PHIN Messaging Standard
Follow-Up Encounter Message
Using ORU^R01
HL7 Version 2.5

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Centers for Disease Control and Prevention

Revision History

Revision	Date	By	Description
V1.0	4/27/05	Margaret Marshburn	Create first draft
V1.01	5/4/05	Margaret Marshburn	CRA/OM joint review session – some slight changes made to the status fields and some descriptions clarified per our discussion.
V1.02	5/23/05	Margaret Marshburn	Updated the code references to the new PHIN-VADS Preparedness Messaging Vocabulary. Combined the field descriptions into the Attribute tables for each segment. Accepted revisions per Mead Walker's review.
V1.03	6/6/05	Margaret Marshburn	Edited per group review/comments. Updated the vocabulary and OID references. Completed the example messages. Added attribute table for NK1 segment. Added a few missing data types. Removed support for OBR-15 Specimen Source, OBX-17 Observation Method, and OBX-7 References Range, as these are more applicable to Lab reporting. Removed support for OBX-15 Producer's ID and OBX-16 Responsible Observer in favor of using OBR-32 Primary Result Interpreter and OBR-34 Transcriptionist, so that these entries would apply to the entire report and not just to an individual Observation.
V1.04	6/8/2005	Austin Kreisler	Updated the Message Flow Diagram.

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1. Introduction

This Implementation Guide documents the use of the Health Level 7 (HL7) Version 2.5 Observation Report Unsolicited to support messaging of observations made regarding follow-up encounters that occur in the course of countermeasure administration.

This document is not intended as a tutorial for either HL7 or interfacing in general. The reader is expected to have a basic understanding of interface concepts and HL7. This Guide is based on and conforms to the HL7 Standard, Version 2.5.

PHIN Messaging

The PHIN (Public Health Information Network) initiative is a comprehensive architecture of data and information systems standards intended to advance the development of efficient, integrated and interoperable public health information systems. PHIN development, along with the work of related initiatives such as eHI (e-Health Initiative) is based on the fundamental understanding that exchange of health-related information between healthcare providers, public health agencies, and the general public is an essential aspect of public health surveillance and response. As a consequence, messaging – the electronic exchange of data between computerized information systems – is a key element of the PHIN architecture.

The development and effective management of data interchange (messaging) requires the use of generally accepted standards. These standards become more widely used and more effective when they are developed by a widely based, consensus process, rather than by any single organization. Furthermore, use of industry standards is a basic tenet of the e-Government initiative which provides direction to CDC as to other government agents. Since it is generally accepted that Health Level Seven (HL7) standards are the prevailing industry standards for communicating clinical and laboratory data in the form of electronic messages, CDC has chosen to work with HL7 as the primary source for interface standards.

The breadth and general applicability of the HL7 standard are advantageous to a wide variety of users but also present challenges for specific implementations in public health and other contexts. Public health messaging partners need to define with particularity, the data to be passed, and the circumstances under which it is passed. In other words, it is necessary to develop message implementation guides based around specific scenarios or use cases. These guides are necessary because they introduce the level of specificity required in order to define verifiably compliant messages.

What is an Implementation Guide?

A public health messaging implementation guide is a document that describes:

a) The circumstances under which messaging takes place.

b) The data which is passed in a particular message.

c) Additional specifications and guidance to assist in message implementation.

A wide range of use cases and partners are involved in public health messaging. Despite a multiplicity of specific message contexts, many of the same partners are involved as message receivers and message

senders. As a result, consistency in both the form and content of message implementation guides can help establish and maintain a common, standards-based approach to electronic messaging.

Audience

This guide is designed to be used by analysts who need a better understanding of the contents of PHIN messages, and by implementers working to develop PHIN compliant applications. In fact, understanding and using the relevant implementation guide or guides is a key requirement for establishing PHIN compliance. This flows from the fact that one key aspect of application level PHIN compliance is the ability to send and receive messages that conform to the requirements of the appropriate implementation guide.

Document Structure

This body of this document contains the following major sections.

- Application Requirements and Data Flows: describes the context and usage for the messaging.
- Abstract Message: indicates the segments that comprise the message, and describes their ordering and repetition.
- Segment & Field Descriptions: provides details about the segments that make up the message, and the fields that comprise the segments.
- Datatypes: defines the datatypes that establish the format and components of fields.
- Code Systems & Value Sets: includes the list of valid values for coded fields within the message, and describes how vocabulary items are managed.
- Use of Object Identifiers: defines the OIDs (object identifiers) that are used to identify a) specific parties involved in messaging, or in providing data relevant to messaging, and b) the coding systems and value sets that are used within the message.
- Miscellaneous: additional material, including sample messages, that will be useful to implementers.

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2. Application Requirements and Data Flows

This guide addresses the data requirements for specifying one of the data flows needed to fully implement Preparedness & Outbreak Response Messaging. The diagram below outlines the different functional areas – each of which would normally be supported by a discrete application - that need to cooperate to achieve the goals of the preparedness messaging process. The diagram also indicates the data flows that are required in order to support the functional area.
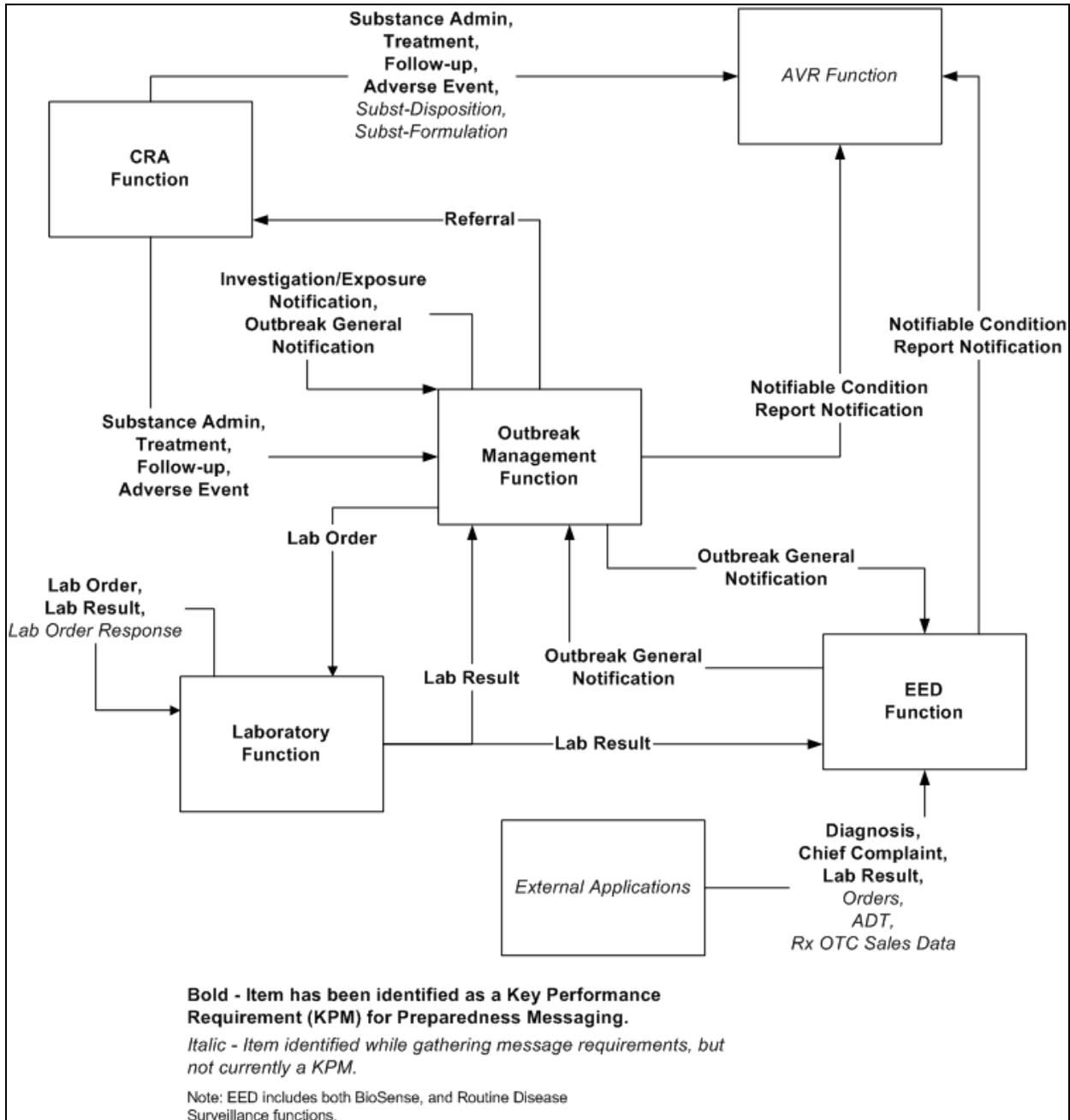

*Figure 1: **Preparedness & Outbreak Response Messaging Systems and Flows***

The list below describes the functional areas, and briefly discusses the transactional information flows. All of these functional areas must collaborate to support the overall requirements:

Outbreak Management: OM includes the responsibility for investigating and managing outbreaks, whether of natural or man-made origin. Outbreak management functions includes identifying individuals who are affected – cases, referring persons in need of treatment, investigating case contacts, and reporting on cases that have been detected.

An outbreak management system tracks cases related to an outbreak, and is generally locally deployed for the management of that outbreak. The outbreak management system supports investigation, monitoring, management, analysis, and reporting of a public health event or act of bioterrorism. The outbreak management system aids in the collection and analysis of data to support identifying and containing the outbreak.

In order to fulfill its responsibilities, an outbreak management system needs to support the following information flows:

- The ability to refer patients to a CRA system for management and treatment.
- The ability to receive information on CRA patient related activities. As shown above, this includes information on substance administrations (administration of vaccines or other drugs), treatments (non-pharmaceutical interventions including such activities as isolation and monitoring), follow-up activities (reviewing the efficacy of drug and other interventions), and adverse event reports. Outbreak management systems also receive aggregate statistical reports that summarize the countermeasures that have been undertaken.
- The ability to pass investigation/exposure information and outbreak general notifications from one outbreak management system to another is needed. This function is needed since multiple outbreak management systems can be deployed to handle an extensive outbreak, or an outbreak that crosses jurisdictional boundaries.
- The ability to pass case notifications to an Analysis, Visualization and Reporting (AVR) system to support reporting and analysis.   (In the diagram, the Analysis, Visualization, and Reporting role is taken by CDC's National Reporting system.)
- The ability to send outbreak general notifications to an EED system in order to support early event detection activities.
- The ability to receive outbreak general notifications from an EED system as a trigger for initiating outbreak response.
- The ability to order tests to be performed by a testing laboratory as part of outbreak investigation.
- The ability to receive test results from a laboratory to confirm or rule out the presence of an investigated condition.

Countermeasure Response Administration (CRA): CRA defines the system responsibilities for managing specific actions that are taken to prepare for or respond to public health emergencies. Countermeasures include vaccination and other types of drug prophylaxis, as well as non-drug actions such as patient follow up activities and isolation and restriction monitoring. The recipients of the

countermeasures may include potential responders from the public and the private sector, identified exposed individuals, and the general public.

A countermeasure response system supports preparedness activities, or manages the response to an outbreak by providing medications and vaccines to affected or potentially affected persons. This includes, but is not limited to, persons referred by an OM system. It also deploys and manages other services such as isolation and quarantine.

In order to fulfill its responsibilities, a countermeasure response administration system needs to support the following information flows:

- The capability to receive referrals from an outbreak management system in order to initiate treatment for persons who have been exposed or are at risk of exposure.
- The ability to provide the OMS system with information on substance administrations and other treatments provided, follow activities related to persons who have received treatment, and adverse events experienced as a result of treatment. This information is used to update the information held by the outbreak management system.
- The ability to, in order to support reporting and analysis, pass information on substance administrations and other treatments provided, on follow-up activities related to persons who have received treatment, and on adverse events experienced as a result of treatment to the system or systems supporting Analysis, Visualization, and Reporting. It will also provide the AVR system(s) with information on the amount of drugs and other substances that have been formulated, and that have been dispensed to patients.

