Implementation Guide for Transmission of Laboratory-Based Reporting of Public Health Information using Version 2.3.1 of the Health Level Seven (HL7) Standard Protocol

Implementation Guide Update
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Centers for Disease Control and Prevention

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1 Introduction

1.1 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 specifications for sending laboratory-reportable findings to appropriate state, territorial, and federal health agencies using Health Level Seven (HL7) messages. The message is not specific to any pathogen or reportable condition and is applicable for most laboratory-reportable findings in the National Public Health Surveillance System (NPHSS) as defined by the Council of State and Territorial Epidemiologists (CSTE).

This document is a guide for electronic communication of reportable diseases, consistent with recommended reporting of reportable conditions from laboratories to public health agencies using HL7 Version 2.3.1. The implementation guide follows the specifications described in the HL7 Standard Version 2.3.1 and focuses on one type of HL7 message, the Observational Report - Unsolicited (ORU). HL7 describes the order and structure of data fields for sharing test results, but does not stipulate which coding system or dictionary of descriptive terms should be used to identify specific tests and findings unambiguously; this is determined by agreement of the parties sharing the information. For sharing laboratory-based reports of public health findings, these coding systems are recommended: 1) Logical Observation Identifier Names and Codes (LOINC®) for specific laboratory procedure names, 2) the Systematized Nomenclature for Human and Veterinary Medicine (SNOMED®) for descriptions of findings, notably organism names, and 3) International Classification of Diseases, Clinical Modification (ICD-9-CM) coding system to code signs, symptoms, injuries, diseases, and conditions. The guide gives a description of the utility and requirement of each data field in the ORU message, provides examples of complete messages, and includes tables of recommended codes.

1.2 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 pre-empts 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, "[N]othing 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) specifically deal 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 reporting. The HL7 message as defined in this document was carefully developed to provide a method for evidence of reportable conditions to be transmitted electronically. We believe that laboratories can report this public health information using the HL7 standard as described here and that these reports will not be altered by HIPAA provisions.

1.3 Scope

The specifications 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-based reporting of public health information. This guide describes a data exchange protocol applicable for reporting most diseases of public health importance.

This implementation guide is based on and consistent with the HL7 Standard, Version 2.3.1. Any user-defined variations from the standard are clearly described. Reporting requirements for reportable diseases may vary by state. Electronic copies of this document are available.

1.4 Contacts

HL7 Contact
For information about HL7, contact:
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2 HL7 Concepts

This project remains true to the HL7 2.3.1 Final Standard, dated May, 1999. The entries below are derived from that standard for use with Electronic Laboratory Reporting.

2.1 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, the hex characters 0D0A0D0A represent the end of each message.

Segment: A segment is a logical grouping of data fields. 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. Each field is identified by the segment it is in and the position within the segment; e.g., PID-5 is the fifth field of the PID segment. Optional data fields need not be valued. Whether a field is required, optional, or conditional in a segment is specified in the segment attribute tables. The designations are: R=Required, O=Optional, C=Conditional on the trigger event or on some other field(s). The field definition should define any conditionality for the field: X=Not Supported with this trigger event, B=Left in for backward compatibility with previous versions of HL7. 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 guide 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. Appendix D provides a complete listing of data types used in this document and their definitions.

Delimiters: The delimiter values are given in MSH-2 and used throughout the message. Applications must use agreed upon delimiters to parse the message. The recommended delimiters for laboratory messages are ‘0D0A’ = Segment Terminator (hex characters equivalent to a Carriage Return and Line Feed); | = Field Separator; ^ = Component Separator; & = Sub-Component Separator; ~ = Repetition Separator; and \ = Escape Character.

Message syntax: The 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 a patient is admitted may cause the need for data about that patient to be sent to a number of other systems. 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.

Z segments: All message types, trigger event codes, and segment ID codes beginning with Z are reserved for locally defined messages. No such codes are defined within the HL7 Standard. In this Guide are references to a legacy z-segment that is sent in the 2.3.z ELR messages designed before the 2.3.1 standard included a place to capture the Ordering Facility Name, Address and Phone Number, as well as the Ordering Provider's address. These fields are sent in the ZLR segment from some participating Laboratories and converted to this 2.3.1 message format. That ZLR segment also contains Next of Kin information that is translated to a NK1 segment, and may contain a Reported Patient Age field that is converted to an OBR/OBX pair that uses the LOINC code for Reported Patient Age for 2.3.1 Electronic Laboratory Reporting.

2.2 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.

- Components, subcomponents, or repetitions that are not valued at the end of a field need not be represented by component separators. 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 that is expected is not included, treat it as if all data fields within were not present.

- 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.

2.3 Unsolicited Observation Message (ORU)/ Event R01

Laboratory information is reported through the ORU^R01 message to public health agencies. The supported segments and usage for Public Health ORU/R01 message structure are described below.

ORU - unsolicited transmission of an observation message (event R01)

ORU^R01	**Observational Results (Unsolicited)**	**Chapter**
MSH	Message Header segment	2
PID	Patient Identification segment	3
NK1	Next-Of-Kin segment	3
ORC	Order common segment	4
{		
OBR	Observations Report ID segment	7
{		
[OBX]	Observation/Result segment	7
{ [NTE] }	Notes and comments segment	2
}		
}		

Using the basic “building blocks” of MSH, PID, OBR and OBX segments (in bold type in table above), a clinical report can be constructed as a three-level hierarchy with the patient information (PID) segment at the upper level, one or more order records (OBR) at the next level, and one or more observation records (OBX) at the bottom. The Message Header (MSH) segment is required for all HL7 messages. The Next of Kin (NK1) segment can provide information about parties associated with the patient. The common order (ORC) segment transmits fields common to all types of requested services, and the notes and comments (NTE) segment is only supported at the Result level for ELR.

While certain elements of the message are required for laboratory-based reporting, data in non-required fields will not be rejected. The standard ORU message allows for the optional use of PD1, PV1, PV2, CTI, and DSC segments, but these segments are not defined or used in the laboratory-based reporting message. For this reason, there is no discussion of these segments in this implementation guide. Messages containing these segments, however, will not be rejected. For electronic laboratory purposes, we do not anticipate the use of acknowledgment messages; therefore, we have not defined these in this guide.

Example: Laboratory Report of Bordetella Pertussis

MSH|^~\&|| LABCORP^34D0655059^CLIA|WA|WA|200102171830|
|ORU^R01|200102170042|P|2.3.1|<hex 0D0A>
PID|||10543^^^^^Columbia Valley Memorial Hospital&01D0355944&CLIA~95101100001^^^^^MediLabCo-Seattle&45D0470381&CLIA||Doe^John^Q^Jr^^^L|Clemmons^^^^^^M|19841004|M||W|2166 WellsDr^AptB^Seattle^WA^98109^USA^M^^King^^A||^PRN^PH^^^206^6793240|||S^single^HL70002|||423523049|DOEJ34556057^WA^ 19970801||N|||||||| <hex 0D0A>
NK1|1|Doe^Jane^Lee^^^^L|MTH^mother^HL70063|2166 Wells Dr^Apt B^Seattle^WA^98109^USA^M^^King^^A|(206) 679-3240^PRN^PH^^^206^6793240|<hex 0D0A>
ORC|CN||||||||||||||||||||MediLabCo - Northwest Pathology Ltd., Central Campus^^45D0470381^^^CLIA|2217 Rainier Way^^Renton^WA^98002^USA^M^^Black Hawk^^A|^^PH^helpline@medilab.com^^206^5549097 |115 Pike Plaza^Suite 2100^Seattle^WA^98122^USA^^^^^A|<hex 0D0A>
OBR|||MICR9700342|654324^Throat culture^L|||200011270930|||||||THRT&Throat&HL70070|1234567^Welby^M^J^Jr^Dr^MD|^^^^^206^4884144|||||||F<hex 0D0A>
OBX||CE|626-2^Microorganism identified, Throat Culture^LN||L-12801^Bordetella pertussis^SNM||||||F||200012161330|45D0470381|<hex 0D0A>

This example demonstrates an ORU message for a laboratory report of Bordetella Pertussis, sent from a laboratory in Seattle to Washington Department of Health specifying that the pertussis microorganism was identified from the throat culture of the patient John Q Doe Jr.

The MSH segment shows a Version 2.3.1 ORU message being sent from a laboratory in Seattle to the WADOH application in the Washington Department of Health on February 17, 2001, at 6:30 pm. The message control ID indicates that this is the 42nd message of the day from this laboratory.
The PID segment shows that the patient named John Q. Doe, Jr., is a white male born on October 4th, 1984. All the patient identifiers and demographic details such as address, phone number, Social Security number, driver's license numbers, etc., are included in this segment. The NK1 segment shows the reported data for the patient's mother, Jane Lee Doe as the next of kin. The mother's contact information such as home address and phone number is shown here. The ORC segment shows the name, address, phone number, email address and CLIA identifier for MediLabCo. the ordering facility. The OBR segment specifies that a report identified as MICR9700342 was processed on November 27, 2000, at 9:30 am. The report was a throat culture requested by Dr. M.J. Welby, Jr., MD, whose phone number is (206) 488-4144. This is the final result. The OBX segment specifies that the organism Bordetella pertussis was identified from the throat culture. This is the final result and was observed on December 16, 2000, at 1:30 p.m.

2.4 HL7 Standard Segment Usage

Each message is composed of a series of segments. Each segment is identified by its unique three-letter code. The segments used in electronic laboratory-based reporting (ELR) are defined below. The segment definitions are given in the most logical order for ELR messages and do not strictly adhere to the order in which they are presented in the HL7 Standard. However, for ease of reference, the number preceding each segment and field name indicates its reference place in the HL7 Standard, Version 2.3.1. Because the segments here are re-ordered, these reference numbers are not always in sequential order.

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, whether required (R), optional (O), conditional (C), or for backwards compatibility (B), whether repeating (Y), the applicable table number for values, the field item number, and the field name.

Following the table, all 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 reporting are provided, a description of the data type is given in small font, and a statement about how the fields are valued in the example is given. Fields that we do not anticipate physicians using are not defined. Users interested in learning more about fields not discussed here should refer to the full text of HL7 Final Standard Version 2.3.1 dated 11/2000.

