PHIN Messaging Standard
Laboratory Order Response
ORL^O22
HL7 Version 2.5

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Centers for Disease Control and Prevention

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1. Introduction

Background

Monitoring the occurrence of diseases is a cornerstone of public health decision-making. This monitoring, referred to as public health surveillance, can be used to trigger case or outbreak investigations, follow trends, evaluate the effect of prevention measures such as immunizations, and suggest public health priorities. Because disease trends have the potential to shift rapidly, especially with infectious diseases, surveillance needs to be ongoing, timely, and complete.

Each state and territory has requirements for laboratories to report certain findings to health officials. In the past, these reports were written by hand on forms provided by health departments and mailed to appropriate offices. With computerization of laboratories, it has become possible for laboratories to send reportable data to health departments electronically.

This guide contains the standards for sending laboratory order responses to appropriate state, territorial, and federal health agencies using Health Level Seven (HL7) messages.

This document is a guide for electronic communication of laboratory order responses, using HL7 Version 2.5. The PHIN Messaging Standard for Laboratory Order Responses follows the specifications described in the HL7 Standard Version 2.5 and focuses on one type of HL7 message, the Laboratory Order Response Message, ORL^O22. HL7 describes the order and structure of data fields for transmitting orders, but does not stipulate which coding system or dictionary of descriptive terms should be used to identify specific tests being ordered; this is determined by agreement of the parties sharing the information. For transmitting laboratory orders, these coding systems are required:

- Logical Observation Identifier Names and Codes (LOINC®) for specific laboratory procedure names,

The document gives a description of the utility and requirement data fields of interest to public health in the ORL^O22 message, provides examples of complete messages, and includes tables of recommended codes.

HIPAA

The Health Insurance Portability and Accountability Act (HIPAA, or the Act), P.L. 104-191, was enacted on August 21, 1996. The Act included provisions relating to insurance coverage, but it also included a section that is relevant to electronic reporting of health care information. Among the requirements in this section called administrative simplification were: the adoption of standards for electronic health information transactions for certain uniform financial and administrative transactions and data elements, including claims, enrollment, eligibility, payment, coordination of benefits, and for the security of electronic health information systems. HIPAA also addressed safeguards of information, electronic signatures, and standards for various unique health identifiers, and specific code sets to be used in the transactions.

HIPAA also included provisions for adopting standards for the privacy of health information. The Law preempts State laws and imposes civil money penalties and prison for certain violations and made some changes in the membership and duties of the National Committee on Vital and Health Statistics (NCVHS). There is also a provision that NCVHS will make recommendations and legislative proposals to the Secretary on the adoption of uniform data standards for patient medical record information and the electronic exchange of such information. It also addresses state regulatory reporting by stating, "Nothing in this part shall limit the ability of a State to require a health plan to report, or to provide access to, information for management audits, financial audits, program monitoring and evaluation, facility licensure or certification, or individual licensure or certification." Regulations issued under the Act provide the implementation detail.

On the issue of public health, HIPAA states, "Nothing in this part shall be construed to invalidate or limit the authority, power, or procedures established under any law providing for the reporting of disease or injury, child abuse, birth, or death, public health surveillance, or public health investigation or intervention." The covered entities (those who have to comply) named in the HIPAA legislation are "health plans, health care clearinghouses, and health care providers who transmit any health information in electronic form in connection with a transaction referred to in Section 1173(a) of the Act." The transactions listed in Section 1173(a) deal specifically with eligibility, enrollment, claims, and others related to payment of insurance claims. Many of the public health reports will occur between parties that are not covered entities under the Act and do not involve the covered transactions, because public health agencies generally do not file insurance claims. The regulation implementing the HIPAA privacy provisions allowed public health exemptions for disclosure without patient consent of individually identifiable health information for the purposes quoted above.

Public health reporting is not a part of the claims process and conceptually is most closely aligned with the patient medical record, with Health Level Seven (HL7) as a recognized standards development organization in that subject area. We do not believe the HIPAA requirements related to electronic transactions will in any way affect our planned use of HL7 for electronic laboratory ordering. The HL7 message as defined in this document was carefully developed to provide a method for laboratory orders to be transmitted electronically. We believe that public health entities can use this public health order using the HL7 standard as described here and that these orders will not be altered by HIPAA provisions.

Scope

The standards in this guide are not intended as a tutorial for either HL7 or interfacing in general. The reader is expected to have a basic understanding of interface concepts, HL7, and electronic laboratory ordering. This document describes a data exchange protocol applicable for ordering tests of public health importance.

This laboratory messaging standard guide is based on and consistent with the HL7 Standard, Version 2.5. Any user- defined variations from the standard are clearly described. Electronic copies of this document are available.

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2. HL7 Concepts

While the use of some non-HL7 tables is necessary for vocabulary purposed, this document remains true to the HL7 v2.5 Final Standard, dated July 2003. The entries below are derived from that standard for use with Electronic Laboratory Ordering.

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 fields."[1] 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."[2] The segment it 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:

M=Mandatory; the field must be valued
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
X=Not Used; for this trigger event

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 HL7 Standard is written from the assumption that an event in the real world of healthcare creates the need for data to flow among systems. The real-world event is called the trigger event. For example, the trigger event, an observation (e.g., a CBC result) for a patient is available, may cause the need for that observation to be sent to a number of other systems. When the transfer of information is initiated by the application system that deals with the triggering event, the transaction is termed an unsolicited update. "[3]

Z segments: All message types trigger event codes, and segment ID codes beginning with Z are reserved for locally defined messages. No Z segments codes have been defined in the HL7 v2.5 Standard for the ORL^O22 message; this document does not contain customized Z segments for the ORL^O22 message.

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.

Note: XML can be used as an alternative method for message encoding. There are basic rules that must be followed in addition to maintaining the HL7 v2.x standards. For XML encoding information refer to the document HL7 Version 2: XML Encoding Syntax, Release 1. The document and more information about XML encoding can be found on the HL7.org website.

Data Types

The data type's names and descriptions used in this document follow:

Data Type	Data Type Description
CE	Coded Element
CNE	Coded With No Exceptions
CQ	Composite Quantity with Units
CWE	Coded With Exceptions
CX	Extended Composite ID with Check Digit
DR	Date/Time Range
DT	Date
DTM	Date/Time
EI	Entity Identifier
EIP	Entity Identifier Pair
FN	Family Name
FT	Formatted Text Data
GTS	General Timing Specification
HD	Hierarchic Designator
ID	Coded Value for HL7 defined tables
IS	Coded Value for User defined tables
JCC	Job Code/Class
MSG	Message Type
NA	Numeric Array
NM	Numeric
PL	Person Location
PT	Processing Type
RPT	Repeat Pattern
SAD	Street Address
SI	Sequence ID
SN	Structured Numeric
ST	String Data
TM	Time
TS	Time Stamp
TX	Text Data

VID	Version Identifier
XAD	Extended Address
XCN	Extended Composite ID Number and Name for Persons
XON	Extended Composite Name and ID Number for Organizations
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	Table 0396 should be imported into PHIN-VAD. Additional Codes will be added.
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 codes and the text associated with the code. Maximum Length: 483.

Example:

|F-11380^CREATININE^I9^2148-5^CREATININE^LN|"[4]

CNE - Coded With No Exceptions

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	Table 0396 should be imported into PHIN-VAD. Additional Codes will be added.
4	20	ST	O		Alternate Identifier	
5	199	ST	O		Alternate Text	
6	20	ID	O	0396	Name of Alternate Coding System	

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
7	10	ST	C		Coding System Version ID	
8	10	ST	O		Alternate Coding System Version ID	
9	199	ST	O		Original Text	

Definition: "Specifies a coded element and its associated detail. The CNE data type is used when a required or mandatory coded field is needed. The specified HL7 or externally defined table must be used and may not be extended with local values. Text may not replace the code. A CNE field must have an HL7 defined or external table associated with it. It must be specified in the standard. Maximum Length: 705"[5]

CQ - Composite Quantity with Units

HL7 Component Table - CQ –Composite Quantity with Units

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	16	NM	O		Quantity	
2	483	CE	O		Units	

Definition: "Maximum Length: 500.

```
Examples:
|123.7^kg|        kilograms is an ISO unit
|150^lb&&ANSI+|   weight in pounds is a customary US unit
      defined within ANSI+."[6]
```

CWE – Coded With Exceptions

HL7 Component Table - CWE – Coded with Exceptions

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	
7	10	ST	C		Coding System Version ID	
8	10	ST	O		Alternate Coding System Version ID	
9	199	ST	O		Original Text	

Definition: "Specifies a coded element and its associated detail. The CWE data type is used when 1) more than one table may be applicable or 2) the specified HL7 or externally defined table may be extended with local values or 3) when text is in place, the code may be omitted. Maximum Length: 705.

Usage Notes: This is a field that is generally sent using a code, but where the code may be omitted in exceptional instances or by site agreement. Exceptional instances arise when the coding system being used does not have a code to describe the concept in the text.

Components 1-3 & 7 are used in one of three ways:

- ✓ Coded: The identifier contains a valid code from a coding system. The coding system must either be present and have a value from the set of allowed coding systems, or if not present, it will be interpreted to have the same meaning as if it had been valued with the code meaning "HL7 coding system". Refer to HL7 Table 0396 in section 2.17.5 for valid values. The table includes ASTM E1238-94, Diagnostic, procedure, observation, drug ID, and health outcomes coding systems. If the coding system is any system other than "HL7 coding system," version ID must be valued with an actual version ID. If the coding system is "HL7 coding system," version ID may have an actual value or it may be absent. If version ID is absent, it will be interpreted to have the same value as the HL7 version number in the message header. Text description is optional, but its use should be encouraged to aid in readability of the message during testing and debugging.

  ```
  Example 1a: OBX segment where the observation identifier is a
  LOINC code and the observation value is being sent as a CWE
  value, and the value is taken from SNOMED International.

  OBX|1|CWE|883-9^ABO Group^LN|1|F-D1250^Type
     O^SNM3^^^^3.4|||N||F<cr>

  Example 1b: OBX segment where the observation identifier is a
  LOINC code and the observation value is being sent as an CWE
  value, and the value is taken from a (currently hypothetical)
  HL7 table.

  OBX|1|CWE|883-9^ABO Group^LN|1|O^Type
     O^HL74875^^^^2.3.1|||N||F<cr>
  ```

- ✓ Uncoded: Text is valued, the identifier has no value, and coding system and version ID follow the same rules as discussed for option 1.

  ```
  Example 2: OBX segment where the observation identifier is a
  LOINC code and the observation value is being sent as a CWE
  value, and the value is sent as text because the correct
  clinical value, "Wesnerian" was not found in the set of
  allowed values.

  OBX|1|CWE|883-9^ABO
     Group^LN|1|^Wesnerian^SNM3^^^^3.4|||A||F<cr>
  ```

- ✓ Data missing: The name of the coding system is "HL7 CWE Status," version ID is either a real version, or if not present it has the same meaning as the version in the message header, and the identifier takes its value from one of the allowed CWE field statuses. The codes for the allowed CWE field statuses are shown below and will be maintained in a table as part of the HL7 vocabulary. Text description of code is optional.

```
Example 3: OBX segment where the observation identifier is a
LOINC code and the observation value is being sent as an LCE
value, and no value can be sent because the test was not done.

OBX|1|CWE|883-9^ABO Group^LN|1|NAV^Not
   Available^HL70353^^^^2.3.1|||N||F<cr>
```

Component 9: This is the original text that was available to an automated process or a human before a specific code was assigned. This field is optional.

Components 3-6 & 8: Components 3-6 & 8 are optional. They are used to represent the local or user seen code. If present, components 3-6 & 8 obey the same rules of use and interpretation as described for components 1-3 & 7 (of the CWE data type). If both are present, the identifiers in component 4 and component 1 should have exactly the same meaning; i.e. they should be exact synonyms.

```
Example 4: OBX segment where the observation identifier is a
LOINC code and the observation value is being sent as an CWE
value, and the value is taken from SNOMED International. The
user seen fields are being used to represent a local coding
system (99LAB) used in the sending system.

OBX|1|CWE|883-9^ABO Group^LN|1|F-D1250^Type O^SNM3^O^O Type
   Blood^99LAB^3.4^|||||F<cr>
```

Summary of CWE usage notes with table of status values for various states without values: The CWE data type should be used for coded fields that are optional or where it is permissible to send text for items that are not yet a part of the approved value set. In the normal situation, the identifier is valued with the code from the value set. If the value of the field is known, but is not part of the value set, then the value is sent as text, and the identifier has no value. If the field has an unknown status, then third form of the field is used (see Data missing above), and the appropriate status for the field is selected from the table of allowed statuses. When no code exists, refer to *HL7 Table 0353 – CWE statuses* for valid values.

HL7 Table 0353 - CWE statuses

Code	Description	Comment
U	Unknown	
UASK	Asked but Unknown	
NAV	Not available	
NA	Not applicable	
NASK	Not asked	

Where a text modifier might accompany a code, the "field" in the HL7 message would be of data type CWE and would be allowed to repeat. The first instance of the field would be used, as per option 1; i.e. the identifier would have a valid code. The second instance of the repeating field would be used, as per option 2, that is, the text description would take the value of the free text modifier."[7]

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	
3	3	ID	O	0061	Check Digit Scheme	
4	227	HD	O	0363	Assigning Authority	
5	5	ID	O	0203	Identifier Type Code	PHIN Vocab : PHVS_EI_TYPE
6	227	HD	O		Assigning Facility	
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 is used for specifying an identifier with its associated administrative detail. Maximum Length: 1913

Note: The check digit and the check digit scheme are null of the ID is alphanumeric.

```
Example:
|1234567^4^M11^ADT01^MR^University Hospital|"[8]
```

DR - Date/Time Range

HL7 Component Table - DR – Date/Time Range

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	26	TS	O		Range Start Date/Time	
2	26	TS	O		Range End Date/Time	

Definition: "Maximum Length: 53."[9]

DT - Date

HL7 Component Table - DT – Date

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
	8				Date	

Definition: "Specifies the century and year with optional precision to month and day. Maximum Length: 8

As of v 2.3, the number of digits populated specifies the precision using the format specification YYYY[MM[DD]]. Thus:

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"

Examples: |19880704|

|199503|"[10]

DTM - Date/Time

HL7 Component Table - DTM – Date/Time

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

Definition: "Specifies a point in time using a 24-hour clock notation. Maximum Length: 24. The number of characters populated (excluding the time zone specification) specifies the precision.

Format: YYYY[MM[DD[HH[MM[SS[.S[S[S[S]]]]]]]]][+/-ZZZZ].

Thus:

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

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

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

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

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

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

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

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

Example: |199904| specifies April 1999.

The time zone (+/-ZZZZ) is represented as +/-HHMM offset from Co-ordinated Universal Time (UTC) (formerly Greenwich Mean Time (GMT)), where +0000 or -0000 both represent UTC (without offset). The specific data representations used in the HL7 encoding rules are compatible with ISO 8824-1987(E).

Note that if the time zone is not included, the time zone defaults to that of the local time zone of the sender. Also note that a DTM or TS valued field with the HHMM part set to "0000" represents midnight of the night extending from the previous day to the day given by the YYYYMMDD part (see example below).

Examples:

Example	Description
|19760704010159-0500|	1:01:59 on July 4, 1976 in the Eastern Standard Time zone (USA)
|19760704010159-0400|	1:01:59 on July 4, 1976 in the Eastern Daylight Saving Time zone (USA).
|198807050000|	Midnight of the night extending from July 4 to July 5, 1988 in the local time zone of the sender.
|19880705|	Same as prior example, but precision extends only to the day. Could be used for a birth date, if the time of birth is unknown.
|19981004010159+0100|	1:01:59 on October 4, 1998 in Amsterdam, NL. (Time zone=+0100).

The HL7 Standard strongly recommends that all systems routinely send the time zone offset but does not require it. All HL7 systems are required to accept the time zone offset, but its implementation is application specific. For many applications the time of interest is the local time of the sender. For example, an application in the Eastern Standard Time zone receiving notification of an admission that takes place at 11:00 PM in San Francisco on December 11 would prefer to treat the admission as having occurred on December 11 rather than advancing the date to December 12.

Note: The time zone [+/-ZZZZ], when used, is restricted to legally-defined time zones and is represented in HHMM format.

One exception to this rule would be a clinical system that processed patient data collected in a clinic and a nearby hospital that happens to be in a different time zone. Such applications may choose to convert the data to a common representation. Similar concerns apply to the transitions to and from daylight saving time. HL7 supports such requirements by requiring that the time zone information be present when the information is sent. It does not, however, specify which of the treatments discussed here will be applied by the receiving system."[11]

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: "The entity identifier defines a given entity within a specified series of identifiers. Message Length: 427.

The EI is appropriate for, but not limited to, machine or software generated identifiers. The generated identifier goes in the first component. The remaining components, 2 through 4, are known as the assigning authority; they identify the machine/system responsible for generating the identifier in component 1.

The specified series, the assigning authority, is defined by components 2 through 4. The assigning authority is of the hierarchic designator (HD) data type, but it is defined as three separate components in the EI data type, rather than as a single component as would normally be the case. This is in order to maintain backward compatibility with the EI's use as a component in several existing data fields."[12]

EIP - Entity Identifier Pair

HL7 Component Table - EIP – Entity Identifier Pair

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	427	EI	O		Placer Assigned Identifier	
2	427	EI	O		Filler Assigned Identifier	

Definition: "Specifies an identifier assigned to an entity by either the placer or the filler system. If both components are populated the identifiers must refer to the same entity. Maximum Length: 855."[13]

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	

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
5	50	ST	O		Surname From Partner/Spouse	

Definition: "This data type allows full specification of the surname of a person. Where appropriate, it differentiates the person's own surname from that of the person's partner or spouse, in cases where the person's name may contain elements from either name. It also permits messages to distinguish the surname prefix (such as "van" or "de") from the surname root. Maximum Length: 194."[14]

FT - Formatted Text Data

HL7 Component Table - FT – Formatted Text Data

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
	65536				Coded Value for HL7-Defined Tables	

Definition: "This data type is derived from the string data type by allowing the addition of embedded formatting instructions. These instructions are limited to those that are intrinsic and independent of the circumstances under which the field is being used. The actual instructions and their representation are described elsewhere in this chapter. *The FT field is of arbitrary length (up to 64k)* and may contain formatting commands enclosed in escape characters. Maximum Length: 65536.

```
Example:
|\.sp\(skip one vertical line)|"[15]
```

GTS – General Timing Specification

HL7 Component Table - FT – Formatted Text Data

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
	199				General Timing Specification	

Definition: "The General Timing Specification data type is used to communicate complex inter-related information Timing information. The value of such a field follows the formatting rules for a ST field. The string data will be structured according to the rules set forth in the "Version 3 Data Types Part II Unabridged Specification" for the General Timing Specification (GTS) data type. Maximum Length: 199"[16]

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 basic definition of the HD is that it identifies an (administrative or 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.). This entity could be a particular health care application such as a registration system that assigns patient identifiers, a governmental entity such as a licensing authority that assigns professional identifiers or drivers' license numbers, or a facility where such identifiers are assigned. Maximum Length: 227.

The HD is designed to be a more powerful and more general replacement for the application identifier of HL7 versions 2.1 and 2.2. It adds two additional components, the <universal ID> and the <universal ID type> to the former application ID (which is renamed more generically to be the namespace ID).

In the case where an HD identifies an entity that assigns/creates instance identifiers such as a particular patient registration system, it defines an "assigning authority". In the case where an HD identifies a location where instance identifiers are given out (although they may be created by another entity at another location) such as a particular "department of motor vehicles office location," it defines an "assigning facility". These two different uses of the HD appear in many of the extended data types.

The "assigning authority" defined by the HD is similar in its role to the coding system (and version) part of the coded element data types: both identify a set of more discrete instance identifiers. The difference is that the set of HD-defined discrete instances contain identifiers of "real-world" things such as patient or clinical orders, while the coded element-defined set of discrete instances contains concept identifiers (codes).

The HD is designed to be used either as a local identifier (with only the <namespace ID> valued) or a publicly-assigned identifier, a UID (<universal ID> and <universal ID type> both valued). Syntactically, the HD is a group of two identifiers: a local identifier defined by the first component and a universal identifier defined by the second and third components. HDs that have defined third components (defined UID types) must have a second component that is unique within the series of IDs defined by that component.

Note: The HD is used in fields that in earlier versions of HL7 used the IS data type. Thus, a single component HD (only the first component valued) will look like a simple IS data type for older systems expecting a single component in the place of the HD data type.

If the first component for the HD data type is present, the second and third components are optional. If the third component is present, then the second must also be present (although in this case the first is optional). The second and third components must either both be valued (both non-null), or both be not valued (both null).

This means that if all three components of the HD are valued, the entity identified by the first component is the same as the entity identified by components two and three taken together. However, implementers may choose, by site agreement, to specify that if all three components of the HD are valued, the first component defines a member in the set defined by the second and third components.

Examples:

Example 1: ISO examples with only the 2nd and 3rd components valued:

```
|^1.2.344.24.1.1.3^ISO|
|^1.2.34.4.1.5.1.5.1,1.13143143.131.3131.1^ISO|
```

The syntax of the second component is defined by the ISO standard for object identifiers, not by HL7 (for which the second component is of the ST data type). Thus the periods (".") and comma (",") in the second component are part of the ISO syntax, but are legal by the definition of the HL7 ST data type.

```
Example 2: A GUID example
          |^14344.14144321.4122344.14434.654^GUID|
Example 3: An internet example
          |^falcon.iupui.edu^DNS|
Example 4: a RANDOM UID
          |^40C983F09183B0295822009258A3290582^RANDOM|
```

Local examples:

```
Example 5: Local use only: a HD that looks like an IS data type
          |LAB1|
          |RX.PIMS.SystemB.KP.CA.SCA|
```

Note that the syntax of the first component is not defined by HL7 but by the site according to its own needs: the only requirement is that the first component's structure is allowed by the HL7 string (ST) data type, which is used for values by the IS data type.

```
Example 6: Local identifier using components 2 and 3 only
    |^RX.PIMS.SystemB.CA.SCA^M|
```

An alternate way to encode the previous example, illustrating the use of the third component value of "M" (see above HL7 Table 0301) to identify a locally-defined identifier set. The second component has the same value as the previous example but is now defined to be a member of a set of allowable values defined by a site for the identifier set "M".

```
Example 7: Local identifier with 2nd and 3rd components populated.
    |PathLab^PL.UCF.UC^L|
```

The 'PathLab' application is identified by the namespace component but it is also identified by the 2nd and 3rd components, (i.e., by the locally-defined UID system "L"). The two identifiers are equivalent.