Early Event Detection (EED): EED includes the processes under which data collected by routine means is collated and analyzed to identify patterns that detect or indicate potential outbreaks that require further investigation. Typical data analyzed by the EED system includes patient diagnoses, hospital visit chief complaints, orders, laboratory results and pharmacy prescriptions dispensed.

An early event detection system captures relevant transactional information that is generated in the normal course of providing healthcare and analyses that information to detect potential cases, and to identify potential outbreaks for investigation and management.

In order to fulfill its responsibilities, an early event detection system needs to support the following information flows:

- The ability to receive transactional information from external applications. For the most part, these are applications that support healthcare functions in hospitals, doctor's offices and pharmacies. The EED system will receive information on patient diagnoses, chief complaints, lab results, orders, admits discharges and transfers (ADT), and pharmacy drug sales from these external applications. This data flow provides the EED system with data to analyze.
- The ability, since laboratory results are a key indicator for many types of outbreak, to receive information on lab results from clinical testing laboratories.
- The ability to receive outbreak notifications from an OMS system.
- The ability, as potential cases are discovered, to pass information to the relevant OMS system.
- The ability to pass information related to possible cases to the Analysis, Visualization, and Reporting system, in order to support reporting and analysis.

Analysis Visualization and Reporting (AVR): AVR includes those processes needed to receive reports from systems involved in any of the other Preparedness & Outbreak Response Messaging functions, to accumulate the data that has been received, and to make that data useful for analysis through visualization and other techniques. Today, CDC is developing such a system to support national requirements. It is likely that, in the future, other such systems will be implemented.

An Analysis, Visualization, and Reporting system will pull together information from all relevant systems involved in Preparedness & Outbreak Response Messaging. The data will be managed and stored to support a wide range of analytic and reporting tasks.

In order to fulfill its responsibilities, an AVR system needs to support the following information flows:

- The ability to receive information on substance administrations and other treatments provided, information on follow-up activities related to persons who have received treatment, and information on adverse events experienced as a result of treatment to CDC's Analysis, Visualization, and Reporting system. It will also receive information on the amount of drugs and other substances that have been formulated, and that have been dispensed to patients.
- The ability to receive case notifications from outbreak management systems.
- The ability to receive case notifications from EED systems.

Laboratory: Laboratory processing includes the functions necessary to support testing and results reporting for samples collected in the process of outbreak management and countermeasure response. It also includes routine testing and reporting that takes place within the course of providing heath care and provides important information for early event detection.

A laboratory system manages the processing required for laboratory testing and result reporting.

In order to fulfill its responsibilities, a laboratory system needs to support the following information flows:

- The ability to receive test orders from an outbreak management or other system, and transmit relevant lab results to that system.
- The ability to provide relevant test results to an EED system for analysis.
- The ability to, when further or specialized testing is needed, pass lab orders onto reference laboratories, and receive both order confirmations and test results from those laboratories.

External Applications: An external application is one that is not directly involved in Preparedness & Outbreak Response Messaging but, as a result of its day to day business, generates information that can be analyzed for EED purposes.

In order to fulfill its preparedness messaging responsibilities, an external system needs to support the following information flows:

- The ability to provide transactional information to the EED system. This includes information on patient diagnoses, chief complaints, lab results, orders, admits discharges and transfers (ADT), and pharmacy drug sales.

3. Abstract Message

The message description below shows how the HL7 Unsolicited Observation message is constrained for use in countermeasure response administration.

Segment	Unsolicited Observation Message ORU_R01	Usage	HL7 Chapter
MSH	Message Header	Required; does not repeat	2.15.9
[SFT]	Software	Optional; does not repeat	2.15.17
	Patient Result... begin		
	Patient... begin		
PID	Patient Identification	Required; does not repeat – that is, one patient per message	3.4.2
[{NK1}]	Next of Kin/Associated Parties	Optional; has two specialized instances for Adverse Event reporting	3.4.5
	Patient... end		
{	*Order Observation... begin*		
[ORC]	Common Order	Optional	4.5.1
OBR	Observation Request	Required	4.5.3
[{	*Observation...begin*		
OBX	Observation/Result	Optional, may repeat	7.4.2
{ [NTE] }	Notes and comments	Optional, may repeat	2.1.5
}]	*Observation...end*		
}	*Order Observation... end*		
	Patient Result... end		

While the standard HL7 ORU message construct allows for the use of PD1 (additional demographics), PV1, PV2 (Patient visit), TQ1, TQ2 (Timing and Quantity), CTI (Clinical Trials Identifier), and DSC (Continuation) segments, these segments are not expected in the message and are not included in this Standard. Messages containing these segments will not be rejected, but the unsupported segments will be ignored.

4. Segment and Field Descriptions

This section contains descriptions of the segments used. Within each segment, the supported fields are briefly described. For more information on segments and fields, refer to the HL7 Standard.

Segment Attribute Table Abbreviations

The abbreviated terms and their definitions used in the segment table headings are as follows:

ABBREVIATION	DEFINITION
HL7 SEQ	The sequence of the elements as they are numbered in the HL7 segment.
HL7 LEN	The HL7 maximum length of the element.
HL7 DT	The data type of the HL7 element.
HL7 OPT	HL7 standard determination of whether the field is required, optional, or conditional in a segment.
HL7 RPT/#	Indicates if element repeats. If the number of repetitions is limited, the number of allowed repetitions is given.
HL7 TBL#	HL7-Specific table reference.
PHIN Value Set	Pre-coordinated tables used in public health messages are accessed via the Public Health Information Network Vocabulary Access and Distribution Services at http://www.cdc.gov/PhinVSBrowser/StrutsController.do
HL7 Element Name	HL7 name of element in the segment.
Description/Comments	PHIN context and usage for the element.

Note: Gray = The PHIN Messaging Standard does not support the use of this field.

MSH - Message Header Segment

This segment is necessary to support the functionality described in the Control/Query chapter of the HL7 standard. MSH is used to define the intent, source, destination, and some specifics of the syntax of a message.

HL7 Seq.	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/ #	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
1	1	ST	R				Field Separator	The character to be used as the field separator for the rest of the message. The supported value is |, ASCII (124).
2	4	ST	R				Encoding Characters	The four characters that always appear in the same order in this field are: |^~\&
3	227	HD	O		0361	OID Registry	Sending Application	This field may be used to uniquely identify the sending application for messaging purposes. If populated, it will contain an OID that represents the sending application instance.
4	227	HD	R		0362	OID Registry	Sending Facility	This field uniquely identifies the facility that sends the message. The sending facility must be part of the PHIN OID registry.
5	227	HD	O		0361	OID Registry	Receiving Application	This field may be used to uniquely identify the receiving application for messaging purposes. If populated, it will contain an OID that represents the receiving application instance.
6	227	HD	R		0362	OID Registry	Receiving Facility	This field uniquely identifies the facility that is to receive the message. This unique identifier must be part of the PHIN OID registry.
7	26	TS	R				Date/Time Of Message	This field contains the date/time that the sending system created the message. The user values the field only as far as needed. When a system has only a partial date, e.g., month and year, but not day, the missing values may be interpreted as zeros. The time zone is assumed to be that of the sender.

HL7 Seq.	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/ #	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
8	40	ST	O				Security	This field may be used by the sender to convey whether information contained in the message is sharable or non-sharable, identified, non-identified, etc.
9	15	MSG	R				Message Type	This field contains the message type, trigger event, and the message structure ID for the message. For the Adverse Event message, the value in this field will always be ORU^R01.
10	20	ST	R				Message Control ID	This field contains a string that uniquely identifies the message instance from the sending application. Typically, this field contains a timestamp and possibly a counter.
11	3	PT	R				Processing ID	This field may be used to indicate the intent for processing of the message, such as "Testing", "Development" or "Production". For this message, the field will always contain |P|. Processing mode is understood to be "Current" if not explicitly sent in the message.
12	60	VID	R				Version ID	This field contains the HL7 version number that is used to interpret format and content of the message. For this message, the version id will always be 2.5.
13	15	NM	O				Sequence Number	Not supported
14	180	ST	O				Continuation Pointer	Not supported
15	2	ID	O		0155		Accept Acknowledgment Type	Not supported
16	2	ID	O		0155		Application Acknowledgment Type	Not supported
17	3	ID	O		0399	PHVS_Country_FIPS_10-4	Country Code	This field may be used to indicate country of origin of the message.
18	16	ID	O	Y	0211		Character Set	Not supported
19	250	CE	O				Principal Language Of Message	Not supported

HL7 Seq.	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/ #	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
20	20	ID	O		0356		Alternate Character Set Handling Scheme	Not supported
21	427	EI	O	Y			Message Profile Identifier	Not supported

SFT – Software Segment

The software segment provides information about the software product being used as the Sending Application in this message instance.   The information will be provided for diagnostic purposes by the receiving application.

HL7 Seq.	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/ #	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
1	567	XON	R				Software Vendor Organization	Organization identification information for the software vendor that created this transaction. The Software Vendor Organization field allows for identification of the vendor who is responsible for maintaining the application.
2	15	ST	R				Software Certified Version or Release Number	Software version number assigned to the instance of the application being used to send the message.
3	20	ST	R				Software Product Name	The name of the software product that submitted the transaction. This field is synonymous with the application name
4	20	ST	R				Software Binary ID	Contains the Software Binary ID issued by the vendor for each unique software version instance. Identical IDs in this field indicate that the software is identical at the binary level, although configuration settings may differ.
5	1024	TX	O				Software Product Information	Not supported.
6	26	TS	O				Software Install Date	The date the submitting software was installed at the sending site.

PID - Patient Identification Segment

The PID segment is used as the primary means of conveying patient identification information that is not likely to change frequently.

HL7 Seq.	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/#	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
1	4	SI	C				Set ID - PID	This segment sequencing field does not need to be populated or could contain a '1', but only one patient/one PID segment per message is supported
2	20	CX	B				Patient ID	Not supported
3	250	CX	R	Y			Patient Identifier List	This field contains one or more identifiers used by the sending application to uniquely identify a patient. Social security, account number, and driver's license number are sent in this field as of version 2.3.1 of the HL7 standard.
4	20	CX	B	Y			Alternate Patient ID - PID	Not supported
5	250	XPN	R	Y		PHVS_NameType_HL7_2x PHVS_DegreeLicenseCertificate_HL7_2x	Patient Name	This field may contain one or more names of the person who is the subject of the message. The name in the first position is considered the primary or legal name. Therefore, the name type code for the first instance is "L - Legal". In the absence of sending a patient name, some other patient identifier must be placed in this field.
6	250	XPN	O	Y			Mother's Maiden Name	Not supported
7	26	TS	O				Date/Time of Birth	This field contains the patient's date of birth.
8	1	IS	O		0001	PHVS_AdministrativeSex_HL7_2x	Administrative Sex	This field indicates the patient's sex.
9	250	XPN	B	Y			Patient Alias	Not supported
10	250	CE	O	Y	0005	PHVS_RaceCategory_CDC	Race	This field contains one or more codes that broadly refer to the patient's race(s).