2.5 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.
HL7 LEN	The maximum length of the field suggested by the HL7 2.3.1 Standard.
NBS LEN	The maximum defined length of the fields based on what the NBS database will support. This value is often larger than the suggested HL7 length.
HL7 DT	The data type of the element.
HL7 OPT	Whether the field is required, optional, or conditional in a segment. Required fields are defined by HL7 2.3.1 and do not refer to requirements for reporting laboratory findings to public health agencies. The designations are:
	Required.
	Optional.
	Conditional on the trigger event or on some other field(s). The field definitions following the segment attribute table should specify the algorithm that defines the conditionality for the field.
	Not Supported with this trigger event.
	Left in for backward compatibility with previous versions of HL7. The field definitions following the segment attribute table should denote the optionality of the field for prior versions.
HL7 RP/#	Indicates if element repeats. If the number of repetitions is limited, the number of allowed repetitions is given.
HL7 TBL#	Specific table reference. Tables used in public health messages are listed in Appendix C.
HL7 ITEM#	HL7 unique item number for each element.
Element Name	Descriptive name of element in the segment.
ELR Usage	For this implementation, describes whether this field is required or optional for the ELR message. If it is marked “Supported”, it can be handled if it is received but the information has not yet been sent by the Lab at all or appears very infrequently. If it is marked “Not Supported”, it is not expected nor can it be handled by the current WADOH system database.

3 Segment Definitions

3.1 MESSAGE CONTROL SEGMENTS

These segments are necessary to support the functionality described in the Control/Query chapter of the HL7 standard.

3.1.1 Message Header (MSH) Segment

The MSH segment is used to define the intent, source, destination, and some specifics of the syntax of a message. This table is updated to reflect the implementation requirements specific to ELR.

MSH Attributes

SEQ	HL7 LEN	NBS LEN	HL7 DT	HL7 R/O	HL7 RP#	HL7 TBL#	HL7 ITEM#	ELEMENT NAME	ELR Usage
1	1	N/A	ST	R			00001	Field separator	
2	4	N/A	ST	R			00002	Encoding characters	
3	180	163	HD	O			00003	Sending application	
3.1		13*	IS					Sending Application Name	*Lab system name must be 13 characters or less as it is used to populate MI_Communication_function.type_cd = 'SENDER' plus the sending application name as sent in this field, i.e. "SENDER_LABSYSTEM-LIS"
3.2		100	ST					Sending Application ID	
3.3		50	ID					Sending Application ID Type	
4	180	250	HD	R			00004	Sending facility	|lab name^ CLIA code^CLIA|
4.1		100	IS					Sending Facility Name	
4.2		100	ST					Sending Facility ID	
4.3		50	ID					Sending Facility ID Type	
5	180	250	HD	R			00005	Receiving application	Expecting state postal code plus "DOH" only
5.1		100	IS					Receiving Application Name	
5.2		100	ST					Receiving Application ID	
5.3		50	ID					Receiving Application ID Type	
6	180	250	HD	R			00006	Receiving facility	Expecting 2-character state postal code only
6.1		100	IS					Receiving Facility Name	
6.2		100	ST					Receiving Facility ID	
6.3		50	ID					Receiving Facility ID Type	
7	26	26	TS	R			00007	Date/Time of message	Required for ELR
8	40	N/A	ST	O			00008	Security	Not supported
9	7	20	CM	R		0076 0003	00009	Message type/ Trigger Event	ORU^R01
10	20	100	ST	R			00010	Message control ID	Expecting timestamp plus lab-generated sequence number
11	3	20	PT	R			00011	Processing ID	Generally, 'T' Test or 'P' Production
12	60	20	VID	R		0104	00012	Version ID	2.3.1
13	15	N/A	NM	O			00013	Sequence number	Not Supported
14	180	N/A	ST	O			00014	Continuation pointer	Not Supported
15	2	N/A	ID	O		0155	00015	Accept acknowledgment type	Not Supported
16	2	N/A	ID	O		0155	00016	Application acknowledgment type	Not Supported
17	2	N/A	ID	O			00017	Country code	Not Supported
18	10	N/A	ID	O	Y	0211	00692	Character set	Not Supported
19	60	N/A	CE	O			00693	Principal language of message	Not Supported
20	20	N/A	ID	O		0356	01317	Alternate character set handling scheme	Not Supported

Example segment of MSH:

MSH|^~\&|LIS|MediLabCo-Seattle^45D0470381^CLIA|WADOH^1644^WA|WA|200102171830|
|ORU^R01|200102170042|P|2.3.1|<hex 0D0A>

This example segment shows a Version 2.3.1 ORU message being sent from a laboratory in Seattle to the WADOH application in the Washington Department of Health on February 17, 2001, at 6:30 pm. The message control ID indicates that this is the 42nd message of the day from this laboratory.

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 our examples.

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

Definition: Four characters in the following order:

Type of Separator or Escape Character	Character	ASCII Code
Component separator	'^'	ASCII (94)
Repetition Separator	'~'	ASCII (126)
Escape character	'\'	ASCII (92)
Subcomponent separator	'&'	ASCII (38)

Note that the characters in MSH-2 appear 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|

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. The field is entirely site-defined. By site agreement, implementers may use *User-defined table 0361 Sending/receiving application* for first component.

HD data type components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

In the example above, this field is populated with a generic LIS (Laboratory Information System) designation.

MSH.4 Sending facility (HD-180, Required for this implementation) 00004

Definition: The originator of HL7 message will place the text name 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/dls/default.asp on the World Wide Web.

For example: |MediLabCo-Seattle^45D0470381^CLIA|

HD data type components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID>

Component Name	Component Value
namespace ID	Text name of the sending laboratory
universal ID	CLIA number for the sending laboratory
universal ID type	"CLIA", indicating that the universal ID is a nationally assigned unique identifier

MSH.5 Receiving application (HD-180, Optional) 00005

Definition: Uniquely identifies the receiving application among all other applications within the network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages within the enterprise. Entirely site-defined. By site agreement, implementers may use *User-defined table 0361 Sending/receiving application* for first component.

HD data type components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

For example: |WADOH^1644^WA|

MSH.6 Receiving facility (HD-180, Required for this implementation) 00006

Definition: This field identifies the receiving application among multiple identical applications running on behalf of different organizations. This may be used identify the receiving state health department systems. Certain public health agencies may request that a unique identifier for the state health department or specific program appear here.

HD data type components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

For example: |WA|

MSH.7 Date/time of message (TS-26, Required for this implementation) 00007

Definition: Date/time the sending system created the message.

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, 2004, would appear as:

|200402171830|

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

Definition: This field may be used to implement application level security. Within HL7, a workgroup is studying further specification of this field. For ELR purposes, this field is not used if it is valued.

MSH.9 Message type (CM-7, Required) 00009

Definition: The receiving system uses this field to know the data segments to recognize and, possibly, the application to which to route this message.

The specific components of fields using the CM data type are defined within the field descriptions.
The components for this field are: <message type (ID)>^<trigger event (ID)>^<message structure (ID)>
Refer to *HL7 Table 0076 - Message type*, *HL7 Table 0003 - Event type*, and *HL7 Table 0354 - Message structure* for values.

The unsolicited transmission of an observation message would appear as:

|ORU^R01|

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

Definition: Number or other identifier that uniquely identifies the message. The receiving system echoes this ID back to the sending system in the message acknowledgment. For electronic laboratory reporting, we recommend using a timestamp and counter as: YYYYLLDDHHMMSS.

The example below shows that the date of this message is February 17, 2001 and the sequence number is 0042.

|200102170042|

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

Definition: Used to decide how to process the message as defined in HL7 processing rules. Field appears as P for production, T for training, or D for debugging.

PT data type components: <processing ID (ID)>^<processing mode (ID)>

(1) Processing ID (ID). A value that defines whether the message is part of a production, training or debugging system. Refer to *HL7 Table 0103-Processing ID* for valid values.
(2) Processing mode (ID). A value that defines whether the message is part of an archival process or an initial load. Refer to *HL7 Table 0207-Processing mode* for valid values. The default (blank) means current processing.

For Example: |P|

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

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

Definition: Matched by the receiving system to its own HL7 version to be sure the message will be interpreted correctly.

VID data type components: <version ID (ID)>^<internationalization code (CE)>^<international version ID (CE)>
(1) Version ID (ID). Used to identify the HL7 version. Refer to *HL7 Table 0104 - Version ID* for valid values
(2) Internationalization code (CE). Used to identify the international affiliate country code. ISO 3166 provides a list of country codes that may be used (see *User-defined Table 0212 - Nationality*).
(3) International version ID (CE). Used when the international affiliate has more than a single local version associated with a single U.S. version.

In these messages, the HL7 version is 2.3.1.

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

Definition: Non-null value in this field implies that the sequence number protocol is in use. This numeric field is incremented by one for each subsequent value.

In this interface, this field is Not Supported.

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

Definition: Used to define continuations in application-specific ways.

In this interface, this field is Not Supported.

MSH.15 Accept acknowledgment type (ID-2, Not supported) 00015

Definition: Identifies the conditions under which accept acknowledgments are required to be returned in response to this message. *HL7 Table 0155 - Accept/Application acknowledgment conditions* gives valid values.

In this interface, this field is Not Supported.

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

Definition: Identifies the conditions under which application acknowledgments are required to be returned in response to this message. See *HL7 Table 0155 - Accept/Application acknowledgment conditions* for values.

In this interface, this field is Not Supported. Rather than using application-level acknowledgement, the acknowledgments are at the transport layer of the Public Health Information Network Messaging System.

MSH.17 Country Code (ID-2, 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,.[1]. 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.

In this interface, this field is Not Supported.

MSH.18 Character Set (ID-10, Optional) 00692

Definition: This field contains the character set for the entire message. Refer to *HL7 Table 0211 - Alternate character sets* for valid values.

In this interface, this field is not supported.

MSH.19 Principal language of message (CE-60, Not supported) 00693

Definition: This field contains the principal language of the message. Codes come from ISO 639.

MSH.20 Alternate character set handling scheme (ID-20, Not supported) 01317

1 Available from ISO 1 Rue de Varembe, Case Postale 56, CH 1211, Geneve, Switzerland

Definition: When any alternative character sets are used (as specified in the second or later iterations of *MSH-18 character sets*), and if any special handling scheme is needed, this component is to specify the scheme used, according to *HL7 Table 0356- Alternate character set handling scheme*.

3.2 PATIENT ADMINISTRATION MESSAGE SEGMENTS

3.2.1 Patient Identification (PID) Segment

Used by all applications as the primary means of communicating patient identification information. This segment contains patient identifying and demographic information that, for the most part, is not likely to change frequently. For ELR, only one PID segment is expected per message.

