

ILLINOIS HEALTH INFORMATION EXCHANGE

Immunization Use Case

The Illinois Immunization Registry and Health Information Exchange

Illinois Health Information Exchange Public Health Work Group
December 2010

Table of Contents

1.0	Executive Summary	3
2.0	Introduction	5
3.0	Scope	6
4.0	Use Case Stakeholders	8
5.0	Issues and Obstacles	10
6.0	Use Case Pre-Conditions	10
7.0	Use Case Post-Conditions	11
8.0	Detailed Scenarios/Technical Specifications	12
9.0	Information Exchange	14
10.0	Dataset Considerations	15
11.0	Validation and Certification	16
	Appendix A	17

1.0 Executive Summary

This Use Case is a product of the Public Health Work Group (PHWG) of the Illinois Health Information Exchange (HIE) Advisory Committee. The Illinois HIE Advisory Committee was constituted as the diverse public healthcare stakeholder body providing input and recommendations on the creation of the Illinois HIE Authority (“the Authority”) as the Illinois vehicle for designing and implementing electronic health information exchange in Illinois. The establishment of the Authority marks the formal transition of the work of the HIE Advisory Committee and the Work Groups into alignment with the provisions of Illinois Public Act 096-1331, the Illinois Health Information Exchange and Technology Act.

Generally, the mission of the PHWG is to provide guidance and recommendations to the HIE Advisory Committee or its successors on the exchange of data relevant to public health between HIEs that operate in Illinois and Illinois public health agencies. This will be advanced by

- encouraging the adoption of electronic health records (EHRs) and the use of health information technology (health IT) to improve both individual and population health status and public health outcomes;
- assuring standards-based interoperability and workable data sharing between the public health system and HIEs in Illinois, including the Illinois HIE, local exchanges, and institution-based EHR systems;
- demonstrating and documenting the mutual benefit to public health and healthcare providers in the development of the Illinois HIE;
- assuring policy compatibility with the goals of public health for the use of individual and population health data;
- communicating to and educating the public health system about the value and applications of the Illinois HIE and promoting participation in the HIE by state and local health departments and the broader public health community; and
- promoting the identification of resources for public health to fully participate in HIE planning.

The Illinois Office of Health Information Technology (OHIT) will provide administrative and implementation support to the Authority as it moves forward with the development of the Illinois HIE. It is the intention of OHIT to release a request for proposals in early 2011 that will detail the requirements for the initial design of the Illinois HIE. **The purpose of this Use Case is to document and describe the current state of information flows regarding immunizations in Illinois, and to document and describe the ideal state in a future system that includes expanded electronic health information systems and**

HIE. The PHWG expects that the Use Case will be one of many inputs into the upcoming RFP process, and will be a scored element of the process to award the contract to design and build the Illinois HIE.

Making a priority of integrating Illinois' immunization registry in Illinois' HIE planning is justified by its specific inclusion in the federal rules for Meaningful Use under the EHR Incentive Programs, including the criterion for "electronic submission to immunization registries". Because the Illinois immunization registry is already employing federal health information technology funding to upgrade the registry, now is the right time to work to integrate it with the emerging HIE development plans. Additionally, supporting bi-directional communications between the registry and healthcare providers has the following benefits:

- Reduces death, morbidity, disability
- Enables stakeholders to meet Meaningful Use
- Enriches clinical records to enhance decision support for providers
- Increases patient safety and quality of care
- Increases system efficiency, reduces redundancy and repetition of services
- Which in turn decreases overall cost of providing immunization services
- Results in a more complete description of population-level health outcomes
- Which in turn allows for better allocation of public resources to support more effective immunization practices
- Increases capacity to prevent vaccine-preventable diseases
- Provides a structural model for other governmental public health systems to be integrated with EHR/HIE

The PHWG Immunization Use Case addresses several aspects of immunization information, including: immunization status for specific populations as well as the general population; the automated integration of electronic immunization data into Illinois' immunization registry and case management databases; vaccine supply management and the automated integration of immunization and vaccine information into supply chain and product management tracking functions; and automated functionalities related to Illinois statutory requirements regarding elementary school attendance.

This Use Case is divided into the following Sections:

- 2.0 Introduction
- 3.0 Scope
- 4.0 Use Case Stakeholders
- 5.0 Issues and Obstacles

- 6.0 Use Case Pre-Conditions
- 7.0 Use Case Post-Conditions
- 8.0 Detailed Scenarios/Technical Specifications
- 9.0 Information Exchange
- 10.0 Dataset Considerations
- 11.0 Validation and Certification

2.0 Introduction

Vaccines save lives routinely and in times of outbreaks – they are one of the ten great Public Health Achievements of the last century. From a variety of perspectives, including medical and financial, the public benefits when the whole population is vaccinated against disease are immense; providing individual and population level protection against illness and death caused by infectious diseases. Simplifying the reporting, tracking, and monitoring of immunizations in the population through use of a registry that is interoperable with the clinical EHR, will pay off in helping to ensure that appropriate immunizations are administered to everyone.

Immunizations are a proxy measure for the overall health of the population; the idea being that if people are appropriately immunized they are also receiving other preventive and primary care. As such they are an important quality indicator for public health departments, health care organizations, and consumers to monitor for continuous improvement.

The PHWG chose to provide a clear pathway for interoperability between clinical providers and the Illinois immunization registry, the Illinois Comprehensive Automated Immunization Registry Exchange (I-CARE). The secure exchange of this data will allow Illinois to increase the number of children and adults participating in the immunization registry, eliminate double entry of immunization data by providers, reduce the risk of care interruption, and ensure widespread use of the registry to establish greater accuracy on Illinois and national immunization levels. Eventually the immunization registry may become part of the public health node on the Illinois HIE.

I-CARE is an immunization registry application developed by the Illinois Department of Public Health (IDPH), allowing health care providers to share immunization records of Illinois residents. I-CARE is designed to help providers collect, store, analyze, and report their patients' immunization data as well as access patient records for information about immunizations administered outside their practices. I-CARE currently stores

immunization information on approximately 4 million patients and contains nearly 40 million records.¹

Among the functionality available to I-CARE users is the capability to: forecast immunization due dates; prevent duplicate immunizations; follow CDC's immunization schedule for children and adults; produce a health record and pre-printed school physical forms; record patient contraindications, adverse reactions, and immunities; track vaccine inventory; collect patient demographic data and insurance eligibility; maintain running progress notes; and schedule appointments as well as track and notify patients of upcoming due dates. I-CARE has also incorporated additional data fields to track and record body mass index, height and weight, blood pressure, and blood lead screenings.

I-CARE can accept data from Cornerstone (the statewide data management information system developed to effectively measure health outcomes and facilitate the integration of community maternal and child health services provided to Illinois residents by the Illinois Department of Human Services) through daily batch flat file transfers. Data entered directly into the I-CARE web-portal is available in real-time. IDPH is currently working with providers to enable secure messaging directly between a provider's EHR and I-CARE. I-CARE is able to accept HL7 data, in versions 2.31 and 2.51, from outside sources and is prepared to accept batch data through a secure STP site, which it will use to populate the registry. IDPH anticipates implementing 2-way real time patient data exchange in early 2011.

This immunization registry Use Case focuses on the needs of consumers, clinicians, registries, and public health carrying out routine care activities associated with immunizations. This Use Case also recognizes that the technical infrastructure for the immunization registry supports routine immunizations by governmental public health and other healthcare providers as well as emergency situations arising from outbreaks, epidemics and natural disasters. This Use Case does not address all the operational possibilities of the immunization registry – but will focus on universality, the functionality of providers receiving real time feedback regarding immunization status, reminder recalls, vaccine and drug administration reporting, immunization monitoring, vaccine and drug inventory reporting, and reporting and notification of adverse events.

3.0 Scope

Since widespread adoption of the EHR and meaningful use of that record is the goal of the national and statewide health IT agenda, this Use Case for immunization data exchange

¹ Illinois Department of Public Health, 2010.

between the clinical provider's EHR and I-CARE will provide clinicians, technology vendors, and the State the opportunity to align the technical specifications for exchange. The Use Case will present the public health workflow, perspectives, pre and post conditions, and include the actions required to exchange specific patient care data between clinical providers and state and local public health departments through I-CARE. This Use Case also outlines how, as the HIEs becomes operational, they will facilitate bi-directional exchange. The PHWG Use Case for the Illinois immunization registry addresses the following:

- Access to information about who receives or needs to receive specific vaccines, including:
 - Patient demographics, physician orders, vaccine administration data, and adverse events data
- The ability to report and track vaccines, including:
 - Measuring and reporting immunizations with a minimum burden assessed on the provider
 - The aggregation of health information for the purpose of public health reporting of immunizations
 - Recall data and supply management data
- Documentation of vaccine administration
- Ability to provide reminders about immunization to patients
- Ability to provide aggregate reports of immunizations in a practice
- Ability to expand I-CARE beyond traditional medical and healthcare settings
- Ability to identify and electronically exchange information describing the immunizations of the population, both routine and emergency. This gives both providers and public health the capability to request real time information from the registry.

3.1 Criteria for Meaningful Use for Public Health in Illinois

The value of the creation and implementation of criteria for Meaningful Use for public health is in the promotion of unified standards, the development of interoperable data stores, and the establishment of a foundation for future efforts to leverage information technology for public health practice in Illinois.

The PHWG recognizes the challenges inherent in implementation of new methods and workflows for data sharing. These challenges may include a) development of interface engines or web service engines that message data b) harmonization of semantic knowledge into a common format c) allocation of limited IT resources to accomplish technical implementation tasks d) incorporation of security and consents in health information

exchange and e) maintenance and certification of the accuracy of electronically detected and transmitted data.

To that end, this document will summarize the recommendations for messaging of data to public health as a part of the HIE and in the effort to meet the Stage 1 Meaningful Use criteria for public health. The two initial Use Cases to be developed by the PHWG will be the transmission of data to the state immunization registry and electronic laboratory reporting. It is not coincidental that these two Use Cases correspond to existing robust reporting systems at the state level: I-CARE and I-NEDSS. The general philosophy in the development of infrastructure to support the public health Use Cases is to leverage existing implementation guides and standards to promote a short term/current state messaging implementation framework, while also looking forward to the future for a longer term/future state framework to be developed in parallel. We will provide these two paths to enable use of existing systems while also providing a roadmap for the future of public health surveillance infrastructure. We will also give some examples of ways these standards can be implemented to permit sustainability, auditing and certification, and minimal impact on existing public health work processes.

4.0 Use Case Stakeholders

The primary stakeholders for HIE for immunizations are listed below and defined by their functional role related to either submitting and/or retrieving immunization information electronically through EHRs and HIEs.