HL7 Seq.	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/#	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
11	250	XAD	O	Y		PHVS_AddressType_HL7_2x PHVS_Country_FIPS_10-4 PHVS_State_FIPS_5-2 PHVS_County_FIPS_6-4 PHVS_Zipcode_USPS	Patient Address	This field contains the residence address of the patient. Multiple addresses for the same person may be sent.
12	4	IS	B		0289		County Code	Not supported – residence county is part of PID-11
13	250	XTN	O	Y		PHVS_TelecommunicationEquipmentType_HL7_2x PHVS_TelecommunicationUseCode_HL7_2x	Phone Number - Home	This field may contain a telephone number of a residence where the patient may be contacted.
14	250	XTN	O	Y		PHVS_TelecommunicationEquipmentType_HL7_2x PHVS_TelecommunicationUseCode_HL7_2x	Phone Number - Business	This field may contain the patient's business telephone number.
15	250	CE	O		0296	PHVS_Language_ISO_639-2	Primary Language	Language spoken by the subject of the message.
16	250	CE	O		0002	PHVS_MaritalStatus_HL7_2x	Marital Status	Marital status of the subject of the message.
17	250	CE	O		0006	PHVS_Religion_HL7_2x	Religion	Religion of the subject of the message.
18	250	CX	O				Patient Account Number	Not supported
19	16	ST	B				SSN Number - Patient	Not supported. (see PID-3 Patient Identifier list)
20	25	DLN	B				Driver's License Number - Patient	Not supported. (see PID-3 Patient Identifier list)
21	250	CX	O	Y			Mother's Identifier	Not supported
22	250	CE	O	Y	0189	PHVS_EthnicityGroup_CDC	Ethnic Group	This field defines the patient as either Hispanic or Non-hispanic.
23	250	ST	O			PHVS_Country_FIPS_10-4	Birth Place	Country of Birth of subject of the message.
24	1	ID	O		0136		Multiple Birth Indicator	Not supported.
25	2	NM	O				Birth Order	Not supported.

HL7 Seq.	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/#	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
26	250	CE	O	Y	0171	PHVS_Country_FIPS_10-4	Citizenship	Country of Citizenship of subject of the message.
27	250	CE	O		0172		Veterans Military Status	Not supported.
28	250	CE	B		0212		Nationality	Not supported.
29	26	TS	O				Patient Death Date and Time	If the patient is known to be deceased at the time of the message, the patient death date/time should be sent in this field.
30	1	ID	O		0136	PHVS_YesNo_HL7_2x	Patient Death Indicator	If the patient is known to be deceased at the time of the message, the patient death indicator (Y) would be sent in this field along with the deceased date in PID-29
31	1	ID	O		0136	PHVS_YesNo_HL7_2x	Identity Unknown Indicator	There are times when this field could be populated to indicate that the treatment subject's identity is unknown. It is a relatively new HL7 field that simply contains Y or N.
32	20	IS	O	Y	0445		Identity Reliability Code	Not supported.
33	26	TS	O				Last Update Date/Time	This is the date/time of the last the demographics record update. This date/time is helpful for patient reconciliation purposes when populated by the sending application.
34	241	HD	O			OID Registry	Last Update Facility	The application that last updated the demographics record. This information is helpful for patient reconciliation when populated by the sending application. An OID may be passed to identify the facility.
35	250	CE	C		0446	PHVS_Species_CDC_CRA	Species Code	This information may be necessary for non-human subjects.
36	250	CE	C		0447	PHVS_Breed_CDC_CRA	Breed Code	This information is only relevant if PID-35 Species is populated.
37	80	ST	O				Strain	This information may be necessary to further define non-human living subjects
38	250	CE	O	2	0429	PHVS_ProductionClass_HL7_2x	Production Class Code	This information may be necessary for tracking and identification of non-human subjects.
39	250	CWE	O	Y	0171		Tribal Citizenship	

NK1 – Next of Kin Segment

The NK1 segment contains information about the patient's other related parties.   Multiple NK1 segments per message may be sent by using the Set ID in NK1-1.

HL7 Seq	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/ #	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
1	4	SI	C				Set ID – NK1	This field numbers the instances of the NK1 usage. For the first occurrence of the segment, the sequence number is |1|, for the second occurrence, the sequence number is |2|, etc.
2	250	XPN	O	Y		PHVS_NameType_HL7_2x PHVS_DegreeLicenseCertificate_HL7_2x	Name	This field contains the name of the next of kin or associated party, such as the name of the employer. Multiple names for the same entity are allowed, but the legal name must be sent in the first sequence. If the legal name is not sent, then the repeat delimiter must be sent in the first sequence.
3	250	CE	O		0063	PHVS_Relationship_HL7_2x	Relationship	This field describes the personal relationship that the next of kin/associated party has to the patient.
4	250	XAD	O	Y		PHVS_AddressType_HL7_2x PHVS_Country_FIPS_10-4 PHVS_State_FIPS_5-2 PHVS_County_FIPS_6-4 PHVS_Zipcode_USPS	Address	This field may contain the address of the next of kin/associated party. For adverse event NK1 usage, this field is not expected to be populated.
5	250	XTN	O	Y		PHVS_TelecommunicationEquipmentType_HL7_2x PHVS_TelecommunicationUseCode_HL7_2x	Phone Number	This field may contain the personal telephone number of the next of kin/associated party. Multiple phone numbers are allowed for the same person.
6	250	XTN	O	Y		PHVS_TelecommunicationEquipmentType_HL7_2x PHVS_TelecommunicationUseCode_HL7_2x	Business Phone Number	This field may contain the telephone number of the next of kin/associated party. Multiple phone numbers are allowed for the same person.

HL7 Seq	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/#	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
7	250	CE	O		0131	PHVS_Contact_Role_CDC_CRA	Contact Role	This field indicates the specific role that the party identified in NK1-2 plays in regard to the patient.
8	8	DT	O				Start Date	Not supported.
9	8	DT	O				End Date	Not supported.
10	60	ST	O				Next of Kin / Associated Parties Job Title	This field contains the title of the next of kin/associated parties at their place of employment. However, if the contact role is the patient's employer, this field contains the title of the patient at their place of employment.
11	20	JCC	O		0327/ 0328		Next of Kin / Associated Parties Job Code/Class	Not supported.
12	250	CX	O				Next of Kin / Associated Parties Employee Number	Not supported.
13	250	XON	O	Y		PHVS_NameType_HL7_2x PHVS_DegreeLicenseCertificate_HL7_2x	Organization Name - NK1	This field may contain the place of business if employee information is being conveyed in this instance of NK1. The 10th component would contain the OID for the assigning authority.
14	250	CE	O		0002		Marital Status	Not supported.
15	1	IS	O		0001		Administrative Sex	Not supported.
16	26	TS	O				Date/Time of Birth	Not supported.
17	2	IS	O	Y	0223		Living Dependency	Not supported.
18	2	IS	O	Y	0009		Ambulatory Status	Not supported.
19	250	CE	O	Y	0171		Citizenship	Not supported.
20	250	CE	O		0296		Primary Language	Not supported.
21	2	IS	O		0220		Living Arrangement	Not supported.
22	250	CE	O		0215		Publicity Code	Not supported.
23	1	ID	O		0136		Protection Indicator	Not supported.
24	2	IS	O		0231		Student Indicator	Not supported.
25	250 80	CE	O		0006		Religion	Not supported.
26	250	XPN	O	Y			Mother's Maiden Name	Not supported.
27	250	CE	O		0212		Nationality	Not supported.
28	250	CE	O	Y	0189		Ethnic Group	Not supported.

HL7 Seq	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/ #	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
29	250	CE	O	Y	0222		Contact Reason	Not supported.
30	250	XPN	O	Y		PHVS_NameType_HL7_2x PHVS_DegreeLicenseCertificate_HL7_2x	Contact Person's Name	This field may contain the name of a person to contact when the NK1 Contact Role is describing an organization. The legal name should be sent first in the sequence.
31	250	XTN	O	Y		PHVS_TelecommunicationEquipmentType_HL7_2x PHVS_TelecommunicationUseCode_HL7_2x	Contact Person's Telephone Number	This field contains the telephone numbers of the contact person depending on the value of the relationship defined for valid values. This field is typically needed when the instance of the NK1 describes an organization. The primary telephone number must be sent in the first sequence. If the primary telephone number is not sent, then a repeat delimiter must be sent in the first sequence.
32	250	XAD	O	Y		PHVS_AddressType_HL7_2x PHVS_Country_FIPS_10-4 PHVS_State_FIPS_5-2 PHVS_County_FIPS_6-4 PHVS_Zipcode_USPS	Contact Person's Address	This field contains the addresses of the contact depending on the value of the relationship defined in *NK1-3 - Relationship*. This field is typically used when the NK1 refers to an organization. When multiple addresses are sent, the mailing address must be sent first in the sequence.
33	250	CX	O	Y			Next of Kin/Associated Party's Identifiers	Not supported.
34	2	IS	O		0311		Job Status	Not supported.
35	250	CE	O	Y	0005		Race	Not supported.
36	2	IS	O		0295		Handicap	Not supported.
37	16	ST	O				Contact Person Social Security Number	Not supported.
38	250	ST	O				Next of Kin Birth Place	Not supported.
39	2	IS	O		0099		VIP Indicator	Not supported.

ORC - Common Order Segment

The Common Order segment (ORC) is used to transmit order information and Campaign ID, if available. The ORC is an optional segment for this message.   It will, however, be required for in conjunction with the first OBR in the preparedness messages in order to carry information for the order leading to the observation report. The Order Control Code must be "RE".

HL7 Seq	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT /#	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
1	2	ID	R		0119		Order Control	The Order Control Code determines the function of the order segment. For purposes of this message, the default value will be 'RE' (Observations/Performed Service to Follow) since it is a required field.
2	22	EI	C				Placer Order Number	Not supported.
3	22	EI	C				Filler Order Number	Not supported.
4	22	EI	O				Placer Group Number	This field may be used to carry the name and id for the campaign under which the patient is followed. The second component would contain the OID for the assigning authority.
5	2	ID	O		0038		Order Status	Not supported.
6	1	ID	O		0121		Response Flag	Not supported.
7	200	TQ	B	Y			Quantity/Timing	Not supported.
8	200	EIP	O				Parent	Not supported.
9	26	TS	O				Date/Time of Transaction	Not supported.
10	250	XCN	O	Y			Entered By	Not supported.
11	250	XCN	O	Y			Verified By	Not supported.
12	250	XCN	O	Y			Ordering Provider	Not supported.
13	80	PL	O				Enterer's Location	Not supported.
14	250	XTN	O	Y/2			Call Back Phone Number	Not supported.
15	26	TS	O				Order Effective Date/Time	Not supported.
16	250	CE	O				Order Control Code Reason	Not supported.
17	250	CE	O				Entering Organization	Not supported.
18	250	CE	O				Entering Device	Not supported.
19	250	XCN	O	Y			Action By	Not supported.
20	250	CE	O		0339		Advanced Beneficiary Notice Code	Not supported.

HL7 Seq	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT /#	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
21	250	XON	O	Y		PHVS_NameType_HL7_2x	Ordering Facility Name	This field is used to capture the name of the organization that ordered the treatment. The OID for the assigning authority would be in component 10.
22	250	XAD	O	Y		PHVS_AddressType_HL7_2x PHVS_Country_FIPS_10-4 PHVS_State_FIPS_5-2 PHVS_County_FIPS_6-4 PHVS_Zipcode_USPS	Ordering Facility Address	This field may contain the phone number of the organization that ordered the treatment.
23	250	XTN	O	Y		PHVS_TelecommunicationEquipmentType_HL7_2x PHVS_TelecommunicationUseCode_HL7_2x	Ordering Facility Phone Number	This field may contain the phone number of the organization that ordered the treatment.
24	250	XAD	O	Y		PHVS_AddressType_HL7_2x PHVS_Country_FIPS_10-4 PHVS_State_FIPS_5-2 PHVS_County_FIPS_6-4 PHVS_Zipcode_USPS	Ordering Provider Address	This field may contain the address of the physician or other provider who ordered the treatment. The name and phone number of this person are passed in OBR-16 and OBR-17, respectively.
25	250	CWE	O				Order Status Modifier	Not supported.
26	60	CWE	C		0552		Advanced Beneficiary Notice Override Reason	Not supported.
27	26	TS	O				Filler's Expected Availability Date/Time	Not supported.
28	250	CWE	O		0177		Confidentiality Code	Not supported.
29	250	CWE	O		0482		Order Type	Not supported.
30	250	CNE	O		0483		Enterer Authorization Mode	Not supported.