This is a more complex HD in which the middle component, which is locally defined, is itself structured. As with the ISO example above, the middle component's structure is not defined by HL7 but by the site according to its own needs: the only requirement is that the middle component's structure is allowed by the HL7 string (ST) data type.

```
Example 8: local identifier and universal ID types:
    |LAB1^1.2.3.3.4.6.7^ISO|
```

A HD with an ISO "object Identifier" as a UID and a locally defined system name. Both the first component and the second and third (taken together) refer to the same entity. This example shows that the local value and the universal ID value may be transmitted with a single HD field."[17]

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 value of such a field follows the formatting rules for an ST field except that it is drawn from a table of legal values. There shall be an HL7 table number associated with ID data types. An example of an ID field is OBR-25-result status. This data type should be used only for HL7 tables (see Section 2.5.3.6 -Table). The reverse is not true, since in some circumstances it is more appropriate to use the CNE or CWE data type for HL7 tables. Maximum Length: varies."[18]

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 value of such a field follows the formatting rules for a ST field except that it is drawn from a site-defined (or user-defined) table of legal values. There shall be an HL7 table number associated with IS data types. An example of an IS field is the Event reason code defined in Section 3.3.1.4, "Event reason code". This data type should be used only for user-defined tables (see Section 2.5.3.6 - Table). The reverse is not true, since in some circumstances, it is more appropriate to use the CWE data type for user-defined tables. Maximum Length: 20."[19]

JCC – Job Code/Class

HL7 Component Table – JCC – Job Code/Class

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	20	IS	O	0327	Job Code	
2	20	IS	O	0328	Job Class	
3	250	TX	O		Job Description Text	

"Maximum Length: 292"[20]

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 field contains the message type, trigger event, and the message structure ID for the message. Maximum Length: 15."[21]

NA - Numeric Array

HL7 Component Table - NA – Numeric Array

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	16	NM	R		Value1	
2	16	NM	O		Value2	
3	16	NM	O		Value3	
4	16	NM	O		Value4	
…						

Definition: "This data type is used to represent a series (array) of numeric values. A field of this type may contain a one-dimensional array (vector or row) of numbers. Also, by allowing the field to repeat, a two-dimensional array (table) of numbers may be transmitted using this format, with each row of the table represented as one repetition of the field. Arrays that have one or more values not present may be transmitted using this data type. "Not present" values are represented as two adjacent component delimiters. If the absent values occur at the end of a row, the trailing component delimiters may be omitted. If an entire row of a table has no values, no component delimiters are necessary (in this case, there will be two adjacent repetition delimiters). Maximum Length: 65536.

Example 1: vector of 8 numbers

```
|125^34^-22^-234^569^442^-212^6|
```

Example 2: 3 x 3 array of numbers

```
|1.2^-3.5^5.2~2.0^3.1^-6.2~3.5^7.8^-1.3|
```

Example 3: 5 x 4 array of numbers with the values in positions (1,1), (2,2), (2,3), (3,3), (3,4), (4,1), (4,2), (4,3), and (4,4) not present

```
|^2^3^4~5^^^8~9^10~~17^18^19^20|"[22]
```

NM - Numeric

HL7 Component Table - NM – Numeric

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
	16				Numeric	

Definition: "A number represented as a series of ASCII numeric characters consisting of an optional leading sign (+ or -), the 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. Maximum Length: 16.

```
Examples:  |999|  or   |-123.792|
```

Leading zeros, or trailing zeros after a decimal point, are not significant. For example, the following two values with different representations, "01.20" and "1.2," are identical. Except for the optional leading sign (+ or -) and the optional decimal point (.), no non-numeric ASCII characters are allowed. Thus, the value <12 should be encoded as a structured numeric (SN) (preferred) or as a string (ST) (allowed, but not preferred) data type."[23]

PL – Person Location

HL7 Component Table - PL – Person Location

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	20	IS	O	0302	Point of Care	
2	20	IS	O	0303	Room	
3	20	IS	O	0304	Bed	
4	227	HD	O		Facility	
5	20	IS	O	0306	Location Status	
6	20	IS	C	0305	Person Location Type	
7	20	IS	O	0307	Building	
8	20	IS	O	0308	Floor	
9	199	ST	O		Location Description	
10	427	EI	O		Comprehensive Location Identifier	
11	227	HD	O		Assigning Authority for Location	

Definition: "This data type is used to specify a patient location within a healthcare institution. Which components are valued depends on the needs of the site. For example for a patient treated at home, only the person location type is valued. It is most commonly used for specifying patient locations, but may refer to other types of persons within a healthcare setting. Maximum Length: 1230"[24]

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 indicates whether to process a message as defined in HL7 Application (level 7) Processing rules. Maximum Length: 3."[25]

RPT – Repeat Pattern

HL7 Component Table - RPT – Repeat Pattern

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	705	CWE	R	0335	Repeat Pattern Code	
2	2	ID	O	0527	Calendar Alignment	
3	10	NM	O		Phase Range Begin Value	
4	10	NM	O		Phase Range End Value	
5	10	NM	O		Period Quantity	
6	10	IS	C		Period Units	
7	1	ID	O	0136	Institution Specified Time	
8	6	ID	O	0528	Event	
9	10	NM	O		Event Offset Quantity	
10	10	IS	C		Event Offset Units	
11	200	GTS	O		General Timing Specification	

Definition: "The repeat pattern data type should be used where it is necessary to define the frequency at which an event is to take place. This data type provides a way to define repeat pattern codes "on the fly". The repeat pattern code is equivalent to the TQ data type, component 2, sub-component 1 (repeat pattern). The additional components define the meaning of the repeat pattern code. Components 2 - 10 are used to define relatively simple repeat patterns. Component 11 is provided to define complex repeat patterns. This data type forms a bridge between the 2.x Repeat Pattern concept from Quantity/Timing, and the Version 3.0 GTS General Timing Specification. Component 1 is the 2.x concept of repeat pattern. Components 2-7 are derived from the version 3.0 data type PIVL. Components 8-10 are derived from the version 3.0 EIVL data type. If a repeat pattern cannot be defined using components 2-10, then component 11, General Timing Specification is provided. This allows the full literal form of the version 3.0 GTS to be specified.

When using the RPT, if an application doesn't recognize the code in component 1, then it may attempt to determine the appropriate frequency using the remaining components. If the application does recognize the

code in component 1, the application is not required to determine the frequency from the remaining components.

Maximum Length: 984."[26]

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 specifies an entity's street address and associated detail. Appears only in the XAD data type. Maximum Length: 184."[27]

SI - Sequence ID

HL7 Component Table - SI – Sequence ID

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

Definition: A non-negative integer in the form of a NM field. The uses of this data type are defined in the chapters defining the segments and messages in which it appears. Maximum Length: 4."[28]

SN - Structured Numeric

HL7 Component Table - SN – Structured Numeric

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	2	ST	O		Comparator	
2	15	NM	O		Num1	
3	1	ST	O		Separator/Suffix	
4	15	NM	O		Num2	

Definition: "The structured numeric data type is used to unambiguously express numeric clinical results along with qualifications. This enables receiving systems to store the components separately, and facilitates the use of numeric database queries. The corresponding sets of values indicated with the <comparator> and <separator/suffix> components are intended 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. Maximum Length: 36."[29]

ST - String Data

HL7 Component Table - ST – String Data

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

Definition: "String data is left justified with trailing blanks optional. Any displayable (printable) ACSII characters (hexadecimal values between 20 and 7E, inclusive, or ASCII decimal values between 32 and 126), except the defined escape characters and defined delimiter characters. Maximum Length: 199.

```
Example:

    |almost any data at all|
```

To include any HL7 delimiter character (except the segment terminator) within a string data field, use the appropriate HL7 escape sequence (see Section 2.7.1, "Formatting Codes").

Usage note: The ST data type is intended for short strings (e.g., less than 200 characters). For longer strings the TX or FT data types should be used.

Alternate character set note: ST - string data may also be used to express other character sets. See Section 2.15.9.18, "Character set," and Section 2.15.9.20, "Alternate character set handling" for details."[30]

TM - Time

HL7 Component Table - TM – Time

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
	16				Time	

Definition: "Specifies the hour of the day with optional minutes, seconds, fraction of second using a 24-hour clock notation and time zone. Maximum Length: 16

```
Format: HH[MM[SS[.S[S[S[S]]]]]][+/-ZZZZ]"[31]
```

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	Not supported

Definition: "Specifies a point in time. Maximum Length: 26

```
Format: YYYY[MM[DD[HH[MM[SS[.S[S[S[S]]]]]]]]][+/-ZZZZ]^<degree of
        precision>"[32]
```

TX - Text Data

HL7 Component Table - TX – Text Data

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS	SEC.REF.
					Text Data		

Definition: "String data meant for user display (on a terminal or printer). Such data would not necessarily be left justified since leading spaces may contribute greatly to the clarity of the presentation to the user. Because this type of data is intended for display, it may contain certain escape character sequences designed to control the display. Escape sequence formatting is defined in Section 2.7 "Use of escape sequences in text fields". Leading spaces should be included. Trailing spaces should be removed. Maximum Length: 65536.

```
Example:
|  leading spaces are allowed.|
```

Since TX data is intended for display purposes, the repeat delimiter, when used with a TX data field, implies a series of repeating lines to be displayed on a printer or terminal. Therefore, the repeat delimiters are regarded as paragraph terminators or hard carriage returns (e.g., they would display as though a CR/LF were inserted in the text (DOS type system) or as though a LF were inserted into the text (UNIX style system))."[33]

"A receiving system would word-wrap the text between repeat delimiters in order to fit it into an arbitrarily sized display window but start any line beginning with a repeat delimiter on a new line."[34]

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	

XAD - Extended Address

HL7 Component Table - XAD – Extended Address

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
1	184	SAD	O		Street Address	

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
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	Not supported
13	26	TS	O		Effective Date	
14	26	TS	O		Expiration Date	

Definition: "This data type specifies the address of a person, place or organization plus associated information. Maximum Length: 631.

```
Example of usage for US:  |1234 Easy St.^Ste. 123^San
Francisco^CA^95123^USA^B^^SF^|

This would be formatted for postal purposes as

          1234 Easy St.
          Ste. 123
          San Francisco CA 95123"[35]
```

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)	

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
6	20	ST	O		Prefix (e.g., DR)	
7	5	IS	B	0360	Degree (e.g., MD)	Not supported
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	Not supported
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: "This data type is used extensively appearing in the PV1, ORC, RXO, RXE, OBR and SCH segments, as well as others, where there is a need to specify the ID number and name of a person. Maximum Length: 3002.

Example without assigning authority and assigning facility:

```
|1234567^Smith^John^J^III^DR^PHD^ADT01^^L^4^M11^MR|
```

Examples with assigning authority and assigning facility:

Dr. Samuel Semmelweiss's provider ID was assigned by the Provider Master and was first issued at Fairview Hospital within the University Hospitals System. Since IS table values (first component of the HD) were not used for assigning authority and assigning facility, components 2 and 3 of the HD data type are populated and demoted to sub-components as follows:

```
12188^Semmelweiss^Samuel^S^IV^Dr^MD^^&Provider
   Master.University Hospitals&L^L^9^M10^DN^&Fairview
   Hospital.University Hospitals&L^A
```

Ludwig van Beethoven's medical record number was assigned by the Master Patient Index and was first issued at Fairview Hospital within the University Hospitals System.

10535^van Beethoven&van^Ludwig^A^III^Dr^PHD^^&MPI.University Hospitals&L^L^3^M10^MR^&Fairview Hospital.University Hospitals&L^A"[36]

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	Not supported
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	

Definition: "This data type is used in fields (e.g., PV2-23, NK1-13, PD1-3, OBR-44) to specify the name and ID number of an organization. Maximum Length: 567.

Example 1:

The ID for Fairview Hospital was assigned by the University Hospital enterprise's Hospital Master and was first issued at the Central Offices.

Fairview Hospital^L^716^9^M10^&Hospital Master.University Hositals&L^XX^&Central Offices.University Hospitals&L^A

Example 2:

Fairview Hospital has another ID that was issued by CMS. Assigning Authority, CMS, values only the first HD component, an IS data type and assigning facility is not relevant. This information might be transmitted accordingly:

Fairview Hospital^L^4544^3^M10^CMS^XX^^A"[37]

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)	Not supported
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	Not supported
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: "Maximum Length: 1103."[38]

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	Not supported
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	

SEQ	LEN	DT	OPT	TBL#	COMPONENT NAME	COMMENTS
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: "Maximum Length: 850.

Example: A fax number: ^ORN^FX^^^734^6777777"[39]

Communications

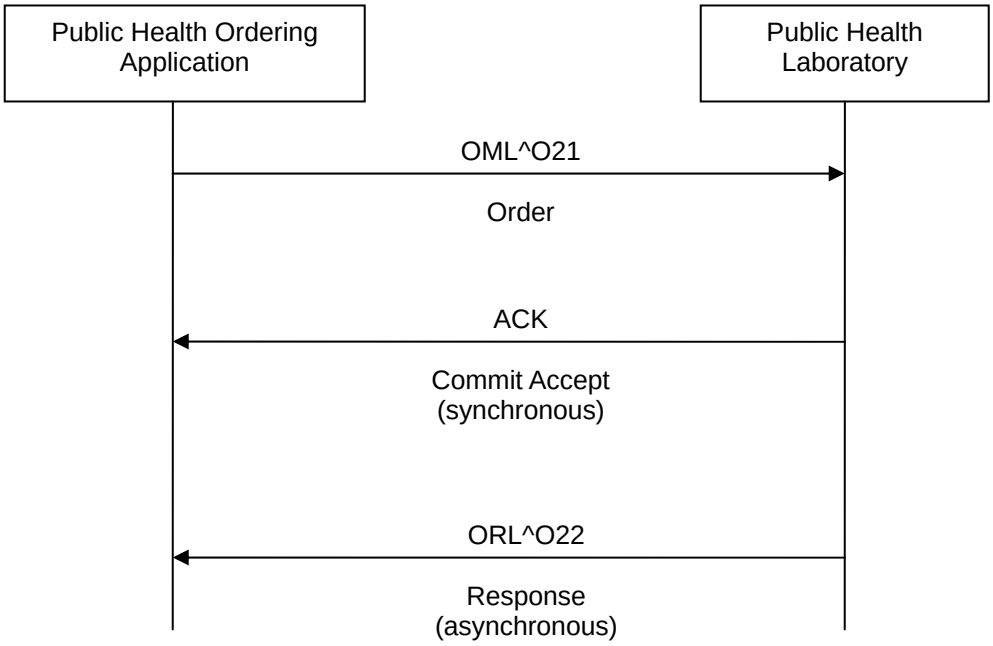
The use of Accept and Application Acknowledgment messages are not expected with the use of PHIN-MS as the transport system. Encryption and the mechanism for transmitting messages are described in the PHIN-MS ELR Guide that can be found on the PHIN Web site: www.cdc.gov/phin.

ORL - laboratory order message (event O22)

The ORL^O22 is the application acknowledgement for the OML^O21 message. This message is sent by laboratory receiving the OML message. The response message is used to communicate back to the order placer system whether or not the laboratory accepts the order at the application level. If the laboratory cannot fulfill the order for what ever reason, the ORL can be used to communicate why the order cannot be performed by the lab. The MSA segment is used to indicate whether or not the order can be fulfilled. The ERR segment is used to provide specific details regarding any errors the laboratory had while trying to process the order. The PID segment is present for identification purposes only. If the laboratory is accepting the order, then the ORC segment will contain the filler order number assigned to the order by the lab. The TQ1 segment normally reflects the values sent in the original order. The OBR segment carries information regarding what has been ordered. Additional information regarding how and when the Laboratory plans on fulfilling the order can be specified in the OBR segment. Additional details regarding the specimen and specimen container can be included in the SPM and SAC segments. Under normal circumstances, where the laboratory is accepting the order, and is only providing the filler order number as additional information, the response message may only contain the MSH, MSA, PID, and ORC segments.

Order Interaction

The following diagram illustrates where the ORL^O22 message fits into an order interaction. There are two applications involved here, a public health ordering application, and a public health laboratory. The public health ordering application originates an order. The public health laboratory synchronously responds with a commit accept message (a communication level response). At some point time latter, the public health laboratory sends the application acknowledgement (ORL^O22) message indication whether or not the order is accepted or rejected at the application level.



Note that this same interaction will apply if the laboratory needs to send the order on to a specialty or reference laboratory to perform testing. In this case, the public health laboratory takes on the role of a public health ordering application, and the reference laboratory takes on the role of the public health laboratory in the above interaction diagram.

If the application receiving the original OML^O21 order message is not a laboratory, and is just tracking the order, then the application does not respond with the ORL^O22 message. In this case, the communication level acknowledgment is all that is necessary.

Abstract Message Structure

ORL^O22	Laboratory Order Message	Segment Processing Rules	Chapter
	Header…begin		
MSH	Message Header		2.15.9
MSA	Message Acknowledgment	Required	2.15.8
[{ERR}]	Error	Optional and repeating	2.15.5
[{SFT}]	Software Segment	SFT is optional and may repeat	15.4.8
[{NTE}]	Notes and Comments for SFT	NTE is optional and may repeat *(use is discouraged)*	2.15.10
	Header…end		.
[	*Response … begin*		
[	*Patient…begin*	The Patient Section is optional.	.
PID	Patient Identification	If Patient Section used; PID segment is mandatory	3.4.2
{	*Order…begin*	The Order section may repeat.	.
ORC	Common Order	The ORC is required.	4.5.1
[{	*Timing…begin*	The Timing section is optional and may repeat	.
TQ1	Timing /Quantity	If Timing section is used; TQ1 segment is mandatory	4.5.4
}]	*Timing…end*		.
[	*Observation Request…begin*	The Observation Request section is optional	.
OBR	Observation Request	If Observation Request section is used; OBR segment is mandatory	7.4.1
[{	*Specimen…begin*	The Specimen section is optional and may repeat	.
SPM	Specimen…begin	If the Specimen section is used; the SPM segment is mandatory	7.4.3
[{SAC}]	Specimen…container	Optional and repeating	13.4.3
}]	*Specimen…end*		.
]	*Observation Request…end*		.
}	*Order…end*		
]	*Patient…end*		.
]	*Response … end*		

HL7 Standard Segment Usage

The following format is used in this document for listing and defining message segments and fields. First, the message segment's use is defined, and a segment attribute table listing all fields defined in the segment is shown. In the segment attribute table, the following attributes are given for each field: sequence number within the segment, length of field, data type, optionality, the applicable table number for values, and the field name.

Following the table, select fields are listed and defined. For each field, the HL7 segment code and reference number are listed, followed by the field name. Items in parentheses after the field name show respectively data type and length of field, whether the field is required or optional, and lists "repeating" if the field is allowed to repeat. The HL7 item number follows the parenthesis and is given for reference convenience. As part of the definitions, usage notes for laboratory-based ordering are provided, and a statement about how the fields are valued in the example is given. Users interested in learning more about fields not discussed here should refer to the full text of Version 2.5 of the HL7 standard.

The reader should take note of the following points, which discuss specifics of how the ORL is being used and constrained in this context:

The SPM carries specimen information and is newly defined for HL7 V2.5.

The SAC segment will be treated as optional and accommodate information pertaining to specimen containers.

In some cases, an order will be placed on specimens which have been previously tested, or which have been split off (aliquot) from a parent specimen at the same Lab or at another Lab. When this happens, and it is important to track information linking the tested specimen back to the original specimen source, information about the parent specimen and any previous testing or processing is captured in an OBR, SPM, and OBX group of segments that are linked to the current test information.

3. Message Segments

Segment Attribute Table Abbreviations

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

ABBREVIATION	DEFINITION
SEQ	The sequence of the elements as they are numbered in the segment.
LEN	The length of the element.
DT	The data type of the element.
OPT	Whether the field is required, optional, or conditional in a segment. Required fields are defined by HL7 2.5 and do not refer to PHIN requirements. Refer to section 2.1 HL7 Definitions for the designations.
RP/#	Indicates if element repeats. IF the number of repetitions is limited, the number of allowed repetitions is given.
TBL#	Specific HL7 table reference.
PHIN Code System / Value Set	Identifies the PHIN Coding system or value set that has been defined for the field.
Element Name	Descriptive name of element in the segment.

Note: Legend of Table
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.

MSH Attributes

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
1	1	ST	R				Field Separator	
2	4	ST	R				Encoding Characters	
3	227	HD	O		0361		Sending Application	
4	227	HD	R		0362		Sending Facility	
5	227	HD	O		0361		Receiving Application	
6	227	HD	R		0362		Receiving Facility	
7	26	TS	R				Date/Time Of Message	
8	40	ST	O				Security	Not Supported
9	15	MSG	R				Message Type	ORL^O22^ORL_O22

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
10	20	ST	R				Message Control ID	
11	3	PT	R				Processing ID	
12	60	VID	R				Version ID	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		Country Code	
18	16	ID	O	Y	0211		Character Set	Not Supported
19	250	CE	O				Principal Language Of Message	Not Supported
20	20	ID	O		0356		Alternate Character Set Handling Scheme	Not Supported
21	427	EI	O	Y			Message Profile Identifier	Version of specification to which this message conforms

```
Example segment of MSH:
MSH|^~\&|^2.16.840.1.114222.4.3.2.1..^ISO|^2.16.840.1.114222.4.1.^ISO
|^2.16.840.1.114222.4.3.2.3^ISO|^2.16.840.1.114222.4.1.1^ISO|20030527
1131||OUL^R22^OUL_R22|200305271131|P^T|2.5|||||||||1.4
```

MSH field definitions

MSH-1 Field separator (ST-1, Required) 00001

Definition: The character to be used as the field separator for the rest of the message.

The field separator always appears in the 4th character position of MSH segment and is used to separate adjacent data fields within a segment. The recommended value is |, ASCII (124), as shown in the examples.

MSH-2 Encoding characters (ST-4, Required) 00002

Definition: The four characters in the following order are designated in the Message Header to be used for the following purposes when they appear in the message:

Component separator	^	ASCII (94)
Repetition Separator	~	ASCII (126)
Escape character	\	ASCII (92)

Subcomponent separator	&	ASCII (38)

Note that the characters in MSH-2 appear between two field separators as:

```
|^~\&|
```

The component separator (^) separates adjacent components of a data field and the subcomponent separator (&) separates the adjacent subcomponents of a data field. An example of a compound element using components and subcomponents from PID-2, described below in another section of this document, would appear as:

```
|10543^^^^^Columbia Valley Memorial
Hospital&01D0355944&CLIA|
```

And not as:

```
|10543^^^^^Columbia Valley Memorial Hospital~01D0355944~CLIA|
```

The tilde (~) should not be used as a separator but rather should be used to identify when a repeating field or component occurs.

MSH-3 Sending application (HD-180, Optional) 00003

Definition: "This field uniquely identifies the sending application among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site-defined. *User-defined Table 0361- Application* is used as the user-defined table of values for the first component."[40]

```
Example of MSH-3:  |^2.16.840.1.114222.4.3.2.1..^ISO|
```

MSH-4 Sending facility (HD-227, Required) 00004

Definition: "This field uniquely identifies the receiving application among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site-defined User-defined Table 0361- Application is used as the HL7 identifier for the user-defined table of values for the first component."[41]

The originator of HL7 message will place the text name and address of the sending laboratory or reporting site, followed by the unique Clinical Laboratory Improvement Act (CLIA) identifier of the originating institution. Information about CLIA can be found at: http://www.phppo.cdc.gov/clia/default.asp on the World Wide Web. For laboratories that do not have a CLIA identifier an OID should be sent.

```
Example:  |^2.16.840.1.114222.4.1.^ISO|
Example:  |labcorp_KC_2.16.340.114222.1.317^ISO|
```

MSH-5 Receiving application (HD-227, Optional) 00005

Definition: "This field identifies the receiving application among multiple identical instances of the application running on behalf of different organizations. User-defined Table 0362 - Facility is used as the HL7 identifier for the user-defined table of values for the first component. Entirely site defined. By site agreement, implementers may continue to use User-defined Table 0300 – Namespace ID for the first component."[42]

This field may be blank.

```
For example:  |^2.16.840.1.114222.4.3.2.3^ISO|
```

MSH-6 Receiving facility (HD-227, Required) 00006

Definition: "This field identifies the receiving application among multiple identical instances of the application running on behalf of different organizations."[43] This may be used identify the receiving state health department systems.

```
For example:  |OH-DOH^2.16.840.1.114222.4.1.1^ISO|
```

MSH-7 Date/time of message (TS-26, Required) 00007

Definition: "This field contains the date/time that the sending system created the message. If the time zone is

specified, it will be used throughout the message as the default time zone."[44]

```
Time stamp (TS) data type must be in the format:
YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][ ]
```

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.

```
For example: 6:30 pm, February 17, 2001, would appear as:
|200102171830|
```

MSH-8 Security (ST-40, Optional) 00008

The PHIN Messaging Standard does not support the use of this field.