Stakeholder	Working Definition of Role
Patient	Members of the public who require immunizations. May also include a person who can act on behalf of the patient, such as a parent. Patient consent is required to participate in I-CARE.
Clinician	Health care providers with direct patient care responsibilities, including ordering clinicians and providers of care in all health care delivery settings. Eligible professionals participating in the Medicare and Medicaid EHR Incentive Programs. Programs demonstrating fulfillment of the immunization objective. Providers would both submit and retrieve data.
Health care delivery organization	All health care delivery organizations that provide vaccines to children and adults. Examples of healthcare organizations include hospitals, physician practices, Federally Qualified Health Centers, and long term care facilities that manage the delivery of care and

Immunization Use Case

December 2010

	<p>maintain personal health records with immunizations.</p> <p>Health care delivery organizations would both submit and retrieve data.</p>
Local health department	<p>Public health agencies that manage delivery of immunizations, maintain personal immunization records, and enter immunization record for individual patients into Cornerstone or I-CARE. Uses population-based immunization coverage levels for the purpose of improving immunization rates in the population.</p> <p>Local health departments would both submit and retrieve data.</p>
Illinois Comprehensive Automated Immunization Registry Exchange (I-CARE)	<p>The Illinois Department of Public Health's web-based immunization registry application housing information on public and private patients receiving immunizations.</p>
Local Health Information Exchange	<p>Local conduit for sharing electronic health information among certified participants in exchange and the Illinois Health Information Exchange.</p>
State Health Information Exchange	<p>State conduit for sharing electronic health information among local HIEs, interstate exchanges, certified participants in exchange, and state and federal data sources.</p>

There are a number of secondary stakeholders who use immunization data in a wide variety of ways but who would primarily be accessing the data through the I-CARE system rather than the HIE. These include: community-based organizations, family case management services, schools and daycare centers, Cornerstone, the Department of Healthcare and Family Services (State Medicaid), and public and private vaccine experts. Additionally, secondary stakeholders in public and population health may access aggregated data from either I-CARE or the HIE to support assessment, assurance and advocacy. This functional aspect of HIE will be more fully addressed in subsequent Use Case documents.

5.0 Issues and Obstacles

Realizing the full benefits of health IT is dependent on overcoming a number of issues and obstacles in today's environment. Inherent is the premise that some of these issues and obstacles will be cross-cutting and therefore will apply to all the Use Cases developed by the PHWG, while others are unique to this specific Use Case. This Use Case promotes the standardization of data messaging either directly to I-CARE or to the proposed public health node on the Illinois HIE.

Generally, the issues and obstacles applicable across all Use Cases are related to the adoption of health IT and the concerns of clinical workflow integration and workforce education, and the use of standards to promote data interoperability and facilitate HIE. These issues, while critical to the success and widespread implementation to the exchange of immunization data, are outside the scope of this Use Case and, are being addressed by the multiple federally funded programs to encourage the widespread use of health IT and HIE created under the Health Information Technology for Economic and Clinical Health Act of 2009.

In addition to the cross-cutting issues and obstacles identified above, several issues or obstacles exist that are specific to this Use Case and include:

- Immunization schedules, as well as local, school and state interpretations of published schedules, vary between jurisdictions and are not available in an electronic interoperable form for inclusion in EHRs, Personal Health Records (PHRs), or registries.
- As personally controlled health records evolve, it is possible that the consumer's PHR or health data bank may contain immunization information supplied directly by a clinician; however the standards by which that information can be properly attributed are not currently harmonized.
- It is acceptable for providers to accept patient's self-report as long as it is documented as such in the medical record.
- From state to state, policies vary regarding patient consent regarding treatment and the release of immunization information in the event of a public health emergency.
- I-CARE is a web-based registry and can be used by providers without an EHR. Therefore, providers may choose not to adopt or upgrade their EHRs with an immunization/I-CARE module.

6.0 Use Case Pre-Conditions

Pre-conditions are the conditions that must be in place before the start of the use case.

This includes, but is not limited to, the state of a stakeholder, data that must be available somewhere, or an action that must have occurred.

- Health care provider has completed the I-CARE registration process, including the user agreement
- Health care provider is located in Illinois and has administered an immunization
- Health care provider has the consent of the patient, or a child's parent or guardian, to participate in I-CARE
- Data system technical specifications
 - Provider's EHR will be able to record data elements required by I-CARE
 - See Appendix A for data field requirements for HL7 messaging to I-CARE
 - Messaging will adhere to I-CARE approved data exchange file specifications; EHR technology supporting HL7 2.3.1 or 2.5.1 messaging standards
 - See HL7 2.3.1 and HL7 2.5.1 implementation guides, available online
- Memo of Understanding between the Authority and IDPH for implementation, routing and query functions using the Illinois HIE

7.0 Use Case Post-Conditions

Post-conditions are the conditions that will result or be the output from the Use Case. This includes, but is not limited to, the state of the stakeholder upon conclusion of the Use Case, data that was created or now available, and identification of actions that may serve as pre-conditions for other Use Cases.

Systems

1. Local, state and federal public health agencies will have higher quality data and can develop effective programming to improve immunization rates in targeted populations and ensure prevention of vaccine preventable diseases.
2. In a public health emergency, central storage of immunization data would improve the ability to track vaccinations given and where vaccine is needed.
3. Vaccine experts will have more usage data to draw on for future decisions/recommendations.

Individual

1. Patient receives needed immunization at appropriate time and can check PHR to know when future immunizations are due.

2. Clinician has access to previous immunizations given and can make appropriate clinical decisions on what additional immunizations are needed.

8.0 Details Scenarios/Technical Specifications

I-CARE is the immunization registry in use by IDPH. This system has a web-based interface that permits manual entry of client information. In addition to the web-based system, there is the capability to receive HL7 messages from stakeholders of vaccine recipients and incorporate this information into the registry. The necessary fields are listed in Appendix A.

Much as with electronic laboratory reporting, messaging is currently planned to occur using HL7 2.3.1, and sent to the registry using Secure FTP to the MoveIT system at the state level. It is anticipated that future standards will incorporate the use of XML based methods of data transfer, and a web services model to enable transmission of data.

For Stage 1 Meaningful Use, the focus of data sharing will be unsolicited messages to the state immunization registry, I-CARE. It is anticipated that bidirectional, real-time data transmission will be achievable to I-CARE in 2011. Future stages of Meaningful Use will incorporate these features. Vendors and developers are asked to refer to the following implementation guides with the full description of immunization messaging standards for HL7 2.3.1 and HL7 2.5.1:

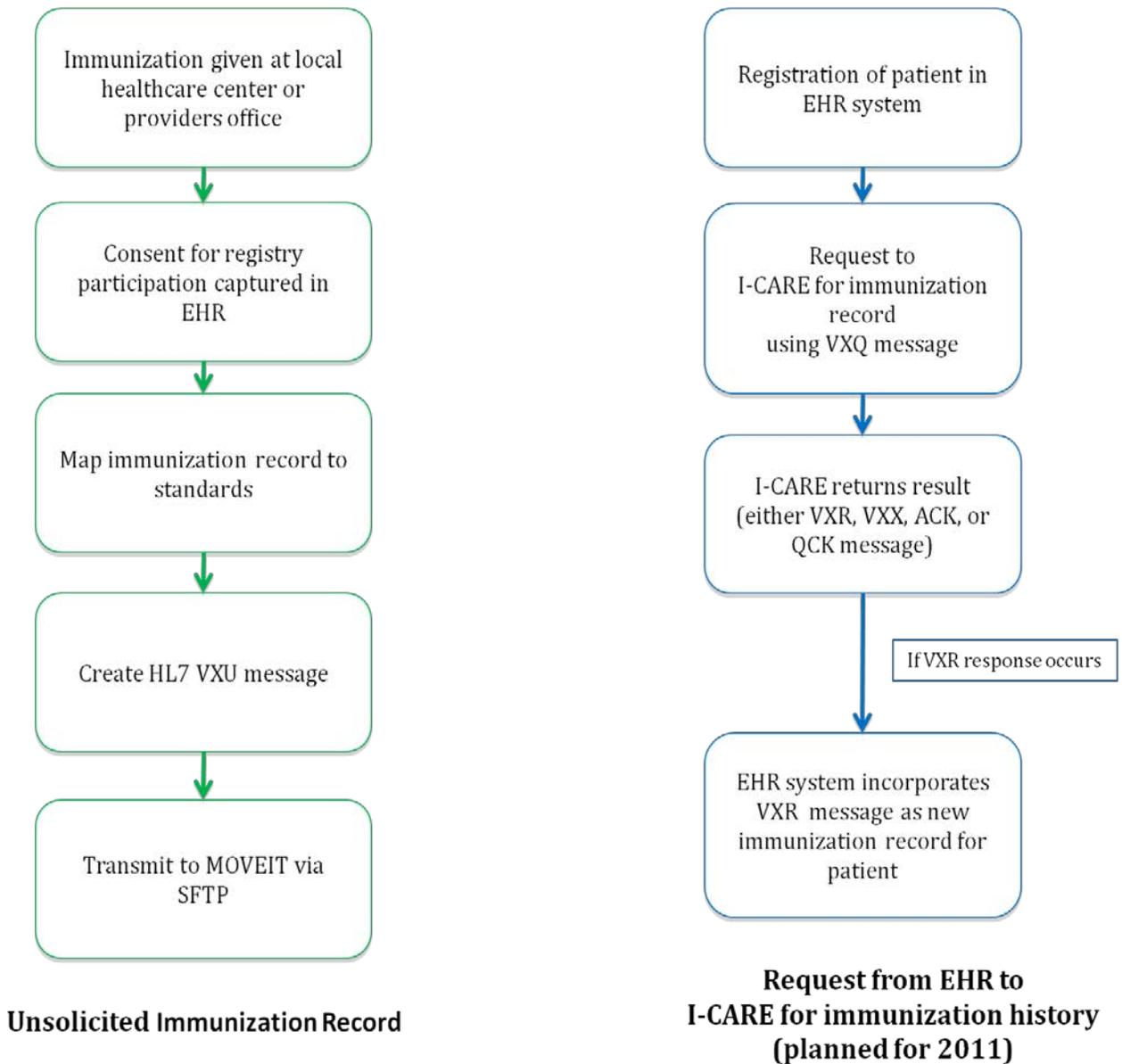
- HL72.3.1
<http://www.cdc.gov/vaccines/programs/iis/stds/downloads/hl7guide.pdf>
- HL7 2.5.1
<http://www.cdc.gov/vaccines/programs/iis/stds/downloads/hl7-guide2010-508.pdf>

Messages to the immunization registry shall be sent as VXU message types (i.e., unsolicited vaccination record update). The VXQ/VXR response pair will not be used at this time but will be implemented as a future state. Infrastructure to support the ACK response to a VXU message type should also be planned with modifications possible at the vendor site with a repeat send of message.

Examples of methods of implementation are shown below (Figure 7-1). In mid-2011, it is anticipated that the bi-directional flow of data to I-CARE will be available, with availability of VXQ/VXR pairs of data transmission.

It is anticipated that as national standards mature for the transmission of data to governmental agencies, new standards will emerge. For example, a candidate for a new standard that already is in use on the federal level in some domains of data exchange is the National Information Exchange Model (or NIEM) model. As there is maturation in the exchange of health information, new standards will be discussed with stakeholders and pursued where appropriate.