OBR - Observation Request

The OBR contains attributes related to the order for the observation that is being reported in this message. It also is used to indicate groupings of observations in the context of an adverse event report.

HL7 Seq	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/#	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
1	4	SI	O				Set ID - OBR	The field identifies the sequence number of one of multiple OBRs that could be in a message. For the first order transmitted, the set ID is |1|, for the second order, it is |2|, and so on. If more than one OBR per PID is transmitted, this field should be used.
2	22	EI	C				Placer Order Number	The placer order number field may contain a unique identifier that was created for the original referral for services. This field would allow the application which to match the follow-up encounters against the referral. The second component contains the OID for the assigning authority of the identifier.
3	22	EI	C				Filler Order Number	The filler order number field contains a unique identifier that was created for this encounter instance. The second component contains the OID for the assigning authority of the identifier.
4	250	CE	R			PHVS_EncounterPurpose_CDC_CRA	Universal Service Identifier	The Universal Service ID identifies the type of either a report or a section within a larger report.
5	2	ID	B				Priority – OBR	Not supported.
6	26	TS	B				Requested Date/Time	Not supported.
7	26	TS	C				Observation Date/Time	This field is the clinically relevant date/time of the observation. For Isolation/Quarantine, is it the time when the isolation was begun. For other treatments, it is the start time of the treatment. For Laboratory result reporting, it is the time of specimen collection.
8	26	TS	O				Observation End Date/Time	This field may contain a stop time for the observation, isolation or other treatment.
9	20	CQ	O				Collection Volume	Not supported.
10	250	XCN	O	Y			Collector Identifier	Not supported.
11	1	ID	O		0065		Specimen Action Code	Not supported.
12	250	CE	O				Danger Code	Not supported.

HL7 Seq	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/#	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
13	300	ST	O				Relevant Clinical Information	This field may contain free-text entered clinical information about the patient. Relevant epidemiologically important information (e.g., day-care center attendee, or nursing home patient) can be placed here; however, there are no recommendations for specific use of this field for observation reporting.
14	26	TS	B				Specimen Received Date/Time	Not supported
15	300	SPS	B				Specimen Source	Not supported
16	250	XCN	O	Y		PHVS_NameType_HL7_2x PHVS_DegreeLicenseCertificate_HL7_2x	Ordering Provider	This field identifies the provider who ordered services associated with this encounter. Either the ID code or the name, or both, may be present. This is the same field as *ORC-12-ordering provider*
17	250	XTN	O	Y/2		PHVS_TelecommunicationEquipmentType_HL7_2x PHVS_TelecommunicationUseCode_HL7_2x	Order Callback Phone Number	This field may contain the phone number for the provider who ordered services associated with this encounter. The provider is identified in OBR-16.
18	60	ST	O				Placer Field 1	Not supported
19	60	ST	O				Placer Field 2	Not supported
20	60	ST	O				Filler Field 1	Not supported
21	60	ST	O				Filler Field 2	Not supported
22	26	TS	C				Results Rpt/Status Change Date/Time	Not supported
23	40	MOC	O				Charge to Practice	Not supported
24	10	ID	O		0074		Diagnostic Serv Sect ID	Not supported
25	1	ID	C		0123	PHVS_ResultStatus_HL7_2x	Result Status	The Result Status field applies to the entire report and is required in this message. Receipt of a subsequent message with the same filler number and a different status in this field implies processing may need to occur at the receiving application level to update a previous report.
26	400	PRL	O				Parent Result	Not supported
27	200	TQ	B	Y			Quantity/Timing	Not supported
28	250	XCN	O	Y			Result Copies To	Not supported
29	200	EIP	O				Parent	Not supported
30	20	ID	O		0124		Transportation Mode	Not supported
31	250	CE	O	Y			Reason for Study	Not supported.

HL7 Seq	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/#	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
32	200	NDL	O				Principal Result Interpreter	May be used to capture the id and name of the person who actually performed the observation.
33	200	NDL	O	Y			Assistant Result Interpreter	Not supported
34	200	NDL	O	Y			Technician	Not supported
35	200	NDL	O	Y			Transcriptionist	May be used to capture the id and the name of the person who transcribed information into the sending application.
36	26	TS	O				Scheduled Date/Time	Not supported
37	4	NM	O				Number of Sample Containers *	Not supported
38	250	CE	O	Y			Transport Logistics of Collected Sample	Not supported.
39	250	CE	O	Y			Collector's Comment *	Not supported
40	250	CE	O				Transport Arrangement Responsibility	Not supported
41	30	ID	O		0224		Transport Arranged	Not supported
42	1	ID	O		0225		Escort Required	Not supported
43	250	CE	O	Y			Planned Patient Transport Comment	Not supported
44	250	CE	O		0088		Procedure Code	Not supported
45	250	CE	O	Y	0340		Procedure Code Modifier	Not supported
46	250	CE	O	Y	0411		Placer Supplemental Service Information	Not supported
47	250	CE	O	Y	0411		Filler Supplemental Service Information	Not supported
48	250	CWE	C		0476		Medically Necessary Duplicate Procedure Reason.	Not supported.
49	2	IS	O		0507		Result Handling	Not supported

OBX - Observation/Result Segment

The OBX is used to convey the observation results. There may be multiple OBX segments reported under a single Observation Request segment. In adverse event reporting, multiple OBXs are clustered under an OBR to indicate information about a particular vaccine that was administered, details of a specific adverse event, etc.

HL7 Seq.	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/ #	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
1	4	SI	O				Set ID – OBX	This field contains the sequence number of the OBX, which increments up by one for each observation segment in the group.
2	2	ID	C		0125		Value Type	This field contains the format of the observation value expressed in OBX-5. Value Type is required for this message. The expected value types SN, CE, TX or ST, to reflect Structured Numeric, Coded,Text or String observations.
3	250	CE	R			PHVS_EncounterObservations_CDC_CRA	Observation Identifier	This field contains a code that identifies the specific observation being passed in this segment. The format is that of the Coded Element (CE). Example: 21612-7^Reported Patient Age^LN.
4	20	ST	C				Observation Sub-ID	A sequence number in this field may be used to tie together observations with the same value in OBX-3.

HL7 Seq.	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/ #	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
5	99999	varies	C			PHVS_EncounterType_CDC_CRA PHVS_ExposureType_CDC_CRA PHVS_TreatmentStatus_CDC_CRA PHVS_HistoricalObservation_CDC_CRA PHVS_HistorySource_CDC_CRA PHVS_EncounterNotPerformedReason_CDC_CRA PHVS_PreviousVaccinationHistory_CDC_CRA PHVS_TakeResponse_CDC_CRA PHVS_SubstanceAdministered_CDC_CRA PHVS_ConsentCode_CDC_CRA	Observation Value	This field contains the actual result value or observation. The data type in OBX-2 Value Type indicates the format of the observation. It is not a required field because some systems will report the result using only the Abnormal Flag values in (OBX-8), especially in product experience reporting. The length of the observation field is variable, depending upon the value type. The Standard allows the observation value to repeat using a tilde (~) for multipart, single answer results with appropriate data types, e.g., CE, TX, ST and FT data types, but repeats are not recommended as it complicates parsing. The data is typically split across more than one OBX, tying the segments together with the Observation Sub-ID and the same value in OBX-3, Observation Identifier. As in the observation identifier, if the value type is CE, the first 3 components would reflect the universal result identifier, description, and its encoding system, whereas fields 4-6 would be used to convey the local result code, description as alternate result values.
6	250	CE	O			PHVS_UnitsOfMeasure_CDC	Units	Units of measure put the observation value expressed in OBX-5 into context. Units includes weight, height, age, and temperature units.
7	60	ST	O				References Range	Not supported
8	5	IS	O	Y	0078	PHVS_AbnormalFlag_HL7_2x	Abnormal Flags	This field may contain a qualifier assigned by the person making the observation. The Abnormal Flag details the observer's assessment as to whether the results are normal or abnormal; or it could be a value that says a therapeutic substance level is high or low.

HL7 Seq.	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/ #	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Description/Comments
9	5	NM	O				Probability	Not supported.
10	2	ID	O	Y	0080		Nature of Abnormal Test	Not supported.
11	1	ID	R		0085	PHVS_ObservationResultStatus_HL7_2x	Observation Result Status	Observation Result Status is a required field. "F" (Final) can be used as a default code. Receipt of a subsequent message with the same filler number and a different status in this field implies processing on the receiving side may need to occur to update previous results.
12	26	TS	O				Effective Date of Reference Range Values	Not supported.
13	20	ST	O				User Defined Access Checks	Not supported.
14	26	TS	O				Date/Time of the Observation	This field used to capture the date/time that observation identified in OBX-3 was performed.
15	250	CE	O				Producer's ID	Not supported.
16	250	XCN	O	Y			Responsible Observer	Not supported.
17	250	CE	O	Y			Observation Method	Not supported.
18	22	EI	O	Y			Equipment Instance Identifier	Not supported.
19	26	TS	O				Date/Time of the Analysis	Not supported.

NTE - Notes and Comments Segment

The NTE segment is a common format for sending notes and comments. For this message, the NTE segment is used to transmit notes and comments entered with or pertinent to an observation result.

Seq.	HL7 Len.	HL7 DT	HL7 Opt	HL7 RPT/#	HL7 Tbl #	PHIN Value Set	HL7 Element Name	Comments
1	4	SI	O				Set ID - NTE	This field is required where multiple NTE segments are included in a message. The numbering scheme is related to the OBX segment directly before it in that the Set ID begins again with '1' for each OBX that has one or more NTEs following it. The set ID is used to keep the text in proper order for storage and retrieval.
2	8	ID	O		0105		Source of Comment	Not supported
3	65536	FT	O	Y			Comment	Contains the comment text as related to the observation immediately preceding.
4	60	CE	O				Comment Type	Not supported

5. Data Types

Only those data types which are used within this guide have been included.

Data Type	Data Type Description
CE	Coded Element
CNN	Composite ID number and name simplified
CX	Extended Composite ID with Check Digit
DT	Date
DTM	Date Time
EI	Entity Identifier
FN	Family Name
HD	Hierarchic Designator
ID	Coded Value for HL7 defined tables
IS	Coded Value for User defined tables
MSG	Message Type
NDL	Name with date and location
NM	Numeric Data
PT	Processing Type
SAD	Street Address
SI	Sequence ID
SN	Structured Numeric Data
ST	String Data
TS	Time Stamp
TX	Text Data
VID	Version Identifier
XAD	Extended Address
XCN	Extended Coded Name
XON	Extended Organization Name
XPN	Extended Person Name
XTN	Extended Telephone Number

CE - Coded Element

HL7 Component Table - CE – Coded Element

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	20	ST	O		Identifier	
2	199	ST	O		Text	
3	20	ID	O	0396	Name of Coding System	
4	20	ST	O		Alternate Identifier	
5	199	ST	O		Alternate Text	
6	20	ID	O	0396	Name of Alternate Coding System	

Definition: This data type transmits coded values and the text associated with the code. Codes that represent the PHIN standard coding systems should be placed in the first set of components. Locally defined codes – if it desired to provide them – should go in the second set – alternate ID, text and coding system. HL7 recommended maximum length is 483 characters, but with the use of OIDs to represent the relevant coding system, the CE maximum length has been increased to 836 for PHIN messaging.

