.3	Coding System			Value must be “HL70215”		
PD1-12	Protection Indicator		RE	[0..1]	identifies whether a person’s information may be shared with others. Specific protection policies are a local consideration (opt in or opt out, for instance). This field conveys the current state in the sending system. “Y” means data must be protected.	Policies are jurisdiction-specific. This field is required in jurisdictions where required by law. See Consent Guidance for more details.	HL7 Table 0136
PD1-13	Protection Indicator Effective Date		C (RE/X)	[0..1]	If PD1-12 is valued, indicates the effective date for protection indicator reported in PD1-12.	Use format YYYYMMDD. Policies are jurisdiction-specific. This field is required in jurisdictions where required by law. See Consent Guidance for more details.	

PD1-16	Immunization Registry Status	RE	[0..1]	Identifies the current status of the patient in relation to the sending provider organization.		User-Defined Table 0441
PD1-17	Immunization Registry Status Effective Date	C (RE/X)	[0..1]	If PD1-16 is valued, indicates the effective date for the registry status reported in PD1-16		
PD1-18	Publicity Code Effective Date	C (RE/X)	[0..1]	If PD1-11 is valued, indicates the effective date for the publicity code reported in PD1-11		

Example PD1 segment indicating any method for reminder/recall and no data protection indicated.

PD1||||||||||||02^Reminder/Recall - any method^HL70215|N|20160805|||A|20160805|20160805|

NK1 Segment

For some jurisdictions, NK1 is required if the patient is a minor. It is recommended to submit NK1 in all records for children 18 years and younger.

Field		Usage	Cardinality	CDC 2.5.1 IG Notes	IZ Gateway IG Notes	Code Table
NK1-1	Set ID	R	[1..1]	The number that identifies this transaction. For the first occurrence of the segment, the sequence number shall be 1, for the second occurrence, the sequence number shall be 2, etc.		

NK1-2	Name		R	[1..*]	The name of the next of kin or associated party. Multiple names for the same person are allowed, but the legal name must be sent in the first sequence (Name type code shall be valued “L” – Legal.)		HL7 Table 0200
	NK1-2.1	Last Name					
	NK1-2.2	First Name					
	NK1-2.3	Middle Name or Initial					
	NK1-2.7	Name Type Code			Value must be “L”		
NK1-3	Relationship		R	[1..1]	The personal relationship that the next of kin/associated party has to the patient.	The table option “Other” should be used by the sender if unable to map to a specific relationship.	User-defined Table 0063
	NK1-3.1	Identifier					
	NK1-3.2	Text					
	NK1-3.3	Coding System			Value must be “HL70063”		
NK1-4	Address		RE	[0..*]	The address of the next of kin/associated party		User-Defined HL7 Table 0190
	NK1-4.1	Street Address					
	NK1-4.2	Other Designation					
	NK1-4.3	City					

	NK1-4.4	State					
	NK1-4.5	Zip or Postal Code					
	NK1-4.6	Country					
	NK1-4.7	Address Type					
NK1-5	Phone Number		RE	[0..*]	The telephone number of the next of kin/associated party		
	NK1-5.2	Telecommunication Use Code					HL7 Table 0201
	NK1-5.3	Telecommunication Equipment Type					HL7 Table 0202
	NK1-5.6	Area Code					
	NK1-5.7	Phone Number					

Example NK1 segment indicating the mother Marion Valisa Pecos as the next of kin.

NK1|1|Pecos^Valisa^Marion^^^^L|MTH^Mother^HL70063|350 Greene Cir^^Little Lake^MI^49833^USA^P|^PRN^PH^^^906^3464569|

ORC Segment

Field			Usage	Cardinality	CDC 2.5.1 IG Notes	IZ Gateway IG Notes	Code Table
ORC-1	Order Control		R	[1..1]	Shall be valued "RE"		
ORC-2	Placer Order Number		RE	[0..1]	Uniquely identifies this order among all orders sent by a provider organization		
	ORC-2.1	Entity Identifier					

	ORC-2.2	Namespace ID					
ORC-3	Filler Order Number		R	[1..1]	Uniquely identifies this order among all orders sent by a provider organization that filled the order		
	ORC-3.1	Entity Identifier					
	ORC-3.2	Namespace ID					
ORC-10	Entered By		RE	[0..1]	Identifies the individual that entered this particular order		HL7 Table 0203
	ORC-10.1	ID Number					
	ORC-10.2	Last Name					
	ORC-10.3	First Name					
	ORC-10.4	Middle Name or Initial					
	ORC-10.9	Assigning Authority					
	ORC-10.13	Identifier Type Code					
ORC-12	Ordering Provider		C (RE/O)	[0..1]	The identity of the person who is responsible for creating the request (i.e., ordering physician). Populated only if RXA-9.1 is valued “00” (administered) and RXA-20 is valued “CP” or “PA”. Expected to be empty if the immunization		HL7 Table 0203

					record is transcribed from a historical record.		
	ORC-12.1	ID Number					
	ORC-12.2	Last Name					
	ORC-12.3	First Name					
	ORC-12.4	Middle Name or Initial					
	ORC-12.9	Assigning Authority					
	ORC-12.13	Identifier Type Code					
ORC-17	Entering Organization		RE		Identifies the provider organization that entered this record/order	Value supplied by the receiving IIS. See Facility Mapping Guidance for more detail.	HL7 Table 0306
	ORC-17.1	Identifier					
	ORC-17.2	Text					
	ORC-17.3	Name of Coding System					

Example ORC segment of an order entered by Donna A Burden, ordered by Nicholas John Radon, by entering organization AIRA Clinic 1.