MSH-9 Message type (MSG-15, Required) 00009

Definition: "This field contains the message type, trigger event, and the message structure ID for the message."[45]

"The receiving system uses this field to recognize the data segments, and possibly, the application to which

to route this message."[46]

```
The unsolicited transmission of an observation message would
appear as: |OUL^R22|
```

MSH-10 Message control ID (ST-20, Required) 00010

Definition: "This field contains a number or other identifier that uniquely identifies the message. The

receiving system echoes this ID back to the sending system in the Message acknowledgment segment

(MSA)."[47]

For electronic laboratory reporting, it is recommend to use the date/time stamp followed by the sequence number as: `YYYYLLDDHHMMSS#### (# = counter number).`

```
Example: The date of this message is February 14, 2004, and the
sequence number is 0042: |200402140042|
```

Note: This field must be unique within a sending laboratory. The receiving system can use this number as well as a combination of other data elements (like sending facility, observation identifier, etc) to uniquely identify this result in their systems.

MSH-11 Processing ID (PT-3, Required) 00011

Definition: "This field is used to decide whether to process the message as defined in HL7 Application (level 7) Processing rules."[48] Field appears as P for production, T for training, or D for debugging.

```
In the example, the use is production |P|.  The second component
is not specified, indicating current processing as the default.
```

MSH-12 Version ID (VID-60, Required) 00012

Definition: "This field is matched by the receiving system to its own version to be sure the message will be interpreted correctly."[49]

MSH-13 Sequence number (NM-15, Optional) 00013

The PHIN Messaging Standard does not support the use of this field.

MSH-14 Continuation pointer (ST-180, Optional) 00014

The PHIN Messaging Standard does not support the use of this field..

MSH-15 Accept acknowledgment type (ID-2, Optional) 00015

The PHIN Messaging Standard does not support the use of this field.

MSH-16 Application acknowledgment type (ID-2, Optional) 00016

The PHIN Messaging Standard does not support the use of this field.

MSH-17 Country Code (ID - 3, Optional) 00017

Definition: "This field contains the country of origin for the message. It will be used primarily to specify default elements, such as currency denominations. The values to be used are those of ISO 3166. The ISO 3166 table has three separate forms of the country code: HL7 specifies that the 3-character (alphabetic) form be used for the country code."[50]

MSH-18 Character Set (ID - Optional) 00692

The PHIN Messaging Standard does not support the use of this field.

MSH-19 Principal Language of Message (CE - Optional) 00693

The PHIN Messaging Standard does not support the use of this field.

MSH-20 Alternate Character Set Handling Scheme (ID - Optional) 01317

The PHIN Messaging Standard does not support the use of this field.

MSH-21 Message Profile Identifier (EI - Optional) 01598

Definition: “Sites may use this field to assert adherence to, or reference, a message profile. Message profiles contain detailed explanations of grammar, syntax, and usage for a particular message or set of messages.”[51]

Repetition of this field allows more flexibility in creating and naming message profiles. Using repetition, this field can identify a set of message profiles that the message conforms to. For example, the first repetition could reference a vendor's message profile. The second could reference another compatible provider's profile or a later version of the first vendor profile.”[52]

“As of v2.5, the HL7 message profile identifiers might be used for conformance claims and/or publish/subscribe systems.”[53]

“Prior to v2.5, the field was called Conformance Statement ID. For backward compatibility, the Conformance Statement ID can be used here. Examples of the use of Conformance Statements appear in Chapter 5, ‘Query.’”[54]

```
Example: the version of the specification to which this message
conforms. |1.6|
```

MSA - Message Acknowledgment Segment

"The MSA segment contains information sent while acknowledging another message."[55]

MSA - Message Acknowledgment – Attributes

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
1	2	ID	R		0008		Acknowledgment Code	
2	20	ST	R				Message Control ID	
3	80	ST	B				Text Message	Not Supported
4	15	NM	O				Expected Sequence Number	
5			W				Delayed Acknowledgment Type	Not Supported
6	250	CE	B		0357		Error Condition	Not Supported

MSA field definitions

MSA-1 Acknowledgment Code (ID) 00018

Definition: "This field contains an acknowledgment code, see message processing rules. Refer to *HL7 Table 0008 - Acknowledgment code* for valid values."[56]

HL7 Table 0008 - Acknowledgment code

Value	Description
AA	Original mode: Application Accept - Enhanced mode: Application acknowledgment: Accept
AE	Original mode: Application Error - Enhanced mode: Application acknowledgment: Error
AR	Original mode: Application Reject - Enhanced mode: Application acknowledgment: Reject
CA	Enhanced mode: Accept acknowledgment: Commit Accept
CE	Enhanced mode: Accept acknowledgment: Commit Error
CR	Enhanced mode: Accept acknowledgment: Commit Reject

MSA-2 Message Control ID (ST) 00010

Definition: "This field contains the message control ID of the message sent by the sending system. It allows the sending system to associate this response with the message for which it is intended."[57]

MSA-3 Text Message (ST) 00020

The PHIN Messaging Standard does not make use of this field.

MSA-4 Expected Sequence Number (NM) 00021

Definition: "This optional numeric field is used in the sequence number protocol."[58]

MSA-5 Delayed Acknowledgment Type 00022

The PHIN Messaging Standard does not make use of this field.

MSA-6 Error Condition (CE) 00023

The PHIN Messaging Standard does not make use of this field.

ERR - Error Segment

"The ERR segment is used to add error comments to acknowledgment messages.

Use Cases:

Severity: A receiving application generates two messages, one an error, and the other a warning and sends each of them. The application displays them both, prefixing the messages appropriately with the severity.

Application Error Code: A receiving application generates an error that reports an application error code and returns this information in its response. This code in turn is used by helpdesk staff to pinpoint the exact cause of the error, or by the application to prompt an appropriate response from the user. (Ex. Deceased date must be greater than or equal to birth date).

Application Error Parameter: A receiving application encounters an error during processing of a transaction. In addition to an error code, the application provides an error parameter that gives greater detail as to the exact nature of the error. The receiving application looks up the message corresponding to the error code, substitutes in the parameter, and displays the resulting message to the user.

Diagnostic Information: While processing a transaction, a receiving application encounters an exception. When the exception is thrown, it provides a volume of detailed information relating to the error encountered. The receiving application captures the information and sends it in its response. The user reports the error to the help desk, and on request, faxes a copy of the diagnostic information to assist analyzing the problem.

User Message: A user executes an application function that generates a transaction that is sent to another application for further processing. During this processing, the receiving application encounters an error and, as part of the error handling routine, retrieves a User Message that it returns in its response. The originating application receives the error and displays it to the end user with the intent that the error condition can be resolved and the user can re-execute the function without error.

Inform Person Code: After submitting a dispense transaction, a response is returned to the user indicating that the patient may be abusing drugs. Given the sensitivity of this warning, the error is returned with an indicator stating that the patient should not be informed of the error with the implication that steps should be taken to rule out or confirm the warning.

Override Type: If a business rule states that a prescription on hold cannot be dispensed, an override type might be "Dispense Held Prescription" to allow the prescription to be dispensed in exception to the rule.

Override Reason Codes: A patient is given a prescription; however, before completing the prescription, the remaining pills are spoiled. The patient returns to their pharmacy and explains the situation to their pharmacist. The pharmacist decides to replace the spoiled drugs; however, when attempting to record the

event, a message is returned indicating that the dispense would exceed the maximum amount prescribed. The pharmacist overrides the rule and specifies an Override Reason Code indicating a replacement of lost product.

Help Desk Contact: Help desk contact information is stored in a database. When an application error is encountered, the database is queried and the most current help desk contact information is returned in the error message. This is displayed to the user by the receiving application.

Better Error Location Information: Receiving system detects an error with the 3rd repetition of the ROL.4 (Role Person - XCN).16 (Name Context _ CE).4(Alternate Identifier _ IS). The application identifies the specific repetition and component when raising the error, simplifying diagnosis of the problem.

Support for multiple Error Locations: Two fields are marked as conditional, with the condition that one of the two must be specified. The sending application leaves both blank. The receiving application detects the problem, and sends back a single error indicating that one of the fields must be filled in. The ERR segment identifies both positions within the message that relate to the error."

ERR – Error HL7 Attribute Table

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
1	493	ELD	B	Y			Error Code and Location	Not Supported
2	18	ERL	O	Y			Error Location	
3	705	CWE	R		0357		HL7 Error Code	
4	2	ID	R		0516		Severity	
5	705	CWE	O		0533		Application Error Code	
6	80	ST	O	Y/10			Application Error Parameter	
7	2048	TX	O				Diagnostic Information	
8	250	TX	O				User Message	
9	20	IS	O	Y	0517		Inform Person Indicator	
10	705	CWE	O		0518		Override Type	
11	705	CWE	O	Y	0519		Override Reason Code	
12	652	XTN	O	Y			Help Desk Contact Point	

ERR field definition

ERR-1 Error Code and Location (ELD) 00024

The PHIN Messaging Standard does not make use of this field.

ERR-2 Error Location (ERL) 01812

Definition: "Identifies the location in a message related to the identified error, warning or message. If multiple repetitions are present, the error results from the values in a combination of places."[59]

ERR-3 HL7 Error Code (CWE) 01813

Definition: "Identifies the HL7 (communications) error code. Refer to *HL7 Table 0357 – Message Error Condition Codes* for valid values."[60]

HL7 Table 0357 - Message error condition codes

Value	Description	Comment
0	Message accepted	Success. Optional, as the AA conveys success. Used for systems that must always return a status code.
100	Segment sequence error	Error: The message segments were not in the proper order, or required segments are missing.
101	Required field missing	Error: A required field is missing from a segment
102	Data type error	Error: The field contained data of the wrong data type, e.g. an NM field contained "FOO".
103	Table value not found	Error: A field of data type ID or IS was compared against the corresponding table, and no match was found.
200	Unsupported message type	Rejection: The Message Type is not supported.
201	Unsupported event code	Rejection: The Event Code is not supported.
202	Unsupported processing id	Rejection: The Processing ID is not supported.
203	Unsupported version id	Rejection: The Version ID is not supported.
204	Unknown key identifier	Rejection: The ID of the patient, order, etc., was not found. Used for transactions *other than* additions, e.g. transfer of a non-existent patient.
205	Duplicate key identifier	Rejection: The ID of the patient, order, etc., already exists. Used in response to addition transactions (Admit, New Order, etc.).
206	Application record locked	Rejection: The transaction could not be performed at the application storage level, e.g., database locked.
207	Application internal error	Rejection: A catchall for internal errors not explicitly covered by other codes.

ERR-4 Severity (ID) 01814

Definition: "Identifies the severity of an application error. Knowing if something is Error, Warning or Information is intrinsic to how an application handles the content. Refer to *HL7 Table 0516 - Error severity* for valid values. If ERR-3 has a value of "0", ERR-4 will have a value of "I".

Example: a Warning could be used to indicate that notes were present, but ignored because they could not be automatically processed, and therefore information could have been missed.

Example of Information: When submitting a claim, a payor might indicate remaining coverage under limit."[61]

HL7 Table 0516 – Error severity

Value	Description	Comment
W	Warning	Transaction successful, but there may issues
I	Information	Transaction was successful but includes information e.g., inform patient
E	Error	Transaction was unsuccessful

ERR-5 Application Error Code (CWE) 01815

Definition: "Application specific code identifying the specific error that occurred. Refer to *User-Defined Table 0533 – Application Error Code* for suggested values.

If the message associated with the code has parameters, it is recommended that the message be indicated in the format of the java .text.MessageFormat approach1. This style provides information on the parameter type to allow numbers, dates and times to be formatted appropriately for the language."[62]

ERR-6 Application Error Parameter (ST) 01816

Definition: "Additional information to be used, together with the Application Error Code, to understand a particular error condition/warning/etc. This field can repeat to allow for up to 10 parameters.

```
Example: If the application error code specified in ERR.5
corresponded with the English message 'The patient has a remaining
deductable of {0, number, currency} for the period ending {1,
date, medium}.', and the first two repetitions of ERR.6 were "250"
and "20021231", then a receiving application in the U.S. would
display the message as 'The patient has a remaining deductable of
$250.00 for the period ending Dec 31, 2002.'"[63]
```

ERR-7 Diagnostic Information (TX) 01817

Definition: "Information that may be used by help desk or other support personnel to diagnose a problem."[64]

ERR-8 User Message (TX) 01818

Definition: "The text message to be displayed to the application user.

```
Example:  |This program is having trouble communicating with
another system. Please contact the help desk.|

This differs from the actual error code and may provide more
diagnostic information."[65]
```

ERR-9 Inform Person Indicator (IS) 01819

Definition: "A code to indicate who (if anyone) should be informed of the error. This field may also be used to indicate that a particular person should NOT be informed of the error (e.g. Do not inform patient). Refer to *User-defined table 0517- Inform Person Code* for suggested values."[66]

---

1 Details on MessageFormat can be found at *http://java.sun.com/products/jdk/1.2/docs/api/java/text/MessageFormat.html*.

User-defined Table 0517 – Inform person code

Value	Description	Comment
PAT	Inform patient	
NPAT	Do NOT inform patient	
USR	Inform User	
HD	Inform help desk	

ERR-10 Override Type (CWE) 01820

Definition: "Identifies what type of override can be used to override the specific error identified. Refer to *User-defined table 0518 Override Type* for suggested values."[67]

User-defined Table 0518 – Override type

Value	Description	Comment
EXTN	Extension Override	Identifies an override where a service is being performed for longer than the ordered period of time.
INLV	Interval Override	Identifies an override where a repetition of service is being performed sooner than the ordered frequency.
EQV	Equivalence Override	Identifies an override where a service is being performed against an order that the system does not recognize as equivalent to the ordered service.

ERR-11 Override Reason Code (CWE) 01821

Definition: "Provides a list of potential override codes that can be used to override enforcement of the application rule that generated the error. Refer to *User-defined table 0519 – Override Reason* for suggested values."[68]

ERR-12 Help Desk Contact Point (XTN) 01822

Definition: "Lists phone, e-mail, fax, and other relevant numbers for helpdesk support related to the specified error."[69]

SFT – Software segment

"This segment provides additional information about the software product(s) used as a Sending Application. The primary purpose of this segment is for diagnostic use. There may be additional uses per site-specific agreements."[70]

"For example, if software product A has versions 9 and 10 deployed in different Enterprise locations, the fact that they use different message types, segments, or fields should be reflected via their message profiles. If there is an upgrade from version 10 to 10.1, this would be reflected in the SFT segment, but

changes to the message contents should be reflected via a new/different conformance profile.

Use Case: An external application has been customized to communicate with a centralized patient drug history system. However, due to certain, known characteristics of the external software package, the centralized system must modify its behavior in order to process transactions correctly. In one example, the external application may have multiple versions in production. As such, the centralized application will need to know the name of the Software Vendor Organization, the Software Release Number, the Software Product Name, and the Software Binary ID so that it can correctly identify the software submitting the transaction and modify its behavior appropriately.

While preparing a transaction for submission to a centralized system the sending application specifies its Software Install Date and its configuration settings (Software Product Information). While processing the transaction, the centralized system encounters an error. Upon examination of the error, install date and configuration of the software that sent the message, helpdesk staff are able to determine the sending application has not been updated to reflect recent application changes.

Use Case: In circumstances where a message is manipulated or modified by multiple systems, a repetition of this segment may be appended by each system.

```
Example from Abstract Message:
      MSH
      [{ SFT }]"[71]
```

SFT – Software Segment Attributes

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
1	567	XON	R				Software Vendor Organization	
2	15	ST	R				Software Certified Version or Release Number	
3	20	ST	R				Software Product Name	
4	20	ST	R				Software Binary ID	
5	1024	TX	O				Software Product Information	
6	26	TS	O				Software Install Date	

SFT field definitions

The SFT segment is optional and may repeat. In general, the SFT segment is used when debugging issues. The information provided in the SFT segment can be used to identify specific software involved in a particular communication setting. Information in this segment generally does not get stored separate from the message by the receiving application.

SFT-1 Software Vendor Organization (XON - Required) 01834

Definition: "Organization identification information for the software vendor that created this transaction. The purpose of this field, along with the remaining fields in this segment, is to provide a more complete picture of applications that are sending HL7 messages. The Software Vendor Organization field would allow the identification of the vendor who is responsible for maintaining the application."[72]

SFT-2 Software Certified Version or Release Number (ST - Required) 01835

Definition: “Latest software version number of the sending system that has been compliance tested and accepted. Software Certified Version or Release Number helps to provide a complete picture of the application that is sending/receiving HL7 messages. Versions are important in identifying a specific ‘release’ of an application. In some situations, the receiving application validates the Software Certified Version or Release Number against a list of "certified" versions/releases of the particular software to determine if the sending application adheres to specific business rules required by the receiving application.

Alternatively, the software may perform different processing depending on the version of the sending software.”[73]

SFT-3 Software Product Name (ST - Required) 01836

Definition: “The name of the software product that submitted the transaction. A key component in the identification of an application is its Software Product Name. This is a key piece of information in identifying an application.”[74]

SFT-4 Software Binary ID (ST - Required) 01837

Definition: “Issued by a vendor for each unique software version instance to distinguish between like versions of the same software e.g., a checksum.

Software Binary Ids are issued for each unique software version instance. As such, this information helps to differentiate between differing versions of the same software. Identical Primary IDs indicate that the software is identical at the binary level (configuration settings may differ).”[75]

SFT-5 Software Product Information (TX – Optional) 01838

Definition: “Software identification information that can be supplied by a software vendor with their transaction. This field would contain any additional information an application provides with the transaction it has submitted. This information could be used for diagnostic purposes and provides greater flexibility in identifying a piece of software. Possibilities include setup or configuration parameter information. This field should not be sent unless performing diagnostics.”[76]

SFT-6 Software Install Date (TS - Optional) 01839

Definition: “Date the submitting software was installed at the sending site.

A Software Install Date on its own can often provide key information about the behavior of the application, and is necessary to provide a complete picture of the sending application.”[77]

NTE – Notes and Comments Segment

The NTE segment is a common format for sending notes and comments. For some laboratory results messages, notes are used to transmit notes and comments entered with an observation result. Refer to *user-defined table 0364-Comment Type* for suggested values.

In the message construct, the NTE segment is tied to the OBX segment directly above it. This is a standard segment. All NTE segments found in the different message sections are exactly coded in this manner.

NTE – Notes and Comments Attribute Table

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
1	4	SI	O				Set ID - NTE	
2	8	ID	O		0105		Source of Comment	
3	64k	FT	O	Y			Comment	
4	60	CE	O				Comment Type	

NTE Field Attributes

NTE-1 Set ID - NTE (SI)

Definition: "This field is used where multiple NTE segments are included in a message."[78]

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.

```
For example:        |1|
```

NTE-2 Source of Comment (ID)

Definition: "This field is used when source of comments must be identified. It is an optional field. Refer to the HL7 Standard and table 0105 – Source of Comment."[79]

```
For example:      |L| (typical for results reporting)
```

NTE-3 Comment (FT)

Definition: "This field contains the comment contained in the segment."[80]

NTE-4 Comment Type (CE)

Definition: "This field is contains a value to identify the type of comment text being sent in the specific comment record. Refer to the HL7 Standard and table 0364 – Comment Type for values."[81]

This field is optional and may be left blank.

```
For example – the following would represent a remark: |RE|
```

PID - Patient Identification Segment

"The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

The assigning authority, the fourth component of the patient identifiers, is a HD data type that is uniquely associated with the assigning authority that originally assigned the number. A given institution, or group of intercommunicating institutions, should establish a list of assigning authorities that may be potential assignors of patient identification (and other important identification) numbers. The list will be one of the institution's master dictionary lists. Since third parties (other than the assignors of patient identification numbers) may send or receive HL7 messages containing patient identification numbers, the assigning authority in the patient identification numbers may not be the same as the sending and receiving systems identified in the MSH. The assigning authority must be unique across applications at a given site. This field is required in HL7 implementations that have more than a single Patient Administration application assigning such numbers. The assigning authority and identifier type codes are strongly recommended for all CX data types."[82]

Note: The PID segment is required in the ORL^O22 message. This message is a response message for the OML^O21, which may be used for orders which do not contain the PID segment. In situations where An order has been placed which does not contain PID information, this response message will still contain a PID segment. However, required fields in the PID will be populated with null's (paired double quotes). Optional fields will be left empty (i.e., ||). Basically this means PID-3 and PID-5 will contain paired double quotes, and the rest of the segment will be empty.

```
Example: PID|||""||""
```

PID Attributes

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
1	4	SI	C				Set ID - PID	Required for living subjects (human and animal)
2	20	CX	B				Patient ID	Deprecated – Do Not Use
3	250	CX	R	Y		PHVS_EI_TYPE	Patient Identifier List	
4	20	CX	B	Y			Alternate Patient ID - PID	Not Supported
5	250	XPN	R	Y			Patient Name	Multiple sub-components
6	250	XPN	O	Y			Mother's Maiden Name	Not Supported
7	26	TS	O				Date/Time of Birth	
8	1	IS	O		0001	PHVS_SEX	Administrative Sex	
9	250	XPN	B	Y			Patient Alias	Not Supported
10	250	CE	O	Y	0005	PH_P_RACE_CAT	Race	
11	250	XAD	O	Y			Patient Address	
12	4	IS	B		0289		County Code	Not Supported
13	250	XTN	O	Y			Phone Number - Home	
14	250	XTN	O	Y			Phone Number - Business	

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
15	250	CE	O		0296		Primary Language	Not Supported
16	250	CE	O		0002		Marital Status	
17	250	CE	O		0006		Religion	Not Supported
18	250	CX	O				Patient Account Number	Not Supported
19	16	ST	B				SSN Number - Patient	Not Supported
20	25	DLN	B				Driver's License Number - Patient	Not Supported
21	250	CX	O	Y		PHVS_EI_TYPE	Mother's Identifier	
22	250	CE	O	Y	0189	PHVS_P_ETHN_GRP	Ethnic Group	
23	250	ST	O				Birth Place	
24	1	ID	O		0136		Multiple Birth Indicator	
25	2	NM	O				Birth Order	
26	250	CE	O	Y	0171	PHVS_COUNTRY_NM	Citizenship	
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	
30	1	ID	O		0136		Patient Death Indicator	
31	1	ID	O		0136		Identity Unknown Indicator	
32	20	IS	O	Y	0445	HL70445	Identity Reliability Code	
33	26	TS	O				Last Update Date/Time	Not Supported
34	241	HD	O				Last Update Facility	Not Supported
35	250	CE	C		0446	PH_SPECIES	Species Code	
36	250	CE	C		0447		Breed Code	
37	80	ST	O				Strain	
38	250	CE	O	2	0429		Production Class Code	
39	250	CWE	O	Y	0171		Tribal Citizenship	

PID field definitions

Usage notes: The PID segment will be left optional for electronic laboratory reporting purposes.