CNN - Composite ID Number and Name Simplified

HL7 Component Table - CNN - Composite ID Number and Name Simplified

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	15	ST	O		ID Number	
2	50	ST	O		Family Name	
3	30	ST	O		Given Name	
4	30	ST	O		Second and Further Given Names or Initials Thereof	
5	20	ST	O		Suffix (e.g., JR or III)	
6	20	ST	O		Prefix (e.g., DR)	
7	5	IS	O	0360	Degree (e.g., MD	
8	4	IS	C	0297	Source Table	
9	20	IS	C	0363	Assigning Authority - Namespace ID	OID
10	199	ST	C		Assigning Authority - Universal ID	
11	6	ID	C	0301	Assigning Authority - Universal ID Type	

Definition: Specifies a person using both an identifier and the person's name. For PHIN messaging, component #9, the Assigning Authority namespace ID, will contain the OID that indicates the namespace for the identifier. The OIDs used to identify entities will be available for look-up in the PHIN-VADS OID Registry.

CX - Extended Composite ID with Check Digit

HL7 Component Table - CX – Extended Composite ID with Check Digit

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	15	ST	R		ID Number	
2	1	ST	O		Check Digit	null if ID is alphanumeric
3	3	ID	O	0061	Check Digit Scheme	null if ID is alphanumeric
4	227	HD	O	0363	Assigning Authority	OID
5	5	ID	O	0203	Identifier Type Code	
6	227	HD	O		Assigning Facility	OID
7	8	DT	O		Effective Date	
8	8	DT	O		Expiration Date	
9	705	CWE	O		Assigning Jurisdiction	
10	705	CWE	O		Assigning Agency or Department	

Definition: This data type specifies an identifier with its associated administrative detail. Maximum length is 1913 characters. For PHIN messaging, component #4, assigning authority, will be filled with the OID that indicates the namespace for the identifier. This namespace, in effect, identifies both the assigning authority and the type of identifier. As a result, the identifier type code value, component #5, can be inferred from the chosen OID. The OIDs used to identify entities will be available for look-up in the PHIN-VADS OID Registry.}

DT - Date

HL7 Component Table - DT – Date

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
	8				Date	

Definition: This datatype specifies a date field. Maximum length is 8 digits. The number of digits specifies the precision, in that:

a) only the first four digits are used to specify a precision of "year"

b) the first six are used to specify a precision of "month"

c) the first eight are used to specify a precision of "day"

DTM - date/time

HL7 Component Table - DTM – Date/Time

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS	SEC.REF.
	24				Date/Time		

Definition: This data type specifies a point in time using a 24-hour clock notation. It is a component of the Timestamp datatype and does not appear on its own in these messages. Maximum length is 24. The number of digits specifies the precision, in that:

a) only the first four are used to specify a precision of "year"

b) the first six are used to specify a precision of "month"

c) the first eight are used to specify a precision of "day"

d) the first ten are used to specify a precision of "hour″

e) the first twelve are used to specify a precision of "minute″

f) the first fourteen are used to specify a precision of "second″

g) the first sixteen are used to specify a precision of "one tenth of a second″

h) the first nineteen are used to specify a precision of " one ten thousandths of a second″

EI - Entity Identifier

HL7 Component Table - EI – Entity Identifier

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	199	ST	O		Entity Identifier	
2	20	IS	O	0363	Namespace ID	
3	199	ST	C		Universal ID	
4	6	ID	C	0301	Universal ID Type	

Definition: This datatype indicates an identifier that defines a given entity within a specified series of identifiers. Maximum length is 427 characters.

It is important to note that, for PHIN messaging, component #3, Universal ID, will contain the OID that indicates the namespace for the identifier. The presence of the Universal ID requires the Universal ID Type to be valued in component #4. Since OIDs are dictated for component 3, the value "ISO" should appear in component 4. The OIDs used to identify entities are available for look-up in the PHIN-VADS OID Registry.

FN - Family Name

HL7 Component Table - FN – Family Name

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	50	ST	R		Surname	
2	20	ST	O		Own Surname Prefix	
3	50	ST	O		Own Surname	
4	20	ST	O		Surname Prefix From Partner/Spouse	
5	50	ST	O		Surname From Partner/Spouse	

Definition: This data type allows full specification of the surname of a person.   The FN data type is included here only because it is a component of the Extended Person Name (XPN) data type. In reality, the surname that is passed as the first component of this field is the only portion of the FN data type that will be supported. Maximum length is 194 characters.

HD - Hierarchic Designator

HL7 Component Table - HD – Hierarchic Designator

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	20	IS	O	0300	Namespace ID	
2	199	ST	C		Universal ID	
3	6	ID	C	0301	Universal ID Type	

Definition: The Hierarchic Designator data type identifies a system or application or other entity that has responsibility for managing or assigning a defined set of instance identifiers (such as placer or filler number, patient identifiers, provider identifiers, etc.).

For PHIN messaging, component #2, Universal ID, will contain the OID that indicates the namespace for the identifier. The presence of the Universal ID requires the Universal ID Type to be valued in component #3. Since OIDs are dictated for component 3, the value "ISO" should appear in component 4. The OIDs used to identify entities are available for look-up in the PHIN-VADS OID Registry.

ID - Coded Value for HL7 Defined Tables

HL7 Component Table - ID – String Data

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
					Coded Value for HL7-Defined Tables	

Definition: The ID data type indicates that the value is drawn from a HL7 table of legal values. This data type is used only for HL7 tables. Maximum length of data with this data type varies.

IS - Coded Value for User-Defined Tables

HL7 Component Table - IS – String Data

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
	20				Coded Value for User-Defined Tables	

Definition: The IS data type indicates that the value is drawn from a site-defined (or user-defined) table of legal values. There is an HL7 table number associated with IS data types. Maximum length is 20 characters.

MSG – Message Type

HL7 Component Table - MSG – Message Type

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	3	ID	R	0076	Message Code	
2	3	ID	R	0003	Trigger Event	
3	7	ID	R	0354	Message Structure	

Definition: This data type is used only in MSH-9 to indicate the type of format, content, and intent of the message. Maximum length is 15 characters.

NDL – name with date and location

HL7 Component Table - NDL – Name with Date and Location

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	406	CNN	O		Name	
2	26	TS	O		Start Date/time	
3	26	TS	O		End Date/time	
4	20	IS	O	0302	Point of Care	
5	20	IS	O	0303	Room	
6	20	IS	O	0304	Bed	
7	227	HD	O		Facility	
8	20	IS	O	0306	Location Status	
9	20	IS	O	0305	Patient Location Type	
10	20	IS	O	0307	Building	
11	20	IS	O	0308	Floor	

Definition: Specifies the name of the person performing a service, when the person performed the service and where the person performed the service. PHIN is using only the first component to capture a code and name. (See CNN datatype) Maximum length is 835 characters.

NM - Numeric

HL7 Component Table - NM – Numeric

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
	16				Numeric	

Definition: This field contains a number with optional leading sign (+ or -), digits and an optional decimal point. In the absence of a sign, the number is assumed to be positive. If there is no decimal point the number is assumed to be an integer. Leading zeros, or trailing zeros after a decimal point, are not significant. Maximum length is 16 characters.

Except for the optional leading sign (+ or -) and the optional decimal point (.), no non-numeric ASCII characters are allowed, thus, the value <6 should be encoded as the structured numeric (SN) data type.

PT - Processing Type

HL7 Component Table - PT – Processing Type

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	1	ID	O	0103	Processing ID	
2	1	ID	O	0207	Processing Mode	

Definition: This data type is used only in MSH-11 to indicate the type of processing that may be performed on the message (Debugging, Production, Training). Maximum length is 3 characters.

SAD – Street Address

HL7 Component Table - SAD – Street Address

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	120	ST	O		Street or Mailing Address	
2	50	ST	O		Street Name	
3	12	ST	O		Dwelling Number	

Definition: This data type is a component of the XAD Extended Address data type. For this message, only data in the first component will be parsed into the street address field. Maximum length is 184 characters.

SI - Sequence ID

HL7 Component Table - SI – Sequence ID

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
	4				Sequence ID	

Definition: The SI provides a numeric sequencing for segments that may repeat. Maximum length is 4 digits.

SN – Structured Numeric

HL7 Component Table - SN – Structured Numeric

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	2	ST	O		Comparator	Defined as greater than, less than, greater than or equal, less than or equal, equal, and not equal, respectively (= ">" or "<" or ">=" or "<=" or "=" or "<>" If this component is not valued, it defaults to equal ("=").
2	15	NM	O		Num1	
3	1	ST	O		Separator/Suffix	"-" or "+" or "/" or "." or ":"
4	15	NM	O		Num2	

Definition: The structured numeric data type unambiguously expresses numeric results that are not simply integers or real numbers. This enables receiving systems to parse and store the components separately. The corresponding sets of values indicated with the <comparator> and <separator/suffix> components are intended by HL7 to be the authoritative and complete set of values. If additional values are needed for the <comparator> and <separator/suffix> components, they should be submitted to HL7 for inclusion in the Standard.

If <num1> and <num2> are both non-null, then component 3 must contain a valid separator/suffix. If the separator is "-", the data range is inclusive; e.g., <num1> - <num2> defines a range of numbers x, such that: <num1> <=x<= <num2>.

ST - string data

HL7 Component Table - ST – String Data

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
	199				String Data	

Definition: String data is comprised of any ASCII characters except the escape and delimiter characters. The ST datatype is intended for short strings of less than 200 characters. For longer strings, the TX data type should be used. Maximum length is 199 characters.

TS - Time Stamp

HL7 Component Table - TS – Time Stamp

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	24	DTM	R		Time	
2	1	ID	B	0529	Degree of Precision	

Definition: The Timestamp data type indicates a point in time. Only the first component, which is of the previously described Date/Time data type, is supported. Maximum length is 4 digits.

TX - text data

HL7 Component Table - TX – Text Data

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
					Text Data	

Definition: The TX data type is used for string data meant for user display (on a terminal or printer). TX supports leading spaces in the field (that is, not necessarily left justified) as this may enhance the presentation to the user.

HL7 describes the use of the repeat delimiter as a paragraph terminator or hard carriage return, causing a receiving system to start any line beginning with a repeat delimiter on a new line. PHIN discourages repeats in OBX-5. To facilitate parsing, it is recommended that each line be sent as a repeat of the entire OBX segment, using the same OBX-3 value and incrementing the OBX-4 Sub-ID field to maintain line sequencing. Maximum length is 65536 characters.

VID – Version Identifier

HL7 Component Table - VID – Version Identifier

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	5	ID	O	0104	Version ID	
2	483	CE	O	0399	Internationalization Code	
3	483	CE	O		International Version ID	

Definition: The VID data type is used to identify the version of HL7. The data type appears in MSH-12 Version ID in this message. Maximum length is 973 characters, although in practical terms a maximum of 5 characters are expected.

XAD - Extended Address

HL7 Component Table - XAD – Extended Address

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	184	SAD	O		Street Address	
2	120	ST	O		Other Designation	
3	50	ST	O		City	
4	50	ST	O		State or Province	
5	12	ST	O		Zip or Postal Code	
6	3	ID	O	0399	Country	
7	3	ID	O	0190	Address Type	
8	50	ST	O		Other Geographic Designation	
9	20	IS	O	289	County/Parish Code	
10	20	IS	O	288	Census Tract	
11	1	ID	O	465	Address Representation Code	
12	53	DR	B		Address Validity Range	
13	26	TS	O		Effective Date	
14	26	TS	O		Expiration Date	

Definition: The XAD data type is used to convey complete address information for a person or organization. Maximum length is 631 characters.