Figure 7-1 Methods of Implementation



9.0 Information Exchange

Messaging to the state I-CARE registry can be viewed as a current state, and a future state. The current state consists of all existing methods of messaging to registries, and is what will be leveraged for Stage 1 Meaningful Use for public health. The future state encompasses possible and desirable systems of data exchange that can fully leverage new technologies like XML, web services, and novel security paradigms.

In the current state, the use of Secure FTP to the MoveIT system will be recommended for transmission of HL7 messages to the State. Daily batch uploads will be sufficient, though real time transmission of data are supported. The MoveIT system is available at www.idphnet.com. Potential users can follow a registration process to access the IDPH Health Alert Network web portal, as well as to obtain credentials to enable Secure FTP uploads. Facilities seeking to transmit data to I-CARE will need to transmit data using the Secure FTP protocol and develop the appropriate institutional infrastructure (e.g. Secure FTP clients, firewall, and network modifications) to permit transmission in this manner.

For the future state, we will seek input from stakeholders and anticipate some support of web services and SaaS models to enable transmission of data.

9.1. Examples of Models of Standards-Based Reporting to I-CARE

It is anticipated that, with the opportunity presented through Stage 1 Meaningful Use, that opportunities for sustainable systems will be maximized. The following section provides non-prescriptive examples of methods to deploy reporting systems.

- 1 EHR based, vendor provided solutions. In this scenario, health care systems will utilize software products provided by the EHR vendor to enable compliance with the Meaningful Use criteria. Vendors will be expected to comply with Illinois guidance for messaging to I-CARE, including use of standard vocabularies as suggested by the HL7 specification in use in Illinois, transport mechanisms suggested for data transmission, and implementation of consent and other workflow processes necessary for a working system.
- 2 Middleware, on-site solutions. It is anticipated that health care providers, particularly hospital systems, may select middleware software providers for data transmission to the immunization registry. For example, point-to-point interfaces from EHR systems to middleware systems on-site at hospitals might provide the capability for transmission of immunization dosing to I-CARE.
- 3 A third party, off-site solution. A third option is the use of a neutral third party entity to which data are sent, whose responsibility is to receive data from providers,

map the data to standards, create HL7 messages, and transmit to I-CARE. The third party could perform auditing functions, standardize mapping approaches, and achieve economies of scale in the transmission of data to I-CARE.

- 4 HIE. When the Illinois HIE has matured in Illinois, this might serve as a method to simplify and streamline data transmission to I-CARE. In this scenario, providers and healthcare systems will send data to the HIE, which will then be responsible for data transmission to I-CARE.

10.0 Dataset Considerations

The minimum required elements for VXU^V04 messages to be successfully imported into the ICARE system. Other HL7 standard requirements should also apply.

Segment	Field	Type	Req/Opt	RP/#	Table	Item #	Element Name
MSH	4	HD	R	[0..1]	0362	00004	Sending Facility
MSH	12	VID	R	[1..1]	0104	00012	Version ID
PID	3	CX	R	[1..*]		00106	Patient Identifier List
PID	5	XPN	R	[1..*]		00108	Patient Name
PID	7	TS	R	[1..1]		00110	Date/Time of Birth
PID	8	IS	R	[0..1]	0001	00111	Administrative Sex
PID	11	XAD	RE	[0..*]		00114	Patient Address, (If empty NK1 is required.)
NK1	4	XAD	CE	[0..*]		00193	Address
RXA	3	TS	R	[1..1]		00345	Date/time start of administration
RXA	5	CE	R	[1..1]	0292	00347	Administered code

Optional, but desirable fields are:

Segment	Field	Type	Req/Opt	RP/#	Table	Item #	Element Name
PID	6	XPN	RE	[0..1]		00109	Mother's Maiden Name
PID	10	CE	RE	[0..*]	0005	00113	Race
PID	13	XTN	RE	[0..*]		00116	Phone Number - Home
PID	25	NM	CE	[0..1]		00128	Birth Order
PID	24	ID	RE	[0..1]			Multiple Birth Indicator
PID	25	NM	CE	[0..1]		00128	Birth Order
PD1	12	ID	RE	[0..1]	0136	00744	Protection Indicator
PD1	16	ID	RE	[0..1]	0441	01569	Immunization Registry Status
PV1	20	FC	RE	[1..*]	0064	00150	Financial Class
NK1	1	SI	R	[1..1]		00190	Set ID- NK1
NK1	2	XPN	R	[1..*]		00191	Name
NK1	3	CE	R	[1..1]	0063	00192	Relationship
NK1	4	XAD	RE	[0..*]		00193	Address
ORC	3	EI	RE			00217	Filler Order Number

Immunization Use Case

December 2010

Segment	Field	Type	Req/Opt	RP/#	Table	Item #	Element Name
RXA	9	CE	RE	[0..1]	NIP 0001	00351	Administration Notes
RXA	10	XCN	RE	[0..1]		00352	Administering Provider
RXA	15	ST	RE	[0..*]		01129	Substance Lot Number
RXA	17	CE	RE	[0..*]	0227	01131	Substance Manufacturer Name
RXA	11	LA2	RE	[0..1]		00353	Administered-at Location
RXA	21	ID	RE	[0..1]	0323	01224	Action Code-RXA
RXR	1	CE	R	[1..1]	0162	00309	Route
RXR	2	CWE	RE	[0..1]	0163	00310	Administration Site

A conforming sending application must be capable of providing all "RE" segment/elements. If the conforming sending application knows the required values for the segment/element, then it must send that segment/element. If the conforming sending application does not know the required values, then that segment/element will be omitted.

11.0 Validation and Certification

Some aspects of exchange of data with public health agencies require the application of business logic rules to detect cases of interest. It is anticipated that a useful approach to implementation of this Use Case will be the creation of a third party entity/entities that will serve several functions: a) enforcement of standardization in data mapping b) application of public health business rules c) audit and validation of application of mapping terms and d) audit and validation of the rule sets used for public health surveillance. Such entity/entities will be developed, it is expected, under the supervision of or as agents of OHIT or HFS; possible opportunities for auditing and validation are at the time of integration testing of new interfaces, or before the initiation of transmission of data to I-CARE.

All Messages

Spec Notes
[] = optional
{ } = repeatable
R = required
RE = required but may be empty (in 2.3)
O = optional
C = conditional
CE = conditional but may be empty
X = not supported

Batch Messages
VXU-V04 - Vaccination Record Update
ADT-A04 - Register a Patient
ADT-A28 - Add Person Information
ADT-A31 - Update Person Information

Real Time Messages
QBP-Q11 (v2.5.1) - Request Imm History
VXQ-V01 (v2.3.1) - Request Imm History
ADT-A29 - Delete Person Information
ADT-A40 - Merge Patient

*Note: differences in v2.3.1 to v2.5.1 will be anoted in the specs.
Specs are based on v2.3.1 and v2.5.1 except where indicated.*

Fields that are imported into I-CARE are highlighted in green.

Fields required in order to be imported into I-CARE are hightlighted in red.

Please note that HL7 required fields are in bold but are not necessarily mapped into the I-CARE Registry, but should be present in order to remain HL7 compliant.

**Please note these specifications are subject to change to meet current Illinois Department of Public Health policies.*

VXQ^V01

Query for Vaccination Record

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
QRD	[1..1]	R	Query Definition Segment	Every VXQ has one QRD segment.
[QRF]	[0..1]	RE	Query Filter Segment	Every QRD segment in VXQ may have one or less QRF segments.

v2.3.1

Realtime VXQ responses: VXR, VXX, ACK, QCK

VXX^V02

Response to Vaccination Query Returning Multiple PID Matches

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
MSA	[1..1]	R	Message Acknowledgment	Every VXX has one MSA segment.
QRD	[1..1]	R	Query Definition Segment	Every VXX has one QRD segment.
[QRF]	[0..1]	RE	Query Filter Segment	May have one or less QRF segments.
{	PATIENT begin			
PID	[1..1]	R	Patient Identification Segment	Each Patient Group will have only one PID segment.
{{NK1}}	[0..*]	RE	Next of Kin/Associated Parties	
}	PATIENT end			

v2.3.1

Realtime VXQ responses: VXR, VXX, ACK, QCK

VXR^V03

Vaccination Record Response

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
MSA	[1..1]	R	Message Acknowledgment	Every VXR has one MSA segment.
QRD	[1..1]	R	Query Definition Segment	Every VXR has one QRD segment.
[QRF]	[0..1]	RE	Query Filter Segment	May have one or less QRF segments.
PID	[1..1]	R	Patient Identification Segment	Every VXR has one PID segment.
[PD1]	[0..1]	RE	Additional Demographics	Every PID segment in VXU may have one or less PD1 segment.
[(NK1)]	[0..*]	RE	Next of Kin/Associated Parties	The PID segment in a VXR may have zero or more NK1 segments.
[	PATIENT VISIT begin			
PV1	[0..1]	RE	Patient Visit	The PID segment in a VXR may have zero or one PV1 segment. Subsequent messages regarding the same patient/client may have a different PV1 segment.
[PV2]	[0..1]	X	Patient Visit Additional Information	
]	PATIENT VISIT end			
[[	ORDER begin			
[ORC]	[0..*]	O	Common Order Segment	Each VXR may have zero or more Order Groups. The PID segment in a VXR may have zero or more ORC segments.
RXA	[1..1]	R	Pharmacy Administration	Each ORC segment in a VXR must have one RXA segment. Every RXA requires an ORC segment.
[RXR]	[0..1]	RE	Pharmacy Route	Every RXA segment in a VXR may have zero or one RXR segments.
[[	OBSERVATION BEGIN			
OBX	[0..*]	RE	Observation/Result	Every RXA segment in a VXR may have zero or more OBX segments.
[(NTE)]	[0..1]	RE	Notes (Regarding Immunizations)	Every OBX segment in a VXR may have zero or one NTE segment.
]]	OBSERVATION END			
]]	ORDER end			

v2.3.1

Realtime VXQ responses: VXR, VXX, ACK, QCK

VXU^V04

Unsolicited Vaccination Record Update

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
PID	[1..1]	R	Patient Identification Segment	Every VXU has one PID segment.
[PD1]	[0..1]	RE	Additional Demographics	Every PID segment in VXU may have one or less PD1 segment.
[[NK1]]	[0..*]	RE	Next of Kin/Associated Parties	The PID segment in a VXU may have zero or more NK1 segments.
[	PATIENT VISIT begin			
PV1	[0..1]	RE	Patient Visit	The PID segment in a VXU may have zero or one PV1 segment. Subsequent messages regarding the same patient/client may have a different PV1 segment.
[PV2]	[0..1]	X	Patient Visit Additional Information	
]	PATIENT VISIT end			
[[	INSURANCE begin			Each VXU may have zero or more Insurance Groups.
IN1	[0..1]	X	Insurance	
[IN2]	[0..1]	X	Insurance Additional Information	
[IN3]	[0..1]	X	Insurance Additional Information-Cert.	
]]	INSURANCE end			
[[	ORDER begin			Each VXU may have zero or more Order Groups.
ORC	[1..]	RE	Common Order Segment	The PID segment in a VXU may have zero or more ORC segments.
RXA	[1..1]	R	Pharmacy Administration	Each ORC segment in a VXU must have one RXA segment. Every RXA requires an ORC segment.
[RXR]	[0..1]	RE	Pharmacy Route	Every RXA segment in a VXU may have zero or one RXR segments.
[[	OBSERVATION BEGIN			
OBX	[0..*]	RE	Observation/Result	Every RXA segment in a VXU may have zero or more OBX segments.
[[NTE]]	[0..1]	RE	Notes (Regarding Immunizations)	Every OBX segment in a VXU may have zero or one NTE segment.
]]	OBSERVATION END			
]]	ORDER end			