ORC|RE|1234^AIRA|F81S3495.3^AIRA|||||||23432^Burden^Donna^A^^^^^AIRA^^^^PRN||57422^RADON^NICHOLAS^JOHN^^^^^AIRA^^^^PRN|||||444^AIRA Clinic 1^HL70362

RXA Segment

Field			Usage	Cardinality	CDC 2.5.1 IG Notes	IZ Gateway IG Notes	Code Table
RXA-1	Give Sub-ID Counter		R	[1..1]	Shall be valued "0"		
RXA-2	Administration Sub-ID Counter		R	[1..1]	Shall be valued "1"		
RXA-3	Date/Time Start of Administration		R	[1..1]	Date this vaccination occurred. In the case of refusal or deferral, this is the date that the refusal or deferral was recorded.	Use format YYYYMMDD.	
RXA-5	Administered Code		R	[1..1]	Identifies the medical substance administered.	For administered vaccines, default recommended option is CVX code in the first triplet, followed by NDC as the second triplet. Other options may be acceptable. See Vaccine Code Reporting for Administered and Historical Vaccinations Guidance for additional information. NDC must be 11 digits with hyphens.	CVX Table and NDC Table
	RXA-5.1	Identifier					

	RXA-5.2	Text					
	RXA-5.3	Coding System				CVX code recommended as the first triplet	
	RXA-5.4	Alternate Identifier					
	RXA-5.5	Alternate Text					
	RXA-5.6	Alternate Coding System				NDC recommended as the second triplet	
RXA-6	Administered Amount		R	[1..1]	Amount of pharmaceutical administered. If administered amount is unknown, populate with the value “999”.		
RXA-7	Administered Units		C(R/X)	[0..1]	Populated if administered amount is not valued “999”		UCUM
	RXA-7.1	Identifier					
	RXA-7.2	Text					
	RXA-7.2	Coding System			Value must be “UCUM”		
RXA-9	Administration Notes		C(R/O)	[0..*]	Indicates whether the immunization is based on a historical record or was administered by the provider recording the immunization Populated if RXA-20 is valued “CP” or “PA”		NIP-Defined Table 0001

	RXA-9.1	Identifier			If administered, populate with the value “00”. If historical record, populate with the value “01”.		
	RXA-9.2	Text			If administered, populate with the value “Administered”. If historical record, populate with the value “Historical”.		
	RXA-9.3	Coding System			Populate with the value “NIP001”.		
RXA-10	Administering Provider		C(RE/O)	[0..1]	Name and provider ID of the person physically administering the pharmaceutical Populated if RXA-9 is valued “00” (administered).		HL7 Table 0203
	RXA-10.1	ID Number					
	RXA-10.2	Last Name					
	RXA-10.3	First Name					
	RXA-10.4	Middle Name or Initial					
	RXA-10.9	Assigning Authority					
	RXA-10.13	Identifier Type Code					

RXA-11	Administered-at Location		C(RE/O)	[0...1]	The clinic/site where the vaccine was administered Populated if RXA-9.1 is valued "00" and RXA-20 is valued "CP" or "PA"	Value supplied by the receiving IIS. See Facility Mapping Guidance for more detail.	
	RXA-11.4	Facility				Value supplied by the receiving IIS	
RXA-15	Substance Lot Number		C(R/O)	[0..*]	The lot number of the medical substance administered Populated if RXA-9.1 is valued “00” and RXA-20 is valued “CP” or “PA”		
RXA-16	Substance Expiration Date		C(RE/O)	[0..1]	The expiration date of the medical substance administered Populated if RXA-9.1 is valued “00” and RXA-20 is valued “CP” or “PA”		
RXA-17	Substance Manufacturer Name		C(R/O)	[0..1]	The manufacturer of the medical substance administered		MVX Code System

					Populated if RXA-9.1 is valued “00” and RXA-20 is valued “CP” or “PA”		
	RXA-17.1	Identifier					
	RXA-17.2	Text					
	RXA-17.3	Coding System			Value must be “MVX”		
RXA-18	Substance/Treatment Refusal Reason		C(R/X)	[0..*]	The reason the patient refused the medical substance/treatment Populated if RXA-20 is valued “RE”		NIP-Defined Table 002
	RXA-18.1	Identifier					
	RXA-18.2	Text					
	RXA-18.3	Coding System			Value must be “NIP002”		
RXA-20	Completion Status		RE	[0..1]	Indicates if the dose was successfully given If RXA-5.1 has a value of “998” (no vaccine administered), then RXA-20 must be valued “NA” (not administered). If RXA-18 is populated, then RXA-20 must be valued “RE” (refusal).		HL7 Table 0322

RXA-21	Action Code	C(R/O)	[0..1]	Indicates the action expected by the sending system. It can facilitate update or deletion of immunization records. If this field is empty, no action is indicated. Populated if RXA-5.1 is not valued "998" (no vaccine administered).		HL7 Table 0323

Example of a MMRV administered at AIRA Clinic 1 by Suzanne Lily Jackson on August 5, 2016.

RXA|0|1|20160805||94^MMRV^CVX^00006-4171-00^MMRV^NDC|0.5|mL^milliliters^UCUM||00^Administered^NIP001|7824^Jackson^Lily^Suzanne^^^^^AIRA^^^^PRN|^^^AIRA-Clinic-1||||Q3110HZ|20170430|MSD^Merck and Co^MVX|||CP|A|

Example of an MMR previously given on August 5, 2004, reported as a historical record.

RXA|0|1|20040805||03^MMR^CVX|999|||01^Historical^NIP001||||||||||CP|A|

RXR Segment

Field			Usage	Cardinality	CDC 2.5.1 IG Notes	IZ Gateway IG notes	Code Table
RXR-1	Route		R	[1..1]	Route of vaccine administration		NCIT
	RXR-1.1	Identifier					
	RXR-1.2	Text					
	RXR-1.3	Coding System			Value must be "NCIT"		

RXR-2	Administration Site		RE	[0..1]	Site of vaccine administration		HL7 Table 0163
	RXR-2.1	Identifier					
	RXR-2.2	Text					
	RXR-2.3	Coding System			Value must be "HL70163"		
Example RXR segment indicating subcutaneous route in the left thigh. RXR|C38299^Subcutaneous^NCIT|LT^Left Thigh^HL70163|							

OBX Segment

In a VXU, the OBX segment is associated with an RXA segment to report dose level eligibility, vaccine funding source, and vaccination information statement (VIS) documentation. Where applicable, it is used to report an adverse reaction, contraindication, and presumed immunity. The basic format is a question (OBX-3) and an answer (OBX-5).