XCN - extended composite ID number and name for persons

HL7 Component Table - XCN – Extended Composite ID Number and Name for Persons

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	15	ST	O		ID Number	
2	194	FN	O		Family Name	
3	30	ST	O		Given Name	
4	30	ST	O		Second and Further Given Names or Initials Thereof	
5	20	ST	O		Suffix (e.g., JR or III)	
6	20	ST	O		Prefix (e.g., DR)	
7	5	IS	B	0360	Degree (e.g., MD)	deprecated as of v 2.5
8	4	IS	C	0297	Source Table	
9	227	HD	O	0363	Assigning Authority	
10	1	ID	O	0200	Name Type Code	
11	1	ST	O		Identifier Check Digit	
12	3	ID	C	0061	Check Digit Scheme	
13	5	ID	O	0203	Identifier Type Code	
14	227	HD	O		Assigning Facility	
15	1	ID	O	0465	Name Representation Code	
16	483	CE	O	0448	Name Context	
17	53	DR	B		Name Validity Range	
18	1	ID	O	0444	Name Assembly Order	
19	26	TS	O		Effective Date	
20	26	TS	O		Expiration Date	
21	199	ST	O		Professional Suffix	
22	705	CWE	O		Assigning Jurisdiction	
23	705	CWE	O		Assigning Agency or Department	

Definition: The XCN data type is used to where there is a need to convey ID number and name for a person. The assigning authority would be passed as an OID in component 9. Maximum length is 3002 characters.

XON - Extended Composite Name and Identification Number for Organizations

HL7 Component Table - XON – Extended Composite Name and Identification Number for Organizations

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	50	ST	O		Organization Name	
2	20	IS	O	0204	Organization Name Type Code	
3	4	NM	B		ID Number	
4	1	NM	O		Check Digit	
5	3	ID	O	0061	Check Digit Scheme	
6	227	HD	O	0363	Assigning Authority	
7	5	ID	O	0203	Identifier Type Code	
8	227	HD	O		Assigning Facility	
9	1	ID	O	0465	Name Representation Code	
10	20	ST	O		Organization Identifier	this field will contain the OID for the organization

Definition: The XON data type is used to specify name and identification information for an organization.   An OID in the 10th field provides all the information needed to identify the organization with PHIN messaging. Maximum length is 567 characters.

XPN - Extended Person Name

HL7 Component Table - XPN– Extended Person Name

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	194	FN	O		Family Name	
2	30	ST	O		Given Name	
3	30	ST	O		Second and Further Given Names or Initials Thereof	
4	20	ST	O		Suffix (e.g., JR or III)	
5	20	ST	O		Prefix (e.g., DR)	
6	6	IS	B	0360	Degree (e.g., MD)	
7	1	ID	O	0200	Name Type Code	
8	1	ID	O	0465	Name Representation Code	
9	483	CE	O	0448	Name Context	
10	53	DR	B		Name Validity Range	
11	1	ID	O	0444	Name Assembly Order	
12	26	TS	O		Effective Date	
13	26	TS	O		Expiration Date	
14	199	ST	O		Professional Suffix	

Definition: The XPN data type is used to convey complete name information for a person. Family Name or surname in the first component was previously described. Maximum length is 1103 characters.

XTN - Extended Telecommunication Number

HL7 Component Table - XTN – Extended Telecommunication Number

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	199	ST	B		Telephone Number	
2	3	ID	O	0201	Telecommunication Use Code	
3	8	ID	O	0202	Telecommunication Equipment Type	
4	199	ST	O		Email Address	
5	3	NM	O		Country Code	
6	5	NM	O		Area/City Code	
7	9	NM	O		Local Number	
8	5	NM	O		Extension	
9	199	ST	O		Any Text	
10	4	ST	O		Extension Prefix	
11	6	ST	O		Speed Dial Code	
12	199	ST	C		Unformatted Telephone number	

Definition: The XTN data type is used to convey telephone or other telecommunications information for a person or organization.   The formatted telephone number in the first field is not supported. Maximum length is 1103 characters.

6. Use of Object Identifiers (OIDs)

In order for computers to manipulate information about objects, those objects (and sometimes the records about the objects) need to be uniquely identified in some way. Health Level Seven has identified OIDs[1] as the preferred mechanisms for the unambiguous global identity of coding systems. This section describes how OIDs are used within PHIN messaging.

An OID is a character string made up of clauses that are concatenated together. The complete string is hierarchical in structure, and architected as a well-formed tree. Each node of the tree represents a namespace, where all branches under that node are unique. There are several representations of OIDs, but the one accepted by everyone is completely numeric with no embedded spaces or special characters. The different representations are fully isomorphic, but the non-numeric ones tend to be harder for machines to process efficiently. In the numeric representation, each node in the tree is given a unique numeric id, which is a non-zero positive integer (except for the zero at one root of the tree). The OID is constructed by putting a dot (decimal point, period, etc.) after the current node, then assigning a unique integer next. This process is repeated to construct a tree of arbitrary depth. At the top of the tree, there are three roots currently:

> 0 - ITU-T (International Telecommunication Union Standardization Sector) assigned
> 1 - ISO assigned
> 2 - Joint ISO/ITU-T assignment

Each of these three organizations maintains a namespace of the OIDs that they assign. Due to the hierarchical structure of OIDs, responsibility for maintenance and further assignment of any branch may be delegated to any organization that agrees to manage that branch. Therefore, the 2 root and the branches immediately below that are maintained by a joint ISO/ITU-T committee, and branch 2.16.840.1 is for US companies. A couple of important OIDs are immediately below that are managed by their respective organizations:

> 2.16.840.1.113883 – Health Level Seven, Inc.
> 2.16.840.1.114222 – Centers for Disease Control and Prevention (CDC)

Since an ISO OID is merely the globally unique identifier of an object, and any OID that is not a leaf on the OID tree is a namespace of objects, OIDs are very well suited to namespace management. HL7 has recommended that all coding systems used in message fields carrying coded data for Version 3 use HL7-registered OIDs to uniquely identify the coding system. HL7 also suggests that OIDs may be used for the namespace identifiers (the identifier 'root') in the fields that are of Instance Identifier data types in V3 messages.

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[1] The International Standards Organization (ISO) has developed the OID mechanism for the assignment of globally unique identifiers to any type of object in a decentralized way that retains some traceability of the object so identified. The Internet Engineering Task Force (IETF) realized the utility of this mechanism, and formalized it in RFC 1778. This was further refined after comments and a desire for increased usability on the World Wide Web and released again in RFC 2252. The W3C supports the use of OIDs, and they are also consistent with the implementation of DNS out on the Web.

Structure and Use at CDC

PHIN Messaging uses OIDs for three primary purposes:

- **Identification of Well Known Objects**: These are organizations and places that are significant for messaging. Currently, the only parties who are assigned OIDS of this type are the parties who act as senders and receivers of messages.
- **Identification of Namespaces used in Public Health**: These are the namespaces within which identifiers are unique. The namespace OID indicates the organization assigning the identifier as well as the type of identifier being assigned. This usage is shown within the EI and CX data types.
- **Identification of Vocabulary items**: These are the structures – coding system and value set - used to organize vocabulary concepts and the codes used to represent them. This usage is shown within the CE, CWE, and CQ data types.

All of the OIDs that are assigned by CDC to support PHIN Messaging are based on the CDC OID with a suffix to indicate that the OID is assigned for use by the PHIN. This initial part of the OID is known as the PHIN root, and it is constructed by adding ".4" to CDC's OID. The PHIN root, therefore, is "2.16.840.1.114222.4". Except for HL7 defined coding systems, all the OIDs used in PHIN Messaging will start with the PHIN root.

OIDs for Well Known Objects

These OIDs identify message senders and receivers. The OIDs that are assigned are created as follows.

> Start with the PHIN root.
> Add a suffix that indicates this OID represents a partner ID. (Note, this suffix indicates which type of "information artifact" the OID is assigned to.)
> Add a suffix that identifies the messaging partner in question

The OID that emerges has the following structure: [PHIN_root] + [Info_artifact = Partner id] + [partner specific indicator].

OIDs for Public Health Namespaces

The OID for public health namespaces are used to guarantee identifier uniqueness. It is important to note that namespace identifiers will only be used for identifiers that are locally assigned – that is to say – by the message sending organization. This could include such items as referral ids, and ids for drug or vaccine administrations. The namespace OIDs are built under the assumption that identifier uniqueness is guaranteed by the application creating the message; they include a component which identifies the software instance involved. The OIDs that are assigned for identifier namespaces are created as follows:

1) Start with the PHIN root.
2) Add a suffix (4.3.2.1) that indicates this is an instance of the Results Reporting application. Actually the suffix breaks down into (4-info artifacts) + (3.2 application software) + (1 LRN application)
3) Add a suffix that identifies the organization or site that is creating the message.
4) Add a suffix that identifies the software instance that is creating or recording the identifier. These

suffixes will be sequential integers. I.e., 1, 2, 3, …

5) Add a suffix that indicates the type of identifier being issued.

The following list indicates the suffixes that are currently supported.

Identifier/Namespace Type	Suffix
Messaging Partners	4.1
Information Artifacts	4.3
Coding Systems	4.5
External Coding Systems	4.6
External Namespaces	4.7
Surveillance Areas	4.8
Partner Namespaces	4.9
Value Sets	4.11

The OID that emerges has the following structure: [PHIN_root] + [Info_artifact = identifier namespace] + [partner specific indicator] + [software instance] + [namespace type indicator].

The reader may wonder why suffixes are not provided for provider IDs, or for the variety of identifiers assigned to patients, e.g., SSN, driver's license number. The reason is that these identifiers are currently handled as "external" identifiers. That is, they are treated as identifiers for which the name space specification is not rigorously possible.

OIDs for Vocabulary Items

Vocabulary items used in these Guides are drawn from two sources: Health Level 7, and the CDC PHIN. Their OID assignment reflects this by using either the PHIN root, or the HL7 root as the starting point for OID construction. The OIDs that are assigned for identifier namespaces are created as follows:

1) Start with the appropriate root. This will either be the PHIN root or the HL7 one.
2) Add a suffix that indicates whether the vocabulary item is a coding system or a value set.
3) Add a suffix that identifies the particular vocabulary item.

The reader should note that it is the coding system OID, not the one for the value set that will appear in messages.

Refer to the section on vocabulary items to find the OIDs assigned to coding systems and values sets.

7. Code Systems & Value Sets

This section contains the vocabulary items to be used with the described message. Every field in a message that contains one or more coded values has its value constrained by the specific list of values that are permitted in that field. Over time, the "list of values" that is associated with a field will change. Successful message implementation requires that transmitted messages (message instances) contain valid values for coded fields. However, since the list of valid codes changes from time to time, it is also important to make sure that updates to the valid vocabularies are properly managed. The segment tables in the previous sections associate a Table to each of these coded fields, and these tables are listed in this section below. The entry for each table enumerates all of the code values that may be used for the specified field, as those code values are known at the time of publishing this guide.

PHIN messaging uses the HL7 defined code sets where these have been identified and published by HL7. For "user defined" tables, it uses those developed by PHIN messaging for use in public health. However, all tables are implemented using PHIN vocabulary principles. These principles mandate the assignment of object identifiers (OIDs) as the identifiers for code systems. These OIDs are identified, along with code values, within the PHIN Vocabulary Authoring and Distribution System (VADS). It is also important to be aware of the fact that code sets are relatively dynamic, and are subject to change between publications of these implementation guides. As a result, the VADS will be used to make updated code values available. This key PHIN application is discussed below.

Every code value that is passed in a message instance is drawn from a code system, which has an OID associated with it as a globally unique identifier of the code system. In the general case, a) the coded values allowed in a field may be drawn from more than one code system, and b) the coded values are a subset of the codes from a given coding system. Combining (a) and (b) makes it possible for the allowed code value to be a combination of multiple subsets drawn from multiple coding systems. In most cases, only some of the codes defined in a code system are legal for use in a particular message.

The subsets of the codes that are legal for a particular field are identified by an HL7 construct known as a Value Set. A value set is a collection of coded values drawn from code systems. Value sets serve to identify the specific set of coded values for the message from the universe of coded values across all coding systems.

The segment tables in previous sections identify the PHIN Value Set that is used for each supported field containing a coded value. For fields that use the datatype CE or CWE, these datatypes require that messages include the OID that uniquely defines the coding system as well as the coded value itself. It should be understood that some of these pre-coordinated value sets will need to be quickly updated or new ones created as new campaigns, new needs, and new sets of observations are identified.