PID-1 Set ID - PID (SI) Conditional 00104

Definition: "This field contains the number that identifies this transaction. For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc."[83] The field is required for living subjects (human and animal).

Example: |1|.

PID-2 Patient ID (CX) 00105

The PHIN Messaging Standard does not make use of this field.

PID-3 Patient Identifier List (CX) 00106

Definition: "This field contains the list of identifiers (one or more) used by the healthcare facility to uniquely identify a patient (e.g., medical record number, billing number, birth registry, national unique individual identifier, etc.). In Canada, the Canadian Provincial Healthcare Number should be sent in

this field. The arbitrary term of "internal ID" has been removed from the name of this field for clarity."[84]

Usage Note: If an OID is not used in PID-3.4 you may need to complete PID-3.6, PID-3.9, and PID-3.10. Usage examples will be supplied at a later date.

PID-4 Alternate Patient ID - PID (CX) 00107

The PHIN Messaging Standard does not make use of this field.

PID-5 Patient Name (XPN) 00108

Definition: "This field contains the name(s) of the patient, the primary or legal name of the patient is reported first. Therefore, the name type code in this field should be "L - Legal". Refer to the HL7 Standard and Table 0200 - Name Type for valid values. Repetition of this field is allowed for representing the same name in different character sets. Note that "last name prefix" is synonymous to "own family name prefix" of previous versions of HL7, as is "second and further given names or initials thereof" to "middle initial or name". Multiple given names and/or initials are separated by spaces."[85]

Usage Note: For PID-5.7: Always "L" for Legal. For animals if a Name Type of "R" is used, use "Name Context" (PID-5.9) to identify the authority with which the animal's name is registered.

PID-6 Mother's Maiden Name (XPN) 00109

The PHIN Messaging Standard does not make use of this field.

PID-7 Date/Time of Birth (TS) 00110

Definition: "This field contains the patient's date and time of birth."[86]

PID-8 Administrative Sex (IS) 00111

Definition: "This field contains the patient's sex. Refer to the HL7 Standard and user-defined table 0001 – Administrative Sex for suggested values."[87]

PID-9 Patient Alias (XPN) 00112

This field has been deprecated – Do Not Use.

PID-10 Race (CE) 00113

Definition: "This field refers to the patient's race. Refer to the HL7 Standard and user-defined table 0005 - Race for suggested values. The second triplet of the CE data type for race (alternate identifier, alternate text, and name of alternate coding system) is reserved for governmentally assigned codes."[88]

PID-11 Patient Address (XAD) 00114

Definition: "This field contains the mailing address of the patient. Address type codes are defined by the HL7 Standard and table 0190 – Address Type. Multiple addresses for the same person may be sent in the following sequence: The primary mailing address must be sent first in the sequence (for backward compatibility); if the mailing address is not sent, then a repeat delimiter must be sent in the first sequence.""[89]

PID-12 County Code (IS) 00115

This field has been deprecated – Do Not Use.

PID-13 Phone Number - Home (XTN) 00116

Definition: "This field contains the patient's personal phone numbers. All personal phone numbers for the patient are sent in the following sequence. The first sequence is considered the primary number (for backward compatibility). If the primary number is not sent, then a repeat delimiter is sent in the first sequence. Refer to the HL7 Standard and table 0201 – Telecommunication Use Code and table 0202 – Telecommunication Equipment Type for valid values."[90]

Usage Notes: PID-13.1 Telephone Number (ST) – this format is not supported by PHIN. Use is discouraged.

PID-14 Phone Number - Business (XTN) 00117

Definition: "This field contains the patient's business telephone numbers. All business numbers for the patient are sent in the following sequence. The first sequence is considered the patient's primary business phone number (for backward compatibility). If the primary business phone number is not sent, then a repeat delimiter must be sent in the first sequence. Refer to the HL7 Standard and table 0201 – Telecommunication Use Code and the HL7 Standard and table 0202 – Telecommunication Equipment Type for valid values. "[91]

PID-15 Primary Language (CE) 00118

The PHIN Messaging Standard does not make use of this field.

PID-16 Marital Status (CE) 00119

Definition: "This field contains the patient's marital (civil) status. Refer to user-defined table 0002 – Marital Status for suggested values."[92]

PID-17 Religion (CE) 00120

The PHIN Messaging Standard does not make use of this field.

PID-18 Patient Account Number (CX) 00121

The PHIN Messaging Standard does not make use of this field.

PID-19 SSN Number - Patient (ST) 00122

The PHIN Messaging Standard does not make use of this field.

PID-20 Driver's License Number - Patient (DLN) 00123

The PHIN Messaging Standard does not make use of this field.

PID-21 Mother's Identifier (CX) 00124

Definition: "This field is used, for example, as a link field for newborns. Typically a patient ID or account number may be used. This field can contain multiple identifiers for the same mother. Refer to the HL7 Standard and table 0061 – Check Digit Scheme for valid values. "[93] See PID-3 Patient Identifier List for the CX data type field format.

PID-22 Ethnic Group (CE) 00125

Definition: "This field further defines the patient's ancestry. Refer to user-defined table 0189 – Ethnic Group for suggested values. The second triplet of the CE data type for ethnic group (alternate identifier, alternate text, and name of alternate coding system) is reserved for governmentally assigned codes. In the US, a current use is to report ethnicity in line with US federal standards for Hispanic origin."[94]

PID-23 Birth Place (ST) 00126

Definition: "This field indicates the location of the patient's birth, for example 'St. Francis Community Hospital of Lower South Side'. The actual address is reported in PID-11 with an identifier of 'N'."[95]

PID-24 Multiple Birth Indicator (ID) 00127

Definition: "This field indicates whether the patient was part of a multiple birth. Refer to the HL7 Standard and table 0136 – Yes/No Indicator for valid values."[96]

PID-25 Birth Order (NM) 00128

Definition: "When a patient was part of a multiple birth, a value (number) indicating the patient's birth order is entered in this field."[97]

PID-26 Citizenship (CE) 00129

Definition: "This field contains the information related to a person's country citizenship. For country citizenship HL7 recommends using ISO table 3166. For a local definition, user-defined table 0171 - Citizenship should be used."[98]

PID-27 Veterans Military Status (CE) 00130

The PHIN Messaging Standard does not make use of this field.

PID-28 Nationality (CE) 00739

The PHIN Messaging Standard does not make use of this field.

PID-29 Patient Death Date and Time (TS) 00740

Definition: "This field contains the date and time at which the patient death occurred."[99]

PID-30 Patient Death Indicator (ID) 00741

Definition: "This field indicates whether the patient is deceased. Refer to the HL7 Standard and table 0136 – Yes/No Indicator for valid values."[100]

PID-31 Identity Unknown Indicator (ID) 01535

Definition: "This field indicates whether or not the patient's/person's identity is known. Refer to the HL7 Standard and table 0136 – Yes/No Indicator for valid values."[101]

PID-32 Identity Reliability Code (IS) 01536

Definition: "This field contains a coded value used to communicate information regarding the reliability of patient/person identifying data transmitted via a transaction. Values could indicate that certain fields on a PID segment for a given patient/person are known to be false (e.g., use of default or system-generated values for Date of Birth or Social Security Number. Refer to user-defined table 0445 – Identity Reliability Code for suggested values."[102]

PID-33 Last Update Date/Time (TS) 01537

The PHIN Messaging Standard does not make use of this field.

PID-34 Last Update Facility (HD) 01538

The PHIN Messaging Standard does not make use of this field.

PID-35 Species Code (CE) 01539

Definition: "The species of living organism. This may include the common or scientific name,

based on the coding system(s) used. SNOMED is the recommended coding system. If this field is not valued, a human is assumed. Refer to user-defined table 0446 – Species Code for suggested values.

Conditionality Rule: This field must be valued if *PID-36 - Breed Code* or *PID-38 - Production Class Code* is valued.

```
For example:
          ...|L-80700^Canine, NOS^SNM3|...
          ...|L-80100^Bovine^SNM3|...
          ...|L-80A00^Feline^SNM3|..."[103]
```

PID-36 Breed Code (CE) 01540

Definition: "The specific breed of animal. This field, unlike Species and Strain is specific to animals and cannot be generally used for all living organisms. SNOMED is the recommended coding system. Refer to user-defined table 0447 – Breed Code for suggested values.

Conditionality Rule: This field must be valued if *PID-37 - Strain* is valued.

```
For example, (showing primary and alternative coding systems,
using locally defined "American Kennel Club" nomenclature):
    ...|L-80733^ Staffordshire bull terrier^SNM3^^American
   Staffordshire Terrier^99AKC|...
    ...|L-80900^Weimaraner^SNM3|...
    ...|L-80439^Peruvian Paso Horse^SNM3|..."[104]
```

PID-37 Strain (ST) 01541

Definition: "This field contains the specific strain of animal. It can also be expanded to include strain of any living organism and is not restricted to animals.

```
Example:
    ...|DeKalb|...
    ...|Balb/c|...
    ...|DXL|..."[105]
```

PID-38 Production Class Code (CE) 01542

Definition: "This field contains the code and/or text indicating the primary use for which the living subject was bred or grown. Refer to user-defined table 0429 – Production Class Code for suggested values.

```
For example:
    ...|DA^Dairy^L|...
    ...|MT^Meat^L|...
    ...|RA^Racing^L|..."[106]
```

PID-39 Tribal Citizenship (CWE) 01840

Definition: "This field contains the information related to a person's tribal citizenship. For tribal citizenship, in the United States, HL7 recommends using the Bureau of Indian Affairs (BIA) Tribal Identity List. For a local definition, user-defined table 0171 - Citizenship should be used.

This field repeats since persons can have tribal membership(s) and can be members of more than one tribe. The Name of Coding System component(s) of the CWE datatype should be used to identify the table from which tribal membership is drawn."[107]

ORC - Common Order Segment

"The Common Order segment (ORC) is used to transmit fields that are common to all orders (all types of services that are requested). The ORC segment is required in the Order (ORM) message. ORC is mandatory in Order Acknowledgment (ORR) messages if an order detail segment is present, but is not required otherwise."[108]

"Observations can be transmitted in an ORU message without using an ORC. There are times when it is necessary to transmit information not included in the OBR segments of the ORU message. In this case, it is recommended that the ORC be included in the ORU message."[109]

The Order Status and Order Effective Date/Time elements may be used in place of OBR 22 and 25 when reporting complete and final orders. The ORC will also be used for reporting Ordering Facility and Provider information when available.

ORC – Common Order Attribute Table

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
1	2	ID	R		0119	HL70119	Order Control	
2	22	EI	C				Placer Order Number	
3	22	EI	C				Filler Order Number	
4	22	EI	O				Placer Group Number	
5	2	ID	O		0038		Order Status	
6	1	ID	O		0121		Response Flag	
7	200	TQ	B	Y			Quantity/Timing	Not supported
8	200	EIP	O				Parent	
9	26	TS	O				Date/Time of Transaction	
10	250	XCN	O	Y			Entered By	
11	250	XCN	O	Y			Verified By	
12	250	XCN	O	Y			Ordering Provider	
13	80	PL	O				Enterer's Location	
14	250	XTN	O	Y/2			Call Back Phone Number	
15	26	TS	O				Order Effective Date/Time	
16	250	CE	O				Order Control Code Reason	
17	250	CE	O				Entering Organization	
18	250	CE	O				Entering Device	
19	250	XCN	O	Y			Action By	
20	250	CE	O		0339		Advanced Beneficiary Notice Code	Not supported
21	250	XON	O	Y			Ordering Facility Name	
22	250	XAD	O	Y			Ordering Facility Address	
23	250	XTN	O	Y			Ordering Facility Phone Number	

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
24	250	XAD	O	Y			Ordering Provider Address	
25	250	CWE	O				Order Status Modifier	
26	60	CWE	C		0552		Advanced Beneficiary Notice Override Reason	Not supported
27	26	TS	O				Filler's Expected Availability Date/Time	
28	250	CWE	O		0177		Confidentiality Code	
29	250	CWE	O		0482		Order Type	
30	250	CNE	O		0483		Enterer Authorization Mode	

ORC Field Definitions

ORC-1 Order Control (ID) 00215

Definition: "Determines the function of the order segment. Refer to the HL7 Standard and table 0119 – Order Control Codes and Their Meaning for valid entries. Depending on the message, the action of the control code may refer to an order or an individual service."[110]

Usage of the various order control codes will be determined by program specific supplements to this guide.

ORC-2 Placer Order Number (EI) 00216

Definition: "This field is the placer application's order number."[111]

Note: This must be the same identifier as that reported in OBR-2 (Placer Order Number).

ORC-3 Filler Order Number (EI) 00217

Definition: "This field is the order number associated with the filling application. It is a case of the Entity Identifier data type (Section 2.A.28). Its first component is a string that identifies an order detail segment (e.g., OBR). A limit of fifteen (15) characters is suggested but not required. An implementation is HL7 compliant when the number of characters for this field is increased to accommodate applications that require a greater number of characters for the Filler order number. It is assigned by the order filler (receiving) application. This string must uniquely identify the order (as specified in the order detail segment) from other orders in a particular filling application (e.g., clinical laboratory). This uniqueness must persist over time."[112]

Note: This must be the same identifier as that reported in OBR-3 (Filler Order Number).

ORC-4 Placer Group Number (EI) 00218

Definition: "This field allows an order placing application to group sets of orders together and subsequently identify them. It is a case of an Entity Identifier data type (2.A.28).

The first component is a string that uniquely identifies all order groups from the given placer application. A limit of fifteen (15) characters is suggested but not required. It is assigned by the

placer application and may come from the same series as the placer order number of the ORC, but this is not required.

The second through fourth components constitute a placer application ID identical to the analogous components of *ORC-2-placer order number*. Order groups and how to use them are described in detail in Section ***Error! Reference source not found.***,'ORC Common Order Segment.'"[113]

ORC-5 Order Status (ID) 00219

Definition: "This field specifies the status of an order. Refer to HL7 Table 0038 - Order status for valid entries. The purpose of this field is to report the status of an order either upon request (solicited), or when the status changes (unsolicited). It does not initiate action. It is assumed that the order status always reflects the status as it is known to the sending application at the time that the message is sent. Only the filler can originate the value of this field."[114]

ORC-6 Response Flag (ID) 00220

Definition: "This field allows the placer (sending) application to determine the amount of information to be returned from the filler. Sometimes the requested level of response may not be possible immediately, but when it is possible, the filler (receiving) application must send the information. Refer to HL7 Table 0121 - Response flag for valid entries."[115]

The default value for this field for PHIN messaging is "F", which means that exceptions should be reported, as well as replacements, parent/child, associated segments. Also confirmations should be sent explicitly. This basically means PHIN expects full application level acknowledgements for orders.

ORC-7 Quantity/Timing (TQ) 00221

The PHIN Messaging Standard does not make use of this field.

ORC-8 Parent (EIP) 00222

Definition: "This field relates a child to its parent when a parent child relationship exists. The parent child mechanism is described under ORC-1-order control notes.

The first component has the same format as ORC-2-placer order number (Section 4.5.1.2, "Placer Order Number (EI) 00216)." The second component has the same format as ORC-3-filler order number (Section 4.5.1.3, "Filler Order Number (EI) 00217)". The components of the placer order number and the filler order number are transmitted in sub components of the two components of this field.

ORC-8-parent is the same as OBR-29-parent. If the parent is not present in the ORC, it must be present in the associated OBR. (This rule is the same for other identical fields in the ORC and OBR and promotes upward and ASTM compatibility.) This is particularly important when results are transmitted in an ORU message. In this case, the ORC is not required and the identifying filler order number must be present in the OBR segments."[116]

ORC-9 Date/Time of Transaction (TS) 00223

Definition: "This field contains the date and time of the event that initiated the current transaction as reflected in ORC-1 Order Control Code. This field is not equivalent to MSH-7 Date and Time of Message which reflects the date/time of the physical message."[117]

ORC-10 Entered By (XCN) 00224

Definition: "This field contains the identity of the person who actually keyed the request into the application. Note that this refers to the current transaction as reflected in ORC-1 Order Control Code. It provides an audit trail in case the request is entered incorrectly and the ancillary department needs to clarify the request. By local agreement, either the ID number or name component may be omitted."[118]

ORC-11 Verified By (XCN) 00225

Definition: "This field contains the identity of the person who verified the accuracy of the entered request. Note that this refers to the current transaction as reflected in ORC-1 Order Control Code. It is used in cases where the request is entered by a technician and needs to be verified by a higher authority (e.g., a nurse). By local agreement, either the ID number or name component may be omitted."[119]

ORC-12 Ordering Provider (XCN) 00226

Definition: "This field contains the identity of the person who is responsible for creating the request (i.e., ordering physician).

ORC-12-ordering provider is the same as *OBR-16-ordering provider*. If the ordering provider is not present in the ORC, it must be present in the associated OBR. (This rule is the same for other identical fields in the ORC and OBR and promotes upward and ASTM compatibility.)"[120]

ORC-13 Enterer's Location (PL) 00227

Definition: "This field specifies the location (e.g., nurse station, ancillary service location, clinic, floor) where the person who entered the request was physically located when the order was entered. Note that this refers to the current transaction as reflected in ORC-1 Order Control Code. Only those subcomponents relevant to enterer's location should be valued (commonly nursing unit; facility; building; floor). The person who entered the request is defined in ORC-10-entered by."[121]

ORC-14 Call Back Phone Number (XTN) 00228

Definition: "This field contains the telephone number to call for clarification of a request or other information regarding the order. *ORC-14-call back phone number* is the same as *OBR-17-order callback phone number*."[122]

ORC-15 Order Effective Date/Time (TS) 00229

Definition: "This field contains the date/time that the changes to the request took effect or are supposed to take effect.

If ORC-9-date/time of transaction is after or equal to ORC-15-order effective date/time, the data values in the ORC and its subordinate segments took effect on the order effective date/time.

If ORC-9-date/time of transaction is before the time specified in ORC-15-order effective date/time, the data values in ORC and its subordinate segments are planned to take effect on the order effective date/time.

If ORC-15-order effective date/time is left blank, its value is assumed to be equal to that specified in ORC-9-date/time of transaction or MSH-7-date/time of message if the transaction date/time is blank.

In the case where the time specified in ORC-15-order effective date/time (for the order control code event in the same ORC segment) is different from the corresponding date/time in ORC-7-quantity/timing, the time specified in ORC-15-order effective date/time takes precedence. Thus if the ORC event is a discontinue request to the filler for a continuing order, and the order-effective date/time is prior to the end date/time of ORC-7-quantity/timing, the order effective date/time should take precedence. If the order identified in the ORC has children, the children which have not started should be canceled; if there is a child in process, it should be discontinued; if a child has progressed beyond the point where it can be discontinued, its status is unaffected."[123]

ORC-16 Order Control Code Reason (CE) 00230

Definition: "This field contains the explanation (either in coded or text form) of the reason for the order event described by the order control code (HL7 Table 0119). Whereas an NTE after the order-specific segment (e.g., RXO, ORO, OBR) would provide a comment for that specific segment, the purpose of the order control code reason is only to expand on the reason for the order event.

ORC-16-order control code reason is typically not valued when ORC-1-order control is NW, although it could be. In the case of a canceled order, for example, this field is commonly used to explain the cancellation. A Pharmacy system that canceled a drug order from a physician because of a well documented allergy would likely report the fact of the allergy in this field.

If it canceled the order because of a drug interaction this field might contain at least the names (and codes, if needed) of the interacting substances, the text describing the interaction, and the level of severity of the interaction."[124]

ORC-17 Entering Organization (CE) 00231

Definition: "This field identifies the organization that the enterer belonged to at the time he/she enters/maintains the order, such as medical group or department. The person who entered the request is defined in ORC-10 -entered by."[125]

ORC-18 Entering Device (CE) 00232

Definition: "This field identifies the physical device (terminal, PC) used to enter the order."[126]

ORC-19 Action By (XCN) 00233

Definition: "This field contains the identity of the person who initiated the event represented by the corresponding order control code. For example, if the order control code is CA (cancel order request), this field represents the person who requested the order cancellation. This person is typically a care provider but may not always be the same as ORC-12 ordering provider."[127]

ORC-20 Advanced Beneficiary Notice Code (CE) 01310

The PHIN Messaging Standard does not make use of this field.

ORC-21 Ordering Facility Name (XON) 01311

Definition: "This field contains the name of the facility placing the order."[128]

ORC-22 Ordering Facility Address (XAD) 01312

Definition: "This field contains the address of the facility placing the order."[129]

ORC-23 Ordering Facility Phone Number (XTN) 01313

Definition: "This field contains the telephone number of the facility placing the order."[130]

ORC-24 Ordering Provider Address (XAD) 01314

Definition: "This field contains the address of the care provider requesting the order."[131]

ORC-25 Order Status Modifier (CWE) 01473

Definition: "This field is a modifier or refiner of the ORC-5-Order status field. This field may be used to provide additional levels of specificity or additional information for the defined order status codes. Unlike the Order Status field, which is controlled by an HL7 defined table, this field is a CE data type allowing applications to support an unlimited library of Order Status Modifier codes.

Usage Rule: This field may only be populated if the ORC-5-Order Status field is valued.

Examples: An LIS is processing an order with an order status of IP may send an update using the order status modifier to indicate the progress of the order through the laboratory or to indicate that the order has been sent to an external laboratory."[132]

ORC-26 Advanced Beneficiary Notice Override Reason (CWE) 01641

The PHIN Messaging Standard does not make use of this field.

ORC-27 Filler's Expected Availability Date/Time (TS) 01642

Definition: "This field specifies the date/time the filler expects the services to be available. For example when a prescription is ready for pickup or when a supply will be sent or picked up, or for when a laboratory result is expected to be available."[133]

ORC –28 Confidentiality Code (CWE) 00615

Definition: "This field contains information about the level of security and/or sensitivity surrounding the order (e.g., highly sensitive, not sensitive, sensitive, etc.). Refer to HL7 Table 0177 – Confidentiality Code for allowed values. The specific treatment of data with a particular confidentiality level is subject to site-specific negotiation."[134]

ORC –29 Order Type (CWE) 01643

Definition: "This field indicates whether the order is to be executed in an inpatient setting or an outpatient setting. If this field is not valued, the system default is assumed. Refer to HL7 Table 0482 – Order Type for suggested values.

Examples: Before discharge an order is placed for follow-up physical therapy, or to pick up a prescription at a community pharmacy. The patient is an inpatient according to PV1, but the order is an outpatient order."[135]

ORC-30 Enterer Authorization Mode (CNE) 01644

Definition: "This field indicates the form of authorization a recorder had from the responsible practitioner to create or change an order. Refer to HL7 Table 0483 Authorization Mode for suggested values."[136]

TQ1 – Timing/Quantity Segment

"The TQ1 segment is used to specify the complex timing of events and actions such as those that occur in order management and scheduling systems. This segment determines the quantity, frequency, priority, and timing of a service. By allowing the segment to repeat, it is possible to have service requests that vary the quantity, frequency and priority of a service request over time."