Details on structuring the OBX segment and identifying the types of observations can be found on the AIRA Repository: Guidance on Detailed Message Structure and the Use of Specific LOINC Codes.

Field		Usage	Cardinality	CDC 2.5.1 IG Notes	IZ Gateway IG Notes	Code Table
OBX-1	Set ID	R	[1..1]	The first instance shall be set to 1 and each subsequent instance shall be the next number in sequence. Numbering is not restarted within a message. That is, if a message had 3 order groups and each had 3 OBX, the last OBX in the message would have value of 9 for this field.		

OBX-2	Value Type		R	[1..1]	The format of the observation value in OBX		HL7 Table 0125
OBX-3	Observation Identifier		R	[1..1]	Indicates what this observation refers to. It poses the question that is answered by OBX-5.		NIP-Defined Table 003
	OBX-3.1	Identifier					
	OBX-3.2	Text					
	OBX-3.3	Coding System			Value must be “LN”		
OBX-4	Observation Sub-ID		R	[1..1]	Used to group related observations by setting the value to the same number		
OBX-5	Observation Value		R	[1..1]	This is the observation value and answers the question posed by OBX-3.		Varies
	OBX-5.1	Identifier					
	OBX-5.2	Text					
	OBX-5.3	Coding System			If OBX-3.1 is “64994-7” and OBX-2 is “CE” then the value set for OBX-5 shall be HL70064. If OBX-3.1 is “69764-9” and OBX-2 is “CE” then the value set for OBX-5 shall be cdcgs1vis.		

					If OBX-3.1 is “30956-7” and OBX-2 is “CE” then the value set for OBX-5 shall be CVX.		
OBX-11	Observation Result Status		R	[1..1]	Value must be “F”		
OBX-14	Date/Time of the Observation		RE	[0..1]	Use format YYYYMMDD.		
OBX-17	Observation Method		C(RE/O)	[0..1]	Populated if OBX-3.1 is “64994-7” (funding program eligibility) This field is used to distinguish between eligibility that is captured at the visit level versus at the immunization event level.		CDCPHINVS
	OBX-17.1	Identifier					
	OBX-17.2	Text					
	OBX-17.3	Coding System			Value must be “CDCPHINVS”		

Example of a non-VFC-eligible patient given a privately funded MMRV vaccine, including VIS information and VIS date presented.

OBX|1|CE|30963-3^Vaccine Funding Source^LN|1|PHC70^Private^CDCPHINVS|||||F|||20160805

OBX|2|CE|64994-7^Vaccine Funding Program Eligibility^LN|2|V01^Not VFC Eligible^HL70064|||||F|||20160805|||VXC40^per immunization^CDCPHINVS

OBX|3|CE|69764-9^Document Type^LN|3|25308869830001341119081 5^MMRV Vaccine VIS^cdcgs1vis|||||F|||20160805

OBX|4|DT|29769-7^Date Vis Presented^LN|3|20160805|||||F|||20160805

QBP Message Guidance Tables

The following tables outline QBP segment and field standard requirements per the HL7 2.5.1 standard. Comments specific to IZ Gateway data exchange are noted in these tables. Reference the HL7 v2.5.1: Implementation Guide for Immunization Messaging, Release 1.5. for additional requirements (e.g. field type and length), code tables, and details.

Supported QBP Profiles

Z34 – Request Complete Immunization History

Z44 – Request Evaluated Immunization History and Forecast

QBP Segment Requirements and Order

Segment	Usage	Comment
MSH	R	Every message begins with an MSH segment.
QPD	R	Every QBP has one QPD segment.
RCP	R	Every QBP has one RCP segment.

MSH Segment

Field		Usage	Cardinality	CDC 2.5.1 IG Notes	IZ Gateway IG Notes	Code Table
MSH-1	Field Separator	R	[1..1]	SHALL be valued "|"		
MSH-2	Encoding Characters	R	[1..1]	Shall be valued "^~\&"		

MSH-3	Sending Application	RE	[0..1]	Uniquely identifies the sending application. The value is locally defined and assigned by the IIS.	Value supplied by the receiving IIS	
MSH-4	Sending Organization	RE	[0..1]	Identifies the organization responsible for the operations of the sending application. Locally defined codes accommodate local needs.	Value supplied by the receiving IIS. See Facility Mapping Guidance for more detail.	
MSH-5	Receiving Application	RE	[0..1]	Uniquely identifies the receiving application	Value supplied by the receiving IIS	
MSH-6	Receiving Facility	RE	[0..1]	Identifies the organization responsible for the operations of the receiving application. Locally defined codes will accommodate local needs.	Value supplied by the receiving IIS	
MSH-7	Date and Time of Message	R	[1..1]	Date/time that the sending system created the message. The degree of precision must be to the second and include time zone. Format with time zone: YYYYMMDDHHMMSS+/-ZZZZ		
MSH-9	Message Type	R	[1..1]	Shall be valued "QBP^Q11^QBP_Q11"		
MSH-10	Message Control ID	R	[1..1]	The identifier assigned by the sending application (MSH-3) that uniquely identifies a message instance. This identifier is unique within the scope of the sending facility (MSH-4), sending application (MSH-3), and the YYYYMMDD portion of message date (MSH-7).		

MSH-11	Processing ID	R	[1..1]	Used to define how to process the message	Value must be "P" for production. For guidance on value variation for testing during onboarding, see Processing ID Guidance.	HL7 Table 0103
MSH-12	Version ID	R	[1..1]	Shall be valued "2.5.1"		
MSH-15	Accept Acknowledgement Type	RE	[0..1]	Shall be valued "ER"		
MSH-16	Application Acknowledgement Type	RE	[0..1]	Shall be valued "AL"		
MSH-21	Message Profiler Identifier	R	[1..1]	"Z34^CDCPHINVS" or "Z44^CDCPHINVS"		
MSH-22	Sending Responsible Organization	RE	[0..1]	Business organization that originated and is accountable for the content of the message	Value supplied by the receiving IIS. See Facility Mapping Guidance for more detail.	
MSH-23	Receiving Responsible Organization	RE	[0..1]	Business organization that is the intended receiver of the message and is accountable for acting on the data conveyed by the transaction	Usually empty. If required, value supplied by the receiving IIS. See Facility Mapping Guidance for more detail.	