PID Attributes

SEQ	HL7 LEN	NBS LEN	HL7 DT	HL7 R/O	HL7 RP#	HL7 TBL#	HL7 ITEM#	ELEMENT NAME	ELR Usage
1	4	N/A	SI	O			00104	Set ID - PID	Set to '1'
2	20	270	CX	B			00105	Patient ID (External)	See PID-3 – may be sent here as backward compatible but will have the same format and field lengths
3	20	270	CX	R	Y		00106	Patient identifier list	DOCUMENT VARIANCE
3.1		100						Patient ID	
3.2		N/A						Check Digit	
3.3		N/A						Check Scheme	
3.4		N/A						Assigning Authority	
3.4.1		N/A						Assigning Authority Name	
3.4.2		N/A						Assigning Authority ID	
3.4.3		N/A						Assigning Authority ID Type	
3.5		N/A						ID Type Code	
3.6								Assigning Facility	
3.6.1		100						Assigning Facility Name	
3.6.2		20						Assigning Facility ID	
3.6.3		50						Assigning Facility ID Type Code	
4	20	270	CX	B	Y		00107	Alternate patient ID - PID	See PID-3 – may be sent here as backward compatible but will have the same format and field lengths
5	48	230	XPN	R	Y		00108	Patient name	Supported
5.1		50						Patient Last Name	DOCUMENT VARIANCE
5.2		50						Patient First Name	may be 250
5.3		50						Patient Middle Initial/Middle Name	
5.4		20						Patient Name Suffix	
5.5		20						Patient Name Prefix	
5.6		20						Patient Degree	
5.7		20						Name Type Code	
5.8		N/A						Name Representation Code	
6	48	50	XPN	O	Y		00109	Mother's maiden name	Supported, but not as an extended person name – entire name is mapped as an atribute on the MI_Person table
7	26	26	TS	O			00110	Date/time of birth	Date of birth used
8	1	1	IS	O		0001	00111	Sex	Supported
9	48	230	XPN	O	Y		00112	Patient alias	Supported – format same as Patient Name
10	80	20	CE	O	Y	0005	00113	Race	
10.1		10						Race category code	Supported – ELR values map to OMB Race Category codes in NBS
10.2		100						Race description text	
10.3		N/A						Coding System	Assumed to be HL7
11	106	550	XAD	O	Y		00114	Patient address	Supported. County rarely if ever sent with ELR.
11.1		100						Patient Street Address	
11.2		100						Patient Address Line 2	
11.3		100						City	
11.4		20						State	
11.5		10						ZIP/Postal Code	

SEQ	HL7 LEN	NBS LEN	HL7 DT	HL7 R/O	HL7 RP#	HL7 TBL#	HL7 ITEM#	ELEMENT NAME	ELR Usage
11.6		100						Country (Description)	
11.7		20						Address Type	
11.8		N/A						Other geog. Designation	
11.9		100						County	
11.10		N/A						Census tract	
12	4	N/A	IS	B		0289	00115	County code	Not supported from this field– see PID-11
13	40	230	XTN	O	Y		00116	Phone number - home	supported in the XTN format (not in the first field)
13.1		N/A						Home Phone Number	Formatted phone number in this field is not accepted
13.2		20						Telecom use code	
13.3		50						Telecom equipment type	
13.4		100						Email Address	
13.5		N/A						Country Code	
13.6		3						Area Code	Expecting 3 digit area code here
13.7		17						Phone Number	Expecting unformatted phone number here
13.8		20						Extension	
13.9		20						Any Text	
14	40	230	XTN	O	Y		00117	Phone number - business	supported in the XTN format (not in the first field)
15	60	N/A	CE	O		0296	00118	Primary language	Not Supported
16	80	120	CE	O		0002	00119	Marital status	Supported
16.1		20						Identifier	Expecting code value only
16.2		100						Text	Will map description if received
16.3		N/A						Name of coding system	Assumed to be HL7
16.4		N/A						Alternate Identifier	Not Supported
16.5		N/A						Alternate Text	Not Supported
16.6		N/A						Alternate Name of coding system	Not Supported
17	80	N/A	CE	O		0006	00120	Religion	Not Supported
18	20		CX	O			00121	Patient account number	see PID-3
19	16		ST	B			00122	SSN number - patient	see PID-3
20	25		DLN	O			00123	Driver's license number - patient	see PID-3
21	20		CX	O	N		00124	Mother's identifier	Supported
22	80		CE	O	Y	0189	00125	Ethnic group	Requested if available
22.1		20						Identifier	Expecting code value H/N/U only
22.2		100						Text	Will map description if received
22.3		N/A						Name of coding system	Assumed to be HL7
22.4		N/A						Alternate Identifier	Not Supported
22.5		N/A						Alternate Text	Not Supported
22.6		N/A						Alternate Name of coding system	Not Supported
23	60		ST	O			00126	Birth place	Mapped as Country of Birth if sent
24	1	1	ID	O		0136	00127	Multiple birth indicator	Supported
25	2	2	NM	O			00128	Birth order	Supported
26	80	N/A	CE	O	Y	0171	00129	Citizenship	Not Supported
27	60	N/A	CE	O		0172	00130	Veterans military status	Not Supported
28	80	N/A	CE	O		0212	00739	Nationality	Not Supported
29	26	26	TS	O			00740	Patient death date and time	Supported
30	1	1	ID	O		0136	00741	Patient death indicator	Supported

Example:

PID|||10543^^^^PI^Columbia Valley Memorial Hospital&01D0355944&CLIA~95101100001^^^^PT^MediLabCo-Seattle&45D0470381&CLIA~423523049^^^^SS^SSA||Doe^John^Q^Jr^^^L|Clemmons^^^^^^M|19841004

|M||W|2166 Wells Dr^Apt B^Seattle^WA^98109||^^^^^206^6793240^^call after 5:00 pm only ~ ^^^^^206^6795772|||S^single^HL70002||||DOE J34556057^WA^20011101||N|||||||| <hex 0D0A>

This example segment shows that the patient named John Q. Doe, Jr., is a white male born on October 4th, 1984. All the patient identifiers and demographic details such as address, phone number, Social Security number, driver's license numbers, etc., are included in this segment. Please note that the Social Security Number is sent in the PID-3 segment as the third identifier, as designated by the second tilde (~).

PID field definitions

Usage Notes: We do not anticipate that several PID fields (PID-23 to 28) will be used for electronic laboratory reporting purposes; but the definitions are provided below.

PID.1 Set ID - PID (SI-4, Optional) 00104

Definition: The Set ID field numbers the repetitions of the PID segment (i.e., multiple patient reports). For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

SI data type is a non-negative integer in the form of an NM field. The uses of this data type are defined in the chapters defining the segments and messages in which it is used.

For laboratory-based reporting, it is strongly recommended that information for only one patient be sent per message, in other words one PID per MSH. Thus PID-1 may be left blank or appear as:

|1|

PID.2 Patient ID (CX-20, Conditional) 00105

Definition: ***This field has been retained for backward compatibility only.*** With HL7 Version 2.3.1, the arbitrary term of "external ID" has been removed from the name of this field. The repetition, assigning authority, facility, and identifier type code attributes of *PID-3-patient identifier list* allow for distinctive identifier representation.

In our examples, we have not valued this field.

PID.3 Patient identifier list (CX-20, Required, Repeating) 00106

Definition: This field contains the list of identifiers (one or more) used by the facility to uniquely identify a patient (e.g., medical record number, billing number, birth registry, etc.)

Components are defined as follows:

(1) ID number (ST).
(2) Check digit (ST). Defined as in the CK data type except as a ST. The check digit is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null.
(3) Code identifying check digit scheme employed (ID). Refer to *HL7 Table 0061 - Check digit scheme* for valid values.
(4) Assigning authority (HD).
Subcomponents of (4): <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID
(5) Identifier type code (IS). A code corresponding to the type of identifier. This code may be used as a qualifier to the 'Assigning authority' component. Refer to *User-defined Table 0203 - Identifier type* for suggested values.
(6) Assigning facility (HD). The place or location identifier where the identifier was first assigned to the patient-part of the history of the identifier.
Subcomponents of (6): <namespace ID (IS)>&<universal ID (ST)>&<universal ID type (ID)>

HL7 Version 2.3 provided a field to record the patient's Social Security number in *PID-19 - SSN - patient*. With Version 2.3.1, HL7 recommends using *PID-3-patient identifier list* for all patient identifiers along with the appropriate identifier type code (*User-defined Table 0203 - Identifier type*).

Laboratory-based reporting will use this field for the patient identifiers. For example, an isolate from the Columbia Valley Memorial Hospital laboratory is sent to a reference laboratory named MediLabCo, and the result is reported to public health officials by MedilabCo. In the laboratory reporting scenario described, the unique patient identifier from MediLabCo would always appear first with the typecode "PI", along with name and CLIA number for MediLabCo as the assigning authority. Repetitions of the field allow a reporting laboratory also to provide the medical record number and other patient identifiers assigned at the original institution that submitted a specimen for testing (i.e., Columbia Valley Memorial Hospital). The type code for the Columbia Valley Hospital identifier will be PT for Patient external identifier.

For example:
|95101100001^^^^PI^MediLabCo-Seattle&45D0470381&CLIA ~ 10543^^^^PT^Columbia Valley Memorial Hospital&01D0355944&CLIA|

Since HL7 allows users to define the subcomponents of the HD data type, the <assigning facility> has the following definition for the laboratory-based reporting message:

Component Name	**Component Value**
namespace ID	Name of originating laboratory
universal ID	Unique CLIA number of originating laboratory
universal ID type	"CLIA"

If a hospital laboratory will be reporting the result (and thus there will be only one hospital involved in collection and processing of the specimen), then the hospital laboratory's patient identifier and the hospital CLIA ID will appear with typecode PI; no information will appear as an external ID. Likewise, if a reference laboratory receives a specimen from a doctor's office and no preceding originating laboratory is used, then the reference laboratory's patient identifier and reference laboratory CLIA ID will appear with the typecode PI; no information will appear as an external ID.