TQ1 – Timing/Quantity HL7 Attribute Table

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
1	4	SI	O				Set ID - TQ1	
2	20	CQ	O				Quantity	
3	540	RPT	O	Y	0335		Repeat Pattern	
4	20	TM	O	Y			Explicit Time	
5	20	CQ	O	Y			Relative Time and Units	
6	20	CQ	O				Service Duration	
7	26	TS	O				Start date/time	
8	26	TS	O				End date/time	
9	250	CWE	O	Y	0485		Priority	
10	250	TX	O				Condition text	
11	250	TX	O				Text instruction	
12	10	ID	C		0427		Conjunction	
13	20	CQ	O				Occurrence duration	
14	10	NM	O				Total occurrence's	

TQ1 field definitions

TQ1-1 Set ID - TQ1 (SI) 01627

Definition: "For the first timing specification transmitted, the sequence number shall be 1; for the second timing specification, it shall be 2; and so on."[137]

TQ1-2 Quantity (CQ) 01628

Definition: "This field specifies the numeric quantity of the service that should be provided at each service interval. For example, if two blood cultures are to be obtained every 4 hours, the quantity would be 2 or if three units of blood are to be typed and cross-matched, the quantity would be 3. The default value for this field is 1.

If multiple identical services are to be requested, it is strongly recommended that multiple service requests be placed; giving each service request its own unique placer/filler number."[138]

TQ1-3 Repeat Pattern (RPT) 01629

Definition: "The repeating frequency with which the treatment is to be administered. It is similar to the frequency and SIG code tables used in order entry systems.

This field may be repeated to build up more complex repeat patterns. For example, daily at bedtime can be represent as "|QD~HS|".

When the quantity timing specification must change to a different repeat pattern after some period of time, a new TQ1 segment must be used to show the new repeat pattern. Note that the end date of the current TQ1 will show when the current timing specification ends, and the start date of the next TQ1 shows when the new timing specification begins. The Conjunction field, TQ1-12 determines if the next TQ1 segment is to be performed sequentially or in parallel."[139]

TQ1-4 Explicit Time (TM) 01630

Definition: "This field explicitly lists the actual times referenced by the code in TQ1-3. This field will be used to clarify the TQ1-3 in cases where the actual administration times vary within an institution. If the time of the service request spans more than a single day, this field is only practical if the same times of administration occur for each day of the service request. If the actual start time of the service request (as given by TQ1-7) is after the first explicit time, the first administration is taken to be the first explicit time after the start time. In the case where the patient moves to a location having a different set of explicit times, the existing service request may be updated with a new quantity/timing segment showing the changed explicit times.

Usage Note: This field is not valued if a *Repeat Pattern* is not present."[140]

TQ1-5 Relative Time and Units (CQ) 01631

Definition: "This field is used to define the interval between schedules for service request or bottle records. If this field contains a value, it overrides any value in the explicit time interval field. The units component of the CQ data type is constrained to units of time.

```
Examples:

    TQ1|1|1|Q1H||60^min&&ANS+  - Q1H is defined with an interval
       between services of 60 minutes
    TQ1|1|1|Q6H||6^hr&&ANS+  - Q6H is defined with an interval
       between services of 6 hours
    TQ1|1|1|QD||1^d&&ANS+  - QD is defined with an interval
       between services of 1 day"[141]
```

TQ1-6 Service Duration (CQ) 01632

Definition: " This field contains the duration for which the service is requested.

The quantity component of this field must be a positive, non-zero number. The unit's portion of this field is constrained to units of time.

```
Example:  Whirlpool twenty minutes three times per day for 3 days.
 Three days is the service duration.
```

TQ1|1||TID|||3^d&&ANS+|||||20^min&&ANS+|9<cr>"[142]"

TQ1-7 Start Date/Time (TS) 01633

Definition: "This field may be specified by the requester, in which case it indicates the earliest date/time at which the services should be started. In many cases, however, the start date/time will be implied or will be defined by other fields in the service request record (e.g., urgency - STAT). In such a case, this field will be empty.

The filling service will often record a value in this field after receipt of the service request, however, and compute an end time on the basis of the start date/time for the filling service's internal use."[143]

TQ1-8 End Date/Time (TS) 01634

Definition: "When filled in by the requester of the service, this field should contain the latest date/time that the service should be performed. If it has not been performed by the specified time, it should not be performed at all. The requester may not always fill in this value, yet the filling service may fill it in on the basis of the instruction it receives and the actual start time.

Regardless of the value of the end date/time, the service should be stopped at the earliest of the date/times specified by either the duration or the end date/time."[144]

TQ1-9 Priority (CWE) 01635

Definition: "This field describes the urgency of the request. If this field is blank, the default is R. Refer to *User-Defined Table 0485 – Extended Priority Codes* for suggested values."[145]

User-Defined Table 0485 – Extended Priority Codes[146]

Value	Description	Comment
S	Stat	With highest priority
A	ASAP	Fill after S orders
R	Routine	Default
P	Preop	
C	Callback	
T	Timing critical	A request implying that it is critical to come as close as possible to the requested time, e.g., for a trough anti-microbial level.
TS<integer>		Timing critical within <integer> seconds.
TM<integer>		Timing critical within <integer> minutes.
TH<integer>		Timing critical within <integer> hours.
TD<integer>		Timing critical within <integer> days.
TW<integer>		Timing critical within <integer> weeks.
TL<integer>		Timing critical within <integer> months.
PRN	As needed	

TQ1-10 Condition Text (TX) 01636

Definition: "This is a free text field that describes the conditions under which the drug is to be given. For example, PRN pain, or to keep blood pressure below 110.

The presence of text in this field should be taken to mean that human review is needed to determine the how and/or when this drug should be given.

For complex codified conditions see the TQ2 segment below."[147]

TQ1-11 Text Instruction (TX) 01637

Definition: "This field is a full text version of the instruction (optional)."[148]

TQ1-12 Conjunction (ID) 01638

Definition: "This field indicates that a second TQ1 segment is to follow. Refer To *HL7 Table 0472 – TQ Conjunction ID* for allowed values."[149]

HL7 Table 0472 - TQ Conjunction ID[150]

Value	Description	Comment
S	Synchronous	Do the next specification after this one (unless otherwise constrained by the following fields: *TQ1-7-start date/time* and *TQ1-8-end date/time*). An "S" specification implies that the second timing sequence follows the first, e.g., when a service request is written to measure blood pressure Q15 minutes for the 1st hour, then every 2 hours for the next day.
A	Asynchronous	Do the next specification in parallel with this one (unless otherwise constrained by the following fields: *TQ1-7-start date/time* and *TQ1-8-end date/time*). The conjunction of "A" specifies two parallel instructions, as are sometimes used in medication, e.g., prednisone given at 1 tab on Monday, Wednesday, Friday, and at 1/2 tab on Tuesday, Thursday, Saturday, Sunday.
C	Actuation Time	It will be followed by a completion time for the service. This code allows one to distinguish between the time and priority at which a service should be actuated (e.g., blood should be drawn) and the time and priority at which a service should be completed (e.g., results should be reported).

"For continuous or periodic services, the point at which the service is actually stopped is determined by the field *TQ1-8 end date/time* and *TQ1-6 duration*, whichever indicates an earlier stopping time. Ordinarily, only one of these fields would be present.

Condition Rule: If the TQ1 segment is repeated in the message, this field must be populated with the appropriate Conjunction code indicating the sequencing of the following TQ1 segment."[151]

TQ1-13 Occurrence Duration (CQ) 01639

Definition: "This field contains the duration for which a single performance of a service is requested. The quantity component of this field must be a positive, non-zero number when populated. The units component is constrained to be units of time.

```
Example: Whirlpool twenty minutes three times per day for three days.
Twenty minutes is the occurrence duration.
```

TQ1|1||TID|||3^d&&ANS+||||||20^min&&ANS+|9<cr>"[152]

TQ1-14 Total Occurrences (NM) 01640

Definition: "This field contains the total number of occurrences of a service that should result from this service request. If both the end date/time (TQ1-8) and the total occurrences are valued and the occurrences would extend beyond the end date/time, then the end date/time takes precedence. Otherwise the number of occurrences takes precedence.

Example: Whirlpool twenty minutes three times per day for three days. The total occurrences would be 9.

TQ1|1||TID|||3^d&&ANS+||||||20^min&&ANS+|9<cr>"[153]

OBR - Observation Request Segment

"In the reporting of clinical data, the OBR serves as the report header. It identifies the observation set represented by the following atomic observations. It includes the relevant ordering information when that applies. It contains many of the attributes that usually apply to all of the included observations."154

Note that only fields needed for ordering have been retained as supported in the OBR segment.

OBR – Observation Request Segment Attribute Table

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
1	4	SI	R				Set ID - OBR	
2	22	EI	C				Placer Order Number	
3	22	EI	R				Filler Order Number	
4	250	CE	R				Universal Service Identifier	
5	2	ID	X				Priority – OBR	Not supported See TQ1-9
6	26	TS	X				Requested Date/Time	Retained to be backward compatible with BT message.
7	26	TS	C				Observation Date/Time	
8	26	TS	O				Observation End Date/Time	
9	20	CQ	O				Collection Volume	Not supported
10	250	XCN	O	Y			Collector Identifier	
11	1	ID	O		0065		Specimen Action Code	Not supported
12	250	CE	O				Danger Code	Not supported
13	300	ST	O				Relevant Clinical Information	
14	26	TS	B				Specimen Received Date/Time	Not supported ; part of SPM
15	300	SPS	B				Specimen Source	Not supported ; part of SPM
16	250	XCN	O	Y			Ordering Provider	
17	250	XTN	O	Y/2			Order Callback Phone Number	

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
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 Chng - 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		Result Status	Not supported
26	400	PRL	O				Parent Result	Not supported
27	200	TQ	B	Y			Quantity/Timing	Deprecated See TQ1 Segment.
28	250	XCN	O	Y			Result Copies To	
29	200	EIP	O				Parent	
30	20	ID	O		0124		Transportation Mode	Not supported
31	250	CE	O	Y		PH_Reason For Study	Reason for Study	
32	200	NDL	O				Principal Result Interpreter	Not supported
33	200	NDL	O	Y			Assistant Result Interpreter	Not supported
34	200	NDL	O	Y			Technician	Not supported
35	200	NDL	O	Y			Transcriptionist	Not supported
36	26	TS	O				Scheduled Date/Time	
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 *	
40	250	CE	O				Transport Arrangement Responsibility	
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	N	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	N	0476		Medically Necessary Duplicate Procedure Reason.	Not Supported
49	2	IS	O	N			Result Handling.	

OBR - Field Definitions

OBR-1 Set ID (SI-4, Required)

Definition: This field identifies the sequence number of one of multiple OBR's under one PID. "For the first order transmitted, the sequence number shall be 1; for the second order, it shall be 2; and so on."[155]

```
For example, the second OBR under a single MSH (message header)
would appear as:  |2|
```

OBR-2 Placer Order Number (EI-22, Optional)

Definition: "This field is a case of the Entity Identifier data type (Section 2.16.28). The first component is a string that identifies an individual order (e.g., OBR). A limit of fifteen (15) characters is suggested but not required. It is assigned by the place (ordering application). It identifies an order uniquely among all orders from a particular ordering application. The second through fourth components contain the application ID of the placing application in the same form as the HD data type (Section 2.16.36, 'HD – Hierarchic designator')."[156]

This field should not contain the accession number for a specimen. Instead the specimen number should be placed in SAC-1 or SAC-2.

OBR-3 Filler Order Number (EI-22, Required)

Definition: "This field is the order number associated with the filling application. This is the number assigned to the test by the organization performing the test. This string must uniquely identify the order (as specified in the order detail segment) from other orders in a particular filling application (e.g., public health laboratory). This uniqueness must persist over time. "[157]

This field should not contain the accession number for a specimen. Instead the specimen number should be placed in SAC-1 or SAC-2.

"The second through fourth components contain the filler application ID. The second component of the filler order number always identifies the actual filler of an order. A given institution or group of intercommunicating institutions should establish a list of applications that may be potential placers and fillers of orders and assign each a unique application ID. The application ID list becomes part of the institution's master dictionary, as documented in HL7's Chapter 8. Since third-party applications (those other than the placer and filler of an order) can send and receive ORM and ORR messages, the filler application ID in this field may not be the same as any other sending and receiving application on the network (as identified in the MSH segment).

ORC-3-filler order number is the same as OBR-3-filler order number. If the filler order number is not present in the ORC, it must be present in the associated OBR. (This rule is the same for other identical fields in the ORC and OBR and promotes upward and ASTM compatibility.) This is particularly important when results are transmitted in an ORU message. In this case, the ORC is not required and the identifying filler order number must be present in the OBR segments. The filler order number (OBR-3 or ORC-3) uniquely identifies an order and its associated observations."[158]

OBR-4 Universal Service ID (CE-250, Required)

Definition: "This field is the identifier code for the requested observation/test/battery. This can be based on local and/or "universal" codes."[159]

An example valuing all of the CE data type components for a report of antimicrobial susceptibility would appear as:

```
|625-4^MICROORGANISM IDENTIFIED^LN^15555^ORGANISM^L|
```

No coding recommendation for laboratory-based reporting has been made for OBR-4 since the field describes the originally requested order (e.g., a hepatitis panel or anti-microbial susceptibility testing battery). The value of OBR-4 will be continued from the original order, since this is a required field, but the information in OBR-4 will not be used routinely. The "informative field" for laboratory-based reporting is OBX-3, described below. OBX-3 should be used to provide an unambiguous, specific test name and OBX-5 should provide the result to the test. Examples of messages for different laboratory-reportable findings are given in Appendix A.

```
An example for a report of a locally-defined hepatitis panel would
appear as:

|^^^78334^Hepatitis Panel, Measurement^L|      (in that,
sub-components 1 through 3 reserved for standard coding
systems are blank)
```

Here the code is a user-defined "local" code, as indicated by the <L> in the sixth component. Note that the "Universal Service ID" is a code that often represents the battery or collection of tests that make up a routine laboratory panel. The individual results of the different components of the hepatitis panel are reported in the OBX segments described below. For most laboratory tests that are reportable to public health officials, the description of the test and result is sufficiently given in OBX and does not need repetition here. Information in OBR-4 will not be used routinely in public health reporting. An example of this is given in Appendix A for blood lead reporting.

OBR-5 Priority (ID-2, Optional)

The PHIN Messaging Standard does not make use of this field.

OBR-6 Requested Date Time (TS-26, Optional)

Definition: Although HL7 has deprecated use of this field, it is retained to be backward compatible with BT message. The date/time on which the test was requested to be performed by the filler organization, i.e., the performing laboratory.

OBR-7 Observation Date Time (TS-26, Optional)

Definition: "This field is the clinically relevant date/time of the observation. In the case of observations taken directly from a subject, it is the actual date and time the observation was obtained or started. In the case of a specimen-associated study, this field shall represent the date and time the specimen was collected or obtained."[160]

```
Time stamp (TS) data type must be in the format:
YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][ ]
```

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.

```
For example: |200011270930|.
This field will mirror the value in SPM-17 if used.
```

OBR-8 Observation End Date Time (TS-26, Optional)

Definition: "This field is the end date and time of a study or timed specimen collection. If an observation takes place over a substantial period of time, it will indicate when the observation period ended. For observations made at a point in time, it will be null."[161]

```
Time stamp (TS) data type must be in the format:
YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][ ]
```

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.

```
For example: |200011271030|
```

For FDA, this field may be applicable for some tests. The SPM segment does not contain a collection end time field.

OBR-9 Collection Volume (CQ-20, Optional)

The PHIN Messaging Standard does not make use of this field

OBR-10 Collector identifier (XCN-250, Optional) 00244

Definition: "When a specimen is required for the study, this field will identify the person, department, or facility that collected the specimen. Either name or ID code, or both, may be present."[162]

OBR-11 Specimen action code (ID-1, Optional) 00245

The PHIN Messaging Standard does not make use of this field

OBR-12 Danger code (CE-250, Optional) 00246

The PHIN Messaging Standard does not make use of this field

OBR-13 Relevant clinical information (ST-300, Optional) 00247

Definition: "This field contains any additional clinical information about the patient or specimen. This field is used to report the suspected diagnosis and clinical findings on requests for interpreted diagnostic studies. Examples include reporting the amount of inspired carbon dioxide for blood gasses, the point in the menstrual cycle for cervical pap tests, and other conditions that influence test interpretations. For some orders this information may be sent on a more structured form as a series of OBX segments (see Chapter 7) that immediately follow the order segment."[163]

OBR-14 Specimen received date/time (TS-26, Optional) 00248

The PHIN Messaging Standard does not make use of this field; refer to SPM segment.

OBR-15 Specimen source (SPS-300, Optional) 00249

The PHIN Messaging Standard does not make use of this field.

OBR.16 Ordering Provider (XCN-250, Optional)

Definition: "This field identifies the provider who ordered the test. The value passed here currently duplicates the value passed in ORC.12 – Ordering Provider."[164]

OBR-17 Order callback phone number (XTN-250, Optional) 00250

Definition: "This field is the telephone number for reporting a status or a result using the standard format with extension and/or beeper number when applicable."[165]

OBR-18 Placer field 1 (ST-60, Optional) 00251

The PHIN Messaging Standard does not make use of this field

OBR-19 Placer field (ST-60, Optional) 00252

The PHIN Messaging Standard does not make use of this field

OBR-20 Filler field 1 (ST-60, Optional) 00253

The PHIN Messaging Standard does not make use of this field

OBR-21 Filler field 2 (ST-60, Optional) 00254

The PHIN Messaging Standard does not make use of this field

OBR-22 Results rpt/status chng - date/time (TS-26, Optional) 00255

The PHIN Messaging Standard does not make use of this field

OBR-23 Charge to practice (MOC-40, Optional) 00256

The PHIN Messaging Standard does not make use of this field

OBR-24 Diagnostic serv sect ID (ID-10, Optional) 00257

The PHIN Messaging Standard does not make use of this field

OBR-25 Result status (ID-1, Optional) 00258

The PHIN Messaging Standard does not make use of this field

OBR-26 Parent Result (PRL-400) 00259

The PHIN Messaging Standard does not make use of this field

OBR-27 Quantity/timing (TQ-200, Optional) 00221

The PHIN Messaging Standard does not make use of this field;

OBR-28 Result Copies To (XCN-250, Optional) 00260

Definition: "This field is the people who are to receive copies of the results. By local convention, either the ID number or the name may be absent."[166]

OBR-29 Parent (EIP-200, Optional) 00261

Definition: "This field relates a child to its parent when a parent/child relationship exists. For example, observations that are spawned by previous observations, e.g., antimicrobial susceptibilities spawned by blood cultures, need to record the parent (blood culture) filler order number here. The parent/child mechanism is described under the order control field notes (see Segment ORC field notes in Section 4.3.1.1.1, "Table notes for order control codes of ORC." It is required when the order is a child."[167]

OBR-30 Transportation Mode (ID-20, Optional) 00262

The PHIN Messaging Standard does not make use of this field

OBR-31 Reason for Study (CE-250, Optional) 00263

Definition: "This field is the code or text using the conventions for coded fields given in Chapter 2, Control."[168]

OBR-32 Principal Result Interpreter (NDL-200, Optional) 00264

The PHIN Messaging Standard does not make use of this field;

OBR-33 Assistant Result Interpreter (NDL-200, Optional) 00265

The PHIN Messaging Standard does not make use of this field;

OBR-34 Technician (NDL-200, Optional) 00266

The PHIN Messaging Standard does not make use of this field;

OBR-35 Transcriptionist (NDL-200, Optional) 00267

The PHIN Messaging Standard does not make use of this field;

OBR-36 Scheduled - Date/Time (TS-26, Optional) 00268

Definition: "This field is the date/time the filler scheduled an observation, when applicable (e.g., action code in *OBR-11-specimen action code* = "S"). This is a result of a request to schedule a particular test and provides a way to inform the placer of the date/time a study is scheduled (result only)."[169]

OBR-37 Number of Sample Containers (NM-4, Optional) 01028

The PHIN Messaging Standard does not make use of this field

OBR-38 Transport Logistics of Collected Sample (CE-250, Optional) 01029

The PHIN Messaging Standard does not make use of this field

OBR-39 Collector's Comment (CE-250, Optional) 01030

Definition: "This field is for reporting additional comments related to the sample. If coded, requires a user-defined table. If only free text is reported, it is placed in the second component with a null in the first component, e.g., ^difficult clotting after venipuncture and ecchymosis."[170]

OBR-40 Transport Arrangement Responsibility (CE-250, Optional) 01031

Definition: "This field is an indicator of who is responsible for arranging transport to the planned diagnostic service. Examples: Requester, Provider, Patient. If coded, requires a user-defined table."[171]

OBR-41 Transport Arranged (ID-30, Optional) 01032

The PHIN Messaging Standard does not make use of this field

OBR-42 Escort Required (ID-1, Optional) 01033

The PHIN Messaging Standard does not make use of this field

OBR-43 Planned Patient Transport Comment (CE-250, Optional) 01034

The PHIN Messaging Standard does not make use of this field

OBR-44 Procedure Code (CE-250, Optional) 00393

The PHIN Messaging Standard does not make use of this field

OBR-45 Procedure Code Modifier (CE-250, Optional) 01316

The PHIN Messaging Standard does not make use of this field

OBR-46 Placer Supplemental Service Information (CE-250, Optional) 01474

The PHIN Messaging Standard does not make use of this field

OBR-47 Filler Supplemental Service Information (CE-250, Optional) 01475

The PHIN Messaging Standard does not make use of this field

OBR-48 Medically Necessary Duplicate Procedure Reason (CWE-250, Optional) 01646

The PHIN Messaging Standard does not make use of this field

OBR-49 Result Handling (IS-2, Optional) 01647

Definition: "Transmits information regarding the handling of the result. For example, an order may specify that the result (e.g., an x-ray film) should be given to the patient for return to the requestor. Refer to user-defined table 0507 – Observation Result Handling in Chapter 4, Section 4.5.3.49 for suggested values. If this field is not populated then routine handling is implied."[172]

SPM – Specimen Segment

"The intent of this segment is to describe the characteristics of a specimen. It differs from the intent of the OBR in that the OBR addresses order-specific information. It differs from the SAC segment in that the SAC addresses specimen container attributes. An advantage afforded by a separate specimen segment is that it generalizes the multiple relationships among order(s), results, specimen(s) and specimen container(s).

A specimen is defined as "A physical entity that is an individual, a group, an item, or a part representative of a larger group, class or whole that is the target of an observation or analysis for the purpose of drawing conclusions about the group, class, or whole." Note that any physical entity in the universe has the potential to become a specimen.

A specimen is collected or obtained from a source and may be representative of the source, or may represent a deviation within the source. A specimen may be wholly or partially consumed during an observation and any remaining portion of the specimen is persistent and can be stored.

This segment may also be used in limited cases to describe a "virtual" specimen. In particular, to identify the characteristics required for a specimen in the context of a specific observation or test.