Example MSH segment.

BOLD values are supplied by the receiving IIS. May be empty for some IISs.

Z34 – Request Complete Immunization History

MSH|^~\&|**SENDINGAPP**|**AIRAORG**|**RECEIVINGAPP**|**RECEIVINGFAC**|20160805102500-0600||QBP^Q11^QBP_Q11|1cuA.01.01.4n|P|2.5.1|||ER|AL|||||Z34^CDCPHINVS|**AIRAORGRESPONSIBLE**

Z44 – Request Evaluated Immunization History and Forecast
MSH|^~\&|**SENDINGAPP**|**AIRAORG**|**RECEIVINGAPP**|**RECEIVINGFAC**|20160805102500-0600||
QBP^Q11^QBP_Q11|1cuA.01.01.5n|P|2.5.1|||ER|AL|||||Z44^CDCPHINVS|**AIRAORGRESPONSIBLE**

QPD Segment

While all patient identifying fields are RE, the more information that is populated, the more likely a match will be identified.

Field			Usage	Cardinality	CDC 2.5.1 IG Notes and Input Parameter Specification Value	IZ Gateway IG Notes
QPD-1	Message Query Name		R	[1..1]	"Z34^Request Complete Immunization History^CDCPHINVS" **or** "Z44^Request Evaluated History and Forecast^CDCPHINVS"	
QPD-2	Query Tag		R	[1..1]	Unique to each query message instance. Used to match response messages to the originating query. The responding system is required to echo it back as the first field in the query acknowledgement segment (QAK).	
QPD-3	Patient List		RE	[0..*]	PID-3: Patient Identifier List	Recommended to only send MR
	QPD-3.1					

	QPD-3.4					Value may be supplied by the receiving IIS. May be empty.
	QPD-3.5				Value should be “MR”	
QPD-4	Patient Name		RE	[0..1]	PID-5: Patient Name	
	QPD-4.1					
	QPD-4.2					
	QPD-4.3					
	QPD-4.4					
	QPD-4.7				Value should be “L”	
QPD-5	Mother’s Maiden Name		RE	[0..1]	PID-6: Mother’s Maiden Name	
	QPD-5.1					
	QPD-5.2					
	QPD-5.7				Value should be “M”	
QPD-6	Date of Birth		RE	[0..1]	PID-7: Patient Date of Birth	Use format YYYYMMDD
QPD-7	Administrative Sex		RE	[0..1]	PID-8: Patient Sex	
QPD-8	Patient Address		RE		PID-11: Patient Address	
	PID-11.1					
	PID-11.2					
	PID-11.3					
	PID-11.4					
	PID-11.5					
	PID-11.6					

	PID-11.7					
QPD-9	Phone Number		RE	[0..1]	PID-13: Patient Phone	
	PID-13.2					
	PID-13.3					
	PID-13.6					
	PID-13.7					
QPD-10	Multiple Birth Indicator		RE	[0..1]	PID-24: Patient Multiple Birth Indicator	
QPD-11	Birth Order		RE	[0..1]	PID-25: Patient Birth Order	

Example QPD Segment.

Z34 – Request Complete Immunization History
QPD|Z34^Request Immunization History^CDCPHINVS|37374859|1234^^^AIRA^MR|Pecos^Sawyer^Kyoko^^^^L|Marion^Valisa^^^^^M|20150725|F|350 Greene Cir^^Little Lake^MI^49833^USA^P|^PRN^PH^^^906^3464569||

Z44 – Request Evaluated Immunization History and Forecast
QPD|Z44^Request Evaluated History and Forecast^CDCPHINVS|793543|1234^^^AIRA^MR|Pecos^Sawyer^Kyoko^^^^L|Marion^Valisa^^^^^M|2015072|F|350 Greene Cir^^Little Lake^MI^49833^USA^P|^PRN^PH^^^906^3464569||

RCP Segment

Field	Usage	Cardinality	CDC 2.5.1 IG Notes: Field Description and Commentary	IZ Gateway IG Notes

RCP-1	Query Priority		RE	[0..1]	Query priority for valid values. If this field is not valued, then it shall default to I. The only value permitted is "I" for Immediate.	
RCP-2	Query Tag		RE	[0..1]	The sending system sets an upper limit on the number of candidates it will accept in response to a query in RCP-2. It expects that a responding system will send no more candidates than this number. In addition, the responding system may have an upper limit on the number of candidates that it will return. This number may be lower than the requesting system. It will trump the requesting system upper limit.	
	RCP-2.1	Quantity Limited Number			A responding system will send no more candidates than the number indicated here.	In certain cases, a value of "1" may be submitted for systems wishing to receive only one exact match in response to a query. If more than one potential match is found, the receiving system will respond with No Patient Found or Too Many Matches.
	RCP-2.2	Quantity Limited Code			Value must be "RD&Records&HL70126"	
	Example RCP Segment to immediately return no more than 10 potential matching records. RCP|I|10^RD&Records&HL70126					

APPENDIX A: Example VXU Messages

***BOLD** values may be supplied by the receiving IIS and required to be submitted by the sender. If not supplied by the IIS, can be identified by the sender.*

Example VXU: Administered Vaccination

MSH|^~\&|**SENDINGAPP**|**AIRAORG**|**RECEIVINGAPP**|**RECEIVINGFAC**|20160805102500-0600||VXU^V04^VXU_V04|1cuA.01.01.4n|P|2.5.1|||ER|AL|||||Z22^CDCPHINVS|**AIRAORGRESPONSIBLE**

PID|1||1234^^^**AIRA**^MR||Pecos^Sawyer^Kyoko^^^^L|Marion^Valisa^^^^^M|20150725|F||2106-3^White^CDCREC|350 Greene Cir^^Little Lake^MI^49833^USA^P||^PRN^PH^^^906^3464569||||||||2186-5^not Hispanic or Latino^CDCREC||N|||||N

PD1||||||||||||02^Reminder/Recall - any method^HL70215|N|20191001|||A|20191001|20191001|