**While not all immunizations recorded in an immunization message are able to be associated with an order, each RXA must be associated with one ORC, based on HL7 2.5.1 standard. The ORC in v2.3.1 is optional.*

ADT^A01

Admit/Visit Notification

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
EVN	[1..1]	R	Event Type	Every ADT has one EVN segment.
PID	[1..1]	R	Patient Identification Segment	Every ADT has one PID segment.
[PD1]	[0..1]	RE	Patient Additional Demographics	Every PID segment in ADT may have zero or one PD1 segment.
{{ROL}}	[0..*]	O	Role	
{{NK1}}	[0..*]	O	Next of Kin/Associated Parties	The PID segment in a ADT may have zero or more NK1 segments.
PV1	[1..1]	R	Patient Visit Information	The PID segment in an ADT must have one PV1 segment.
[PV2]	[0..1]	X	Patient Visit Additional Information	
{{ROL}}	[0..*]	O	Role	
{{DB1}}	[0..*]	X	Disability Information	
{{OBX}}	[0..*]	O	Observation /Result	The PID segment in an ADT may have zero or more OBX segments.
{{AL1}}	[0..*]	X	Allergy Information	
{{DG1}}	[0..*]	X	Diagnosis Information	
[DRG]	[0..*]	X	Diagnosis Related Group	
{{	PROCEDURE begin			
PR1	[0..1]	O	Procedures	
{{ROL}}	[0..*]	O	Role	
}}	PROCEDURE end			
{{GT1}}	[0..*]	O	Guarantor	
{{	INSURANCE begin			
IN1	[0..1]	X	Insurance	
[IN2]	[0..1]	X	Insurance Add'l Information	
{{IN3}}	[0..*]	X	Insurance Add'l Info - Cert	
{{ROL}}	[0..*]	X	Role	
}}	INSURANCE end			
[ACC]	[0..1]	X	Accident Information	
[UB1]	[0..1]	X	Universal Bill Information	
[UB2]	[0..1]	X	Universal Bill 92 Information	
[PDA]	[0..1]	X	Patient Death and Autopsy	

ADT^A04

Register a Patient

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
EVN	[1..1]	R	Event Type	Every ADT has one EVN segment.
PID	[1..1]	R	Patient Identification Segment	Every ADT has one PID segment.
[PD1]	[0..1]	RE	Patient Additional Demographics	Every PID segment in ADT may have zero or one PD1 segment.
{{ROL}}	[0..*]	O	Role	
{{NK1}}	[0..*]	O	Next of Kin/Associated Parties	The PID segment in a ADT may have zero or more NK1 segments.
PV1	[1..1]	R	Patient Visit Information	The PID segment in an ADT must have one PV1 segment.
[PV2]	[0..1]	X	Patient Visit Additional Information	
{{ROL}}	[0..*]	O	Role	
{{DB1}}	[0..*]	X	Disability Information	
{{OBX}}	[0..*]	O	Observation /Result	The PID segment in an ADT may have zero or more OBX segments.
{{AL1}}	[0..*]	X	Allergy Information	
{{DG1}}	[0..*]	X	Diagnosis Information	
[DRG]	[0..*]	X	Diagnosis Related Group	
{{	PROCEDURE begin			
PR1	[0..1]	O	Procedures	
{{ROL}}	[0..*]	O	Role	
}}	PROCEDURE end			
{{GT1}}	[0..*]	X	Guarantor	
{{	INSURANCE begin			
IN1	[0..1]	X	Insurance	
[IN2]	[0..1]	X	Insurance Add'l Information	
{{IN3}}	[0..*]	X	Insurance Add'l Info - Cert	
{{ROL}}	[0..*]	X	Role	
}}	INSURANCE end			
[ACC]	[0..1]	X	Accident Information	
[UB1]	[0..1]	X	Universal Bill Information	
[UB2]	[0..1]	X	Universal Bill 92 Information	
[PDA]	[0..1]	X	Patient Death and Autopsy	

ADT^A05

Pre-admit a Patient

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
EVN	[1..1]	R	Event Type	Every ADT has one EVN segment.
PID	[1..1]	R	Patient Identification Segment	Every ADT has one PID segment.
[PD1]	[0..1]	RE	Patient Additional Demographics	Every PID segment in ADT may have zero or one PD1 segment.
{{ROL}}	[0..*]	O	Role	
{{NK1}}	[0..*]	O	Next of Kin/Associated Parties	The PID segment in a ADT may have zero or more NK1 segments.
PV1	[1..1]	R	Patient Visit Information	The PID segment in an ADT must have one PV1 segment.
[PV2]	[0..1]	X	Patient Visit Additional Information	
{{ROL}}	[0..*]	O	Role	
{{DB1}}	[0..*]	X	Disability Information	
{{OBX}}	[0..*]	O	Observation /Result	The PID segment in an ADT may have zero or more OBX segments.
{{AL1}}	[0..*]	X	Allergy Information	
{{DG1}}	[0..*]	X	Diagnosis Information	
[DRG]	[0..*]	X	Diagnosis Related Group	
{{	PROCEDURE begin			
PR1	[0..1]	O	Procedures	
{{ROL}}	[0..*]	O	Role	
}}	PROCEDURE end			
{{GT1}}	[0..*]	X	Guarantor	
{{	INSURANCE begin			
IN1	[0..1]	X	Insurance	
[IN2]	[0..1]	X	Insurance Add'l Information	
{{IN3}}	[0..*]	X	Insurance Add'l Info - Cert	
{{ROL}}	[0..*]	X	Role	
}}	INSURANCE end			
[ACC]	[0..1]	X	Accident Information	
[UB1]	[0..1]	X	Universal Bill Information	
[UB2]	[0..1]	X	Universal Bill 92 Information	

ADT^A08

Update Patient Information

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
EVN	[1..1]	R	Event Type	Every ADT has one EVN segment.
PID	[1..1]	R	Patient Identification Segment	Every ADT has one PID segment.
[PD1]	[0..1]	RE	Patient Additional Demographics	Every PID segment in ADT may have zero or one PD1 segment.
{{ROL}}	[0..*]	O	Role	
{{NK1}}	[0..*]	O	Next of Kin/Associated Parties	The PID segment in a ADT may have zero or more NK1 segments.
PV1	[1..1]	R	Patient Visit Information	The PID segment in an ADT must have one PV1 segment.
[PV2]	[0..1]	X	Patient Visit Additional Information	
{{ROL}}	[0..*]	O	Role	
{{DB1}}	[0..*]	X	Disability Information	
{{OBX}}	[0..*]	O	Observation /Result	The PID segment in an ADT may have zero or more OBX segments.
{{AL1}}	[0..*]	X	Allergy Information	
{{DG1}}	[0..*]	X	Diagnosis Information	
[DRG]	[0..*]	X	Diagnosis Related Group	
{{	PROCEDURE begin			
PR1	[0..1]	O	Procedures	
{{ROL}}	[0..*]	O	Role	
}}	PROCEDURE end			
{{GT1}}	[0..*]	X	Guarantor	
{{	INSURANCE begin			
IN1	[0..1]	X	Insurance	
[IN2]	[0..1]	X	Insurance Add'l Information	
{{IN3}}	[0..*]	X	Insurance Add'l Info - Cert	
{{ROL}}	[0..*]	X	Role	
}}	INSURANCE end			
[ACC]	[0..1]	X	Accident Information	
[UB1]	[0..1]	X	Universal Bill Information	
[UB2]	[0..1]	X	Universal Bill 92 Information	
[PDA]	[0..1]	X	Patient Death and Autopsy	

ADT^A28

Add Person Information

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
EVN	[1..1]	R	Event Type	Every ADT has one EVN segment.
PID	[1..1]	R	Patient Identification Segment	Every ADT has one PID segment.
[PD1]	[0..1]	RE	Patient Additional Demographics	Every PID segment in ADT may have zero or one PD1 segment.
{{ROL}}	[0..*]	O	Role	
{{NK1}}	[0..*]	O	Next of Kin/Associated Parties	The PID segment in a ADT may have zero or more NK1 segments.
PV1	[1..1]	R	Patient Visit Information	The PID segment in an ADT must have one PV1 segment.
[PV2]	[0..1]	X	Patient Visit Additional Information	
{{ROL}}	[0..*]	O	Role	
{{DB1}}	[0..*]	X	Disability Information	
{{OBX}}	[0..*]	O	Observation /Result	The PID segment in an ADT may have zero or more OBX segments.
{{AL1}}	[0..*]	X	Allergy Information	
{{DG1}}	[0..*]	X	Diagnosis Information	
[DRG]	[0..*]	X	Diagnosis Related Group	
{{	PROCEDURE begin			
PR1	[0..1]	O	Procedures	
{{ROL}}	[0..*]	O	Role	
}}	PROCEDURE end			
{{GT1}}	[0..*]	X	Guarantor	
{{	INSURANCE begin			
IN1	[0..1]	X	Insurance	
[IN2]	[0..1]	X	Insurance Add'l Information	
{{IN3}}	[0..*]	X	Insurance Add'l Info - Cert	
{{ROL}}	[0..*]	X	Role	
}}	INSURANCE end			
[ACC]	[0..1]	X	Accident Information	
[UB1]	[0..1]	X	Universal Bill Information	
[UB2]	[0..1]	X	Universal Bill 92 Information	

ADT^A29^ADT_A21 Delete Person Information

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
EVN	[1..1]	R	Event Type	Every ADT has one EVN segment.
PID	[1..1]	R	Patient Identification Segment	Every ADT has one PID segment.