In summary, SPM represents the attributes specific and unique to a specimen."[173]

SPM Attributes

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
1	4	SI	O				Set ID – SPM	
2	80	EIP	R				Specimen ID	
3	80	EIP	O	Y			Specimen Parent IDs	
4	250	CWE	R		0487	PHVS_BTSpecimen_type , HL70487	Specimen Type	
5	250	CWE	O	Y	0541		Specimen Type Modifier	Not supported
6	250	CWE	O	Y	0371	HL70371	Specimen Additives	
7	250	CWE	O		0488	HL70488	Specimen Collection Method	
8	250	CWE	O				Specimen Source Site	Not supported

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
9	250	CWE	O	Y	0542		Specimen Source Site Modifier	Not supported
10	250	CWE	O		0543		Specimen Collection Site	
11	250	CWE	O	Y	0369	HL70369	Specimen Role	
12	20	CQ	O				Specimen Collection Amount	
13	6	NM	C				Grouped Specimen Count	
14	250	ST	O	Y			Specimen Description	
15	250	CWE	O	Y	0376	HL70376	Specimen Handling Code	
16	250	CWE	O	Y	0489		Specimen Risk Code	
17	26	DR	O				Specimen Collection Date/Time	
18	26	TS	O				Specimen Received Date/Time	
19	26	TS	O				Specimen Expiration Date/Time	
20	1	ID	O		0136		Specimen Availability	
21	250	CWE	O	Y	0490		Specimen Reject Reason	
22	250	CWE	O		0491	HL70491	Specimen Quality	
23	250	CWE	O		0492		Specimen Appropriateness	
24	250	CWE	O	Y	0493	PHVS_BT_SPECCOND	Specimen Condition	
25	20	CQ	O				Specimen Current Quantity	
26	4	NM	O				Number of Specimen Containers	
27	250	CWE	O				Container Type	
28	250	CWE	O		0544		Container Condition	
29	250	CWE	O		0494		Specimen Child Role	

SPM field definitions

Usage Notes: The SPM segment is required.

SPM -1 Set ID - SPM (SI - 4, Optional) 01754

Definition: "This field contains the sequence number. This field is used to identify SPM segment instances in message structures where the SPM segment repeats."[174]

SPM-2 Specimen ID (EIP -80, Optional) 01755

Definition: "This field contains a unique identifier for the specimen as referenced by the Placer application, the Filler application, or both.

This field is required, as there are use cases in which a unique specimen identifier may not exist. In the first scenario, a placer application may initiate an observation request against an existing specimen without uniquely identifying the specimen. Additionally, in the case of the TCU_U10 message structure, used in automated equipment test code settings messages, the SPM segment is used to define required characteristics of the specimen. As such, TCU_U10 uses SPM to define

a virtual specimen, and a specific specimen ID would not exist. Filler applications would be expected to assign a Specimen ID and populate this field accordingly."[175]

SPM-3 Specimen Parent IDs (EIP - 30, Optional) 01756

Definition: "This field contains the identifiers for the specimen or specimens that contributed to the specimen that is described by the segment instance.

If this field repeats, then *SPM-11-Specimen Role* should be valued with "L" (pooled). The repetitions of this field then carry the specimen IDs of the parent specimens contributing to the pool."[176]

SPM-4 Specimen Type (CWE – 250, Required) 01900

Definition: "This field describes the precise nature of the entity that will be the source material for the observation.

Any physical entity that may have observations made about it may qualify as a specimen. The entry in this attribute describes the specific entity as precisely as possible, whether that is a complex organism (e.g., an ostrich) or a specific cellular mass (e.g., a specific muscle biopsy).

This attribute corresponds to the first component of *OBR.15 – Specimen Source* and *SAC.6 – Specimen Source* component 1 – *Specimen source name or code.* These components, and the SPS data type, were deprecated upon the development of this segment.

A nationally recognized coding system is to be used for this field. Valid coding sources for this field include:

Veterinary medicine may choose the tables supported for the components of this field as decided by their industry."[177]

SPM-5 Specimen Type Modifier (CWE – 250, Optional) 01757

The PHIN Messaging Standard does not make use of this field.

SPM-6 Specimen Additives (CWE – 250, Optional) 01758

Definition: "This field identifies any additives introduced to the specimen before or at the time of collection. These additives may be introduced in order to preserve, maintain or enhance the particular nature or component of the specimen. Refer to the HL7 Standard and table 0371 - Additive for valid values."[178]

SPM-7 Specimen Collection Method (CWE – 250, Optional) 01759

Definition: "Describes the procedure or process by which the specimen was collected.

Any nationally recognized coding system might be used for this field including SNOMED; alternatively the HL7 defined table 0488 may be used. Veterinary medicine may choose the tables supported for the components of this field as decided by their industry."[179]

SPM-8 Specimen Source Site (CWE – 250, Optional) 01901

The PHIN Messaging Standard does not make use of this field.

SPM-9 Specimen Source Site Modifier (CWE – 250, Optional) 01760

The PHIN Messaging Standard does not make use of this field.

SPM-10 Specimen Collection Site (CWE – 250, Optional) 01761

Definition: "This field differs from *SPM-8-Specimen Source Site* in those cases where the source site must be approached via a particular site (e.g., anatomic location). For example, in the case where a liver biopsy is obtained via a percutaneous needle, the collection site would be the point of entry of the needle. For venous blood collected from the left radial vein, the collection site could be "antecubital fossa".

Veterinary medicine may choose the tables supported for the components of this field as decided by their industry.

User-defined table 0543 – Specimen Collection Site has no suggested values."[180]

SPM-11 Specimen Role (CWE – 250, Optional) 01762 -

"This field indicates the role of the sample. Refer to user-defined table 0369 – Specimen Role for suggested values. Each of these values is normally identifiable by the systems and its components and can influence processing and data management related to the specimen.

If this field is not populated, then the specimen described has no special, or specific, role other than serving as the focus of the observation. Such specimens include patient, environmental and other specimens that are intended for analysis.

A grouped specimen consists of identical specimen types from multiple individuals that do not have individual identifiers and upon which the same services will be performed. If the specimen role value is 'G' then the Grouped Specimen Count (*SPM-13*) must be valued with the total number of specimens contained in the group.

If the specimen role is 'L', the repetitions of Parent Specimen ID (SPM-4) represent the individual parent specimens that contribute to the pooled specimen."[181]

SPM-12 Specimen Collection Amount (CQ – 20, Optional) 01902

Definition: "This field specifies the volume or mass of the collected specimen. For laboratory tests, the collection volume is the volume of a specimen. Specifically, units should be expressed in the ISO Standard unit abbreviations (ISO-2955, 1977). This is a results-only field except when the placer or a party has already drawn the specimen. (See Chapter 7 for full details about units.)"[182]

SPM-13 Grouped Specimen Count (NM - Conditional) 01763

Definition: "This field refers to the number of individual specimens of a particular type represented by this instance of a specimen. The use of this field is restricted to specimens upon which all specimen related attributes are identical. This field would only be valued if the specimen role attribute has the value 'G'."[183]

SPM-14 Specimen Description (ST – 250, Optional) 01764

Definition: "This is a text field that allows additional information specifically about the specimen to be sent in the message."[184]

SPM-15 Specimen Handling Code (CWE – 250, Optional) 01908

Definition: "This describes how the specimen and/or container need to be handled from the time of collection through the initiation of testing. As this field is not required, no assumptions can be made as to meaning when this field is not populated."[185]

SPM-16 Specimen Risk Code (CWE – 250, Optional) 01903

Definition: "This field contains any known or suspected specimen hazards, e.g., exceptionally infectious agent or blood from a hepatitis patient. Either code and/or text may be absent. However, the code is always placed in the first component position and any free text in the second component. Thus, a component delimiter must precede free text without a code. Refer to user-defined table 0489 – Risk Codes for suggested entries."[186]

SPM-17 Specimen Collection Date/Time (DR – 26, Optional) 01765

Definition: "The date and time when the specimen was acquired from the source. The use of the Date Range data type allows for description of specimens collected over a period of time, for example, 24-hour urine collection. For specimens collected at a point in time, only the first component (start date/time) will be populated."[187]

SPM-18 Specimen Received Date/Time (TS – 26. Optional) 00248

Definition: "The specimen-received date/time is the time that the specimen is received at the

diagnostic service. The actual time that is recorded is based on how specimen receipt is managed and may correspond to the time the sample is logged in. This is fundamentally different from *SPM-xx Specimen Collection date/time*."[188]

SPM-19 Specimen Expiration Date/Time (TS – 26. Optional) 01904

Definition: "This field is the date and time the specimen can no longer be used for the purpose implied by the order. For example, in the Blood Banking environment the specimen can no longer be used for pre-transfusion compatibility testing. The specimen segment will include an SPM-21-Specimen Reject Reason of 'EX' indicating 'Expired' for message instances created after this date and time."[189]

SPM-20 Specimen Availability (ID – 1, Optional) 01766

Definition: "This describes whether the specimen, as it exists, is currently available to use in an analysis. Refer to the HL7 Standard and table 0136 Yes/No Indicator for valid values."[190]

SPM-21 Specimen Reject Reason (CWE – 250, Optional) 01767

Definition: "This describes one or more reasons the specimen is rejected for the specified observation/result/analysis. Refer to the HL7 Standard and table 0490 – Specimen Reject Reason for valid values."[191]

SPM-22 Specimen Quality (CWE – 250, Optional) 01768

Definition: "The degree or grade of excellence of the specimen at receipt. The filler populates this attribute. Refer to user-defined table 0491 – Specimen Quality for suggested entries."[192]

SPM-23 Specimen Appropriateness (CWE – 250, Optional) 01769

Definition: "The suitability of the specimen for the particular planned use as determined by the filler."[193]

SPM-24 Specimen Condition (CWE – 250, Optional) 01770

Definition: "A mode or state of being that describes the nature of the specimen."[194]

SPM-25 Specimen Current Quantity (CQ – 20, Optional) 01771

Definition: "This attributes contains the amount of specimen that currently exists or is available for use in further testing."[195]

SPM-26 Number of Specimen Containers (NM – 4, Optional)

Definition: "This field identifies the number of containers for a given sample. For sample receipt verification purposes; may be different from the total number of samples that accompany the order."[196]

SPM-27 Container Type (CWE – 250, Optional) 01773

Definition: "The container in or on which a specimen is transported."[197]

SPM-28 Container Condition (CWE – 250, Optional) 01774

Definition: "In chain of custody cases where specimens are moved from lab to lab, the status of the container that the specimen is shipped in must be recorded at each receipt. If the container is compromised in any way (seal broken, container cracked or leaking, etc) then this needs to be recorded for legal reasons."[198]

SPM-29 Specimen Child Role (CWE – 250, Optional) 01775

Definition: "For child specimens, this field identifies the relationship between this specimen and the parent specimen. If this field is populated, then *SPM-3-Specimen Parent ID* must be populated. This field differs from *SPM-15-Specimen Role* in that this field refers to the role of this specimen relative to a parent role rather than the role of this specimen to the ordered service.

Refer to the HL7 Standard and table 0494 – Specimen Child Role for valid values."[199]

SAC– Specimen Container Detail (Container Section)

"The container detail segment is the data necessary to maintain the containers that are being used throughout the Laboratory Automation System."[200]

The proposed use of the SAC segment is limited to the container ID that was sent to the lab (for ID of the primary shipping container). The segment is used to ascertain that a box sent to a laboratory has arrived. SAC-4 should identify the shipping box that arrived in the laboratory.

"The specimens in many laboratories are transported and processed in containers (e.g., sample tubes). When SPM and SAC are used in the same message, then the conceptually duplicate attributes will be valued only in the SPM. This applies to SAC-6 (Specimen Source), SAC-27 (Additives), and SAC-43 (Special Handling Considerations).HL7 Attribute Table – SAC – Specimen Container detail (for the Container Section."[201]

SAC – Specimen Container Attribute Table

Seq.	Len.	DT	Opt	Rpt#	Tbl #	PHIN Code System / Value Set	Element Name	Comments
1	80	EI	O				External Accession Identifier	
2	80	EI	O				Accession Identifier	
3	80	EI	C				Container Identifier	
4	80	EI	C				Primary (parent) Container Identifier	
5	80	EI	O				Equipment Container Identifier	
6	300	SPS	D				Specimen Source	Deprecated – Use the SPM segment.
7	26	TS	O				Registration Date/Time	
8	250	CE	O		0370		Container Status	
9	250	CE	O		0378		Carrier Type	
10	80	EI	O				Carrier Identifier	
11	80	NA	O				Position in Carrier	
12	250	CE	O		0379		Tray Type - SAC	
13	80	EI	O				Tray Identifier	
14	80	NA	O				Position in Tray	
15	250	CE	O	Y			Location	
16	20	NM	O				Container Height	
17	20	NM	O				Container Diameter	
18	20	NM	O				Barrier Delta	
19	20	NM	O				Bottom Delta	
20	250	CE	O				Container Height/Diameter/Delta Units	
21	20	NM	O				Container Volume	
22	20	NM	O				Available Specimen Volume	
23	20	NM	O				Initial Specimen Volume	
24	250	CE	O				Volume Units	
25	250	CE	O		0380		Separator Type	
26	250	CE	O		0381		Cap Type	
27	250	CWE	O	Y	0371		Additive	
28	250	CE	O				Specimen Component	
29	20	SN	O				Dilution Factor	
30	250	CE	O		0373		Treatment	
31	20	SN	O				Temperature	
32	20	NM	O				Hemolysis Index	
33	250	CE	O				Hemolysis Index Units	
34	20	NM	O				Lipemia Index	
35	250	CE	O				Lipemia Index Units	
36	20	NM	O				Icterus Index	
37	250	CE	O				Icterus Index Units	
38	20	NM	O				Fibrin Index	
39	250	CE	O				Fibrin Index Units	
40	250	CE	O	Y	0374		System Induced Contaminants	
41	250	CE	O	Y	0382		Drug Interference	
42	250	CE	O		0375		Artificial Blood	
43	250	CWE	O	Y	0376		Special Handling Code	Not supported
44	250	CE	O	Y	0377		Other Environmental Factors	

SAC Field Definitions for the Container Section

SAC-1 External Accession Identifier (EI, Required) 01329

Definition: "This field identifies the laboratory accession (see section *Glossary*). This identifier is assigned by the external laboratory information system.

Example: If laboratory A sends a specimen to laboratory B, then within laboratory B this field contains accession identifier of lab A."[202]

SAC-2 Accession Identifier (EI, Optional) 01330

Definition: "This field identifies the laboratory accession (see section *Glossary*). This identifier is assigned by the information system of the laboratory performing the tests.

An accession identifier can refer to more than one container. A Container Identifier (see below) is a Unique Identifier for that container."[203]

SAC-3 Container Identifier (EI, Conditional) 01331

Definition: "This field identifies the container. This field is the container's unique identifier assigned by the corresponding equipment. A container may contain the primary (original) specimen or an aliquot (secondary sample) of that specimen. For primary sample this field contains Primary Container ID; for bar-coded aliquot samples this field contains Aliquot Container ID; for non-bar-coded aliquot samples (e.g., microtiter plate) this field is empty2

The NCCLS standard requires a unique identifier for each container introduced into the Laboratory Automation System. The combination of the fields: Primary Container ID, Container ID, Carrier ID / Position, Tray ID / Position must identify the container uniquely within the LAS. The naturally best solution is unique machine-readable id attached to the container (which of course is sufficient to ensure the uniqueness of the fields' combination). A bar code that symbolizes this ID should meet the proposed standard NCCLS AUTO2 (*Laboratory Automation: Bar Codes for Specimen Container Identification).*"[204]

SAC-4 Primary (Parent) Container Identifier (EI, Conditional) 01332

Definition: "If this field is filled in, it identifies the primary container from which this specimen came. For primary samples this field is empty; for aliquot samples this field should contain the identifier of primary container."[205]

Usage Note: SAC-4 should identify the shipping box that arrived in the laboratory.

SAC-5 Equipment Container Identifier (EI, Optional) 01333

Definition: "This field identifies the container in a particular device (e.g., one container in a carousel or rack of containers within an analyzer, analyzer specific bar code mapping, etc.)."[206]

SAC-6 Specimen Source (SPS, Deprecated) 00249

The PHIN Messaging Standard does not make use of this field.

SAC-7 Registration Date/Time (TS, Optional) 01334

Definition: "This field is the date/time that the container was last registered with the "automated system.", e.g., reading of a container bar code by a device."[207]

SAC-8 Container Status (CE, Optional) 01335

Definition: "This field identifies the status of the unique container in which the specimen resides at the time that the transaction was initiated. Refer to *HL7 Table 0370 - Container status* for valid values. The equipment specific container status should be sent as <*alternate identifier*> as needed.

The container states are relevant for the exchange of information among devices (within the LAS). Not all of them are relevant for information transfer between the LAS and the LIS.
In the explanations below the system means the LAS or any equipment interfaced to it or to another equipment."[208]

SAC-9 Carrier Type (CE, Optional) 01336

Definition: "This field identifies the type of the carrier (see section Glossary). Refer to *User-defined Table 0378 – Carrier type* for suggested values. Because the geometry can be different, the carrier type should, if possible, express the number of positions in the carrier.

The definition assumes hierarchical nesting using the following phrases: container is located in a carrier, carrier is located in a tray.

Examples of values: R01 (one position carrier), R05 (five position carrier)"[209]

SAC-10 Carrier Identifier (EI, Optional) 01337

Definition: "This field identifies the carrier. It is the ID (e.g., number or bar code) of the carrier where the container (e.g., tube) is located.

Example: A carrier could be a rack with single or multiple specimen containers. A carrier is usually used for automated specimen transport. Multiple carriers can be stacked in a tray, which is then used for manual or automatic transport."[210]

SAC-11 Position in Carrier (NA, Optional) 01338

Definition: "This field identifies the position of the container in the carrier (e.g., 1…3…). The sub-components allow, if necessary, to transfer multiple axis information, e.g., 2-dimensional carrier (X^Y)."[211]

SAC-12 Tray Type - SAC (CE, Optional) 01339

Definition: "This field identifies the type of the tray (see section Glossary). Refer to User-defined Table
0379 – Tray type for suggested values. Because the geometry can be different, the tray type should if
possible express the number of positions in the tray.
The definition assumes hierarchical nesting using the following phrases: container is located in a carrier,
carrier is located in a tray."[212]

SAC-13 Tray Identifier (EI, Optional) 01340

Definition: "This field identifies the tray identifier (e.g., a number of a tray or a bar code on the tray), where the container carrier is located."[213]

SAC-14 Position in Tray (NA, Optional) 01341

Definition: "This field identifies the position of the carrier in the tray. The sub-components allow, if necessary, to transfer multiple axis information, e.g., 2-dimensional tray (X^Y)."[214]

SAC-15 Location (CE, Optional) 01342

Definition: "This field is the physical location that the specimen was at the time that the transaction was initiated. The location description can vary with the LAS. For example, it can be an X,Y,Z coordinate in a storage system; a refrigerator number and drawer number where the container-carrier-tray is located; or it can be the name of the institution and the laboratory which owns the container currently. The repeating of this field allows for hierarchical representation of location (lowest level first), e.g., shelf number, refrigerator storage id, lab name, institution name, etc."[215]

SAC-16 Container Height (NM, Optional) 01343

Definition: "This field identifies the height of the container in units specified below. "[216]

SAC-17 Container Diameter (NM, Optional) 01344

Definition: "This field identifies the outside diameter of the container in units specified below." [217]

SAC-18 Barrier Delta (NM, Optional) 01345

Definition: "This field identifies the distance from the Point of Reference to the separator material (barrier) within the container in units specified below. This distance may be provided by the LAS to the instrument and/or specimen processing/handling device to facilitate the insertion of a sampling probe into the specimen without touching the separator. Refer to Point Of Reference definition in section *Glossary* or in NCCLS standard AUTO5 *Laboratory Automation: Electromechanical Interfaces*."[218]

SAC-19 Bottom Delta (NM, Optional) 01346

Definition: "This field identifies the distance from the Point of Reference to the outside bottom of the container in units specified below. Refer to Point Of Reference definition in section *Glossary* or in NCCLS standard AUTO5 *Laboratory Automation: Electromechanical Interfaces*."[219]

SAC-20 Container Diameter/Height/Delta Units (CE, Optional) 01347

Definition: "This field is the unit identifier that is being used to describe the diameter, height and deltas of the container. If the units are ISO+ units, they should be recorded as single case abbreviations. If the units are ANS+ or L (local), the units and the source code table must be recorded, except that in this case, component delimiters should be replaced by subcomponent delimiters. The default unit is millimeters (mm), which should be assumed if no units are reported."[220]

SAC-21 Container Volume (NM, Optional) 00644

Definition: "This field indicates the capacity of the container in the units specified below."[221]

SAC-22 Available Specimen Volume (NM, Optional) 01349

Definition: "This field identifies the current specimen volume available for use in this container in the units specified below."[222]

SAC-23 Initial Specimen Volume (NM, Optional) 01350

Definition: "This field identifies the volume of the specimen initially filled in this container in the units specified below."[223]

SAC-24 Volume Units (CE, Optional) 01351

Definition: "This field is the unit identifier that is being used to describe the volume of the container. If the units are ISO+ units, they should be recorded as single case abbreviations. The default unit is milliliters (ml), which should be assumed if no units are reported."[224]

SAC-25 Separator Type (CE, Optional) 01352

Definition: "This field identifies the type of the separator that is being used (e.g., gel separator in the container – not to be confused with the communication separators). Refer to *User-defined Table 0380 – Separator type* for suggested values. It is recommended that the first table entry be "NO" meaning "No Separator".

Examples of values: NO (no separator), GEL (gel separator), M01 (manufacturer specific)"[225]

SAC-26 Cap Type (CE, Optional) 01353

Definition: "This field indicates the type of cap that is to be used with this container for decapping, piercing or other mechanisms. Refer to *User-defined Table 0381 – Cap type* for suggested values.

```
Examples of values: SCR (screw cap), PSH (push cap), FOIL (foil)"[226]
```

SAC-27 Additive (CWE, Optional) 00647

Definition: "This field identifies any additives introduced to the specimen before or at the time of collection. These additives may be introduced in order to preserve, maintain or enhance the particular nature or component of the specimen. It is a repetitive field. Refer to *HL7 Table 0371 – Additive* for valid values. 'The value set can be extended with user specific values."[227]
"When the SPM (Specimen) segment is sent together with the SAC segment the additive attribute value from the SPM segment can be included in the repeat field of the SAC additive attribute."[228]

SAC-28 Specimen Component (CE, Optional) 01355

Definition: "This field identifies the specimen component, e.g., supernatant, sediment, etc. Refer to *User-defined Table 0372 – Specimen component* for valid values. This table's values are taken from *NCCLS AUTO4*. The value set can be extended with user specific values."[229]

SAC-29 Dilution Factor (SN, Optional) 01356

Definition: "This field identifies the factor of dilution already performed on the specimen. The equipment entity that changes the dilution is responsible for sending this information to other equipment. If the endogenous content of the test (analyte) in the diluent is required for the calculation of the test (analyte) concentration, then the test (analyte) specific values should be exchanged between the systems via Master Files or other means.

```
Examples of use:
      |^1^:^5|    - means dilution 1 to 5, i.e., 1 part sample, 4
      parts diluent

      |^1^+|      - sample is diluted, but the factor is unknown
      |^1^:^1|    - not diluted sample

      ||    - dilution not changed"[230]
```

SAC-30 Treatment (CE, Optional) 01357

Definition: "This field identifies the specimen treatment performed during lab processing. Refer to *User-defined Table 0373 – Treatment* for valid values. This table's values are taken from *NCCLS AUTO4*. The value set can be extended with user specific values."[231]

SAC-31 Temperature (SN, Optional) 01358

Definition: "This field identifies the specimen temperature in degrees Celsius [°C] at the time of the

transaction specified in the EQU segment."[232]

SAC-32 Hemolysis Index (NM, Optional) 01359

Definition: "This field is the index identifier that is being used to describe the Hemolysis Index of the specimen."[233]

SAC-33 Hemolysis Index Units (CE, Optional) 01360

Definition: "This field is the unit's identifier that is being used to describe the Hemolysis Index of the specimen. It is recommended to use g/L. (The transmission of the index values is added here instead of the original use of the OBX segments, because the frequency of the transfer of the specimen details justifies use of more efficient mechanism.)