NK1|1|Pecos^Valisa^Marion^^^^L|MTH^Mother^HL70063|350 Greene Cir^^Little Lake^MI^49833^USA^P|^PRN^PH^^^906^3464569|

ORC|RE|1234^AIRA|F81S3495.1^AIRA||||||I-23432^Burden^Donna^A^^^^^AIRA^^^^PRN||57422^RADON^NICHOLAS^JOHN^^^^^AIRA^^^^PRN||||444^AIRA Clinic 1^HL70362

RXA|0|1|20191001||133^PCV 13^CVX^00005-1971-01^Prevnar 13^NDC|0.5|mL^mL^UCUM||00^New Record^NIP001|7824^Jackson^Lily^Suzanne^^^^^AIRA^^^^PRN|^^^AIRA-Clinic-1||||353480|20240729|PFR^Pfizer, Inc^MVX|||CP|A

RXR|C28161^Intramuscular^NCIT|LT^Left Thigh^HL70163

OBX|1|CE|30963-3^Vaccine Funding Source^LN|1|PHC70^Private^CDCPHINVS|||||F|||20160805

OBX|2|CE|64994-7^Vaccine Funding Program Eligibility^LN|2|V01^Not VFC Eligible^HL70064|||||F|||20191001|||VXC40^per immunization^CDCPHINVS

OBX|3|CE|69764-9^Document Type^LN|3|25308869830001581119103O^Pneumococcal Conjugate (PCV13) Vaccine VIS^cdcgs1vis|||||F|||20191001

OBX|4|DT|29769-7^Date Vis Presented^LN|3|20150624|||||F|||20191001

ORC|RE|1234^AIRA|F81S3495.2^AIRA||||||I-23432^Burden^Donna^A^^^^^AIRA^^^^PRN||57422^RADON^NICHOLAS^JOHN^^^^^AIRA^^^^PRN|||||444^AIRA Clinic 1^HL70362

RXA|0|1|20191001||116^rotavirus, pentavalent^CVX^00006-4047-01^RotaTeq^NDC|2.0|mL^mL^UCUM||00^New Record^NIP001|7824^Jackson^Lily^Suzanne^^^^^AIRA^^^^PRN|^^^AIRA-Clinic-1||||297961|20240916|MSD^Merck and Co., Inc.^MVX|||CP|A

RXR|C38288^Oral^NCIT|RT^Right Thigh^HL70163

OBX|1|CE|30963-3^Vaccine Funding Source^LN|1|PHC70^Private^CDCPHINVS|||||F|||20160805

OBX|2|CE|64994-7^Vaccine Funding Program Eligibility^LN|2|V01^Not VFC Eligible^HL70064|||||F|||20191001|||VXC40^per immunization^CDCPHINVS

OBX|3|CE|69764-9^Document Type^LN|3|25308869830001961119103O^Rotavirus Vaccine VIS^cdcgs1vis||||||F|||20191001

OBX|4|DT|29769-7^Date Vis Presented^LN|3|20150624|||||F|||20191001

ORC|RE|1234^AIRA|F81S3495.3^AIRA||||||I-23432^Burden^Donna^A^^^^^AIRA^^^^PRN||57422^RADON^NICHOLAS^JOHN^^^^^AIRA^^^^PRN|||||444^AIRA Clinic 1^HL70362

RXA|0|1|20191001||10^IPV^CVX^49281-0860-78^IPOL^NDC|0.5|mL^mL^UCUM||00^New Record^NIP001|7824^Jackson^Lily^Suzanne^^^^^AIRA^^^^PRN|^^^AIRA-Clinic-1||||526434|20240722|PMC^Sanofi Pasteur^MVX|||CP|A

RXR|C28161^Intramuscular^NCIT|RT^Right Thigh^HL70163

OBX|1|CE|30963-3^Vaccine Funding Source^LN|1|PHC70^Private^CDCPHINVS|||||F|||20160805

OBX|2|CE|64994-7^Vaccine Funding Program Eligibility^LN|2|V01^Not VFC Eligible^HL70064|||||F|||20191001|||VXC40^per immunization^CDCPHINVS

OBX|3|CE|69764-9^Document Type^LN|3|25308869830001721119103O^Polio Vaccine VIS^cdcgs1vis||||||F|||20191001

OBX|4|DT|29769-7^Date Vis Presented^LN|3|20150624|||||F|||20191001

Example VXU: Historical Vaccination

MSH|^~\&|**SENDINGAPP**|**AIRAORG**|**RECEIVINGAPP**|**RECEIVINGFAC**|20160805102500-0600||VXU^V04^VXU_V04|1cuTA.01.01.5n|P|2.5.1|||ER|AL|||||Z22^CDCPHINVS|**AIRAORGRESPONSIBLE**

PID|1||1234^^^AIRA^MR||Pecos^Sawyer^Kyoko^^^^L|Marion^Valisa^^^^^M|20000725|F||2106-3^White^CDCREC|350 Greene Cir^^Little Lake^MI^49833^USA^P||^PRN^PH^^^906^3464569||||||||2186-5^not Hispanic or Latino^CDCREC||N|||||N

PD1||||||||||||02^Reminder/Recall – any method^HL70215|N|20160805|||A|20160805|20160805|

NK1|1|Pecos^Valisa^Marion^^^^L|MTH^Mother^HL70063|350 Greene Cir^^Little Lake^MI^49833^USA^P|^PRN^PH^^^906^3464569|

ORC|RE|1234^AIRA|F81S3495.3^AIRA|

RXA|0|1|20040805||03^MMR^CVX|999|||01^Historical^NIP001||||||||||||CP|A|

Example VXU: Patient Demographic Information Update

Updating patient and next of kin address to 123 Blue Street

MSH|^~\&|**SENDINGAPP**|**AIRAORG**|**RECEIVINGAPP**|**RECEIVINGFAC**|20160805102500-0600||VXU^V04^VXU_V04|1cuA.01.01.3n|P|2.5.1|||ER|AL|||||Z22^CDCPHINVS|**AIRAORGRESPONSIBLE**

PID|1||1234^^^**AIRA**^MR||Pecos^Sawyer^Kyoko^^^^L|Marion^Valisa^^^^^M|20150725|F||2106-3^White^CDCREC|123 Blue St^^Little Lake^MI^49833^USA^P||^PRN^PH^^^906^3464569||||||||2186-5^not Hispanic or Latino^CDCREC||N|||||N

NK1|1|Pecos^Valisa^Marion^^^^L|MTH^Mother^HL70063|123 Blue St^^Little Lake^MI^49833^USA^P|^PRN^PH^^^906^3464569|

Example VXU: Contraindication

Patient is pregnant, no vaccine given.