If a hospital laboratory is reporting the results of a test performed at a reference laboratory, the following scenario would apply. Columbia Valley Memorial Hospital has sent a specimen to MediLabCo for testing. The test is performed and the results are sent back to Columbia Valley Memorial Hospital, which then electronically transmits the results to a public health agency. The unique patient identifier from Columbia Valley Memorial Hospital would appear with typecode PI, internal patient ID, and the unique patient identifier from MediLabCo would appear next after the repeat delimiter with typecode PT, external patient ID. Identification of the outside laboratory performing the test will appear in OBX-15 (i.e., Producer's ID). As an example, if Columbia Valley Memorial Hospital is reporting the results of a test performed at MediLabCo, then the identifiers would appear as:

|10543^^^^PI^Columbia Valley Memorial Hospital&01D0355944&CLIA ~
95101100001^^^^PT^MediLabCo-Seattle&45D0470381&CLIA|

This field is listed as a required field by HL7 2.3.1. Although uncommon, some laboratories may not currently collect information which may be used for either PID-3 or PID-5. It is strongly recommended that either a personal identifier unique to the testing laboratory (PID-3) or the patient name (PID-5) be provided; ***however, if neither is available the message for reporting should still be sent with the following populating the field:***

|nodata|

Anonymous Identifiers
Anonymous identifiers are occasionally used for protecting patient identity in reporting certain results. For instance, a state health department may choose to use a scheme for generating an anonymous identifier

for reporting a patient that has had a positive human immunodeficiency virus antibody test. That scheme may use various contributing data for generating the identifier, such as parts of the Social Security number, date of birth, and other features. Anonymous identifiers can be used in PID-2, 3, and 4 by replacing the medical record number or other non-anonymous identifier. The type code for an anonymous identifier will appear as ANON. It is important that the receiver of the data be able to determine that the identifier is in fact created through some anonymizing scheme. This is done by placing the creator of the scheme in the sub-component for the "Assigning Authority". For example, a laboratory using a scheme regulated by the Arizona state health department for reporting HIV results creates an anonymous identifier. The message would appear as:

|56850125M7^^^^ANON^AZDOH_HIV|

Note: There is no standard scheme for generating anonymous identifiers and there is no current list of assigning facilities that generate anonymizing schemes.

PID.4 Alternate Patient ID (CX-20, Backward Compatibility, Not expecting repeats) 00107

Definition: ***This field has been retained for backward compatibility only.*** *PID-3-patient identifier list* should be used for all patient identifiers.

In our examples, we valued this field in PID-3. This interface is not expecting repeats of APN id type

PID.5 Patient name (XPN-48, Required, Not expecting repeats) 00108

Definition: The current, assumed legal name of the patient should be sent in this field. The name type code in this field should always be "L - Legal." All other names for the patient should be sent in *PID-9-patient alias*. Repetition of this field is allowed only for representing the same name in different character sets, a situation that will rarely arise. Therefore, for practical purposes this field should be considered not repeating.

For valid values, refer to *User-defined Table 0360 - Degree* for the degree component, to *HL7 Table 0200 - Name type* for the name type code, and to *HL7 Table 4000 - Name/address representation* for the name representation code.

For example:
|Doe^John^Q^Jr^^^L|

This field is listed as a required field by HL7 2.3.1. Although uncommon, some laboratories may not currently collect information which may be used for either PID-3 or PID-5. It is strongly recommended that either a personal identifier unique to the testing laboratory (PID-3) or the patient name (PID-5) be provided; **however, if neither is available the message for reporting should still be sent with the following populating the field:**

|nodata|

PID.6 Mother's maiden name (XPN-48, Optional) 00109

Definition: This field contains the family name under which the mother was born (i.e., before marriage). It is used to distinguish between patients with the same last name. The name type code should be valued "M" for "Maiden Name." If a system needs additional information about the mother, the NK1 segment should be used.

For example: |Clemmons^^^^^^M|

PID.7 Date/time of birth (TS-26, Optional) 00110

Definition: This field contains the patient's date and time of birth.

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: October 04, 1984 would appear as:

|19841004|

If DOB is not available, patient's age may be sent in OBX-3 & OBX-5. See description in section OBX.3.3.3 of this document.

PID.8 Sex (IS-1, Optional) 00111

Definition: This field contains the patient's sex. Refer to *User-defined Table 0001 - Sex* for valid values.

PID.9 Patient alias (XPN-48, Optional, Repeating) 00112

Definition: This field contains names by which the patient has been known at some time.
It is recommended that data be sent if available. The name type code recommended is 'A' per HL7 Standard.

In our examples, we have not valued this field.

PID.10 Race (CE-80, Optional, Repeating) 00113

Definition: This field identifies the patient's race. Refer to *User-defined Table 0005 - Race* for suggested values.

PID.11 Patient address (XAD-106, Optional, Not expected to repeat for this interface) 00114

Definition: This field lists the mailing address of the patient. Multiple addresses for the same person may be sent in the following sequence: the primary mailing address must be sent first in the sequence; if the mailing address is not sent, then a repeat delimiter must be sent in the first sequence.

For valid values in these components, refer to *User-defined Table 0212 - Nationality* for country codes, HL7 *Table 0190 - Address type* for address type codes, *User-defined Table 0289 - County/parish* for county/parish codes, *User-defined Table 0288 - Census Tract* for census tract codes, and *HL7 Table 4000 - Name/address representation* for address representation codes.

For example: |2166Wells Dr^Apt B^Seattle^WA^98109^USA^M^^King^^A|

This information is of great importance to public health agencies as it allows health officials to notify local agencies of potential public health problems in their jurisdictions.

PID.12 County Code (IS-4, Not expected for this interface) 00115

Definition: ***This field has been retained for backward compatibility.*** This field contains the patient's county code. The county can now be supported in the county/parish code component of the XAD data type (*PID-11-patient address*).

In our examples, we have not valued this field. It is sent as part of the extended address datatype in PID-11 Patient Address.

PID.13 Phone number - home (XTN-40, Optional, Not expecting repeats) 00116

Definition: The patient's personal phone numbers. Repetitions are permitted with the standard but this interface expects only one home phone number.

Refer to *HL7 Table 0201 - Telecommunication use code* and *HL7 Table 0202 - Telecommunication equipment type* for valid values.

For example:
|^^^^^206^6795772|

PID.14 Phone number - business (XTN-40, Optional, Not expecting repeats) 00117

Definition: Patient's business phone number. Repetitions are permitted with the standard but this interface expects only one business number. It is not always collected to send in Laboratory Information Systems.

Refer to *HL7 Table 0201 - Telecommunication use code* and *HL7 Table 0202 - Telecommunication equipment type* for valid values.
In our examples, we have not valued this field.

PID.15 Primary language (CE-60, Optional) 00118

Definition: Patient's primary language. Refer to *User-defined Table 0296 - Language* (ISO 639) for suggested values.

In our examples, we have not valued this field as the laboratory results do not contain this element.

PID.16 Marital status (CE-80, Optional) 00119

Definition: This field contains the patient's marital status. Refer to *user-defined table 0002 - Marital status* for suggested values.

For example: |S^single^HL70002|

The laboratory results generally do not contain this element, but it will process to the database if sent.

PID.17 Religion (CE-80, Optional) 00120

Definition: This field contains the patient's religion, for example, Baptist, Catholic, Methodist, etc. *User-defined table 0006 - Religion* from HL7 standard Version 2.3 is used as the HL7 identifier for the user-defined table of values for this field.

In our examples, we have not valued this field. If it is sent by a lab, the field will be skipped by the interface processor.

PID.18 Patient account number (CX-20, Optional) 00121

Definition: This field contains the patient account number assigned by accounting to which all charges, payments, etc., are recorded. It is used to identify the patient's account. If an account number is sent, the entire number including the check digit will be considered the patient account number and no edits occur on the field. The identifier type code for account numbers is "AN".

PID.19 Social Security Number - Patient (ST-60, Backward Compatible but Optional) 00122

Definition: ***This field has been retained for backward compatibility only.*** It is recommended to use *PID-3-patient identifier list* for all patient identifiers. However, in order to maintain backward

compatibility, this field may also be populated. When used for backward compatibility, this field contains the patient's Social Security number. This number may also be a RR retirement number.

For example: |423523049| is acceptable in PID-19; if sent in PID-3, should appear as |423523049^^^SS^SSA&Social Security Administration|.

PID.20 Driver's license number – patient (DLN-25, Optional) 00123

Definition: This field contains the patient's driver's license number. The default of the second component is the state in which the patient's license is registered.

DLN data type components: <license number (ST)> ^ <issuing state, province, country (IS)> ^ <expiration date (DT)>

For example: |DOEJ34556057^WA^20051101|

This field does not move to PID-3, as the datatype does not conform to the CX datatype.

PID.21 Mother's identifier (CX-20, Optional, No expecting repeats) 00124

Definition: This field is used as a link field for newborns, for example. Typically a patient ID or account number may be used. This field can contain multiple identifiers for the same mother.

PID.22 Ethnic group (CE-80, Optional, Not expecting repeats as the field as we use it is mutually exclusive) 00125

Definition: This field further defines patient ancestry.

PID.23 Birth place (ST-60,Optional) 00126

Definition: This field indicates the patient's birth country only. The actual address is reported in PID.11 with an identifier of "N".

If the result message has this field populated, the birth country field will be stored.

PID.24 Multiple birth indicator (ID-1, Optional) 00127

Definition: This field indicates whether the patient was part of a multiple birth. Refer to *HL7 Table 0136 - Yes/No Indicator* for valid values.

If the result message has this field populated, the multiple birth indicator field will be stored.

PID.25 Birth order (NM-2, Optional) 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.

If the result message has this field populated, the birth order numeral will be stored.

PID.26 Citizenship (CE-80, Optional) 00129

Definition: This field contains the patient's country of citizenship. HL7 recommends using ISO table 3166 as the suggested values in *User-defined Table 0171 - Citizenship*.

Not valued for this interface.

PID.27 Veterans military status (CE-60, Optional) 00130

Definition: This field contains the military status assigned to a veteran. Refer to *User-defined Table 0172 - Veterans military status* for suggested values.

Not valued for this interface.

PID.28 Nationality (CE-80, Optional) 00739

Definition: **It is recommended to refer to *PID-10 - Race*, *PID-22 - Ethnic group* and *PID-26 - Citizenship*.** This field contains a code that identifies the nation or national grouping to which the person belongs. This information may be different from a person's citizenship in countries in which multiple nationalities are recognized (for example, Spain: Basque, Catalan, etc.).

Not valued for this interface.

PID.29 Patient death date and time (TS-26, Optional) 00740

Definition: This field contains the date and time at which the patient death occurred. This field should only be valued if PID-30 is valued 'yes.'

If the result message has this field populated, the patient date date/time will be stored.

PID.30 Patient death indicator (ID-1, Optional) 00741

Definition: This field indicates whether or not the patient is deceased. Refer to *HL7 Table 0136 - Yes/No indicator* for valid values.

If the result message has this field populated, the patient death indicator will be stored.

.

3.2.2 Next of Kin/Associated Parties (NK1) Segment

Contains information about the patient's next of kin, emergency contact, or other associated or related parties. At this time, only one NK1 is supported; additional NK1 segments will be skipped. The NK1 is an optional segment.