If this field is null, the recommended value is assumed."[234]

SAC-34 Lipemia Index (NM, Optional) 01361

Definition: "This field is the index identifier that is being used to describe the Lipemia Index of the specimen. It is recommended to use the optical turbidity at 600 nm (in absorbance units)."[235]

SAC-35 Lipemia Index Units (CE, Optional) 01362

Definition: "This field is the unit's identifier that is being used to describe the Lipemia Index of the specimen.

If this field is null, the recommended value is assumed."[236]

SAC-36 Icterus Index (NM, Optional) 01363

Definition: "This field is the index identifier that is being used to describe the Icterus Index of the specimen."[237]

SAC-37 Icterus Index Units (CE, Optional) 01364

Definition: "This field is the unit's identifier that is being used to describe the Icterus Index of the specimen. It is recommended to use mMol/L of bilirubin.

If this field is null, the recommended value is assumed."[238]

SAC-38 Fibrin Index (NM, Optional) 01365

Definition: "This field is the index identifier that is being used to describe the Fibrin Index of the specimen. In the case of only differentiating between Absent and Present, we recommend using 0 and 1 respectively and send the field Fibrin Index Units null."[239]

SAC-39 Fibrin Index Units (CE, Optional) 01366

Definition: "This field is the unit's identifier that is being used to describe the Fibrin Index of the specimen. "[240]

SAC-40 System Induced Contaminants (CE, Optional) 01367

Definition: "This field describes the specimen contaminant identifier that is associated with the specimen in this container. Refer to *User-defined Table 0374 – System induced contaminants* for valid values. This table's values are taken from *NCCLS AUTO4*. The value set can be extended with user specific values."[241]

SAC-41 Drug Interference (CE, Optional) 01368

Definition: "This field describes the drug interference identifier that is associated with the specimen. Refer to *User-defined Table 0382 – Drug interference* for suggested values."[242]

SAC-42 Artificial Blood (CE, Otpional) 01369

Definition: "This field describes the artificial blood identifier that is associated with the specimen. Refer to *User-defined Table 0375 – Artificial blood* for valid values. This table's values are taken from *NCCLS AUTO4*. The value set can be extended with user specific values."[243]

SAC-43 Special Handling Code (CWE) 01370

The PHIN Messaging Standard does not make use of this field.

SAC-44 Other Environmental Factors (CE) 01371

Definition: "This field describes other environmental factors that are associated with the specimen in a specific container, e.g., atmospheric exposure. Refer to *User-defined Table 0377 – Other environmental factors* for valid values. This table's values are taken from *NCCLS AUTO4*. The value set can be extended with user specific values."[244]

4. Code System/Value Set Tables

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. It is important, for message implementation, both to make sure that transmitted messages (message instances) contain valid values. 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; these tables are listed in this section below, and enumerate all of the code values that may be used for the specified field in this message.

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 may be simple or compound. Simple Value Sets are an enumerated list of codes drawn from a single code system. Compound Value Sets are an enumerated list of simple value sets. Compound Value Sets may not contain other compound value sets, and may not directly reference coding systems. These 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 vocabulary (identified with a Table) that is used for each field containing a coded value. For fields that use the datatype CE or CWE3, (these datatypes require that messages include the name of the code system as well as the code value), the message contains the OID that uniquely defines the coding system as well as the coded value itself.

The Value Sets are identified by an OID, but this OID does not get transmitted in any of the messages. However, the value set OID is useful and important when vocabulary items are modified or replaced. Each section below contains a header that describes the following items:

- table name,
- where the codes in the table come from, (i.e. the code system and its OID)
- the Value Sets and their OIDs (if any) that define the subsets of code from the code systems.,
- a description of how the codes in this table are to be used.

This header section is followed by a table in which lists each code value, and the Term associated with the code value. This Term is the text associated with the code, and is often used as the display text in user interfaces. For those tables where the code values are drawn from more than one code system, the OID for the code system is also listed in a column. The sections are in alphabetical order by table name.

Periodically, code values in code systems are updated to represent corrections or enhancements to the code system. A comprehensive table of code values, terms, and code system OIDs will be periodically made available so that implementers of messages using this Guide will be able to update their vocabulary. This new distribution will represent a wholesale replacement of the vocabulary listed in this document.

3 This contrasts with the ID datatype in which only the code value is passed. The distinction is based on the fact that ID data types are used only for fields in which only a single coding system can be used, and in which this coding system is always supplied by HL7. In such cases, it is superfluous to include the coding system OID in the message.

PH_P_RACE_CAT

Table Content Definition: Code System (CDC)
Code System Name: PH_P_RACE_CAT
Code System OID: 2.16.840.1.114222.4.5.3
Functional Description

These codes identify the Race of a Person using the codes for the categories defined by OMB and HL7 Version 2. These codes have been integrated, and imported by the CDC to form this internal Public Health Race Category code system.

PH_P_RACE_CAT Table Codes
Public Health Race Codes

Code	Term
1002-5	American Indian or Native Alaskan
2028-9	Asian
2054-5	Black
2076-8	Hawaiian or Pacific Islander
2106-3	White
2131-1	Other
U	Unknown

PH_SPECIES

Table Content Definition: Code System (CDC)
Code System Name: PH_SPECIES
Code System OID: 2.16.840.1.114222.4.5.13
Functional Description

This code system contains codes for the different species of organisms that are referred to in messages. At the current time, only two values are defined, but additional codes for species will be added to this table as surveillance and response expands to cover more non-human organisms as sources for specimen samples.

PH_SPECIES Table Codes
Public Health Species Codes

Code	Term
Human	Human
Other	Other

PH_Reason For Study

Table Content Definition: Code System (CDC)
Code System Name: PH_Reason For Study
Code System OID: 2.16.840.1.114222.4.5.8
Functional Description

This CDC code system contains codes used to describe the reason for a lab test or assay in the context of Public Health.

PH_Reason For StudyTable Codes
Public Health Reason For Study Codes

Code	Term
RFS-BWT	Bio-Watch
RFS-EMG	Emergency
RFS-OTH	Other
RFS-PT	Proficiency Testing

PHVS_BT_SPECCOND

Table Content Definition: Simple Value Set

Value Set Definition:

- Value Set Name: PHVS_BT_ SPECCOND
- OID: 2.16.840.1.114222.4.11.247
- Based on Code System: Specimen condition (HL7 Version 2.5 table 0493)
- Code System OID: 2.16.840.1.113883.12.493

Functional Description

This value set enumerates the subset of the HL7 version 2.5 Risk code values that are used in this type of message. It is a subset of the HL7 suggested code values from published table 0493. Note that these codes are introduced for HL7 v2.5 and this represents an extension for this implementation.

PHVS_BT_ SPECCOND Table Codes
Public Health Specimen Condition Values

Code	Term
AUT	Autolyzed
CLOT	Clotted
CON	Contaminated
COOL	Cool
FROZ	Frozen
HEM	Hemolyzed
ROOM	Room temperature
SNR	Sample not received

PHVS_BTSpecimen_type

Table Content Definition: Simple Value Set

Value Set Definition:

- Name: PHVS_ BTSpecimen_type
- OID: 2.16.840.1.114222.4.11.241
- Based on Code System: Specimen type (HL7 Version 2 table 487)
- Code System OID: 2.16.840.1.113883.12.487

Functional Description

This value set enumerates only those specimen types that are valid for the laboratory result message that this guide defines. These codes describe both the inherent type of the specimen as well as the type of sampling site it was taken from.

PHVS_ BTSpecimen_type Table Codes
Public Health Specimen Type Code Values

Code	Term
ABS	Abscess
AIRS	Air Sample
ASERU	Serum, Acute
ASP	Aspirate
BBL	Blood bag
BLIST	Blister
BPU	Blood product unit
BX	Biopsy
CSERU	Serum, Convalescent
CSITE	Catheter Insertion Site
EEYE	Environmental, Eye Wash
EFF	Environmental, Effluent
EFOD	Environmental, Food
EISO	Environmental, Isolette
ENVIR	Environmental, Unidentified Substance
EOTH	Environmental, Other Substance
ESOI	Environmental, Soil
ESOS	Environmental, Solution (Sterile)

Code	Term
ETA	Aspirate, Endotrach
FAW	Environmental, Water (Well)
FGA	Fluid, Abdomen
GASA	Aspirate, Gastric
ILLEG	Source of Specimen Is Illegible
LAVG	Lavage, Bronhial
ORH	Other
PUS	Pus
PUSFR	Pustule
SAL	Saliva
SER	Serum
SPS	Environmental, Spore Strip
SPT	Sputum
SPTC	Sputum - coughed
SPTT	Sputum - tracheal aspirate
TASP	Aspirate, Tracheal
VOM	Vomitus
WB	Blood, Whole
WND	Wound
WNDA	Wound abscess
WNDD	Wound drainage
WNDE	Wound exudate
WWA	Environmental, Water

PHVS_COUNTRY_NM

Table Content Definition: Simple Value Set

Value Set Definition:

- Name: PHVS_COUNTRY_NM
- OID: 2.16.840.1.114222.4.11.231
- Based on Code System: PH_COUNTRY_NM
- Code System OID: 2.16.840.1.114222.4.6.1

Functional Description

This Code System is a subset of ISO 3166 codes that is defined for, and maintained by, CDC for use in the Public Health Information Network. These are the two-digit ISO Country Codes, and this is the list of Countries in the world to be used in messages containing addresses that include Country as part of the postal address. It has been modified from ISO 3166 for use of the PHIN in the US.

PHVS_COUNTRY_NM Table Codes
Public Health Country Code Values

Code	Term
AD	ANDORRA
AE	UNITED ARAB EMIRATES
AF	AFGHANISTAN
AG	ANTIGUA AND BARBUDA
AI	ANGUILLA
AL	ALBANIA
AM	ARMENIA
AN	NETHERLANDS ANTILLES
AO	ANGOLA
AQ	ANTARCTICA
AR	ARGENTINA
AS	AMERICAN SAMOA
AT	AUSTRIA
AU	AUSTRALIA
AW	ARUBA
AZ	AZERBAIJAN
BA	BOSNIA AND HERZEGOVI
BB	BARBADOS
BD	BANGLADESH
BE	BELGIUM

Code	Term
BF	BURKINA FASO
BG	BULGARIA
BH	BAHRAIN
BI	BURUNDI
BJ	BENIN
BM	BERMUDA
BN	BRUNEI DARUSSALAM
BO	BOLIVIA
BR	BRAZIL
BS	BAHAMAS
BT	BHUTAN
BV	BOUVET ISLAND
BW	BOTSWANA
BY	BELARUS
BZ	BELIZE
CA	CANADA
CC	COCOS (KEELING) ISLA
CD	CONGO THE DEMOCRATIC REPUBLIC OF THE
CF	CENTRAL AFRICAN REPU
CG	CONGO
CH	SWITZERLAND
CI	CÔTE D'IVOIRE
CK	COOK ISLANDS
CL	CHILE
CM	CAMEROON
CN	CHINA
CO	COLOMBIA
CR	COSTA RICA
CU	CUBA
CV	CAPE VERDE
CX	CHRISTMAS ISLAND
CY	CYPRUS
CZ	CZECH REPUBLIC
DE	GERMANY
DJ	DJIBOUTI
DK	DENMARK
DM	DOMINICA
DO	DOMINICAN REPUBLIC
DZ	ALGERIA
EC	ECUADOR
EE	ESTONIA
EG	EGYPT
EH	WESTERN SAHARA
ER	ERITREA
ES	SPAIN
ET	ETHIOPIA
FI	FINLAND
FJ	FIJI
FK	FALKLAND ISLANDS (MA
FM	MICRONESIA FEDERATED STATES OF
FO	FAROE ISLANDS
FR	FRANCE
GA	GABON
GB	UNITED KINGDOM
GD	GRENADA
GE	GEORGIA
GF	FRENCH GUIANA
GH	GHANA
GI	GIBRALTAR
GL	GREENLAND
GM	GAMBIA
GN	GUINEA
GP	GUADELOUPE
GQ	EQUATORIAL GUINEA

Code	Term
GR	GREECE
GS	SOUTH GEORGIA AND TH
GT	GUATEMALA
GU	GUAM
GW	GUINEA-BISSAU
GY	GUYANA
HK	HONG KONG
HM	HEARD ISLAND AND MCD
HN	HONDURAS
HR	CROATIA
HT	HAITI
HU	HUNGARY
ID	INDONESIA
IE	IRELAND
IL	ISRAEL
IN	INDIA
IO	BRITISH INDIAN OCEAN
IQ	IRAQ
IR	IRAN ISLAMIC REPUBLIC OF
IS	ICELAND
IT	ITALY
JM	JAMAICA
JO	JORDAN
JP	JAPAN
KE	KENYA
KG	KYRGYZSTAN
KH	CAMBODIA
KI	KIRIBATI
KM	COMOROS
KN	SAINT KITTS AND NEVI
KP	KOREA DEMOCRATIC PEOPLE'S REPUBLIC OF
KR	KOREA REPUBLIC OF
KW	KUWAIT
KY	CAYMAN ISLANDS
KZ	KAZAKSTAN
LA	LAO PEOPLE'S DEMOCRATIC REPUBLIC
LB	LEBANON
LC	SAINT LUCIA
LI	LIECHTENSTEIN
LK	SRI LANKA
LR	LIBERIA
LS	LESOTHO
LT	LITHUANIA
LU	LUXEMBOURG
LV	LATVIA
LY	LIBYAN ARAB JAMAHIRI
MA	MOROCCO
MC	MONACO
MD	MOLDOVA REPUBLIC OF
MG	MADAGASCAR
MH	MARSHALL ISLANDS
MK	MACEDONIA THE FORMER YUGOSLAV REPUBLIC OF
ML	MALI
MM	MYANMAR
MN	MONGOLIA
MO	MACAU
MP	NORTHERN MARIANA ISL
MQ	MARTINIQUE
MR	MAURITANIA
MS	MONTSERRAT
MT	MALTA
MU	MAURITIUS
MV	MALDIVE
MW	MALAWI

Code	Term
MX	MEXICO
MY	MALAYSIA
MZ	MOZAMBIQUE
NA	NAMIBIA
NC	NEW CALEDONIA
NE	NIGER
NF	NORFOLK ISLAND
NG	NIGERIA
NI	NICARAGUA
NL	NETHERLANDS
NO	NORWAY
NP	NEPAL
NR	NAURU
NU	NIUE
NZ	NEW ZEALAND
OM	OMAN
PA	PANAMA
PE	PERU
PF	FRENCH POLYNESIA
PG	PAPUA NEW GUINEA
PH	PHILIPPINES
PK	PAKISTAN
PL	POLAND
PM	SAINT PIERRE AND MIQ
PN	PITCAIRN
PR	PUERTO RICO
PS	PALESTINIAN TERRITOR OCCUPIED
PT	PORTUGAL
PW	PALAU
PY	PARAGUAY
QA	QATAR
RE	RÉUNION
RO	ROMANIA
RU	RUSSIAN FEDERATION
RW	RWANDA
SA	SAUDI ARABIA
SB	SOLOMON ISLANDS
SC	SEYCHELLES
SD	SUDAN
SE	SWEDEN
SG	SINGAPORE
SH	SAINT HELENA
SI	SLOVENIA
SJ	SVALBARD AND JAN MAY
SK	SLOVAKIA
SL	SIERRA LEONE
SM	SAN MARINO
SN	SENEGAL
SO	SOMALIA
SR	SURINAME
ST	SAO TOME AND PRINCIP
SV	EL SALVADOR
SY	SYRIAN ARAB REPUBLIC
SZ	SWAZILAND
TC	TURKS AND CAICOS ISL
TD	CHAD
TF	FRENCH SOUTHERN TERR
TG	TOGO
TH	THAILAND
TJ	TAJIKISTAN
TK	TOKELAU
TM	TURKMENISTAN
TN	TUNISIA
TO	TONGA

Code	Term
TP	EAST TIMOR
TR	TURKEY
TT	TRINIDAD AND TOBAGO
TV	TUVALU
TW	TAIWAN PROVINCE OF CHINA
TZ	TANZANIA UNITED REPUBLIC OF
UA	UKRAINE
UG	UGANDA
UM	UNITED STATES MINOR
US	UNITED STATES
UY	URUGUAY
UZ	UZBEKISTAN
VA	HOLY SEE (VATICAN CI
VC	SAINT VINCENT AND TH
VE	VENEZUELA
VG	VIRGIN ISLANDS BRITISH
VI	VIRGIN ISLANDS U.S.
VN	VIET NAM
VU	VANUATU
WF	WALLIS AND FUTUNA
WS	SAMOA
YE	YEMEN
YT	MAYOTTE
YU	YUGOSLAVIA
ZA	SOUTH AFRICA
ZM	ZAMBIA
ZW	ZIMBABWE

PHVS_ EI_TYPE

Table Content Definition: Compound Value Set

Value Set Definition:

- Value Set Name: PHVS_EI_Type
- Value Set OID: 2.16.840.1.114222.4.11.228
- Component #1:
  - Value Set PHVS_EI_TYPE_HL7
  - Value Set OID: 2.16.840.1.114222.4.11.62
  - Based on Code System: EntityIDType (HL7 v2 table 148)
  - Code System OID: 2.16.840.1.113883.5.148
- Component #2:
  - Value Set PHVS_EI_TYPE_CDC
  - Value Set OID: 2.16.840.1.114222.4.11.61
  - Based on Code System: PH_EI_TYPE_CDC
  - Code System OID: 2.16.840.1.114222.4.5.1

Functional Description:

This Value Set comprises all legal values for Entity Id Type codes; it is drawn from two coding system, a CDC coding system and an HL7 coding system. These values describe the semantic type of an identifier, such as Social Security Number or Account Number. Note that the codes in this table are drawn from two different coding systems, an internal CDC coding system and an HL7 Version 3 coding system, therefore the OID for the appropriate coding system is shown in the table.

PHVS_EI_Type Table Codes
Public Health Entity Identifier Type Values

CodeSystem	Code	Term
2.16.840.1.113883.5.148	AN	Account number
2.16.840.1.113883.5.148	AS	Alias social security number
2.16.840.1.113883.5.148	BR	Birth registry number
2.16.840.1.113883.5.148	CI	CHIP Identification number
2.16.840.1.113883.5.148	DL	Driver's license number

CodeSystem	Code	Term
2.16.840.1.113883.5.148	DN	Doctor number
2.16.840.1.113883.5.148	EI	Employee number
2.16.840.1.113883.5.148	EN	Employer number
2.16.840.1.113883.5.148	FI	Facility ID
2.16.840.1.113883.5.148	GI	Guarantor internal identifier
2.16.840.1.113883.5.148	GN	Guarantor external identifier
2.16.840.1.114222.4.5.1	LID	Local/ NEDSS Identifier
2.16.840.1.113883.5.148	LN	License number
2.16.840.1.113883.5.148	LR	Local registry ID
2.16.840.1.113883.5.148	MA	Medicaid number
2.16.840.1.113883.5.148	MC	Medicare number
2.16.840.1.114222.4.5.1	MID	Manufacturer Identifier
2.16.840.1.114222.4.5.1	MLN	Manufacturer Lot Number
2.16.840.1.113883.5.148	MR	Medical record number
2.16.840.1.113883.5.148	MSSN	Mother's social security number
2.16.840.1.113883.5.148	NE	National employer identifier
2.16.840.1.113883.5.148	NH	National health plan identifier
2.16.840.1.113883.5.148	NI	National unique individual identifier
2.16.840.1.113883.5.148	NN	National person identifier xxx is ISO country code
2.16.840.1.113883.5.148	NPI	National provider identifier
2.16.840.1.114222.4.5.1	OTH	Other
2.16.840.1.113883.5.148	PI	Patient internal identifier
2.16.840.1.113883.5.148	PIN	Prison identification number
2.16.840.1.113883.5.148	PN	Person number
2.16.840.1.113883.5.148	PRN	Provider number
2.16.840.1.113883.5.148	PT	Patient external identifier
2.16.840.1.113883.5.148	RR	Railroad retirement number
2.16.840.1.113883.5.148	RRI	Regional registry ID
2.16.840.1.113883.5.148	RW	Ryan White identifier
2.16.840.1.113883.5.148	SL	State license
2.16.840.1.113883.5.148	SR	State registry ID
2.16.840.1.113883.5.148	SS	Social security number
2.16.840.1.113883.5.148	U	Unspecified
2.16.840.1.113883.5.148	UPIN	Medicare/HCFA's universal physician identifer No.
2.16.840.1.113883.5.148	VN	Visit number
2.16.840.1.113883.5.148	VS	VISA
2.16.840.1.113883.5.148	WC	WIC identifier
2.16.840.1.113883.5.148	XX	Organization identifier

PHVS_OBS_INTRP

Table Content Definition: Compound Value Set

Value Set Definition:

- Value Set Name: PHVS_OBS_INTRP
- Value Set OID: 2.16.840.1.114222.4.11.234
- Component #1:
  - Value Set PHVS_OBS_INTRP_HL7
  - Value Set OID: 2.16.840.1.114222.4.11.236
  - Based on Code System: HL7 v2 Table 0078
  - Code System OID: 2.16.840.1.113883.12.78
- Component #2:
  - Value Set PHVS_OBS_INTRP_CDC
  - Value Set OID: 2.16.840.1.114222.4.11.235
  - Based on Code System: PH_OBS_INTRP_CDC
  - Code System OID: 2.16.840.1.114222.4.5.12

Functional Description:

This table contains all the codes defined for abnormal flags and observation interpretations for version 2 table 78 plus NEDSS/CDC extension codes defined in coding system PH_OBS_INTRP_CDC.

PHVS_ OBS_INTRP Table Codes

Public Health Observation Interpretation Values

CodeSystem	Code	Term
2.16.840.1.113883.12.78	<	Below absolute low-off instrument scale
2.16.840.1.113883.12.78	>	Above absolute high-off instrument scale
2.16.840.1.113883.12.78	A	Abnormal; non-numeric results
2.16.840.1.113883.12.78	AA	Very abnormal; non-numeric units, panic
2.16.840.1.113883.12.78	B	Better--use when direction not relevant
2.16.840.1.113883.12.78	D	Significant change down
2.16.840.1.113883.12.78	H	Above high normal
2.16.840.1.113883.12.78	HH	Above upper panic limits
2.16.840.1.113883.12.78	I	Intermediate
2.16.840.1.113883.12.78	L	Below low normal
2.16.840.1.113883.12.78	LL	Below lower panic limits
2.16.840.1.113883.12.78	MS	Moderately susceptible
2.16.840.1.113883.12.78	N	Normal (applies to non-numeric results)
2.16.840.1.113883.12.78	null	No range defined, or normal ranges don't apply
2.16.840.1.114222.4.5.12	OTH	Other abnormal
2.16.840.1.113883.12.78	R	Resistant
2.16.840.1.113883.12.78	S	Susceptible
2.16.840.1.113883.12.78	U	Significant change up
2.16.840.1.113883.12.78	VS	Very susceptible*
2.16.840.1.113883.12.78	W	Worse--direction not relevant

PHVS_P_ETHN_GRP

Table Content Definition: Simple Value Set

Value Set Definition:

- Name: PHVS_P_ETHN_GRP
- OID: 2.16.840.1.114222.4.11.233
- Based on Code System: Ethnic group (HL7 Version 2 User Defined Table 189)
- Code System OID: 2.16.840.1.113883.12.189

Functional Description

This is a value set the currently encompasses all of the recommended codes in the published HL7 version 2 Ethnic group table. The codes used may change for public health and surveillance purposes, but the code system will remain the same since this is a User Defined table (but the codes included in the Value Set may change).