MSH|^~\&|SENDINGAPP|AIRAORG|RECEIVINGAPP|RECEIVINGFAC|20200901102500-0600||VXU^V04^VXU_V04|1cuTA.01.01.3n|P|2.5.1|||ER|AL|||||Z22^CDCPHINVS|AIRAORGRESPONSIBLE

PID|1||M43I125605^^^AIRA^MR||Latimer^Tracey^Eirene^^^^L|Legresley^Hisa^^^^^M|19940821|F|| 2054-5^Black or African American^CDCREC|1281 Borger Odoorn Ave^^Dafter^MI^49724^USA^P||^PRN^PH^^^906^5826637|||||||||2186-5^not Hispanic or Latino^CDCREC||N|||||N

PD1||||||||||||02^Reminder/Recall – any method^HL70215|N|20200901|||A|20200901|20200901

NK1|1|Latimer^Legresley^Marion^^^^L|MTH^Mother^HL70063|1281 Borger Odoorn Ave^^Dafter^MI^49724^USA^P|^PRN^PH^^^906^5826637

ORC|RE|1234^AIRA|9999^AIRA|

RXA|0|1|20200901||998^No Vaccine Administered^CVX|999||||||||||||||NA|A

OBX|1|CE|30945-0^Vaccination contraindication^LN|1|77386006^Patient Currently Pregnant^SCT|||||F|||20200901

OBX|2|DT|30946-8^Vaccination contraindication effective date^LN|1|20160605|||||F|||20200901

Example VXU: Adverse Reaction

Example without a vaccination event, anaphylaxis reaction

MSH|^~\&|SENDINGAPP|AIRAORG|RECEIVINGAPP|RECEIVINGFAC|20200901102500-0600||VXU^V04^VXU_V04|1cuTA.01.01.3n|P|2.5.1|||ER|AL|||||Z22^CDCPHINVS|AIRAORGRESPONSIBLE

PID|1||R37N125626^^^AIRA^MR||Sandusky^Manjula^Jesse^^^^L|Clay^Afton^^^^^M|20160821|F||2106-3^White^CDCREC|1889 Haalte Cir^^Tecumseh^MI^49286^USA^P||^PRN^PH^^^517^6475717|||||||| 2135-2^Hispanic or Latino^CDCREC||N|||||N

PD1||||||||||||02^Reminder/Recall - any method^HL70215|N|20200901|||A|20200901|20200901

NK1|1|Sandusky^Clay^Marion^^^^L|MTH^Mother^HL70063|1889 Haalte Cir^^Tecumseh^MI^49286^USA^P|^PRN^PH^^^517^6475717

ORC|RE|1234^AIRA|9999^AIRA|

RXA|0|1|20170901||998^No Vaccine Administered^CVX|999|||||||||||||NA|A

OBX|1|CE|31044-1^Reaction^LN|1|39579001^Anaphylaxis^SCT||||||F|||20170901|

Example with a vaccination event, anaphylaxis reaction

MSH|^~\&|**SENDINGAPP**|**AIRAORG**|**RECEIVINGAPP**|**RECEIVINGFAC**|20200901102500-0600||VXU^V04^VXU_V04|1cuTA.01.01.3n|P|2.5.1|||ER|AL|||||Z22^CDCPHINVS|**AIRAORGRESPONSIBLE**

PID|1||M91N125632^^^AIRA^MR||Monona^Karma^^^^^L||20160821|F

ORC|RE|1234^AIRA|BM91N125632.1^AIRA

RXA|0|1|20170901||94^MMRV^CVX|999|||01^Historical^NIP001||||||||||CP|A

ORC|RE|1234^AIRA|9999^AIRA|

RXA|0|1|20170901||998^No Vaccine Administered^CVX|999|||||||||||||A

OBX|1|CE|31044-1^Reaction^LN|1|39579001^Anaphylaxis^SCT||||||F

Example VXU: Refusal

MSH|^~\&|**SENDINGAPP**|**AIRAORG**|**RECEIVINGAPP**|**RECEIVINGFAC**|20200901102500-0600||VXU^V04^VXU_V04|1cuTA.01.01.3n|P|2.5.1|||ER|AL|||||Z22^CDCPHINVS|**AIRAORGRESPONSIBLE**

PID|1||S09W125636^^^AIRA^MR||Kjerulf^Cleopatra^Jade^^^^L|Menifee^Yomaris^^^^^M|20160821|F||2106-3^White^CDCREC|1348 Epe St^^Algonac^MI^48001^USA^P||^PRN^PH^^^810^4891553|||||||||2186-5^not Hispanic or Latino^CDCREC||N|||||N

PD1||||||||||||02^Reminder/Recall - any method^HL70215|N|20200901|||A|20200901|20200901

NK1|1|Kjerulf^Menifee^Marion^^^^L|MTH^Mother^HL70063|1348 Epe St^^Algonac^MI^48001^USA^P|^PRN^PH^^^810^4891553

ORC|RE|1234^AIRA|9999^AIRA|

RXA|0|1|20200901||21^varicella^CVX|999|||||||||||00^Parental decision^NIP002||RE|A

Example VXU: History of Disease

MSH|^~\&|**SENDINGAPP**|**AIRAORG**|**RECEIVINGAPP**|**RECEIVINGFAC**|20200901102500-0600||VXU^V04^VXU_V04|1cuTA.01.01.3n|P|2.5.1|||ER|AL|||||Z22^CDCPHINVS|**AIRAORGRESPONSIBLE**