NK1 Attributes

SEQ	HL7 LEN	NBS LEN	HL7 DT	HL7 R/O	HL7 RP#	HL7 TBL#	HL7 ITEM#	ELEMENT NAME	ELR Usage
1	4		SI	R			00190	Set ID - NK1	NK1 is created regardless of whether any Contact info was present.
2	48	230	XPN	O	Y		00191	Next of Kin/Emergency Contact Name	Supported
2.1		50						Next of Kin Last Name	
2.2		50						Next of Kin First Name	
2.3		50						Next of Kin Middle Initial/Middle Name	
2.4		20						Next of Kin Name Suffix	
2.5		20						Next of Kin Name Prefix	
2.6		20						Next of Kin Degree	
2.7		20						Name Type Code	"L" for legal is defaulted
2.8		N/A						Name Representation Code	
3	60		CE	O		0063	00192	Relationship	These come from HL7 table 0063. If no relationship is available to pass here, the generic relationship 'NOK' is mapped.
3.1		20						Identifier	Expecting code value H/N/U only
3.2		100						Text	Will map description if received
3.3		N/A						Name of coding system	Assumed to be HL7
3.4		N/A						Alternate Identifier	Not Supported
3.5		N/A						Alternate Text	Not Supported
3.6		N/A						Alternate Name of coding system	Not Supported
4	106		XAD	O	Y		00193	Address	Supported
4.1		100						NOK/EC Street Address	
4.2		100						NOK/EC Address Line 2	
4.3		100						NOK/EC City	
4.4		20						NOK/EC State	
4.5		10						NOK/EC ZIP/Postal Code	
4.6		100						Country (Description)	
4.7		20						Address Type	
4.8		N/A						Other geog. Designation	
4.9		100						County	
4.10		N/A						Census tract	
5	40	230	XTN	O	Y		00194	Phone number	Supported
5.1		N/A						Home Phone Number	Formatted phone number in this field is not accepted
5.2		20						Telecom use code	
5.3		50						Telecom equipment type	
5.4		100						Email Address	
5.5		N/A						Country Code	
5.6		3						Area Code	Expecting 3 digit area code here
5.7		17						Phone Number	Expecting unformatted phone number here
5.8		20						Extension	
5.9		20						Any Text	
6	40	N/A	XTN	O	Y		00195	Business phone number	NK1-6 through end of segment are not supported
7	60	N/A	CE	O		0131	00196	Contact role	Not Supported
8	8	N/A	DT	O			00197	Start date	Not Supported
9	8	N/A	DT	O			00198	End date	Not Supported
10	60	N/A	ST	O			00199	Next of kin/AP job title	Not Supported
11	20	N/A	JCC	O		0327/ 0328	00200	Next of kin/AP job code/class	Not Supported

SEQ	HL7 LEN	NBS LEN	HL7 DT	HL7 R/O	HL7 RP#	HL7 TBL#	HL7 ITEM#	ELEMENT NAME	ELR Usage
12	20	N/A	CX	O			00201	Next of kin/AP employee number	Not Supported
13	90	N/A	XON	O	Y		00202	Organization name - NK1	Not Supported
14	80	N/A	CE	O		0002	00119	Marital status	Not Supported
15	1	N/A	IS	O		0001	00111	Sex	Not Supported
16	26	N/A	TS	O			00110	Date/time of birth	Not Supported
17	2	N/A	IS	O	Y	0223	00755	Living dependency	Not Supported
18	2	N/A	IS	O	Y	0009	00145	Ambulatory status	Not Supported
19	80	N/A	CE	O	Y	0171	00129	Citizenship	Not Supported
20	60	N/A	CE	O		0296	00118	Primary language	Not Supported
21	2	N/A	IS	O		0220	00742	Living arrangement	Not Supported
22	80	N/A	CE	O		0215	00743	Publicity code	Not Supported
23	1	N/A	ID	O		0136	00744	Protection indicator	Not Supported
24	2	N/A	IS	O		0231	00745	Student indicator	Not Supported
25	80	N/A	CE	O		0006	00120	Religion	Not Supported
26	48	N/A	XPN	O	Y		00746	Mother's maiden name	Not Supported
27	80	N/A	CE	O		0212	00739	Nationality	Not Supported
28	80	N/A	CE	O	Y	0189	00125	Ethnic group	Not Supported
29	80	N/A	CE	O	Y	0222	00747	Contact reason	Not Supported
30	48	N/A	XPN	O	Y		00748	Contact person's name	Not Supported
31	40	N/A	XTN	O	Y		00749	Contact person's telephone number	Not Supported
32	106	N/A	XAD	O	Y		00750	Contact person's address	Not Supported
33	32	N/A	CX	O	Y		00751	Next of kin/AP's identifiers	Not Supported
34	2	N/A	IS	O		0311	00752	Job status	Not Supported
35	80	N/A	CE	O	Y	0005	00113	Race	Not Supported
36	2	N/A	IS	O		0295	00753	Handicap	Not Supported
37	16	N/A	ST	O			00754	Contact person SSN	Not Supported

Example:
NK1|1|Doe^Jane^Lee^^^^L|MTH^mother^HL70063|2166 Wells Dr^Apt B^Seattle^WA^98109^USA^M^^King^^A|^^^^^206^ 6793240|<hex 0D0A>

This example segment shows the reported data for the patient's mother, Jane Lee Doe, as the next of kin. The mother's contact information such as home address and phone number is shown here.

NK1 field definitions

The NK1 segment provides standard fields for those described as ZLR fields 6-9 in the previous guidelines using Version 2.3.z, entitled, "Health Level Seven Specifications for Electronic Laboratory-Based Reporting of Public Health Information," February 28, 2003.

NK1.1 Set ID (SI-4, Required) 00190

Definition: The Set ID field numbers the repetitions of the segment within its association with the PID- For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

The SI data type is a non-negative integer. The uses of this data type are defined in the chapters defining the segments and messages in which it is used.

1 indicates that this segment is the first set of next of kin data, and 2 indicate that this is the second set of next of kin data.

NK1.2 Name (XPN-48, Optional, Not expecting Repeats) 00191

Definition: This field gives the name of the next of kin or associated party. Multiple names for the same person are allowed, but the legal name must be sent in the first sequence. If the legal name is not sent, then the repeat delimiter must be sent in the first sequence.

For example: |Doe^Jane^Lee^^^^L|

NK1.3 Relationship (CE-60, Optional) 00192

Definition: This field defines the personal relationship of the next of kin. *User-defined Table 0063 -Relationship* gives suggested values from HL7.

For example: |MTH^mother^HL70063|

NK1.4 Address (XAD-106, Optional, Not expecting Repeats) 00193

Definition: This field lists the mailing address of the next of kin/associated party identified above. Multiple addresses for the same person may be sent in the following sequence: the primary mailing address must be sent first in the sequence; if the mailing address is not sent, then a repeat delimiter must be sent in the first sequence. If there is only one repetition of this field and an address type is not given, it is assumed to be the primary mailing address.

For example: |2166 Wells Dr^Apt B^Seattle^WA^98109|

When sending multiple addresses, the appropriate type code must be indicated.

NK1.5 Phone number (XTN-40, Optional, Not expecting Repeats) 00194

Definition: The next of kin/associated party's personal phone numbers. All personal phone numbers for the next of kin/associated party are sent in this sequence. The first sequence is considered the primary number. If the primary number is not sent, then a repeat delimiter is sent in the first sequence.

XTN data type format and components: [NNN] [(999)]999-9999[X99999][B99999][C any text]^<telecommunication use code (ID)>^<telecommunication equipment type (ID)>^<email address (ST)>^<country code (NM)>^<area/city code (NM)>^<phone number (NM)>^<extension (NM)>^<any text (ST)>

Refer to *HL7 Table 0201 - Telecommunication use code* and *HL7 Table 0202 - Telecommunication equipment type* for valid values.

For example: |^^^^^206^6793240|

NK1.6 Business phone number (XTN-40, Optional, Not expecting Repeats) 00195

Definition: Next of kin/associated party's business phone numbers. The first sequence is the primary number. If the primary number is not sent, then a repeat delimiter is sent in the first sequence.

In our examples, we have not valued this field.

NK1.7 Contact role (CE-60, Optional) 00196

Definition: This field indicates the specific relationship role (next of kin, employer, emergency contact, etc.). Refer to *User-defined Table 0131 - Contact role* for suggested values. This field specifies the role that the next of kin/associated parties plays with regard to the patient. Examples might include an employer, emergency contact, next of kin, insurance company, state agency, federal agency, etc.

NK1.8 Start date (DT-8, Optional) 00197

Definition: This field contains the start date of the contact role.

Not valued for this interface.

NK1.9 End date (DT-8, Optional) 00198

Definition: This field contains the end date of the contact role.

Not valued for this interface.

NK1.10 Next of kin / associated parties job title (ST-60, Optional) 00199

Definition: This field contains the title of the next of kin/associated parties at their place of employment. However, if the contact role is the patient's employer, this field contains the title of the patient at their place of employment.

Not valued for this interface.

NK1.11 Next of kin / associated parties job code/class (JCC-20, Optional) 00200

Definition: This field contains the employer's job code and the employee classification used for the next of kin/associated parties at their place of employment. However, if the contact role is the patient's employer, this field contains the job code/class of the patient at their place of employment. Refer to *User-defined Table 0327 - Job code* and *User-defined Table 0328 - Employee classification* for suggested values.

Components: <job code (IS)> ^ <employee classification (IS)>

Not valued for this interface.

NK1.12 Next of kin / associated parties employee number (CX-20, Optional) 00201

Definition: **For backward compatibility**, the ST data type can be sent; however HL7 recommends that the CX data type be used for new implementations. This field contains the number that the employer assigns to the employee that is acting as next of kin/associated parties. However, if the contact role is the patient's employer, this field contains the employee number of the patient at their place of employment. The assigning authority and identifier type code are strongly recommended for all CX data types.

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed

Not valued for this interface.

NK1.13 Organization name - NK1 (XON-90, Optional) 00202

Definition: This field contains the name of the organization that serves as a next of kin/associated party or as the next of kin of the patient. This field may also be used to communicate the name of the organization at which the associated party works. Multiple names for the same organization may be sent. If multiple names are sent, the legal name must be sent in the first sequence. If the legal name is not sent, then a repeat delimiter must be sent in the first sequence.

Not valued for this interface.

NK1.14 Marital status (CE-80, Optional) 00119

Definition: This field contains the next of kin/associated party's marital status. Refer to *User-defined Table 0002 - Marital status* for suggested values.

Not valued for this interface.