ADT^A31

Update Person Information

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
EVN	[1..1]	R	Event Type	Every ADT has one EVN segment.
PID	[1..1]	R	Patient Identification Segment	Every ADT has one PID segment.
[PD1]	[0..1]	RE	Patient Additional Demographics	Every PID segment in ADT may have zero or one PD1 segment.
{{ROL}}	[0..*]	O	Role	
{{NK1}}	[0..*]	O	Next of Kin/Associated Parties	The PID segment in a ADT may have zero or more NK1 segments.
PV1	[1..1]	R	Patient Visit Information	The PID segment in an ADT must have one PV1 segment.
[PV2]	[0..1]	X	Patient Visit Additional Information	
{{ROL}}	[0..*]	O	Role	
{{DB1}}	[0..*]	X	Disability Information	
{{OBX}}	[0..*]	O	Observation /Result	The PID segment in an ADT may have zero or more OBX segments.
{{AL1}}	[0..*]	X	Allergy Information	
{{DG1}}	[0..*]	X	Diagnosis Information	
[DRG]	[0..*]	X	Diagnosis Related Group	
{{	PROCEDURE begin			
PR1	[0..1]	O	Procedures	
{{ROL}}	[0..*]	O	Role	
}}	PROCEDURE end			
{{GT1}}	[0..*]	X	Guarantor	
{{	INSURANCE begin			
IN1	[0..1]	X	Insurance	
[IN2]	[0..1]	X	Insurance Add'l Information	
{{IN3}}	[0..*]	X	Insurance Add'l Info - Cert	
{{ROL}}	[0..*]	X	Role	
}}	INSURANCE end			
[ACC]	[0..1]	X	Accident Information	
[UB1]	[0..1]	X	Universal Bill Information	
[UB2]	[0..1]	X	Universal Bill 92 Information	

ADT^A40^ADT_A39 Merge Patient - Patient Identifier List

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
EVN	[1..1]	R	Event Type	Every ADT has one EVN segment.
{	PATIENT begin			
PID	[1..1]	R	Patient Identification Segment	Every ADT has one PID segment.
MRG	[1..1]	R	Merge Information	
}	PATIENT end			

ADT^A47***Change Patient Identifier List***

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
EVN	[1..1]	R	Event Type	Every ADT has one EVN segment.
PID	[1..1]	R	Patient Identification Segment	Every ADT has one PID segment.
[PD1]	[0..1]	RE	Patient Additional Demographics	Every PID segment in ADT may have zero or one PD1 segment.
MRG	[1..1]	R	Merge Information	Every ADT has one MRG segment.

ACK^varies^ACK**General Acknowledgment**

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
MSA	[1..1]	R	Message Acknowledgment	Every ACK has one MSA segment.
[[ERR]]	[0..*]	O	Error	Include if there are errors.

QCK^Q02

Query General Acknowledgment

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
MSA	[1..1]	R	Message Acknowledgment	Every ACK has one MSA segment.
[ERR]	[0..1]	O	Error	Include if there are errors.
[QAK]	[0..1]	O	Query Acknowledgment	Include if there are errors.

v2.3.1

Realtime VXQ responses: VXR, VXX, ACK, QCK

QBP^Q11

Request Immunization History

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
QPD	[1..1]	R	Query Parameter Definition	Every QBP has one QPD segment.
[	<i>QBP begin</i>			
[...]	[1..*]	R		The Query Profile will specify the list of fields and their components in the order that they will be expected for this query.
]	<i>QBP end</i>			
RCP	[1..1]	R	Response Control Parameter	The Query Profile will list the segments that are expected to be returned in response to this query.

v2.5.1

Realtime QBP responses: RSP, ACK

RSP^K11

Return Candidate List

Segment	Cardinality	Usage	Field Name	Comment
MSH	[1..1]	R	Message Header Segment	Every message begins with an MSH.
MSA	[1..1]	R	Message Acknowledgment	Every RSP has one MSA segment.
[ERR]	[0..1]	O	Error	Include if there are errors.
QAK	[1..1]	R	Query Acknowledgment	
QPD	[1..1]	R	Query Parameter Definition	This segment echoes the Query Parameter Definition Segment sent in the requesting query.
[	QBP begin			
...	[0..1]	O		The specified segments and their contents as specified in the Segment Pattern from Query Profile, are returned here. May be null if no records returned.
]	QBP end			

v2.5.1

Realtime QBP responses: RSP, ACK

Message Header Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	Item #	Element Name	Comment	Mapped
MSH	1	1	ST	R	[1..1]		00001	Field Separator	The MSH.1 field shall be |	
MSH	2	4	ST	R	[1..1]		00002	Encoding Characters	The MSH.2 field shall be ^-~\&	
MSH	3		HD	O	[0..1]	0361	00003	Sending Application		
MSH	4		HD	R	[0..1]	0362	00004	Sending Facility		Y
MSH	5		HD	O	[0..1]	0361	00005	Receiving Application		
MSH	6		HD	O	[0..1]	0362	00006	Receiving Facility		
MSH	7		TS	R	[1..1]		00007	Date/Time of Message	YYYYMMDDHHMM[SS[S[S[S[S]]]]]+/- ZZZZ	
MSH	8	40	ST	O	[0..1]		00008	Security		
MSH	9	15	MSG	R	[1..1]	0076 0003	00009	Message Type		
MSH	10	20	ST	R	[1..1]		00010	Message Control ID		
MSH	11	3	PT	R	[1..1]		00011	Processing ID		
MSH	12		VID	R	[1..1]	0104	00012	Version ID	2.3.1 or 2.5.1	Y
MSH	13	15	NM	O	[0..1]		00013	Sequence Number		
MSH	14	180	ST	O	[0..1]		00014	Continuation Pointer		
MSH	15	2	ID	O	[0..1]	0155	00015	Accept Acknowledgement Type		
MSH	16	2	ID	O	[0..1]	0155	00016	Application Acknowledgement Type	AL-always, NE-Never, ER-Error/reject only, SU successful completion only	
MSH	17	3	ID	O	[0..1]	0399	00017	Country Code	Use 3 character country code from ISO 3166. If is empty, assume USA	
MSH	18	16	ID	O	[0..1]	0211	00692	Character Set	blank defaults to ASCII printable	
MSH	19		CE	O	[0..1]		00693	Principal Language of Message		
MSH	20	20	ID	O	[0..1]	0356	01317	Alternate Character Set Handling Scheme		
MSH	21		EI	O	[0..]		01598	Message Profile Identifier	Required for QBP, RSP. Z31^CDCPHINVS - Return Candidates (RSP) Z34^CDCPHINVS - Return Imm History (RSP) Z32^CDCPHINVS - Request Imm History (QPB)	

*MSH21 is used with v2.5.1

Patient Identification Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comment	Mapped
PID	1	4	SI	RE	[1..1]		00104	Set ID - PID		
PID	2		CX	X	[0..1]		00105	Patient ID		
PID	3		CX	R	[1..*]		00106	Patient Identifier List		Y
PID	4		CX	X	[0..1]		00107	Alternate Patient ID - 00106		
PID	5		XPN	R	[1..*]		00108	Patient Name	The first repetition shall contain the legal name. Multiple given names or initials are seperated by spaces.	Y
PID	6		XPN	RE	[0..1]		00109	Mother's Maiden Name		Y
PID	7		TS	R	[1..1]		00110	Date/Time of Birth	Required, must have month, day and year.	Y
PID	8	1	IS	R	[0..1]	0001	00111	Administrative Sex		Y
PID	9		XPN	X	[0..1]		00112	Patient Alias	This field should not be used. It was supported in earlier implementations.	
PID	10		CE	RE	[0..*]	0005	00113	Race		Y
PID	11		XAD	RE	[0..*]		00114	Patient Address	The first repetition should be the primary address. If empty then NK1.4 is required.	Y
PID	12	4	IS	X	[0..1]	0289	00115	County Code	County belongs in the address field.	
PID	13		XTN	RE	[0..*]		00116	Phone Number - Home	The first iteration is considered the primary and will follow this rule: PID13.5-8 will hold the primary number. PID13.1 will be used if PID13.5-8 is not populated. Other communication types may follow (e.g. fax, cell, e-mail) in its own iteration.	Y
PID	14		XTN	O	[0..1]		00117	Phone Number - Business	PID14.5-8 will hold the primary number. PID14.1 will be used if PID14.5-8 is not populated.	Y
PID	15		CE	O	[0..1]	0296	00118	Primary Language	Use ISO 639.	Y
PID	16		CE	O	[0..1]		00119	Marital Status		
PID	17		CE	O	[0..1]		00120	Religion		
PID	18		CX	O	[0..1]		00121	Patient Account Number		

Patient Identification Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comment	Mapped
PID	19	16	ST	X	[0..1]		00122	SSN Number - Patient	Kept for backwards compatibility. It is recommended to use PID.3	Y
PID	20		DLN	X	[0..1]		00123	Driver's License Number - Patient		
PID	21		CX	X	[0..1]		00124	Mother's Identifier		
PID	22		CE	RE	[0..1]	0189	00125	Ethnic Group	First triplet should contain H,N,U if populated. Second triplet should contain government issued code from table xxx, if populated. If both are populated, they must match logically.	
PID	23	60	ST	O	[0..1]		00126	Birth Place	Use may be specified locally.	O
PID	24	1	ID	RE	[0..1]			Multiple Birth Indicator	Y or N	Y
PID	25	2	NM	CE	[0..1]		00128	Birth Order	If multiple births, use person's birth order, with 1 for the first child born and 2 for the second.	Y
PID	26		CE	O	[0..1]	0171	00129	Citizenship		
PID	27		CE	O	[0..1]	0172	00130	Veterans Military Status		
PID	28		CE	O	[0..1]	0212	00739	Nationality		Y
PID	29		TS	RE	[0..1]		00740	Patient Death Date and Time		
PID	30	1	ID	CE	[0..1]	0136	00741	Patient Death Indicator	If patient death date is populated, then this field should be populated.	Y
PID	31	1	ID	O	[0..1]	0136	01535	Identity Unknown Indicator		
PID	32	20	IS	O	[0..1]	0445	01536	Identity Reliability		
PID	33		TS	O	[0..1]		01537	Last Update Date/Time	May be locally specified.	O
PID	34		HD	O	[0..1]		01538	Last Update Facility	Use is locally specified.	O
PID	35		CE	O	[0..1]	0446	01539	Species Code		
PID	36		CE	O	[0..1]	0447	01540	Breed Code		
PID	37		ST	O	[0..1]		01541	Strain		
PID	38		CE	O	[0..1]	0429	01542	Production Class Code		
PID	39		CE	O	[0..1]	0171	01840	Tribal Citizenship		

Patient Additional Demographic Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comments	Mapped
PD1	1	1	ST	O	[0..1]	0223	00755	Living Dependency		
PD1	2	4	ST	O	[0..1]	0220	00742	Living Arrangement		
PD1	3		HD	O	[0..1]		00756	Patient Primary Facility		
PD1	4		HD	O	[0..1]		00757	Patient Primary Care Provider Name & ID N.		
PD1	5		HD	O	[0..1]	0231	00745	Student Indicator		
PD1	6		HD	O	[0..1]	0295	00753	Handicap		
PD1	7		TS	O	[0..1]	0315	00759	Living Will Code		
PD1	8	40	ST	O	[0..1]	0316	00760	Organ Donor Code		
PD1	9	15	MSG	O	[0..1]	0136	00761	Separate Bill		
PD1	10	20	ST	O	[0..1]		00762	Duplicate Patient		
PD1	11	3	PT	RE	[0..1]	0215	00763	Publicity Code		
PD1	12	60	ID	RE	[0..1]	0136	00744	Protection Indicator*	ver. 2.5.1 N = consented Y = unconsented null = unconsented ver. 2.3.1 & 2.4 N = unconsented Y = consented null = unconsented	
PD1	13	15	NM	CE	[0..1]		01566	Protection Indicator Effective Date	If protection indicator is valued, then this field should be valued.	
PD1	14	180	ST	O	[0..1]		01567	Place Of Worship		
PD1	15	2	ID	O	[0..1]		01568	Advance Directive Code		
PD1	16	2	ID	RE	[0..1]	0441	01569	Immunization Registry Status		Y
PD1	17	3	ID	CE	[0..1]		01570	Immunization Registry Status Effective Date	If the registry status field is filled, then this field should be valued.	
PD1	18	16	ID	CE	[0..1]		01571	Publicity Code Effective Date	If the publicity code field is filled then this field should be valued.	
PD1	19		CE	O	[0..1]	00140	01572	Military Branch		
PD1	20	20	ID	O	[0..1]	00141	00486	Military Rank/Grade		
PD1	21		EI	O	[0..1]	00142	01573	Military Status		

* Currently Illinois' immunization registry is considered an Opt-In state registry (patients/guardians consent by signing a form to be included in the registry.) If PD1 segment is missing or PD1.12 is null then the patient will be considered un-consented.