PHVS_ P_ETHN_GRP Table Codes

Public Health Ethnic Group Values

Code	Term
H	Hispanic or Latino
N	Not Hispanic or Latino
U	Unknown

PHVS_SEX

Table Content Definition: Simple Value Set

Value Set Definition:

- Name: PHVS_Sex
- OID: 2.16.840.1.114222.4.11.206
- Based on Code System: Administrative sex (HL7 v2 table 1)
- Code System OID: 2.16.840.1.113883.12.1

Functional Description

This is a Public Health Value set for NEDSS built on the set of codes defined by HL7 Version 2 Administrative Sex; note that these are not the same codes as are used in the HL7 Version 3 Administrative Gender code system. These codes are to indicate the apparent gender of a person from an administrative standpoint; any reason for ambiguity between Male and Female should be assigned the 'Unknown' code.

PHVS_SEX Table Codes
Public Health Gender Values

Code	Term
F	Female
M	Male
U	Unknown

HL70003 (Event Type)

Table Content Definition: Code System (HL7)
Code System Name: Event type
Code System OID: 2.16.840.1.113883.12.3
Functional Description

This table contains values defined by HL7; these are all of the legal codes for this field. Note that this is a table that is not user-modifiable, so it has all the entries that are legal. Only the value 'R22' is used in the messages covered by this guide.

The list of table values has been omitted.

HL70076 (Message Type)

Table Content Definition: Code System (HL7)
Code System Name: Message type
Code System OID: 2.16.840.1.113883.12.76
Functional Description

This table contains values defined by HL7; these are all of the legal codes for this field. Note that this is a table that is not user-modifiable, so it has all entries that are legal. Only the value 'OUL' is used in the messages covered by this guide.

The list of table values has been omitted.

HL70103 (Processing ID)

Table Content Definition: Code System (HL7)
Code System Name: Processing ID
Code System OID: 2.16.840.1.113883.12.103
Functional Description

This table contains values defined by HL7; these are all of the legal codes for this field. These codes permit the interface to be easily deployed and debugged without having to keep track of test messages in the back end.

HL70103 Table Codes - Processing ID

Code	Term
D	Debugging
P	Production
T	Training

HL70104 (Version ID)

Table Content Definition: Code System (HL7)
Code System Name: Version ID
Code System OID: 2.16.840.1.113883.12.104
Functional Description

This table contains values defined by HL7; these are all of the legal codes for this field. Note that this is a table that is not user-modifiable, so it has all entries that are legal for HL7. However, only messages that are V2.5 (HL7 Release 2.5) will be generated and processed.

HL70104 Table Codes - Version ID

Code	Term	Release Date
2.0 Release	2.0	September 1988
2.0D Demo	2.0	October 1988
2.1 Release	2. 1	March 1990
2.2 Release	2.2	December 1994
2.3 Release	2.3	March 1997
2.3.1 Release	2.3.1	May 1999
2.4 Release	2.4	November 2000
2.5 Release	2.5	May 2003

HL70119 (Order Control Code)

Table Content Definition: Code System (HL7)
Code System Name: Order control codes
Code System OID: 2.16.840.1.113883.12.119
Functional Description

This table contains values defined by HL7, and are all of the legal codes for this field. Note that this is a table that is not user-modifiable, so it has all entries that are legal for HL7. Usage of the various order control codes will be determined by program specific supplements to this guide.

The list of table values has been omitted.

HL70125 (Value Type)

Table Content Definition: Code System (HL7)
Code System Name: Value type
Code System OID: 2.16.840.1.113883.12.125
Functional Description

This table contains values defined by HL7, and are all of the legal codes for this field. Note that this is a table that is not user-modifiable, so it has all entries that are legal for HL7; only code values ‘CE’ (coded entry), ‘TX’ (text), ‘NM’ (numeric) are supported for this application.

HL70125 Table Codes - Value type

Code	Term
AD	Address
CE	Coded Entry
CF	Coded Element With Formatted Values
CK	Composite ID With Check Digit
CN	Composite ID And Name
CP	Composite Price
CX	Extended Composite ID With Check Digit
DT	Date
ED	Encapsulated Data
FT	Formatted Text (Display)
MO	Money
NM	Numeric
PN	Person Name
RP	Reference Pointer
SN	Structured Numeric
ST	String Data.
TM	Time
TN	Telephone Number
TS	Time Stamp (Date & Time)
TX	Text Data (Display)
XAD	Extended Address
XCN	Extended Composite Name And Number For Persons
XON	Extended Composite Name And Number For Organizations
XPN	Extended Person Name
XTN	Extended Telecommunications Number

HL70155 (Application Acknowledgement)

Table Content Definition: Code System (HL7)
Code System Name: Application acknowledgment
Code System OID: 2.16.840.1.113883.12.155
Functional Description

This table contains values defined by HL7, and are all of the legal codes for this field. Note that this is a table that is not user-modifiable, so it has all entries that are legal for HL7. Note also that this table is not used in the initial release of the messaging software, and the field is not valued.

HL70155 Table Codes - Application acknowledgment

Code	Term
AL	Always
ER	Error/reject conditions only
NE	Never
SU	Successful completion only

HL70207 (Processing Mode)

Table Content Definition: Code System (HL7)
Code System Name: Processing mode
Code System OID: 2.16.840.1.113883.12.207
Functional Description

This table contains values defined by HL7, and are all of the legal codes for this field. These codes permit the interface to be easily deployed and debugged without having to keep track of test messages in the back end. Note that this code is not placed in the field (the 'not present' value below) for normal production processing (the default).

HL70207 Table Codes - Processing mode

Code	Term
A	Archive
I	Initial load
Not present	Not present (the default, meaning current processing)
R	Restore from archive
T	Current processing, transmitted at intervals (scheduled or on demand)

HL70354 (Message Structure)

Table Content Definition: Code System (HL7)
Code System Name: Message structure
Code System OID: 2.16.840.1.113883.12.354
Functional Description

This table contains values defined by HL7, and are all of the legal codes for this field. Note that this is a table that is not user-modifiable, so it has all entries that are legal, although only the value 'OUL_R22' is used in the messages covered by this guide.

The list of table values has been omitted.

HL70369 (Specimen Role)

Table Content Definition: Code System (HL7 V2 User-Defined Table)
Code System Name: Specimen Role
Code System OID: 2.16.840.1.113883.12.369
Functional Description

This table contains values drawn from HL7 version 2 which identify what type of role the specimen plays in the test or assay. [Note: This HL7 table does not currently provide a code for Environmental samples.]

HL70369 Table Codes - Specimen Role

Code	Term
B	Blind Sample
C	Calibrator
P	Patient
Q	Control specimen
R	Replicate (of patient sample as a control)

HL70371 (Additive)

Table Content Definition: Code System (HL7 V2 User-Defined Table)
Code System Name: Additive
Code System OID: 2.16.840.1.113883.12.371
Functional Description

This table contains values drawn from HL7 version 2 which identify the additives in a specimen.

HL70371 Table Codes – Additive

Code	Term
BOR	Borate
C32	3.2% Citrate
C38	3.8% Citrate
EDTK	Potassium/K EDTA
EDTN	Sodium/Na EDTA
HCL6	6N HCL
HEPL	Lithium/Li Heparin
HEPN	Sodium/Na Heparin

HL70376 (Special Handling Considerations)

Table Content Definition: Code System (HL7 V2 User-Defined Table)
Code System Name: Special handling considerations
Code System OID: 2.16.840.1.113883.12.376
Functional Description

This table contains values drawn from HL7 version 2 which capture instructions for the handling of specimens.

HL70376 Table Codes - Special handling considerations

Code	Term
AMB	Ambient Temperature
C37	Body temperature
CAMB	Critical ambient temperature
CATM	Critical do not expose to atmosphere - Do not uncap
CFRZ	Critical Frozen
CREF	Critical refrigerated
DFRZ	Deep frozen
DRY	Dry
FRZ	Frozen temperature
MTLF	Metal Free
NTR	Liquid nitrogen
PRTL	Protect from light
PSA	Do not shake
PSO	No shock
REF	Refrigerated temperature
UFRZ	Ultra frozen
UPR	Upright

HL70445 (Identity Reliability)

Table Content Definition: Code System (HL7 V2 User-Defined Table)
Code System Name: Identity Reliability Code
Code System OID: 2.16.840.1.113883.12.445
Functional Description

This table contains values from HL7 version 2 which define the credibility of the Patient identity.

HL70445 Table Codes - Identity Reliability Code

Code	Term
AL	Patient/Person Name is an Alias
UA	Unknown/Default Address
UD	Unknown/Default Date of Birth
US	Unknown/Default Social Security Number

HL70488 (Specimen Collection Method)

Table Content Definition: Code System (HL7 version 2.5)
Code System Name: Specimen Collection Method
Code System OID: 2.16.840.1.113883.12.488
Functional Description

This table contains values used for the Specimen Collection Method.

HL70488 Table Codes - Specimen Collection Method

Code	Term
ANP	Plates, Anaerobic
BAP	Plates, Blood Agar
BCAE	Blood Culture, Aerobic Bottle
BCAN	Blood Culture, Anaerobic Bottle
BCPD	Blood Culture, Pediatric Bottle
BIO	Biopsy
CAP	Capillary Specimen
CATH	Catheterized
CVP	Line, CVP
EPLA	Environmental, Plate
ESWA	Environmental, Swab
FNA	Aspiration, Fine Needle
KOFFP	Plate, Cough
LNA	Line, Arterial
LNV	Line, Venous
MARTL	Martin-Lewis Agar
ML11	Mod. Martin-Lewis Agar
MLP	Plate, Martin-Lewis
NYP	Plate, New York City
PACE	Pace, Gen-Probe
PIN	Pinworm Prep
PNA	Aterial puncture
PRIME	Pump Prime
PUMP	Pump Specimen
QC5	Quality Control For Micro
SCLP	Scalp, Fetal Vein
SCRAPS	Scrapings
SHA	Shaving
SWA	Swab
SWD	Swab, Dacron tipped
TMAN	Transport Media, Anaerobic
TMCH	Transport Media, Chalamydia
TMM4	Transport Media, M4
TMMY	Transport Media, Mycoplasma
TMOT	Transport Media,
TMP	Plate, Thayer-Martin
TMPV	Transport Media, PVA
TMSC	Transport Media, Stool Culture
TMUP	Transport Media, Ureaplasma
TMVI	Transport Media, Viral
VENIP	Venipuncture
WOOD	Swab, Wooden Shaft

HL70491 (Specimen Quality)

Table Content Definition: Code System (HL7 V2 User-Defined Table)
Code System Name: Specimen quality
Code System OID: 2.16.840.1.113883.12.491
Functional Description

This table contains values drawn from HL7 version 2 which identify the quality of a specimen.

HL70491 Table Codes - Specimen quality

Code	Term
E	Excellent
F	Fair
G	Good
P	Poor

Other HL7 Tables

The following HL7 tables do not have PHIN vocabularies assigned at this point. These tables will be assigned vocabularies by specific programs. HL7 User defined tables may have some suggested vocabulary provide by HL7. HL7 Defined tables always have an HL7 supplied vocabulary.

Table Name	Source Segment	HL7 Table Type	Description
HL70002	PID	User Defined	Marital Status
HL70008	MSA	HL7	Acknowledgement Code
HL70038	ORC	HL7	Order Status
HL70051	DG1	User Defined	Diagnosis Code
HL70052	DG1	User Defined	Diagnosis Type
HL70063	NK1	User Defined	Relationship
HL70085	OBX	HL7	Observation Result Status
HL70105	NTE	HL7	Source of Comment
HL70121	ORC	HL7	Response flag
HL70131	NK1	User Defined	Contact Role
HL70136	DG1	HL7	Yes/no indicator
HL70171	PID	User Defined	Citizenship
HL70177	ORC	User Defined	Confidentiality code
HL70228	DG1	User Defined	Diagnosis Classification
HL70327	NK1	User Defined	Job code
HL70328	NK1	User Defined	Employee classification
HL70335	TQ1	User Defined	Repeat pattern
HL70357	ERR	HL7	Message error condition codes
HL70359	DG1	HL7	Diagnosis Priority
HL70361	MSH	User Defined	Application
HL70370	SAC	HL7	Container Status
HL70371	SAC	HL7	Additives/Preservatives
HL70374	SAC	User Defined	System Induced Contaminants
HL70375	SAC	User Defined	Artificial Blood
HL70377	SAC	User Defined	Other Environmental Factors.
HL70378	SAC	User Defined	Carrier Type
HL70379	SAC	User Defined	Tray Type
HL70380	SAC	User Defined	Separator Type
HL70381	SAC	User Defined	Cap Type
HL70382	SAC	User Defined	Drug Interference
HL70383	INV	HL7	Substance Status
HL70384	INV	HL7	Substance Type
HL70385	INV	User Defined	Manufacturer Identifier
HL70385	SID	User Defined	Manufacturer Identifier
HL70386	INV	User Defined	Supplier Identifier
HL70389	TCD	HL7	Analyte Repeat Status
HL70429	PID	User Defined	Production Class Code
HL70447	PID	User Defined	Breed Code
HL70451	INV	User Defined	Substance Identifier
HL70472	TQ1	HL7	TQ conjunction ID

Table Name	Source Segment	HL7 Table Type	Description
HL70482	ORC	HL7	Order type
HL70483	ORC	HL7	Authorization Mode
HL70485	TQ1	User Defined	Extended Priority Codes
HL70490	SPM	HL7	Specimen Reject Reason
HL70492	SPM	HL7	Specimen Appropriateness
HL70494	SPM	HL7	Specimen Child Role
HL70516	ERR	HL7	Error severity
HL70517	ERR	User Defined	Inform person indicator
HL70518	ERR	User Defined	Override type
HL70519	ERR	User Defined	Override reason code
HL70533	ERR	User Defined	Application error code
HL70543	SPM	User Defined	Specimen Collection Site
HL70544	SPM	User Defined	Container Condition

5. Use of Object Identifiers (OIDs)

In order for computers to manipulate records about objects, the objects, and often the records about the objects, need to be uniquely identified in some way. There are many mechanisms for doing this, and two currently popular ones are UUIDs and OIDs. Health Level Seven has identified OIDs as the preferred mechanisms for the unambiguous global identity of coding systems. This document describes how OIDs are used by CDC to support the requirements of the PHIN (Public Health Information Network).

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.

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 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 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.

Structure and Use at CDC

Laboratory Results Messaging will use 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, e.g., ORC.3 and CX data types, e.g., PID.3.

- 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. (Refer to Section 6 above for more discussion). This usage is shown within the CE, e.g., PID.22, CWE, e.g., SPM.4, and CQ data types, e.g., SPM.12.

All of the OIDs that are assigned by CDC to support Laboratory Results 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 Laboratory Results 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.

1. Start with the PHIN root.
2. Add a suffix that indicates this OID represents a partner ID.
3. 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].

Given that the current implementation includes cities participating in the BioWatch program as senders, there would be potential adverse consequences from including this set of OIDs in a widely distributed document. Therefore, implementers of Laboratory Results Messaging will be provided with a list of the OIDs they need to identify message senders and message receivers. This list will be provided using a different delivery vehicle than this document.

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, which for Laboratory Results Messaging, will be a LRN lab. The namespace OIDs are built under the assumption that identifier uniqueness is guaranteed by 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. As noted above, these partner ids will be issued separately.
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
Message Partner ID	3.1
Order (Placer/Filler) ID	3.5
Container ID	3.7
Accession (Specimen) ID	3.9

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 Laboratory Results Messaging 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.

6. Appendix A. HL7 Examples of Order Response Messages

Example messages for laboratory-based order response messages.

Example 1: No errors processing order

```
MSH|^~\&|^2.16.840.1.114222.4.3.2.1..^ISO|^2.16.840.1.114222.4.1.^ISO
   |^2.16.840.1.114222.4.3.2.3^ISO|^2.16.840.1.114222.4.1.1^ISO
   |199602171830||OML^O21^OML_O21|199602171831|P^T|2.5|||||||||1.0
MSA|AA|199602171830
PID|||95101100001^^^^^MediLabCo-Seattle&45D0470381&CLIA~423523049^^^^SS
   ~DOEJ34556057^^^^DL^^^19970801^WA||Doe^John^Q^Jr||19641004|M||W
   |100 Main St.^Apt B^Seattle^WA^98109^USA^^^King||^^^^^206^9998888|
   ||M||||||N
ORC|OK|908654^2.16.840.1.114222.4.3.2.1...3.5^ISO
   |4537-23^2.16.840.1.114222.4.3.2.1...3.5^ISO
   |231^2.16.840.1.114222.4.3.2.1...3.5^ISO|SC|F|||199602171830
   |2.16.840.1.114222.4.1.212^Nurse^Nancy
   |2.16.840.1.114222.4.1.213^Jones^M^J^Jr^Dr^MD
   |2.16.840.1.114222.4.1.213^Jones^M^J^Jr^Dr^MD|||199602171830|||||
   |Columbia Valley Memorial Hospital
   |211 W. 4TH ST.^^CRAWFORD^TN^37012|^^^^^308^8652141
   |211 W. 4TH ST.^^CRAWFORD^TN^37012|||199602181200
TQ1|1|1|Once|||||199602171830||S
OBR|1|908654^2.16.840.1.114222.4.3.2.1...3.5^ISO
   |4537-23^2.16.840.1.114222.4.3.2.1...3.5^ISO
   |24313-9^HEPATITIS HCFA 96 PANEL^LOINC
   ^78334^Hepatitis Panel, Measurement^L||||||||||||
   |2.16.840.1.114222.4.1.213^Jones^M^J^Jr^Dr^MD|^^^^^206^9998888
```

```
SPM|1|38294521||BLDV
SAC||B96345||1ZE80A71124371^UPS
```

Example 2: Fatal error processing order.

```
MSH|^~\&|^2.16.840.1.114222.4.3.2.1..^ISO|^2.16.840.1.114222.4.1.^ISO
   |^2.16.840.1.114222.4.3.2.3^ISO|^2.16.840.1.114222.4.1.1^ISO
   |199602171830||OML^O21^OML_O21|199602171831|P^T|2.5|||||||||1.0
MSA|AE|199602171830
ERR||ORC^1^1|101^Required field missing^HL70357|E||||
   |Can't process order message without order control code in ORC-1|HD
```

Example 3: Warning error processing order

```
MSH|^~\&|^2.16.840.1.114222.4.3.2.1..^ISO|^2.16.840.1.114222.4.1.^ISO
   |^2.16.840.1.114222.4.3.2.3^ISO|^2.16.840.1.114222.4.1.1^ISO
   |199602171830||OML^O21^OML_O21|199602171830|P^T|2.5|||||||||1.0
MSA|AA|199602171830
ERR||ORC^1^10|207^Application internal error^HL70357|W
   |W156^Unknown Entered By^HL70533|
   |Entered by '2.16.840.1.114222.4.1.212\S\Nurse\S\Nancy' not found,
   Ordering Provider defaulted as Entered By.|
PID|||95101100001^^^^^MediLabCo-Seattle&45D0470381&CLIA~423523049^^^^SS
   ~DOEJ34556057^^^^DL^^^19970801^WA||Doe^John^Q^Jr||19641004|M||W
   |100 Main St.^Apt B^Seattle^WA^98109^USA^^^King||^^^^^206^9998888|
   ||M||||||N
ORC|OK|908654^2.16.840.1.114222.4.3.2.1...3.5^ISO
   |4537-23^2.16.840.1.114222.4.3.2.1...3.5^ISO
   |231^2.16.840.1.114222.4.3.2.1...3.5^ISO|SC|F|||199602171830
   |2.16.840.1.114222.4.1.213^Jones^M^J^Jr^Dr^MD
   |2.16.840.1.114222.4.1.213^Jones^M^J^Jr^Dr^MD
   |2.16.840.1.114222.4.1.213^Jones^M^J^Jr^Dr^MD|||199602171830|||||
   |Columbia Valley Memorial Hospital
   |211 W. 4TH ST.^^CRAWFORD^TN^37012|^^^^^308^8652141
   |211 W. 4TH ST.^^CRAWFORD^TN^37012|||199602181200
TQ1|1|1|Once|||||199602171830||S
OBR|1|908654^2.16.840.1.114222.4.3.2.1...3.5^ISO
   |4537-23^2.16.840.1.114222.4.3.2.1...3.5^ISO
   |24313-9^HEPATITIS HCFA 96 PANEL^LOINC
   ^78334^Hepatitis Panel, Measurement^L||||||||||||
   |2.16.840.1.114222.4.1.213^Jones^M^J^Jr^Dr^MD|^^^^^206^9998888
SPM|1|38294521||BLDV
SAC||B96345||1ZE80A71124371^UPS
```

End Notes – Sections quoted from HL7 Messaging Standard Version 2.5

[1] 2.5.2

[2] 2.5.3

[3] 2.3.1

[4] 2.A.6

[5] 2.A.8

[6] 2.A.11

[7] 2.A.13

[8] 2.A.14

[9] 2.A.20

[10] 2.A.21

[11] 2.A.22

[12] 2.A.25

[13] 2.A.26

[14] 2.A.30

[15] 2.A.31

[16] 2.A.32

[17] 2.A.33

[18] 2.A.35

[19] 2.A.36

[20] 2.A.37

[21] 2.A.44

[22] 2.A.45

[23] 2.A.47

[24] 2.A.53

[25] 2.A.57

[26] 2.A.66

[27] 2.A.67

[28] 2.A.69

[29] 2.A.70

[30] 2.A.74

[31] 2.A.75

[32] 2.A.77

[33] 2.A.81

[34] 2.A.78

[35] 2.A.85

[36] 2.A.86

[37] 2.A.87

[38] 2.A.88

[39] 2.A.89

[40] 2.15.9.3

[41] 2.15.9.4

[42] 2.15.9.5

[43] 2.15.9.6

[44] 2.15.9.7

[45] 2.15.9.9

[46] 2.15.9.9

[47] 2.15.9.10

[48] 2.15.9.11

[49] 2.15.9.12

[50] 2.15.9.17

[51] 2.15.9.21

[52] 2.15.9.21

[53] 2.15.9.21

[54] 2.15.9.21

[55] 2.15.8

[56] 2.15.8.1

[57] 2.15.8.2

[58] 2.15.8.4

[59] 2.15.5.2

[60] 2.15.5.3

[61] 2.15.5.4

[62] 2.15.5.5

[63] 2.15.5.6

[64] 2.15.5.7

[65] 2.15.5.8

[66] 2.15.5.9

[67] 2.15.5.10

[68] 2.15.5.11

[69] 2.15.5.12

[70] 2.15.12

[71] 2.15.12

[72] 2.15.12.1

[73] 2.15.12.2

[74] 2.15.12.3

[75] 2.15.12.4

[76] 2.15.12.5

[77] 2.15.12.6

[78] 2.15.10.1

[79] 2.15.10.2

[80] 2.15.10.3

[81] 2.15.10.4

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