NK1.15 Administrative sex (IS-1, Optional) 00111

Definition: This field contains the next of kin/associated party's sex. Refer to *User-defined Table 0001 - Administrative sex* for suggested values.

Not valued for this interface.

NK1.16 Date/time of birth (TS-26, Optional) 00110

Definition: This field contains the next of kin/associated party's birth date and time.

Not valued for this interface.

NK1.17 Living dependency (IS-2, Optional) 00755

Definition: This field identifies specific living conditions (e.g., spouse dependent on patient, walk-up) that are relevant to an evaluation of the patient's healthcare needs. This information can be used for discharge planning. Examples might include Spouse Dependent, Medical Supervision Required, and Small Children Dependent. This field repeats because, for example, "spouse dependent" and "medical supervision required" can apply at the same time. Refer to *User-defined Table 0223 - Living dependency* for suggested values.

Not valued for this interface.

NK1.18 Ambulatory status (IS-2, Optional) 00145

Definition: This field identifies the transient rate of mobility for the next of kin/associated party. Refer to *User-defined Table 0009 - Ambulatory status* for suggested values.

Not valued for this interface.

NK1.19 Citizenship (CE-80, Optional) 00129

Definition: This field contains the code to identify the next of kin/associated party's citizenship. HL7 recommends using ISO 3166 as the suggested values in *User-defined Table 0171 - Citizenship*.

Not valued for this interface.

NK1.20 Primary language (CE-60, Optional) 00118

Definition: This field identifies the next of kin/associated party's primary speaking language. HL7 recommends using ISO 639 as the suggested values in *User-defined Table 0296 - Language*.

Not valued for this interface.

NK1.21 Living arrangement (IS-2, Optional) 00742

Definition: This field identifies the situation that the associated party lives in at his/her residential address. Refer to *User-defined Table 0220 - Living arrangement* for suggested values. Examples of living arrangements might include Alone, Family, Institution, etc.

Not valued for this interface.

NK1.22 Publicity code (CE-80, Optional) 00743

Definition: This field indicates what level of publicity is allowed (e.g., No Publicity, Family Only) for the next of kin/associated party. Refer to *User-defined Table 0215 - Publicity code* for suggested values.

Not valued for this interface.

NK1.23 Protection indicator (ID-1, Optional) 00744

Definition: This field identifies that next of kin/associated party's protection that determines, in turn, whether access to information about this person should be kept from users who do not have adequate authority. Refer to *HL7 Table 0136 - Yes/no indicator* for valid values.

Not valued for this interface.

NK1.24 Student indicator (IS-2, Optional) 00745

Definition: This field identifies whether the next of kin/associated party is currently a student or not, and whether the next of kin/associated party is a full- or a part-time student. This field does not indicate the degree (high school, college) of the student or the field of study. Refer to *User-defined Table 0231 - Student status* for suggested values.

Not valued for this interface.

NK1.25 Religion (CE-80, Optional) 00120

Definition: This field indicates the type of religion practiced by the next of kin/associated party. Refer to *User-defined Table 0006 - Religion* for suggested values.

Not valued for this interface.

NK1.26 Mother's maiden name (XPN-48, Optional) 00109

Definition: This field indicates the maiden name of the next of kin/associated party's mother.

Not valued for this interface.

NK1.27 Nationality (CE-80, Optional) 00739

Definition: This field identifies the nation or national group to which the next of kin/associated party belongs. This information may be different than the person's citizenship in countries in which multiple nationalities are recognized (e.g., Spain: Basque, Catalan, etc.). Refer to *User-defined Table 0212 - Nationality* for suggested values.

Not valued for this interface.

NK1.28 Ethnic group (CE-80, Optional) 00125

Definition: This field contains the next of kin/associated party's ethnic group. 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.

Not valued for this interface.

NK1.29 Contact reason (CE-80, Optional) 00747

Definition: This field identifies how the contact should be used (e.g., contact employer if patient is unable to work). Refer to *User-defined Table 0222 - Contact reason* for suggested values.

Not valued for this interface.

NK1.30 Contact person's name (XPN-48, Optional) 00748

Definition: This field contains the names of the people to contact, depending on the value of the relationship defined in *NK1-3 - relationship*. This field is typically needed when the NK1 is an organization. The legal name should be sent first in the sequence. Refer to *HL7 Table 0200 - Name type* for valid values.

Not valued for this interface.

NK1.31 Contact person's telephone number (XTN-40, Optional) 00749

Definition: This field contains the telephone numbers of the contact person depending on the value of the relationship defined in *NK1-3 - relationship*. This field is typically needed when the NK1 is an organization. The primary telephone number must be sent in the first sequence. If the primary telephone number is not sent, then a repeat delimiter must be sent in the first sequence. Refer to *HL7 Table 0201 -Telecommunication use code* and *HL7 Table 0202 - Telecommunication equipment type* for valid values.

Not valued for this interface.

NK1.32 Contact person's address (XAD-106, Optional) 00750

Definition: This field contains the addresses of the contact person depending on the value of the relationship defined in *NK1-3 - relationship*. This field is typically used when the NK1 is an organization. When multiple addresses are sent, the mailing address must be sent first in the sequence.

Not valued for this interface.

NK1.33 Next of kin/associated party's identifiers (CX-32, Optional) 00751

Definition: This field contains the identifiers for the next of kin/associated party, for example, Social Security Number, driver's license, etc. The assigning authority and identifier type code are strongly recommended for all CX data types.\

Not valued for this interface.

NK1.34 Job status (IS-2, Optional) 00752

Definition: This field identifies the next of kin/associated party's job status. Refer to *User-defined Table 0311 - Job status* for suggested values.

Not valued for this interface.

NK1.35 Race (CE-80, Optional) 00113

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (IS)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (IS)>

Definition: This field identifies the race of the next of kin/associated party. Refer to *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.

Not valued for this interface.

NK1.36 Handicap (IS-2, Optional) 00753

Definition: This field contains the code that describes an associated party's disability. Refer to *User-defined Table 0295 - Handicap* for suggested values.

Not valued for this interface.

NK1.37 Contact person social security number (ST-16, Optional) 00754

Definition: In the US, this field contains the contact person's social security number. This number may also be a RR retirement number. For the Social Security number of the associated party, see *NK1-33 - next of kin/associated party*'s identifiers.

Not valued for this interface.

3.3 SEGMENTS COMMON TO ALL ORDERS

This table is updated to reflect the implementation requirements specific to ELR. There are also comments for message requirements for use with the NEDSS Base System.

3.3.1 Common Order (ORC) Segment

Used to transmit fields that are common to all orders (all types of services that are requested). Since the Ordering Provider address or the Ordering Facility information are required for the ELR message, the ORC is a required segment.

ORC Attributes

SEQ	HL7 LEN	NBS LEN	HL7 DT	HL 7 R/O	HL7 RP#	HL7 TBL#	HL7 ITEM#	ELEMENT NAME	ELR Usage
1	2	N/A	ID	O		0119	00215	Order Control	Not Supported – variance from HL7 Standard
2	22	N/A	EI	C			00216	Placer Order Number	Not Supported
3	22	N/A	EI	C			00217	Filler Order Number	Not Supported
4	22	N/A	EI	O			00218	Placer Group Number	Not Supported
5	2	N/A	ID	O		0038	00219	Order Status	Not Supported
6	1	N/A	ID	O		0121	00220	Response Flag	Not Supported
7	200	N/A	TQ	O			00221	Quantity/Timing	Not Supported
8	200	N/A	CM	O			00222	Parent	Not Supported
9	26	N/A	TS	O			00223	Date/Time of Transaction	Not Supported
10	120	N/A	XCN	O	Y		00224	Entered By	Not Supported
11	120	N/A	XCN	O	Y		00225	Verified By	Not Supported
12	120	N/A	XCN	O	Y		00226	Ordering Provider	Not Supported
13	80	N/A	PL	O			00227	Enterer's Location	Not Supported
14	40	N/A	XTN	O	Y/2		00228	Call Back Phone Number	Not Supported
15	26	N/A	TS	O			00229	Order Effective Date/Time	Not Supported
16	200	N/A	CE	O			00230	Order Control Code Reason	Not Supported
17	60	N/A	CE	O			00231	Entering Organization	Not Supported
18	60	N/A	CE	O			00232	Entering Device	Not Supported
19	120	N/A	XCN	O	Y		00233	Action By	Not Supported
20	40	N/A	CE	O		0339	01310	Advanced Beneficiary Notice Code	Not Supported
21	60	120	XON	O	Y		01311	Ordering Facility Name	Need either an Ordering Provider or an Ordering Facility in the message for it to be migrated to NBS; preferably both are present.
21.1		100	ST					Organization Name	
21.2		20	IS					Organization Name Type Code	Defaults A for Alias name
21.3		N/A	NM					ID Number	None expected/none mapped
21.4		N/A	NM					Check digit	Not supported
21.5		N/A	ID					Check digit scheme ID	Not supported
21.6		N/A	HD					Assigning authority	Not supported
21.7		N/A	IS					Identifier Type Code	None expected/none mapped
21.8		N/A	HD					Assigning facility ID	Not supported
21.9		N/A	ID					Name Representation Code	Not supported
22	106	540	XAD	O	Y		01312	Ordering Facility Address	Supported
22.1		100						Facility Street Address	
22.2		100						Facility Address Line 2	
22.3		100						Facility City	
22.4		20						Facility State	
22.5		10						Facility ZIP/Postal Code	
22.6		100						Country (Description)	
22.7		20						Address Type	
22.8		N/A						Other geog. Designation	
22.9		100						County	
22.10		N/A						Census tract	
23	48		XTN	O	Y		01313	Ordering Facility Phone Number	Supported

SEQ	HL7 LEN	NBS LEN	HL7 DT	HL 7 R/O	HL7 RP#	HL7 TBL#	HL7 ITEM#	ELEMENT NAME	ELR Usage
23.1		N/A						Home Phone Number	Formatted phone number in this field is not accepted
23.2		20						Telecom use code	
23.3		50						Telecom equipment type	
23.4		100						Email Address	
23.5		N/A						Country Code	
23.6		3						Area Code	Expecting 3 digit area code here
23.7		17						Phone Number	Expecting unformatted phone number here
23.8		20						Extension	
23.9		20						Any Text	
24	106		XAD	O	Y		01314	Ordering Provider Address	Supported
24.1		50						Ordering Provider Street Address	
24.2		50						Ordering Provider Other Designation	
24.3		20						Ordering Provider City	
24.4		20						Ordering Provider State	
24.5		10						Ordering Provider Zip or Postal Code	
24.6		100						Country (Description)	
24.7		20						Address Type	
24.8		N/A						Other geog. Designation	Not supported
24.9		100						County	County description would map if sent
24.10		N/A						Census tract	Not supported

Example:
ORC|||||||||||||||||||||||MediLabCo - Northwest Pathology Ltd., CentralCampus^^45D0470381^^^CLIA|
2217 Rainier Way^^Renton^WA^98002^USA^M^^Black Hawk^^A|^^PH^helpline@medilab.com^^206^
5549097|115 Pike Plaza^Suite 2100^Seattle^WA^98122^USA^^^^^A|<hex 0D0A>

This example segment shows the name, address, phone number, email address and CLIA identifier for MediLabCo., the ordering facility.