Please note that if/when legislation is approved by the State of Illinois to become an Opt-Out state registry (patients/guardians complete a form to be excluded from the registry), then PD1.12 must be populated. If PD1 segment is missing or PD1.12 is null then the patient will be considered consented.

Patient Visit Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comments	Mapped
PV1	1	4	SI	O	[0..1]		00131	Set ID - PV1	If populated, this should be 1.	
PV1	2	1	IS	R	[1..1]	0004	00132	Patient Class		
PV1	3		PL	O	[0..1]		00133	Assigned Patient Location		
PV1	4	2	IS	O	[0..1]	0007	00134	Admission Type		
PV1	5		CX	O	[0..1]		00135	Preadmit Number		
PV1	6		PL	O	[0..1]		00136	Prior Patient Location		
PV1	7		XCN	O	[0..1]	0010	00137	Attending Doctor		
PV1	8		XCN	O	[0..1]	0010	00138	Referring Doctor		
PV1	9		XCN	O	[0..1]	0010	00139	Consulting Doctor		
PV1	10	3	IS	O	[0..1]	0069	00140	Hospital Service		
PV1	11		PL	O	[0..1]		00141	Temporary Location		
PV1	12	2	IS	O	[0..1]	0087	00142	Preadmit Test Indicator		
PV1	13	2	IS	O	[0..1]	0092	00143	Re-admission Indicator		
PV1	14	6	IS	O	[0..1]	0023	00144	Admit Source		
PV1	15	2	IS	O	[0..1]	0009	00145	Ambulatory Status		
PV1	16	2	IS	O	[0..1]	0099	00146	VIP Indicator		
PV1	17		XCN	O	[0..1]	0010	00147	Admitting Doctor		
PV1	18	2	IS	O	[0..1]	0018	00148	Patient Type		
PV1	19		CX	O	[0..1]		00149	Visit Number		
PV1	20		FC	RE	[1..*]	0064	00150	Financial Class	VFC Status	Y
PV1	21	2	IS	O	[0..1]	0032	00151	Charge Price Indicator		
PV1	22	2	IS	O	[0..1]	0045	00152	Courtesy Code		
PV1	23	2	IS	O	[0..1]	0046	00153	Credit Rating		
PV1	24	2	IS	O	[0..1]	0044	00154	Contract Code		
PV1	25	8	DT	O	[0..1]		00155	Contract Effective Date		
PV1	26	12	NM	O	[0..1]		00156	Contract Amount		
PV1	27	3	NM	O	[0..1]		00157	Contract Period		
PV1	28	2	IS	O	[0..1]	0073	00158	Interest Code		
PV1	29	4	IS	O	[0..1]	0110	00159	Transfer to Bad Debt Code		
PV1	30	8	DT	O	[0..1]		00160	Transfer to Bad Debt Date		
PV1	31	10	IS	O	[0..1]	0021	00161	Bad Debt Agency Code		
PV1	32	12	NM	O	[0..1]		00162	Bad Debt Transfer Amount		
PV1	33	12	NM	O	[0..1]		00163	Bad Debt Recovery Amount		
PV1	34	1	IS	O	[0..1]	0111	00164	Delete Account Indicator		
PV1	35	8	DT	O	[0..1]		00165	Delete Account Date		
PV1	36	3	IS	O	[0..1]	0112	00166	Discharge Disposition		
PV1	37		DLD	O	[0..1]	0113	00167	Discharged to Location		
PV1	38		CE	O	[0..1]	0114	00168	Diet Type		
PV1	39	2	IS	O	[0..1]	0115	00169	Servicing Facility		

Patient Visit Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comments	Mapped
PV1	40	1	IS	O	[0..1]	0116	00170	Bed Status		
PV1	41	2	IS	O	[0..1]	0117	00171	Account Status		
PV1	42		PL	O	[0..1]		00172	Pending Location		
PV1	43		PL	O	[0..1]		00173	Prior Temporary Location		
PV1	44		TS	O	[0..1]		00174	Admit Date/Time		
PV1	45		TS	O	[0..1]		00175	Discharge Date/Time		
PV1	46	12	NM	O	[0..1]		00176	Current Patient Balance		
PV1	47	12	NM	O	[0..1]		00177	Total Charges		
PV1	48	12	NM	O	[0..1]		00178	Total Adjustments		
PV1	49	12	NM	O	[0..1]		00179	Total Payments		
PV1	50		CX	O	[0..1]	0203	00180	Alternate Visit ID		
PV1	51	1	IS	O	[0..1]	0326	01226	Visit Indicator		
PV1	52		XCN	O	[0..1]	0010	01274	Other Healthcare Provider		

Next of Kin / Associated Parties Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comments	Mapped
NK1	1	4	SI	R	[1..1]		00190	Set ID- NK1		Y
NK1	2		XPN	R	[1..*]		00191	Name	The first instance is the legal name and is required.	Y
NK1	3		CE	R	[1..1]	0063	00192	Relationship		Y
NK1	4		XAD	RE	[0..*]		00193	Address	The first instance shall be the primary address. Is required if PID.11 is empty.	Y
NK1	5		XTN	RE	[0..*]		00194	Phone Number	The first instance shall be the primary phone number.	Y
NK1	6		XTN	O	[0..*]		00195	Business Phone Number		Y
NK1	7		CE	O	[0..1]	0131	00196	Contact Role		
NK1	8	8	DT	O	[0..1]		00197	Start Date		
NK1	9	8	DT	O	[0..1]		00198	End Date		
NK1	10	60	ST	O	[0..1]		00199	Next of Kin / Associated Parties Job Title		
NK1	11		JCC	O	[0..1]	0327 0328	00200	Next of Kin / Associated Parties Job Code/Class		
NK1	12		CX	O	[0..1]		00201	Next of Kin / Associated Parties Employee Number		
NK1	13		XON	O	[0..1]		00202	Organization Name - NK1		
NK1	14		CE	O	[0..1]	0002	00119	Marital Status		
NK1	15	1	IS	O	[0..1]	0001	00111	Administrative Sex		Y
NK1	16		TS	O	[0..1]		00110	Date/Time of Birth		Y
NK1	17	2	IS	O	[0..1]	0223	00755	Living Dependency		
NK1	18	2	IS	O	[0..1]	0009	00145	Ambulatory Status		
NK1	19		CE	O	[0..1]	0171	00129	Citizenship		
NK1	20		CE	O	[0..1]	0296	00118	Primary Language		Y
NK1	21	2	IS	O	[0..1]	0220	00742	Living Arrangement		
NK1	22		CE	O	[0..1]	0215	00743	Publicity Code		
NK1	23	1	ID	O	[0..1]	0136	00744	Protection Indicator		O
NK1	24	2	IS	O	[0..1]	0231	00745	Student Indicator		
NK1	25		CE	O	[0..1]	0006	00120	Religion		
NK1	26		XPN	O	[0..1]		00746	Mother'S Maiden Name		Y
NK1	27		CE	O	[0..1]	0212	00739	Nationality		Y
NK1	28		CE	O	[0..1]	0189	00125	Ethnic Group		
NK1	29		CE	O	[0..1]	0222	00747	Contact Reason		

Next of Kin / Associated Parties Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comments	Mapped
NK1	30		XPN	O	[0..1]		00748	Contact Person's Name		
NK1	31		XTN	O	[0..1]		00749	Contact Person's Telephone Number		
NK1	32		XAD	O	[0..1]		00750	Contact Person's Address		
NK1	33		CX	O	[0..1]		00751	Next of Kin/AP's Identifier		
NK1	34	2	IS	O	[0..1]	0311	00752	Job Status		
NK1	35		CE	O	[0..1]	0005	00113	Race		Y
NK1	36	2	IS	O	[0..1]	0295	00753	Handicap		
NK1	37	16	ST	O	[0..1]		00754	Contact Person Social Security #		
NK1	38		ST	O	[0..1]		01905	Next of Kin Birth Place		O
NK1	39	2	IS	O	[0..1]	0099	00146	VIP Indicator		

Common Order Segment (v2.5.1 required)

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comments	Mapped
ORC	1	2	ID	R		0119	00215	Order Control	use RE	
ORC	2		EI	RE			00216	Placer Order Number		
ORC	3		EI	R			00217	Filler Order Number	Filler Order Number SHOULD be the unique immunization ID of the sending system. See appendix C for usage.	Y
ORC	4		EI	O			00218	Placer Group Number		
ORC	5	2	ID	O		0038	00219	Order Status		
ORC	6	1	ID	O		0121	00220	Response Flag		
ORC	7		TQ	X			00221	Quantity/Timing		
ORC	8		EIP	O			00222	Parent		
ORC	9		TS	O			00223	Date/Time of Transaction		
ORC	10		XCN	RE			00224	Entered By	This is the person that entered this immunization record into the system.	
ORC	11		XCN	O			00225	Verified By		
ORC	12		XCN	RE			00226	Ordering Provider	This is the provider ordering the immunization. It is expected to be empty if the immunization record is transcribed from a historical record.	
ORC	13		PL	O			00227	Enterer's Location		
ORC	14		XTN	O			00228	Call Back Phone Number		
ORC	15		TS	O			00229	Order Effective Date/Time		
ORC	16		CE	O			00230	Order Control Code Reason		
ORC	17		CE	O			00231	Entering Organization	This is the provider organization that entered this record/order.	
ORC	18		CE	O			00232	Entering Device		
ORC	19		XCN	O			00233	Action By		
ORC	20		CE	O		0339	01310	Advanced Beneficiary Notice Code		
ORC	21		XON	O			01311	Ordering Facility Name		
ORC	22		XAD	O			01312	Ordering Facility Address		
ORC	23		XTN	O			01313	Ordering Facility Phone Number		