The Value Sets are identified by an OID, but this OID does not get transmitted in the message. The OID for the coding system from which the value is derived is sent in the message. However, the value set OID is useful and important when vocabulary items are modified or replaced.

PHIN Vocabulary Management

Standards-based vocabularies are required for PHIN compliant applications and messages. PHIN Vocabulary Services (PHIN VS) provides a coordinated system for registering, identifying, mapping,

authoring, and editing standards-based vocabularies for PHIN stakeholders and applications. The PHIN Vocabulary Access and Distribution System (PHIN VADS) is a set of tools within the PHIN VS that provides a coordinated system for stakeholders to access, distribute, store, and manage vocabularies within and between applications. PHIN VADS components include an html browser for manual searching, viewing, and download of PHIN approved vocabularies, web services connections for automated functionalities, and a Java application programming interface (API) and data store which can facilitate the development and management of vocabularies within PHIN applications. For more information on PHIN VADS, the reader should refer to the PHIN VADS User Guide, Version 0.5. This document is available for download at the PHIN VADS website - http://www.cdc.gov/PhinVSBrowser/StrutsController.do.

The table below is a compilation of the Value Sets, Code Systems and their OIDS that have been pre-coordinated to be used in the Countermeasure Response Administration Messaging Guides. A brief description of usage throughout the Guides is also provided. Vocabulary discovery and PHIN-VADS updates will be an ongoing process. The table will be updated as vocabulary requirements change.

R & P Messaging Code System OID	R & P Messaging Code System Name	R & P Messaging Value Set Name	R & P Messaging Value Set OID	Usage
2.16.840.1.113883.12.78	PH_AbnormalFlag_HL7_2x	PHVS_AbnormalFlag_HL7_2x	2.16.840.1.114222.4.11.800	May be used in OBX segment on the individual observation
2.16.840.1.113883.12.190	PH_AddressType_HL7_2x	PHVS_AddressType_HL7_2x	2.16.840.1.114222.4.11.801	Address fields
2.16.840.1.113883.12.164	PH_AdministrationDevice_HL7_2x	PHVS_AdministrationDevice_HL7_2x	2.16.840.1.114222.4.11.802	Substance Administration
2.16.840.1.113883.12.165	PH_AdministrationMethod_HL7_2x	PHVS_AdministrationMethod_HL7_2x	2.16.840.1.114222.4.11.803	Substance Administration
2.16.840.1.113883.12.163	PH_BodySite_HL7_2x	PHVS_BodySite_HL7_2x	2.16.840.1.114222.4.11.804	Substance Administration
2.16.840.1.113883.12.1	PH_AdministrativeSex_HL7_2x	PHVS_AdministrativeSex_HL7_2x	2.16.840.1.114222.4.11.805	Patient Identification segment
2.16.840.1.113883.12.127	PH_AllergenType_HL7_2x	PHVS_AllergenType_HL7_2x	2.16.840.1.114222.4.11.806	Allergy information could be passed in Substance Adminstration or Referral message
2.16.840.1.113883.12.128	PH_AllergySeverity_HL7_2x	PHVS_AllergySeverity_HL7_2x	2.16.840.1.114222.4.11.807	Allergy information could be passed in Substance Adminstration or Referral message
2.16.840.1.113883.12.360	PH_DegreeLicenseCertificate_HL7_2x	PHVS_DegreeLicenseCertificate_HL7_2x	2.16.840.1.114222.4.11.808	Person name
2.16.840.1.113883.12.2	PH_MaritalStatus_HL7_2x	PHVS_MaritalStatus_HL7_2x	2.16.840.1.114222.4.11.809	Patient Identification segment
2.16.840.1.113883.12.200	PH_NameType_HL7_2x	PHVS_NameType_HL7_2x	2.16.840.1.114222.4.11.810	Person name (implied by location in field)

R & P Messaging Code System OID	R & P Messaging Code System Name	R & P Messaging Value Set Name	R & P Messaging Value Set OID	Usage
2.16.840.1.113883.12.85	PH_ObservationResultStatus_HL7_2x	PHVS_ObservationResultStatus_HL7_2x	2.16.840.1.114222.4.11.811	OBX-11 required field for observation result
2.16.840.1.113883.12.429	PH_ProductionClass_HL7_2x	PHVS_ProductionClass_HL7_2x	2.16.840.1.114222.4.11.812	PID segment when non-human subject
2.16.840.1.113883.12.63	PH_Relationship_HL7_2x	PHVS_Relationship_HL7_2x	2.16.840.1.114222.4.11.813	Next-of-Kin/Associated Parties segment, if used
2.16.840.1.113883.12.6	PH_Religion_HL7_2x	PHVS_Religion_HL7_2x	2.16.840.1.114222.4.11.814	Patient Identification segment
2.16.840.1.113883.12.123	PH_ResultStatus_HL7_2x	PHVS_ResultStatus_HL7_2x	2.16.840.1.114222.4.11.815	OBR-25 Required field when OBR segment used
2.16.840.1.113883.12.162	PH_RouteOfAdministration_HL7_2x	PHVS_RouteOfAdministration_HL7_2x	2.16.840.1.114222.4.11.816	Substance Administration
2.16.840.1.113883.12.202	PH_TelecommunicationEquipmentType_HL7_2x	PHVS_TelecommunicationEquipmentType_HL7_2x	2.16.840.1.114222.4.11.817	Telephone/fax/e-mail addresses
2.16.840.1.113883.12.201	PH_TelecommunicationUseCode_HL7_2x	PHVS_TelecommunicationUseCode_HL7_2x	2.16.840.1.114222.4.11.818	Telephone/fax/e-mail addresses
2.16.840.1.113883.12.136	PH_YesNo_HL7_2x	PHVS_YesNo_HL7_2x	2.16.840.1.114222.4.11.819	Yes/no indicator used for Deceased
2.16.840.1.113883.12.532	PH_ExpandedYesNo_HL7_2x	PHVS_ExpandedYesNo_HL7_2x	2.16.840.1.114222.4.11.820	May be used in OBX-5 as an observation response
2.16.840.1.113883.12.322	PH_CompletionStatus_HL7_2x	PHVS_TreatmentCompletionStatus_HL7_2x	2.16.840.1.114222.4.11.821	Referral message
2.16.840.1.113883.12.280	PH_ReferralPriority_HL7_2x	PHVS_ReferralPriority_HL7_2x	2.16.840.1.114222.4.11.822	Referral message
2.16.840.1.113883.12.336	PH_ReferralReason_HL7_2x	PHVS_ReferralReason_HL7_2x	2.16.840.1.114222.4.11.823	Referral message
2.16.840.1.113883.12.284	PH_ReferralCategory_HL7_2x	PHVS_ReferralCategory_HL7_2x	2.16.840.1.114222.4.11.824	Referral message
2.16.840.1.113883.12.282	PH_ReferralDisposition_HL7_2x	PHVS_ReferralDisposition_HL7_2x	2.16.840.1.114222.4.11.825	Referral message
2.16.840.1.113883.12.52	PH_DiagnosisType_HL7_2x	PHVS_DiagnosisType_HL7_2x	2.16.840.1.114222.4.11.827	Referral message where DG1 segment may be used; or in generic ORU, OBR-31 Reason for Study
2.16.840.1.113883.6.234	PH_Country_FIPS_10-4	PHVS_Country_FIPS_10-4	2.16.840.1.114222.4.11.828	Used in address fields, as birthplace, citizenship, and origin of message
2.16.840.1.113883.6.93	PH_County_FIPS_6-4	PHVS_County_FIPS_6-4	2.16.840.1.114222.4.11.829	May be used in address fields
2.16.840.1.113883.6.92	PH_State_FIPS_5-2	PHVS_State_FIPS_5-2	2.16.840.1.114222.4.11.830	Address fields

R & P Messaging Code System OID	R & P Messaging Code System Name	R & P Messaging Value Set Name	R & P Messaging Value Set OID	Usage
2.16.840.1.113883.6.100	PH_Language_ISO_639-2	PHVS_Language_ISO_639-2	2.16.840.1.114222.4.11.831	Patient Identification segment
2.16.840.1.113883.6.235	PH_Occupation_SOC_2000	PHVS_Occupation_SOC_2000	2.16.840.1.114222.4.11.832	Observation response
2.16.840.1.113883.6.236	PH_VaccineManufacturer_CDC	PHVS_VaccineManufacturer_CDC	2.16.840.1.114222.4.11.826	May be used as an observation response or sent with Substance Administration
2.16.840.1.113883.6.231	PH_Zipcode_USPS	PHVS_Zipcode_USPS	2.16.840.1.114222.4.11.833	Address fields
2.16.840.1.114222.4.5.200	PH_Allergen_CDC	PHVS_Allergen_CDC	2.16.840.1.114222.4.11.834	Allergy information could be passed in Substance Administration or Referral message
2.16.840.1.114222.4.5.201	PH_Breed_CDC	PHVS_Breed_CDC_CRA	2.16.840.1.114222.4.11.835	Used for non-human subject of message
2.16.840.1.113883.6.238	PH_RaceAndEthnicity_CDC	PHVS_RaceCategory_CDC	2.16.840.1.114222.4.11.836	Patient Identification segment
2.16.840.1.113883.6.238	PH_RaceAndEthnicity_CDC	PHVS_EthnicityGroup_CDC	2.16.840.1.114222.4.11.837	Patient Identification segment
2.16.840.1.114222.4.5.202	PH_UnitsOfMeasure_CDC	PHVS_UnitsOfMeasure_CDC	2.16.840.1.114222.4.11.838	Used to qualify numeric results, age, weight, height, and temperature
2.16.840.1.114222.4.5.203	PH_CaseContactType_CDC_CRA	PHVS_CaseContactType_CDC_CRA	2.16.840.1.114222.4.11.839	Observation response
2.16.840.1.114222.4.5.204	PH_PreviousVaccinationHistory_CDC_CRA	PHVS_PreviousVaccinationHistory_CDC_CRA	2.16.840.1.114222.4.11.840	Observation response
2.16.840.1.114222.4.5.205	PH_TakeResponse_CDC_CRA	PHVS_TakeResponse_CDC_CRA	2.16.840.1.114222.4.11.841	Observation response
2.16.840.1.114222.4.5.206	PH_SubstanceAdministered_CDC_CRA	PHVS_SubstanceAdministered_CDC_CRA	2.16.840.1.114222.4.11.842	Substance Administration or ORU Observation response
2.16.840.1.114222.4.5.207	PH_AdministeredUnits_CDC_CRA	PHVS_AdministeredUnits_CDC_CRA	2.16.840.1.114222.4.11.843	Substance Administration
2.16.840.1.114222.4.5.208	PH_ContactRole_CDC_CRA	PHVS_ContactRole_CDC_CRA	2.16.840.1.114222.4.11.844	Adverse Event
2.16.840.1.114222.4.5.209	PH_SubstanceBatchDeactivationReason_CDC_CRA	PHVS_SubstanceBatchDeactivationReason_CDC_CRA	2.16.840.1.114222.4.11.845	Batch disposition