ORC field definitions

This segment is used to replace ZLR fields 1-4 as described in the 2.3.z Electronic Laboratory Reporting Implementation Guide that uses the HL7 Version 2.3 Standard. The 2.3.z message contains the single Site-Defined (z) Laboratory Reporting segment. When the interface at the laboratory site finds messages in the local directory at the laboratory, ZLR fields 1 through 4 are converted to ORC fields 21-24. The remaining fields in this segment are not populated for the same reason. Any field that is often populated in both the ORC and the OBR are populated in the OBR with the original message.

ORC.1 Order Control (ID-2, Optional) 00215

Definition: Determines the function of the order segment. Refer to *HL7 Table 0119 – Order control codes and their meaning* for valid entries.

Not supported for this interface.

ORC.2 Placer order number (EI-22, Conditional) 00216

Definition: This field is the placer application's order number.

Not supported for this interface.

ORC.3 Filler order number (EI-22, Conditional) 00217

Definition: This field is the order number associated with the filling application. It is a case of the Entity Identifier data type (Section 2.8.13). 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.

Not supported for this interface.

ORC.4 Placer group number (EI-22, Optional) 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 (2.8.13).

Not supported for this interface.

ORC.5 Order status (ID-2, Optional) 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.

Not supported for this interface.

ORC.6 Response flag (ID-1, Optional) 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. When the field is null, D is the default value of the field. Refer to *HL7 Table 0121 - Response flag* for valid entries.

Not supported for this interface.

ORC.7 Quantity/timing (TQ-200, Optional) 00221

Definition: This field determines the priority, quantity, frequency, and timing of an atomic service. Order segments should be thought of as describing an atomic service. It is a composite field .

Not supported for this interface.

ORC.8 Parent (CM-200, Optional) 00222

Not supported for this interface.

ORC.9 Date/time of transaction (TS-26, Optional) 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.

Not supported for this interface.

ORC.10 Entered by (XCN-120, Optional) 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.

Not supported for this interface.

ORC.11 Verified by (XCN-120, Optional) 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.

Not supported for this interface.

ORC-12 Ordering provider (XCN-120, Optional) 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.) 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.

Not supported for this interface.

ORC.13 Enterer's location (PL-80, Optional) 00227

Definition: This field specifies the location (e.g., nurse station, ancillary service location, clinic, and 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*.

Not supported for this interface.

ORC.14 Call back phone number (XTN-40, Optional) 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*.

Not supported for this interface.

ORC.15 Order effective date/time (TS-26, Optional) 00229

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

Not supported for this interface.

ORC.16 Order control code reason (CE-200, Optional) 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, and 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.

Not supported for this interface.

ORC.17 Entering organization (CE-60, Optional) 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*.

ORC.18 Entering device (CE-60, Optional) 00232

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

Not supported for this interface.

ORC.19 Action by (XCN-120, Optional) 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*.

Not supported for this interface.

ORC.20 Advanced beneficiary notice code (CE-40, Optional) 01310

Definition: This field indicates the status of the patient's or the patient's representative's consent for responsibility to pay for potentially uninsured services. This element is introduced to satisfy HCFA Medical Necessity requirements for outpatient services. This element indicates (a) whether the associated diagnosis codes for the service are subject to medical necessity procedures, (b) whether, for this type of service, the patient has been informed that they may be responsible for payment for the service, and (c) whether the patient agrees to be billed for this service. The values for this field are drawn from *User-defined Table 0339 – Advanced beneficiary notice code*.

Not supported for this interface.

ORC-21 Ordering facility name (XON-60, Optional, Repeating) 01311

Definition: Periodically, tests are ordered from facilities without specifying an ordering provider. For instance, an outpatient surgical facility may send biopsy tissue for pathologic examination without specifying the surgeon that actually performed the biopsy. In the case where no ordering provider is identified, knowledge of the ordering facility allows public health officials to follow-up on positive tests to obtain further clinical and epidemiologic information. Information on the ordering facility is most relevant to cancer registries.

The facility's CLIA identifier should be placed in the third component <ID number (NM)> if there is one available, and "CLIA" should appear in <assigning authority (HD)> indicating that the ID number used here to identify the laboratory has been assigned by CLIA. If the Ordering Facility is not a laboratory, the name of the Ordering Facility will suffice.

For example: |MediLabCo - Northwest Pathology Ltd., Central Campus^^45D0470381^^^CLIA|
or
|Northwest Correctional Facility|

ORC.22 Ordering facility address (XAD-106, Optional, Repeating) 01312

Definition: This field contains the address of the facility placing the order.

XAD data type components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

For valid values in these components, refer to *User-defined Table 0212 - Nationality* for country codes, HL7 *Table 0190 - Address type* for address type codes, *User-defined Table 0289 - County/parish* for county/parish codes, *User-defined Table 0288 - Census Tract* for census tract codes, and *HL7 Table 4000 - Name/address representation* for address representation codes.

For example: |2217 Rainier Way^^Renton^WA^98002^USA^M^^Black Hawk^^A|

ORC.23 Ordering facility phone number (XTN-48, Optional, Repeating) 01313

Definition: This field contains the telephone number of the facility placing the order. This field further identifies the laboratory identified in ORC-21.

For example: |^ASN^PH^helpline@medilab.com^^206^5549097|
or |^^^^^206^5549097|

ORC.24 Ordering provider address (XAD-106, Optional, Repeating) 01314

Definition: This field contains the address of the care provider requesting the order. This field contains relevant address information for the ordering provider described in OBR-16.

For example: |115 Pike Plaza^Suite 2100^Seattle^WA^98122^USA^^^^^A|
or more likely |115 Pike Plaza^Suite 2100^Seattle^WA^98122|

3.3.2 Observation Request Segment (OBR)

The Observation Request (OBR) segment is used to transmit information specific to an order for a diagnostic study or observation, physical exam, or assessment. The OBR defines the attributes of a particular request for diagnostic services or clinical observations. For laboratory-based reporting, the OBR defines the attributes of the original request for laboratory testing. Essentially, the OBR describes a battery or panel of tests that is being requested or reported. The OBR is somewhat analogous to a generic lab slip that is filled out when physician requests a lab test. The individual test names and results for the panel of tests performed are reported in OBX segments, which are described below. As defined by the ORU syntax, there can be many OBX's per OBR, and there can be many OBR's per PID-

OBR Attributes

SEQ	HL7 LEN	NBS LEN	HL7 DT	HL7 R/O	HL7R P#	HL7 TBL#	HL7 ITEM#	ELEMENT NAME	ELR Usage
1	4	N/A	SI	O			00237	Set ID – OBR	
2	22	N/A	EI	C			00216	Placer Order Number	Not supported – not expecting for ELR
3	22	18	EI	R			00217	Filler Order Number +	DOCUMENT VARIANCE
3.1		18	ST					Entity identifier	
3.2		N/A	IS					Namespace ID	
3.3		N/A	ST					Universal ID	
3.4		N/A	ID					Universal ID Type	
4	200	340	CE	R			00238	Universal Service ID	DOCUMENT VARIANCE
4.1		50	ST					Code (LOINC)	
4.2		100	ST					Description (LOINC)	
4.3		20	ST					ID Type (LOINC)	
4.4		50	ST					Code (Local)	
4.5		100	ST					Description (Local)	
4.6		20	ST					ID Type (Local)	
5	2	N/A	ID	X			00239	Priority	Not supported
6	26	N/A	TS	X			00240	Requested Date/Time	Not supported
7	26	26	TS	R			00241	Observation Date/Time #	Required – "effective start date/time"
8	26	26	TS	O			00242	Observation End Date/Time #	Supported if sent but not generally used with Public Health ELR
9	20	20	CQ	O			00243	Collection Volume *	Supported if sent but not generally used with Public Health ELR
10	60		XCN	O	Y		00244	Collector Identifier *	One instance supported
10.1		100	ST					ID Number	
10.2		50	ST					family name	
10.3		50	ST					Given Name	
10.4		50	ST					Middle Name/Initial	
10.5		20	ST					Suffix	
10.6		20	ST					Prefix	
10.7		20	IS					Degree	
10.8		20						Name Type Code	
11	1		ID	O		0065	00245	Specimen Action Code *	Not supported
12	60		CE	O			00246	Danger Code	Not supported
13	300		ST	O			00247	Relevant Clinical Info.	Optional text input supported
14	26		TS	C			00248	Specimen Received Date/Time *	Supported as "activity start date/time"
15	300	1270	CM	O		0070	00249	Specimen Source *	
15.1								Specimen Source Name or Code	
15.1.1		50	CE					identifier	
15.1.2		100	ST					text	
15.1.3		N/A	ST					name of coding system	Assumed to be HL7 – no place to store in ODS if other system
15.1.4		N/A	CE					alternate identifier	Not supported
15.1.5		N/A	ST					alternate text	Not supported
15.1.6		N/A	ST					alternate coding system	Not supported