Common Order Segment (v2.5.1 required)

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comments	Mapped
ORC	24		XAD	O			01314	Ordering Provider Address		
ORC	25		CWE	O			01473	Order Status Modifier		
ORC	26		CWE	O		0552	01641	Advanced Beneficiary Notice Override Reason		
ORC	27		TS	O			01642	Filler's Expected Availability Date/Time		
ORC	28		CWE	O		0177	00615	Confidentiality Code		
ORC	29		CWE	O		0482	01643	Order Type		
ORC	30		CNE	O		0483	01644	Enterer Authorization Mode		
ORC	31		CWE	O			02286	Parent Universal Service Identifier		

Original-Style Query Definition

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comment	Mapped
QAK	1	32	ST	R	[1..1]		00696	Query Tag		
QAK	2		ID	O	[0..1]	0208	00708	Query Response Status		
QAK	3	2	CE	O	[0..1]	0471	01375	Message Query Name		
QAK	4	10	NM	O	[0..1]		01434	Hit Count		
QAK	5	10	NM	O	[0..1]		01622	This Payload		
QAK	6	10	NM	O	[0..1]		01623	Hits Remaining		

v2.5.1

Query Parameter Definition

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comment	Mapped
QPD	1		CE	R	[1..1]	0471	01375	Message Query Name	Z34^Request Immunization History^HL70471	
QPD	2	32	ST				00696	Query Tag		
QPD	3		CX	RE	[0..*]			Patientlist	PID-3: Patient Identifier List	Y
QPD	4		XPN	RE	[0..1]			Patientname	PID-5: Patient Name	Y
QPD	5		XPN	RE	[0..1]			Patientmothermaidenname	PID-6: Mother'S Maiden Name	Y
QPD	6	26	TS	RE	[0..1]			Patient Date of Birth	PID-7: Patient Date of Birth	Y
QPD	7	1	IS	RE	[0..1]			Patient Sex	PID-8: Patient Sex	Y
QPD	8		XAD	RE	[0..1]			Patient Address	PID-11: Patient Address	Y
QPD	9		XTN	RE	[0..1]			Patient Home Phone	PID-13: Patient Home Phone	Y
QPD	10	1	ID	RE	[0..1]			Multiple Birth Indicator	PID-24: Multiple Birth Indicator	Y
QPD	11	2	NM	RE	[0..1]			Patient Birth Order	PID-25: Patient Birth Order	Y
QPD	12		TS	RE	[0..1]			Client Last Updated Date	PID-33: Patient Last Update Date	Y
QPD	13		HD	RE	[0..1]			Client Last Update Facility	PID-34: Patient Last Update Facility	Y

Patient List QPD-3

ID	ID Type
SS	SS#
MA	Medicaid ID
MC	Medicare ID
BR	Birth Certificate ID
CH	Chart ID
PT	Site Patient ID
PI	ICARE Patient ID

v2.5.1

Original-Style Query Definition

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comment	Mapped
QRD	1	26	TS	R	[1..1]		00025	Query Date/Time		
QRD	2	1	ID	R	[1..1]		00026	Query Format Code		
QRD	3	1	ID	R	[1..1]		00027	Query Priority		
QRD	4	10	ST	R	[1..1]		00028	Query ID		
QRD	5	1	ID	O	[0..1]		00029	Deferred Response Type		
QRD	6	26	TS	O	[0..1]		00030	Deferred Response Date/Time		
QRD	7	10	CQ	R	[1..1]		00031	Quantity Limited Request	25^RD	Y
QRD	8	250	XCN	R	[1..1]		00032	Who Subject Filter		Y
QRD	8.1		ST		[0..1]			ID Number		Y
QRD	8.2		ST		[0..1]			Patient Last Name		Y
QRD	8.3		ST		[0..1]			Patient First Name		Y
QRD	8.4		ST		[0..1]			Patient Middle Name		Y
QRD	9	250	CE	R	[1..1]		00033	What Subject Filter	VXI^VACCINE INFO^HL70048	Y
QRD	10	250	CE	R	[1..1]		00034	What Department Data Code		
QRD	11	20	VR	O	[0..1]		00035	What Data Code Value Qual.		
QRD	12	1	ID	O	[0..1]		00036	Query Results Level		

v2.3.1

Original-Style Query Definition

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comment	Mapped
QRF	1	20	ST	R	[1..*]		00037	Where Subject Filter		
QRF	2	26	TS	O	[0..1]		00038	When Data Start Date/Time		
QRF	3	26	TS	O	[0..1]		00039	When Data End Date/Time		
QRF	4	60	ST	O	[0..*]		00040	What User Qualifier		
QRF	5		ST	RE	[0..1]		00041	Other QRY Subject Filter		Y
QRF	5.1		ST		[0..1]			Patient Social Security Number		Y
QRF	5.2		DT		[0..1]			Patient Birth Date		Y
QRF	5.3		ID		[0..1]			Patient Birth State		
QRF	5.4		ST		[0..1]			Patient Birth Registration Number		Y
QRF	5.5		ST		[0..1]			Patient Medicaid Number		Y
QRF	5.6		PN		[0..1]			Mother's Name Last^First^Middle		
QRF	5.7		ST		[0..1]			Mother's Maiden Name		Y
QRF	5.8		ST		[0..1]			Mother's Social Security Number		
QRF	5.9		PN		[0..1]			Father's Name Last^First^Middle		
QRF	5.10		ST		[0..1]			Father's Social Security Number		
QRF	6	12	ID	O	[0..*]	0156	00042	Which Date/Time Qualifier		
QRF	7	12	ID	O	[0..*]	0157	00043	Which Date/Time Status Qualifier		
QRF	8	12	ID	O	[0..*]	0158	00044	Date/Time Selection Qualifier		
QRF	9	60	TQ	O	[0..1]		00694	When Quantity/Timing Qualifier		

v2.3.1

Error Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comment	Mapped
ERR	1		ELD	X	[0..0]		00024	Error Code and Location	Not supported for Version 2.5 and above.	
ERR	2	18	ERL	RE	[0..1]		01812	Error Location	If an error involves the entire message (e.g. the message is not parse-able.) then location has no meaning. In this case, the field is left empty.	
ERR	3		CWE	R	[1..1]	0357	01813	HL7 Error Code		
ERR	4	2	ID	R	[1..1]	0516	01814	Severity		
ERR	5		CWE	O	[0..1]	0533	01815	Application Error Code		
ERR	6	80	ST	O	[0..1]		01816	Application Error Parameter		
ERR	7	2048	TX	O	[0..1]		01817	Diagnostic Information		
ERR	8	250	TX	O	[0..1]		01818	User Message	This field may contain free text that may be displayed to a user. It is not intended for any further processing.	
ERR	9	20	IS	O	[0..1]	0517	01819	Inform Person Indicator		
ERR	10		CWE	O	[0..1]	0518	01820	Override Type		
ERR	11		CWE	O	[0..1]	0519	01821	Override Reason Code		

v2.5.1

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comment	Mapped
ERR	1	80	CM	R	[1..*]	0357	00024	Error Code and Location		

v2.3.1

Response Control Parameter

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comment	Mapped
RCP	1	1	ID	O	[0..1]	0091	00027	Query Priority	Constrain to null or I. Immediate priority is expected.	
RCP	2		CQ	O	[0..1]	0126	00031	Quantity Limited Request	25^RD^HL70126	
RCP	3		CE	O	[0..1]	0394	01440	Response Modality	R^real-time^HL70394	
RCP	4		TS	O	[0..1]		01441	Execution and Delivery Time		
RCP	5	1	ID	O	[0..1]	0395	01443	Modify Indicator		
RCP	6		SRT	O	[0..1]		01624	Sort-by Field		
RCP	6		ID	O	[0..*]		01594	Segment Group Inclusion		

v2.5.1

Pharmacy/Treatment Administration Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comments	Mapped
RXA	1	4	NM	R	[1..1]		00342	Give Sub-ID Counter	Constrain to 0 (zero)	
RXA	2	4	NM	R	[1..1]		00344	Administration Sub-ID Counter	Constrain to 1.	
RXA	3		TS	R	[1..1]		00345	Date/Time Start of Administration		Y
RXA	4		TS	RE	[0..1]		00346	Date/Time End of Administration	If populated, this should be the same as start time (RXA-3)	Y
RXA	5		CE	R	[1..1]	0292	00347	Administered Code	CVX code is strongly preferred.	Y
RXA	6	20	NM	R	[1..1]		00348	Administered Amount	If administered amount is not recorded, use 999.	
RXA	7		CE	CE	[0..1]		00349	Administered Units	If previous field is populated by any value except 999, it is required.	
RXA	8		CE	O	[0..1]		00350	Administered Dosage Form		
RXA	9		CE	RE	[0..1]	NIP 0001	00351	Administration Notes	Constrained to one repetition. This repetition is intended for conveying if this immunization record is based on a historical record or was given by the provider recording the immunization. 00=Administered 01=Historical	Y
RXA	10		XCN	RE	[0..1]		00352	Administering Provider	This is the administering provider not necessarily the person who gave the shot.	Y
RXA	11		LA2	RE	[0..1]		00353	Administered-at Location		Y
RXA	12	20	ST	O	[0..1]		00354	Administered Per (Time Unit)		
RXA	13	20	NM	O	[0..1]		01134	Administered Strength		
RXA	14		CE	O	[0..1]		01135	Administered Strength Units		
RXA	15	20	ST	RE	[0..*]		01129	Substance Lot Number		Y
RXA	16		ST	CE	[0..1]		01130	Substance Expiration Date	If the lot number is not null, this field should be valued.	
RXA	17		CE	RE	[0..*]	0227	01131	Substance Manufacturer Name		Y
RXA	18		CE	C	[0..*]		01136	Substance Refusal Reason	If the completion status is RE, then this shall be populated.	
RXA	19		CE	O	[0..1]		01123	Indication		

Pharmacy/Treatment Administration Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comments	Mapped
RXA	20	2	ID	RE	[0..1]	0322	01223	Completion Status	If this field is not populated, it is assumed to be CP or complete. If the Refusal reason is populated, this field shall be set to RE.	
RXA	21	2	ID	RE	[0..1]	0323	01224	Action Code-RXA	D=Mark for deletion	Y
RXA	22		TS	O	[0..1]		01225	System Entry Date/Time		
RXA	23	5	NM	O	[0..1]		01696	Administered Drug Strength Volume		
RXA	24		CWE	O	[0..1]		01697	Administered Drug Strength Volume Units		
RXA	25		CWE	O	[0..1]		01698	Administered Barcode Identifier		
RXA	26	1	ID	O	[0..1]	480	01699	Pharmacy Order Type		