PID|1||O06R133795^^^AIRA^MR||Rogers^Nisha^Sherry^^^^L|Choctaw^Esmerelda^^^^^M|20190822|F||2106-3^White^CDCREC|1378 Aandgraaf Ave^^Onaway^MI^49765^USA^P||^PRN^PH^^^989^7275052||||||||2186-5^not Hispanic or Latino^CDCREC||N|||||N

PD1||||||||||02^Reminder/Recall - any method^HL70215|N|20200902|||A|20200902|20200902

NK1|1|RogersA^Choctawa^Marion^^^^L|MTH^Mother^HL70063|1378 Aandgraaf Ave^^Onaway^MI^49765^USA^P|^PRN^PH^^^989^7275052

ORC|RE||9999^AIRA|

RXA|0|1|20200902||998^No Vaccine Administered^CVX|999||||||||||||NA|A

OBX|1|CE|59784-9^Disease with presumed immunity^LN|1|38907003^History of Varicella infection^SCT|||||F|||20200902

Example VXU: Serological Evidence of Disease

MSH|^~\&|**SENDINGAPP**|**AIRAORG**|**RECEIVINGAPP**|**RECEIVINGFAC**|20200901102500-0600||VXU^V04^VXU_V04|1cuTA.01.01.3n|P|2.5.1|||ER|AL|||||Z22^CDCPHINVS|**AIRAORGRESPONSIBLE**

PID|1||Y09Q133799^^^AIRA^MR||Vinton^Laria^Kumari^^^^L|Highland^Parisa^^^^^M|20190822|F||2106-3^White^CDCREC|1345 Daltbommel Ln^^South Haven^MI^49090^USA^P||^PRN^PH^^^269^4636121||||||||2186-5^not Hispanic or Latino^CDCREC||N|||||N

PD1|||||||||||02^Reminder/Recall - any method^HL70215|N|20200902|||A|20200902|20200902

NK1|1|Vinton^Highland^Marion^^^^L|MTH^Mother^HL70063|1345 Daltbommel Ln^^South Haven^MI^49090^USA^P|^PRN^PH^^^269^4636121

ORC|RE||9999^AIRA|

RXA|0|1|20200902||998^No Vaccine Administered^CVX|999|||||||||||||NA|A

OBX|1|CE|75505-8^Disease with serological evidence of immunity^LN|1|271511000^Serology confirmed Hepatitis B^SCT|||||F|||20200902

APPENDIX B: Example QBP Messages

Example QPB: Z34 – Request Complete Immunization History

MSH|^~\&|**SENDINGAPP**|**AIRAORG**|**RECEIVINGAPP**|**RECEIVINGFAC**|20160805102500-0600||QBP^Q11^QBP_Q11|793543|P|2.5.1|||ER|AL|||||Z34^CDCPHINVS|**AIRAORGRESPONSIBLE**

QPD|Z34^Request Immunization History^CDCPHINVS|37374859|1234^^^AIRA^MR|Pecos^Sawyer^Kyoko^^^^L|Marion^Valisa^^^^^M|20150725|F|350 Greene Cir^^Little Lake^MI^49833^USA^P|^PRN^PH^^^906^3464569||

RCP|I|10^RD&records&HL70126

Example QBP: Z44 – Request Evaluated Immunization History and Forecast

MSH|^~\&|**SENDINGAPP**|**AIRAORG**|**RECEIVINGAPP**|**RECEIVINGFAC**|20160805102500-0600||QBP^Q11^QBP_Q11|1cuA.01.01.3n|P|2.5.1|||ER|AL|||||Z44^CDCPHINVS|**AIRAORGRESPONSIBLE**

QPD|Z44^Request Evaluated History and Forecast^CDCPHINVS|793543|1234^^^AIRA^MR|Pecos^Sawyer^Kyoko^^^^L|Marion^Valisa^^^^^M|20150725|F|350 Greene Cir^^Little Lake^MI^49833^USA^P|^PRN^PH^^^906^3464569||

RCP|I|10^RD&records&HL70126

Appendix C: Examples of Common Facility Mapping Expectations

The following tables outline potential examples of IIS facility mapping requirements for a 2-level parent/child facility hierarchy and one 3-level hierarchy (Example 5). They include examples of variations in format (numeric, character or both) and field requirements. These examples are not all inclusive. As additional unique examples are identified, they will be added to this list.

Example 1

The parent organization is populated in MSH-4, and the child clinic is populated in MSH-22, ORC-17, and RXA-11. The sending application is required to send a value of "EXAMPLESENDINGAPP" in MSH-3 and a value of "EXAMPLE1SIIS" in MSH-5 and MSH-6.

MSH-3: EXAMPLESENDINGAPP
MSH-5: EXAMPLE1SIIS
MSH-6: EXAMPLE1SIIS

(Parent)	(Child)	MSH-4	MSH-22	ORC-17	RXA-11	PID-3.4
VAX GROUP 1	VAX CLINIC 1	1000	100001	100001	100001	
VAX GROUP 1	VAX CLINIC 2	1000	100002	100002	100002	
VAX GROUP 1	VAX CLINIC 3	1000	100003	100003	100003	
VAX GROUP 1	VAX CLINIC 4	1000	100004	100004	100004	
VAX GROUP 1	VAX CLINIC 5	1000	100005	100005	100005	
HOSPITAL XYZ	HOSPITAL CLINIC 1	2000	200001	200001	200001	
HOSPITAL XYZ	HOSPITAL CLINIC 2	2000	200002	200002	200002	
HOSPITAL XYZ	HOSPITAL CLINIC 3	2000	200003	200003	200003	
DR VAX CLINIC	DR VAX CLINIC	3000	3000	3000	3000	

Example 2

The parent organization is populated in MSH-22, and the child clinic is populated in MSH-4, ORC-17, RXA-11, and PID-3.4. The sending application MSH-3 is not required. A value of

"EXAMPLE2SIIS" in MSH-5 and MSH-6. MSH-23 is required to be populated as "EXAMPLE2SIIS".