R & P Messaging Code System OID	R & P Messaging Code System Name	R & P Messaging Value Set Name	R & P Messaging Value Set OID	Usage
2.16.840.1.114222.4.5.210	PH_EncounterPurpose_CDC_CRA	PHVS_EncounterPurpose_CDC_CRA	2.16.840.1.114222.4.11.846	Used to identify both Referral requested service and Encounter Type (OBR-4 Universal service ID value for Follow-up, Other Treatment, and Adverse Event)
2.16.840.1.114222.4.5.211	PH_EncounterType_CDC_CRA	PHVS_EncounterType_CDC_CRA	2.16.840.1.114222.4.11.847	Observation response
2.16.840.1.114222.4.5.212	PH_ExposureType_CDC_CRA	PHVS_ExposureType_CDC_CRA	2.16.840.1.114222.4.11.848	Observation response
2.16.840.1.114222.4.5.213	PH_HistoricalObservation_CDC_CRA	PHVS_HistoricalObservation_CDC_CRA	2.16.840.1.114222.4.11.849	Observation response
2.16.840.1.114222.4.5.214	PH_HistorySource_CDC_CRA	PHVS_HistorySource_CDC_CRA	2.16.840.1.114222.4.11.850	Observation response
2.16.840.1.114222.4.5.215	PH_ReferralStatus_CDC_CRA	PHVS_ReferralStatus_CDC_CRA	2.16.840.1.114222.4.11.851	Observation response
2.16.840.1.114222.4.5.216	PH_Species_CDC_CRA	PHVS_Species_CDC_CRA	2.16.840.1.114222.4.11.852	Observation response
2.16.840.1.114222.4.5.217	PH_EncounterNotPerformedReason_CDC_CRA	PHVS_EncounterNotPerformedReason_CDC_CRA	2.16.840.1.114222.4.11.853	Observation response
2.16.840.1.114222.4.5.218	PH_TreatmentStatus_CDC_CRA	PHVS_TreatmentStatus_CDC_CRA	2.16.840.1.114222.4.11.854	Observation response
2.16.840.1.114222.4.5.219	PH_SubstanceTreatmentRefusalReason_CDC_CRA	PHVS_SubstanceTreatmentRefusalReason_CDC_CRA	2.16.840.1.114222.4.11.855	Substance Administration
2.16.840.1.113883.6.2	PH_DiseaseClassification_ICD-9CM	PHVS_AdministrativeDiagnosis_CDC_ICD-9CM	2.16.840.1.114222.4.11.856	Used when coded diagnosis information needs to be passed
2.16.840.1.114222.4.5.220	PH_ConsentCode_CDC_CRA	PHVS_ConsentCode_CDC_CRA	2.16.840.1.114222.4.11.857	Observation response
2.16.840.1.114222.4.5.221	PH_EncounterObservation_CDC_CRA	PHVS_EncounterObservation_CDC_CRA	2.16.840.1.114222.4.11.858	This is the starter set of questions that would appear in OBX-3 Observation
2.16.840.1.114222.4.5.222	PH_AdverseEventConsequence_CDC_CRA	PHVS_AdverseEventConsequence_CDC_CRA	2.16.840.1.114222.4.11.859	Observation response (Adverse Event)
2.16.840.1.114222.4.5.223	PH_VaccinatedAtLocation_CDC_CRA	PHVS_VaccinatedAtLocation_CDC_CRA	2.16.840.1.114222.4.11.860	Observation response (Adverse Event)
2.16.840.1.114222.4.5.224	PH_VaccinePurchasedWithFund_CDC_CRA	PHVS_VaccinePurchasedWithFund_CDC_CRA	2.16.840.1.114222.4.11.861	Observation response (Adverse Event)
2.16.840.1.114222.4.5.225	PH_AdverseEventPreviouslyReported_CDC	PHVS_AdverseEventPreviouslyReported_CDC	2.16.840.1.114222.4.11.862	Observation response (Adverse Event)

R & P Messaging Code System OID	R & P Messaging Code System Name	R & P Messaging Value Set Name	R & P Messaging Value Set OID	Usage
	_CRA	_CRA		
2.16.840.1.114222. 4.5.224	PH_VaccinePurchase dWithFund_CDC_CR A	PHVS_VaccinePurchas edWithFund_CDC_CR A	2.16.840.1.114222.4. 11.861	Observation response (Adverse Event)
2.16.840.1.114222. 4.5.226	PH_AdverseEventRep ortType_CDC_CRA	PHVS_AdverseEventR eportType_CDC_CRA	2.16.840.1.114222.4. 11.863	Observation response (Adverse Event)
2.16.840.1.114222. 4.5.227	PH_VaccineContraindi cation_CDC_CRA	PHVS_VaccineContrain dication_CDC_CRA	2.16.840.1.114222.4. 11.864	Observation response (Substance Administration)
2.16.840.1.114222. 4.5.228	PH_RiskCategory_CD C_CRA	PHVS_RiskCategory_C DC_CRA	2.16.840.1.114222.4. 11.865	Observation response (Substance Administration)

8. Miscellaneous

This section contains additional material for use by implementers.

HL7 Definitions

Message: A message is the entire unit of data transferred between systems in a single transmission. It is a series of segments in a defined sequence, with a message type and a trigger event. Between text messages in a batch, two carriage returns/line feeds (hex characters 0D0A0D0A) represent the end of each message.

Segment: A segment is a logical grouping of data. Segments within a defined message may be required or optional, may occur only once, or may be allowed to repeat. Each segment is named and is identified by a segment ID, a unique 3-character code. The hex characters '0D0A' that act as a Segment Terminator (equivalent to a Carriage Return and Line Feed) denote the end of each segment.

Field: A field is a string of characters. Every field has a data type that dictates the structure of the data in that field. The segment the field is in and the position within the segment identify each field; e.g., PID-5 is the fifth field of the PID segment. Optional data fields need not be valued. Whether a field is required, optional, or conditional in a segment is specified in the segment attribute tables. The designations are:

> **R**=Required; if the information is available it should be sent
> **O**=Optional; the information might be collected and the information might be sent
> **C**=Conditional; the information is required or mandatory based on the presence or absence of another value
> **D**=Deprecated; the value is not longer valid. Do not use
> **B**=Backward Compatibility; left in for compatibility with previous versions of HL7; the value is scheduled to be Deprecated within two HL7 versions; use is discouraged

A maximum length of the field is stated as normative information. Exceeding the listed length should not be considered an error.

Component: A component is one of a logical grouping of items that comprise the contents of a coded or composite field. Within a field having several components, not all components are required to be valued. Examples in this document demonstrate both fully valued and partially valued coded and composite fields.
Item number: Each field is assigned a unique item number. Fields that are used in more than one segment will retain their unique item number across segments.

Null and empty fields: The null value is transmitted as two double quote marks (""). A null-valued field differs from an empty field. An empty field should not overwrite previously entered data in the field. The null value means that any previous value in this field should be overwritten.

Data type: A data type restricts the contents and format of the data field. Data types are given a 2- or 3-letter code. Some data types are coded or composite types with several components. The applicable data type is listed and defined in each field definition. Chapter 2A of the HL7 v2.5 standard provides a complete listing of data types used in this document and their definitions.

Delimiters: The delimiter values are given in MSH-1 and MSH-2 and used throughout the message. Applications must use agreed upon delimiters to parse the message. The recommended delimiters for laboratory messages are:

> **<CR> (hex 0D0A)** = The Carriage Return is the symbol for the Segment Terminator; *Note:* Designation cannot be changed
> **|** = The vertical bar is the symbol for the Field Separator
> **^** = The circumflex accent mark or hat is the symbol for the Component Separator
> **&** = The ampersand is the symbol for the Sub-Component Separator
> **~** = The tilde or squiggled line is the symbol for the Repetition Separator
> **** = The back slash is the symbol for the Escape Character

Message syntax: Each abstract message is defined in special notation that lists the 3-letter segment identifiers in the order they will appear in the message. Braces, **{ }**, indicate that one or more of the enclosed group of segments may repeat, and brackets, **[ ]**, indicate that the enclosed group of segments is optional.

Trigger events: The trigger event is a real-world event that causes a need for data to flow among systems. For example, the availability of an result from the laboratory may trigger an unsolicited observation message to be sent to a number of other systems.

Z segments: All message types, trigger event codes, and segment ID codes beginning with Z are reserved for locally defined messages. No Z segments or trigger events are being used with this standard message type.

Basic Message Construction Rules

Encoding Rules for Sending
Encode each segment in the order specified in the abstract message format.
Place the Segment ID first in the segment.
Precede each data field with the field separator.
Encode the data fields in the order and data type specified in the segment definition table.
End each segment with the segment terminator.
Component separators need not be represented for components, subcomponents, or repetitions that come at the end of a field. The data fields below, for example, are equivalent:

```
^XXX&YYY&&^ is equal to ^XXX&YYY^
|ABC^DEF^^| is equal to  |ABC^DEF|
```

Encoding Rules for Receiving
If a data segment is included that is not expected, ignore it; this is not an error.

If data fields are found at the end of a data segment that are not expected, ignore them; this is not an error.
If a segment contains fields that are not expected, ignore them; this is not an error.

Example Message
The following example messages are provided as concrete examples of message instances that follow this guide.

Example 1: Follow-Up Encounter Record

This message uses generic OIDs as the Sending Application, Sending Facility, Receiving Application, and Receiving Facility, as well as where the application-assigned Patient Identifier is passed in PID-3. After the patient identifying information, the OBR-4 Universal Service ID first says that it pertains to "Follow-Up" reporting, then has a series of encounter observations passed in OBX segments. The overall Report time is OBR-7. The time when the individual observations were made is not captured, but could have appeared in OBX-14. Information about the Ordering Provider is passed in ORC-24 (Address) and OBR-16 Provider Name and OBR-17 Call-Back Number.

The "Final" status codes refer to the report in OBR-25 and to the individual observation in OBX-11. They will likely need to default in the message, as these are required fields.

Note that the "Encounter Observations" used in OBX-3 are pending the assignment of LOINC codes, so they are being treated as local codes and put into the 5th component for the time being.

MSH|^~\&|^2.16.840.1.114222.4.3.2^ISO|^2.16.840.1.114222.4.3.2^ISO||^2.16.840.1.114222.4.3.2^ISO|200505171830||ORU^R01^ORU_R01|200504171830010|P|2.5<CR>
SFT|^^^^^^^^^2.16.840.1.114222.4.3.2|V 2.1|CRA|cx5f51e1||20050101<CR>
PID|||9510110000^^^&2.16.840.1.114222.4.3.2&ISO~423523049^^^&2.16.840.1.11.383.4.1&ISO||LASTNAME^FIRSTNAME^MI||19981004|M^Male^2.16.840.1.113883.12.1||2106-3^White^2.16.840.1.113883.6.238|100 MAIN ST.^APT B^ATLANTA^GA^30303^US^^^FULTON||^^^^^404^9998888|||S^Single^2.16.840.1.113883.12.2||||||2186-5^Non-Hispanic^2.16.840.1.113883.6.238<CR>
ORC|RE|||||||||||||||||||||||||123 PEACHTREE STREET^SUITE 101^ATLANTA^GA^30301<CR>
OBR|1|REF202011100^^2.16.840.1.114222.4.3.2^ISO|IVA3492387^^2.16.840.1.114222.4.3.2^ISO|Followup^Follow-Up Exam^2.16.840.1.114222.4.5.210|||200504160800|||||||||75397^DOCTOR^^^^^^^2.16.840.1.114222.4.3.2|^^^^^404^2310000||||||||F^Final^2.16.840.1.113883.12.123<CR>
OBX|1|CE|^^^^ENCOUNTER TYPE^ 2.16.840.1.114222.4.5.210||FTF^Face-to-face^ 2.16.840.1.114222.4.5.211||||||F^Final^2.16.840.1.113883.12.85<CR>
OBX|2|DT|^^^^TAKE RESPONSE EXAM DATE^ 2.16.840.1.114222.4.5.210||200504171530||||||F^Final^2.16.840.1.113883.12.85|||<CR>
OBX|3|CE|^^^^TAKE RESPONSE^2.16.840.1.114222.4.5.210||Major^Major^2.16.840.1.114222.4.5.205||||||F^Final^2.16.840.1.113883.12.85|||<CR>

References

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Health Level Seven, Version 2.5 2003 Chapter 2a – Data Types
Health Level Seven, Version 2.5 2003 Chapter 3 – Patient Administration
Health Level Seven, Version 2.5 2003 Chapter 4 – Order Entry
Health Level Seven, Version 2.5 2003 Chapter 5 – Observation Reporting

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