Pharmacy/Treatment Route Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comments	Mapped
RXR	1		CE	R	[1..1]	0162	00309	Route		Y
RXR	2		CWE	RE	[0..1]	0163	00310	Administration Site		Y
RXR	3		CE	O	[0..1]	0164	00311	Administration Device		
RXR	4		CWE	O	[0..1]	0165	00312	Administration Method		
RXR	5		CE	O	[0..1]		01315	Routing instructions		
RXR	6		CWE	O	[0..1]	0495	01670	Administration Site Modifier		

Observation/Result Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comments	Mapped
OBX	1	4	SI	R	[1..1]		00569	Set ID - OBX		
OBX	2	2	ID	R	[1..1]	0125	00570	Value Type	CE,NM,ST,DT,or TS	Y
OBX	3		CE	R	[1..1]		00571	Observation Identifier	This indicates what observation refers to. It poses the question that is answered by OBX-5.	Y
OBX	4	20	ST	RE	[1..1]		00572	Observation Sub-ID		
OBX	5		Varies	R	[1..1]		00573	Observation Value	This is the observation value and answers the question posed by OBX-3.	Y
OBX	6		CE	CE	[0..1]		00574	Units	If the observation in OBX-5 requires an indication of the units, they are placed here.	
OBX	7		ST	O	[0..1]		00575	Reference Ranges		
OBX	8		IS	O	[0..1]	0078	00576	Abnormal Flags		
OBX	9		NM	O	[0..1]		00577	Probability		
OBX	10		ID	O	[0..1]	0080	00578	Nature of Abnormal Test		
OBX	11		ID	R	[1..1]	0085	00579	Observ Result Status	Constrain to F.	
OBX	12		TS	O	[0..1]		00580	Effective Date of Reference Range Values		
OBX	13	20	ST	O	[0..1]		00581	User Defined Access Checks		
OBX	14		TS	R	[1..1]		00582	Date/Time of the Observation		
OBX	15		CE	O	[0..1]		00583	Producer's ID		
OBX	16		XCN	O	[0..1]		00584	Responsible Observer		
OBX	17		CE	O	[0..1]		00936	Observation Method		
OBX	18		EI	O	[0..1]		01479	Equipment Instance Identifier		
OBX	19		TS	O	[0..1]		01480	Date/Time of the Analysis		
OBX	20			O	[0..1]			Reserved for Harmonization With V2.6		
OBX	21			O	[0..1]			Reserved for Harmonization With V2.6		
OBX	22			O	[0..1]			Reserved for Harmonization With V2.6		
OBX	23		XON	O	[0..1]		02283	Performing Organization Name		
OBX	24		XAD	O	[0..1]		02284	Performing Organization Address		

Observation/Result Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comments	Mapped
OBX	25		XCN	O	[0..1]		02285	Performing Organization Medical Director		

Notes and Comments Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comments	Mapped
NTE	1	4	SI	O	[0..1]		00096	Set ID-NTE		
NTE	2	8	ID	O	[0..1]	0105	00097	Source Of Comment		
NTE	3	65536	FT	R	[1..1]		00098	Comment		Y
NTE	4	250	CE	O	[0..1]	0364	01318	Comment Type		

Role Segment

Segment	Field	Length	Type	Req/Opt	RP/#	Table	ITEM #	Element Name	Comment	Mapped
ROL	1	60	EI	C			01206	Role Instance ID		
ROL	2	2	ID	R		0287	00816	Action Code		
ROL	3	250	CE	R		0443	01197	Role-ROL		
ROL	4	250	XCN	R	Y		01198	Role Person		
ROL	5	26	TS	O			01199	Role Begin Date/Time		
ROL	6	26	TS	O			01200	Role End Date/Time		
ROL	7	250	CE	O			01201	Role Duration		
ROL	8	250	CE	O			01205	Role Action Reason		
ROL	9	250	CE	O	Y		01510	Provider Type		
ROL	10	250	CE	O		0406	01461	Organization Unit Type		
ROL	11	250	XAD	O	Y		00679	Office/Home Address/Birthplace		
ROL	12	250	XTN	O	Y		00678	Phone		

HL7 Table 0287 – Problem/goal action code		
Value	Description	Comment
AD	ADD	
CO	CORRECT	
DE	DELETE	
LI	LINK	
UC	UNCHANGED *	
UN	UNLINK	
UP	UPDATE	

ICARE process to insert/update patients:

Key fields:

PID.3 – Patient ID List

MSH.4 – Site ID

First ID in PID.3 list must be an unique Site Identifier for inserted/updated patient.

I-CARE will keep an unique Patient Identifier MSH.4 + PID.3.1 to identify this patient in the future.

I-CARE process to identify trade and generic vaccine names:

Key fields:

RXA.5 – Administered CVX Code

RXA.17 – Manufacturer Code

I-CARE will try to find **trade** vaccine RXA.5 + RXA.17. If no trade vaccine is found, use RXA.5 to find **generic** vaccine for a particular CVX code.

I-CARE process to insert/update/delete shots:

Key fields:

PID.3 – Patient ID

ORC.3 – Shot Unique identifier – 16 characters free text ^ Site ID (optional) (available in HL7 ver. 2.5.1 only)

RXA.3 – Administered Date

RXA.5 – Administered Code – CVX code

RXA.11 – Facility – Facility ID, Name and Address

RXA.21 – Action code-RXA

MSH.4 – Site ID – HL7 site ID, assigned by I-CARE

Use RXA.11 if RXA.11 is not empty, otherwise use MSH.4

1. ORC.3 is not empty
 - a. ORC.3 belongs to I-CARE (example – 9999999^ICARE) – skip the shot.
 - b. ORC.3 does not belong to I-CARE (example – 9999999)
Search for shot in I-CARE by PID.3 + RXA.11/MSH.4 + ORC.3.
If found the shot, update existing record, go to the end.
If did not find the shot, go to step 3.
2. ORC.3 is empty go to step 3.
3. Search for shot in I-CARE by PID.3 + RXA.11/MSH.4 + RXA.5 + RXA.3.
If found the shot, update existing record.
If did not find the shot, insert new record (including ORC.3 if ORC.3 is not empty).

RXA.21 is ignored unless RXA.21 = “D”. In this case I-CARE updates or inserts this shot as a “MARK FOR DELETION” shot.

If a site does not use ORC.3 and wants to update the shot administered code or administered date:

1. Site must send 2 RXA records: First record with RXA.21=“D” (mark existing record for deletion) and second record with new administered code and/or administered date.
2. OR after updating existing shot through the HL7 interface (I-CARE will add a new shot into I-CARE with a new administered code and/or administered date), the site needs to use the I-CARE web interface to delete a shot with an old administered code and/or administered date.

Appendix D: Sample HL7 Messages

Minimum Required v2.5.1

```
MSH|^~\&|ACME FAMILY PRACTICE CENTER|77700001|||20110310113157||VXU^V04^VXU_V04|MSG00001|P|2.5.1|||WINDOWS-1252
PID|1||12345678^^^MR||JONES^JACK^^^^||20000101|M||ADDRESS 1^^SPRINGFIELD^IL^62702^^H|||||||||N|1|||||
PD1|||||||||N|||||
PV1|R|||||||||V02
ORC|RE||85354920
RXA|0|1|20110310|20110310|141^Fluzone > 3 yrs^CVX|999|||Y|||||PMC|||||
```

Minimum Required v2.3.1

```
MSH|^~\&|ACME FAMILY PRACTICE CENTER|77700001|||20110310113157||VXU^V04^VXU_V04|MSG00001|P|2.3.1|||WINDOWS-1252
PID|1||12345678^^^MR||JONES^JACK^^^^||20000101|M||ADDRESS 1^^SPRINGFIELD^IL^62702^^H|||||||||N|1|||||
PD1|||||||||Y|||||
PV1|R|||||||||V02
RXA|0|1|20110310|20110310|141^Fluzone > 3 yrs^CVX|999|||Y|||||PMC|||||
```

Appendix E: Minimum Required Elements

VXU^V04	Segment	Field	Length	Type	Req/Opt	RP/#	Table	Item #	Element Name
	MSH	4		HD	R	[0..1]	0362	00004	Sending Facility
	MSH	12		VID	R	[1..1]	0104	00012	Version ID
	PID	3		CX	R	[1..*]		00106	Patient Identifier List
	PID	5		XPN	R	[1..*]		00108	Patient Name
	PID	7		TS	R	[1..1]		00110	Date/Time of Birth
	PID	8	1	IS	R	[0..1]	0001	00111	Administrative Sex
	PID	11		XAD	RE	[0..*]		00114	Patient Address, (If empty NK1 is required.)
	NK1	4		XAD	CE	[0..*]		00193	Address
	RXA	3		TS	R	[1..1]		00345	Date/time start of administration
	RXA	5		CE	R	[1..1]	0292	00347	Administered code

These are the minimum required elements for VXU^V04 messages to be successfully imported into the ICARE system. Other HL7 standard requirements should also apply.

Appendix F: Required but May be Empty Elements

VXU^V04	Segment	Field	Length	Type	Req/Opt	RP/#	Table	Item #	Element Name
	PID	6		XPN	RE	[0..1]		00109	Mother's Maiden Name
	PID	10		CE	RE	[0..*]	0005	00113	Race
	PID	13		XTN	RE	[0..*]		00116	Phone Number - Home
	PID	25	2	NM	CE	[0..1]		00128	Birth Order
	PID	24	1	ID	RE	[0..1]			Multiple Birth Indicator
	PID	25	2	NM	CE	[0..1]		00128	Birth Order
	PD1	12	60	ID	RE	[0..1]	0136	00744	Protection Indicator
	PD1	16	2	ID	RE	[0..1]	0441	01569	Immunization Registry Status
	PV1	20		FC	RE	[1..*]	0064	00150	Financial Class
	NK1	1	4	SI	R	[1..1]		00190	Set ID- NK1
	NK1	2		XPN	R	[1..*]		00191	Name
	NK1	3		CE	R	[1..1]	0063	00192	Relationship
	NK1	4		XAD	RE	[0..*]		00193	Address
	ORC	3		EI	RE			00217	Filler Order Number
	RXA	9		CE	RE	[0..1]	NIP 000	00351	Administration Notes
	RXA	10		XCN	RE	[0..1]		00352	Administering Provider
	RXA	15	20	ST	RE	[0..*]		01129	Substance Lot Number
	RXA	17		CE	RE	[0..*]	0227	01131	Substance Manufacturer Name
	RXA	11		LA2	RE	[0..1]		00353	Administered-at Location
	RXA	21	2	ID	RE	[0..1]	0323	01224	Action Code-RXA
	RXR	1		CE	R	[1..1]	0162	00309	Route
	RXR	2		CWE	RE	[0..1]	0163	00310	Administration Site

These segments/elements are required but may be empty for VXU^V04 messages.

The segment/element may be missing from the message, but must be sent by the sending application if there is relevant data.

A conforming sending application must be capable of providing all "RE" segment/elements. If the conforming sending application knows the required values for the segment/element, then it must send that segment/element. If the conforming sending application does not know the required values, then that segment/element will be omitted.