MSH-3: [empty]
MSH-5: EXAMPLE2SIIS
MSH-6: EXAMPLE2SIIS
MSH-23: EXAMPLE2SIIS

(Parent)	(Child)	MSH-4	MSH-22	ORC-17	RXA-11	PID-3.4
VAX GROUP 1	VAX CLINIC 1	100001	1000	100001	100001	100001
VAX GROUP 1	VAX CLINIC 2	100002	1000	100002	100002	100002
VAX GROUP 1	VAX CLINIC 3	100003	1000	100003	100003	100003
VAX GROUP 1	VAX CLINIC 4	100004	1000	100004	100004	100004
VAX GROUP 1	VAX CLINIC 5	100005	1000	100005	100005	100005
HOSPITAL XYZ	HOSPITAL CLINIC 1	200001	2000	200001	200001	200001
HOSPITAL XYZ	HOSPITAL CLINIC 2	200002	2000	200002	200002	200002
HOSPITAL XYZ	HOSPITAL CLINIC 3	200003	2000	200003	200003	200003
DR VAX CLINIC	DR VAX CLINIC	3000	3000	3000	3000	3000

Example 3

The parent organization is populated in MSH-4 and MSH-22 (value must be the same), and the child clinic is populated in, ORC-17 and RXA-11. The sending application is required to send a value of "EXAMPLESENDINGAPP" in MSH-3 and a value of "EXAMPLE2SIIS" in MSH-5 and MSH-6.

MSH-3: EXAMPLESENDINGAPP
MSH-5: EXAMPLE3SIIS
MSH-6: EXAMPLE3SIIS

(Parent)	(Child)	MSH-4	MSH-22	ORC-17	RXA-11	PID-3.4
VAX GROUP 1	VAX CLINIC 1	1000	1000	VAX CLINIC 1	VAX CLINIC 1	

VAX GROUP 1	VAX CLINIC 2	1000	1000	VAX CLINIC 2	VAX CLINIC 2	
VAX GROUP 1	VAX CLINIC 3	1000	1000	VAX CLINIC 3	VAX CLINIC 3	
VAX GROUP 1	VAX CLINIC 4	1000	1000	VAX CLINIC 4	VAX CLINIC 4	
VAX GROUP 1	VAX CLINIC 5	1000	1000	VAX CLINIC 5	VAX CLINIC 5	
HOSPITAL XYZ	HOSPITAL CLINIC 1	2000	2000	HOSPITAL CLINIC 1	HOSPITAL CLINIC 1	
HOSPITAL XYZ	HOSPITAL CLINIC 2	2000	2000	HOSPITAL CLINIC 2	HOSPITAL CLINIC 2	
HOSPITAL XYZ	HOSPITAL CLINIC 3	2000	2000	HOSPITAL CLINIC 3	HOSPITAL CLINIC 3	
DR VAX CLINIC	DR VAX CLINIC	3000	3000	DR VAX CLINIC	DR VAX CLINIC	

Example 4

The parent organization is populated in MSH-4 and the child clinic is populated in RXA-11. The sending application is required to send a value of "EXAMPLESENDINGAPP" in MSH-3 and a value of "EXAMPLE4SIIS" in MSH-5 and MSH-6.

MSH-3: EXAMPLESENDINGAPP
MSH-5: EXAMPLE4SIIS
MSH-6: EXAMPLE4SIIS

(Parent)	(Child)	MSH-4	MSH-22	ORC-17	RXA-11	PID-3.4
VAX GROUP 1	VAX CLINIC 1	VAXGROUP1			VAX CLINIC 1	
VAX GROUP 1	VAX CLINIC 2	VAXGROUP1			VAX CLINIC 2	
VAX GROUP 1	VAX CLINIC 3	VAXGROUP1			VAX CLINIC 3	
VAX GROUP 1	VAX CLINIC 4	VAXGROUP1			VAX CLINIC 4	
VAX GROUP 1	VAX CLINIC 5	VAXGROUP1			VAX CLINIC 5	
HOSPITAL XYZ	HOSPITAL CLINIC 1	HOSPITALXYZ			HOSPITAL CLINIC 1	
HOSPITAL XYZ	HOSPITAL CLINIC 2	HOSPITALXYZ			HOSPITAL CLINIC 2	

HOSPITAL XYZ	HOSPITAL CLINIC 3	HOSPITALXYZ			HOSPITAL CLINIC 3	
DR VAX CLINIC	DR VAX CLINIC	DRVAXCLINIC			DR VAX CLINIC	

Example 5

This example shows a 3-tier hierarchy, where another system is responsible for the parent and child. The responsible application or organization is populated in MSH-4, the parent organization is in MSH-22, and the child clinic is populated in RXA-11. The sending application is required to send a value of "EXAMPLESENDINGAPP" in MSH-3and a value of "EXAMPLE4SIIS" in MSH-5 and MSH-6.

MSH-3: EXAMPLESENDINGAPP
MSH-5: EXAMPLE4SIIS
MSH-6: EXAMPLE4SIIS

(Parent)	(Child)	MSH-4	MSH-22	ORC-17	RXA-11	PID-3.4
VAX GROUP 1	VAX CLINIC 1	RESPONSIBLEAPP	1000		100001	
VAX GROUP 1	VAX CLINIC 2	RESPONSIBLEAPP	1000		100002	
VAX GROUP 1	VAX CLINIC 3	RESPONSIBLEAPP	1000		100003	
VAX GROUP 1	VAX CLINIC 4	RESPONSIBLEAPP	1000		100004	
VAX GROUP 1	VAX CLINIC 5	RESPONSIBLEAPP	1000		100005	
HOSPITAL XYZ	HOSPITAL CLINIC 1	RESPONSIBLEAPP	2000		200001	
HOSPITAL XYZ	HOSPITAL CLINIC 2	RESPONSIBLEAPP	2000		200002	
HOSPITAL XYZ	HOSPITAL CLINIC 3	RESPONSIBLEAPP	2000		200003	
DR VAX CLINIC	DR VAX CLINIC	RESPONSIBLEAPP	3000		3000	

IZIG Version Revision History

Effective Date	Revision Description
9/01/2020	First Draft V0.1
9/03/2020	Reformatted First Draft V0.3
9/17/2020	First Version 1.0 Released
9/24/2020	V 1.1 Released. Edits include grammar and formatting edits and minor updates for final release.