SEQ	HL7 LEN	NBS LEN	HL7 DT	HL7 R/O	HL7R P#	HL7 TBL#	HL7 ITEM#	ELEMENT NAME	ELR Usage
15.2		N/A	TX					Additives	
15.3		1000	TX					Freetext	
15.4			CE					Body site	
15.4.1		20	ST					identifier	
15.4.2		100	ST					text	
15.4.3		N/A	ST					name of coding system	Assumed to be HL7 – no place to store in ODS if other system
15.4.4		N/A	CE					alternate identifier	Not supported
15.4.5		N/A	ST					alternate text	Not supported
15.4.6		N/A	ST					alternate coding system	Not supported
15.5		N/A	CE					Site modifier	
15.5.1		N/A	ST					identifier	
15.5.2		N/A	ST					text	
15.5.3		N/A	ST					name of coding system	Assumed to be HL7 – no place to store in ODS if other system
15.5.4		N/A	CE					alternate identifier	Not supported
15.5.5		N/A	ST					alternate text	Not supported
15.5.6		N/A	ST					alternate coding system	Not supported
15.6		N/A	CE					Collection Method Identifier code	
15.6.1		N/A	ST					identifier	
15.6.2		N/A	ST					text	
15.6.3		N/A	ST					name of coding system	Assumed to be HL7 – no place to store in ODS if other system
15.6.4		N/A	ST					alternate identifier	Not supported
15.6.5		N/A	ST					alternate text	Not supported
15.6.6		N/A	ST					alternate coding system	Not supported
16	80		XCN	O	Y		00226	Ordering Provider	One instance supported
16.1		100	ST					Ordering Provider ID	
16.2		50	ST					Provider Last Name	
16.3		50	ST					Provider First Name	
16.4		50	ST					Provider Middle Initial	
16.5		20	ST					Provider Suffix	
16.6		20	ST					Provider Prefix	
16.7		20	IS					Provider Degree	
16.8		20						Name Type Code	
17	40	230	XTN	O	Y/2		00250	Order Callback Phone Number	One instance supported
17.1		N/A						Formatted Phone Number	Phone number in this field is not processed
17.2		20						Telecom use code	
17.3		50						Telecom equipment type	
17.4		100						Email Address	
17.5		N/A						Country Code	
17.6		3						Area Code	Expecting 3 digit area code here
17.7		17						Phone Number	Expecting unformatted phone number here (7 digits)
17.8		20						Extension	
17.9		20						Any Text	
18	60	N/A	ST	O			00251	Placer Field 1	Not Supported
19	60	N/A	ST	O			00252	Placer Field 2	Not Supported
20	60	N/A	ST	O			00253	Filler Field 1 +	Not Supported
21	60	N/A	ST	O			00254	Filler Field 2 +	Not Supported
22	26	26	TS	C			00255	Results Rpt/Status Chng-Date/Time +	“activity end date/time”
23	40	N/A	CM	O			00256	Charge to Practice +	Not Supported
24	10	N/A	ID	O		0074	00257	Diagnostic Serv Sect ID	Not Supported
25	1		ID	R		0123	00258	Result Status +	Used to relay entire report status
26	400		CM	O			00259	Parent	Used for Micros
26.1		100	CE					OBX-3 Observation identifier	

SEQ	HL7 LEN	NBS LEN	HL7 DT	HL7 R/O	HL7R P#	HL7 TBL#	HL7 ITEM#	ELEMENT NAME	ELR Usage
26.1		20	ST					identifier	
26.2		100	ST					text	
26.3		N/A	ST					name of coding system	Assumed to be HL7
26.4		N/A	ST					alternate identifier	Not supported
26.5		N/A	ST					alternate text	Not supported
26.6		N/A	ST					alternate coding system	Not supported
26.2			ST					OBX-4 sub-id of parent result	
26.3			TX					part of OBX-5 observation result from parent	
		100						Filler order number	(generally, this is what is received for sensitivity orders on cultures. It is used for processing act relationships but not mapped again from this field)
27	200		TQ	O	Y		00221	Quantity/Timing	Not Supported
28	150		XCN	O	Y/5		00260	Result Copies To	Supported but rarely sent
29	200		CM	O			00261	Parent *	Supported for micros
29.1		100						Placer order number	
29.2		100						Filler order number	(generally, this is what is received for sensitivity orders on cultures. It is used for processing act relationships but not mapped again from this field)
30	20		ID	O		0124	00262	Transportation Mode	Not Supported
31	300		CE	O	Y		00263	Reason for Study	Supported as ICD codes Note that alternate identifiers are not supported but several ICD-9 codes are supported if sent.
31.1		20	ST					identifier	
31.2		100	ST					text	
31.3		N/A	ST					name of coding system	Assumed to be HL7 – no place to store in ODS if other system
31.4		N/A	ST					alternate identifier	Not supported
31.5		N/A	ST					alternate text	Not supported
31.6		N/A	ST					alternate coding system	Not supported
32	200		CM	O			00264	Principal Result Interpreter +	Supported but not sent
32.1		100	CN					Name component only	
32.11		100	ST					ID	
32.12		50	ST					Last Name	
32.13		50	ST					First Name	
32.14		50	ST					Middle Initial	
32.15		20	ST					Suffix	
32.16		20	ST					Prefix	
32.17		20	IS					Degree	
32.18		20						Name Type Code	
33	200		CM	O	Y		00265	Assistant Result Interpreter +	Supported but not sent
32.1		100	CN					Name component only	
32.11		100	ST					ID	
32.12		50	ST					Last Name	
32.13		50	ST					First Name	
32.14		50	ST					Middle Initial	
32.15		20	ST					Suffix	
32.16		20	ST					Prefix	
32.17		20	IS					Degree	
32.18		20						Name Type Code	
34	200		CM	O	Y		00266	Technician +	Supported but not sent
34.1		100	CN					Name component only	
34.11		100	ST					ID	

SEQ	HL7 LEN	NBS LEN	HL7 DT	HL7 R/O	HL7R P#	HL7 TBL#	HL7 ITEM#	ELEMENT NAME	ELR Usage
34.12		50	ST					Last Name	
34.13		50	ST					First Name	
34.14		50	ST					Middle Initial	
34.15		20	ST					Suffix	
34.16		20	ST					Prefix	
34.17		20	IS					Degree	
34.18		20						Name Type Code	
35	200		CM	O	Y		00267	Transcriptionist +	Supported but not sent
35.1		100	CN					Name component only	
35.11		100	ST					ID	
35.12		50	ST					Last Name	
35.13		50	ST					First Name	
35.14		50	ST					Middle Initial	
35.15		20	ST					Suffix	
35.16		20	ST					Prefix	
35.17		20	IS					Degree	
35.18		20						Name Type Code	
36	26	N/A	TS	O			00268	Scheduled Date/Time +	Not Supported
37	4	N/A	NM	O			01028	Number of Sample Containers *	Not Supported
38	60	N/A	CE	O	Y		01029	Transport Logistics of Collected Sample *	Not Supported
39	200	N/A	CE	O	Y		01030	Collector's Comment *	Not Supported
40	60	N/A	CE	O			01031	Transport Arrangement Responsibility	Not Supported
41	30	N/A	ID	O		0224	01032	Transport Arranged	Not Supported
42	1	N/A	ID	O		0225	01033	Escort Required	Not Supported
43	200	N/A	CE	O	Y		01034	Planned Patient Transport Comment	Not Supported
44	80	N/A	CE	O		0088	00393	Procedure Code	Not Supported
45	80	N/A	CE	O	Y	0340	01316	Procedure Code Modifier	Not Supported

Examples:

For pertussis reporting:

OBR|1||MICR9700342|^^^654324^Throat culture^L|||200011270930|||||||
THRT&Throat&HL70070|1234567^Welby^M^J^Jr^Dr^MD|^^^^^206^4884144|||||||F<hex 0D0A>

This segment specifies that a report identified as MICR9700342 was processed on November 27, 2000, at 9:30 am. The report was a throat culture requested by Dr. M.J. Welby, Jr., MD, whose phone number is (206) 488-4144. This is the final result.

For Hepatitis A virus testing:

OBR|1||SER122145|^^^78334^Hepatitis Panel, Measurement^L|||200003210830|||||||BLDV&Blood venous&HL70070|1234567^Welby^M^J^Jr^Dr^MD|^^^^^206^4884144|||||||F<hex 0D0A>

This segment shows that a report identified by SER122145 for a hepatitis panel was conducted on blood and was processed on March 21, 2000, at 8:30 am. The battery was ordered by Dr. M.J. Welby, Jr., MD, whose phone number is (206) 488-4144. This is the final result.

For blood lead testing:

OBR|5||CH96779|^^^3456543^Blood lead test^L|||200101210730|||||||BLDC^Blood capillary|3456789^Everett^C^Sr^Dr^MD |^^^^206^4880911|||||||F<hex 0D0A>

This segment shows that a report identified by CH96779 for a blood capillary lead test was processed on January 21, 2001, at 7:30 am. The test was ordered by Dr. C. Everett, MD, whose phone number is (206) 488-0911. This is the final result.

OBR field definitions

For electronic laboratory purposes, the Placer and Filler are defined as follows:

The placer is the person or service that requests (places order for) an observation battery, e.g., the physician, the practice, clinic, or ward service, that orders a lab test, X-ray, vital signs, etc. The meaning is synonymous with, and used interchangeably with, requestor. See *ORC-2-placer order number*, "Placer order number."

The filler is the person or service that produces the observations (fills the order) requested by the requestor. The word is synonymous with "producer" and includes diagnostic and clinical services and care providers who report observations about their patients. The clinical laboratory is a producer of lab test results (filler of a lab order), the nursing service is the producer of vital signs observations (the filler of orders to measure vital signs), and so on. See *ORC-3-filler order number*, Section 4.3.5.3, "Filler order number."

The daggered (+) items in the OBR attribute table above are known to the filler, not the placer. They are valued by the filler as needed when the OBR segment is returned as part of a report. The starred (*) fields are only relevant when an observation is associated with a specimen. These are completed by the placer when the placer obtains the specimen. They are completed by the filler when the filler obtains the specimen, and usually are not passed as part of the ORU result message. *OBR-7-observation date/time* and *OBR-8-observation end date/time* (flagged with #) are the physiologically relevant times. In the case of an observation on a specimen, they represent the start and end of the specimen collection. In the case of an observation obtained directly from a subject (e.g., BP, Chest X-ray), they represent the start and end time of the observation.

OBR.1 Set ID (SI-4, Optional) 00237

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. For example, the second OBR under a single PID would appear as:

|2|

OBR.2 Placer order number (EI-22, Conditional) 00216

Definition: This field identifies an order number uniquely among all orders from a particular ordering application. This field should not contain the accession number for a specimen. The first component is a string that identifies an individual order. A limit of fifteen (15) characters is suggested but not required. It is assigned by the placer (ordering application). The second through fourth components contain the application ID of the placing application in the same form as the HD data type.

This field is not expected for this resultsinterface.

OBR.3 Filler order number (EI-22, Conditional) 00217

Definition: This field is the order number associated with the filling application. 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. For laboratory based reporting, this field will be used to report the laboratory specimen accession number. This filler number coupled with the

laboratory identifier acts as a unique identifier across various systems that could happen to use the same filler number to track specimens.

EI data type components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Example: |MICR9700342|

NOTE: this example assumes that the Sending Facility is the assigning authority for this Filler number, if not otherwise indicated.

The second through fourth components could 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. 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.

OBR.4 Universal service ID (CE-200, Required) 00238

Definition: This field is the identifier code for the requested observation/test/battery.

The CE data type transmits codes and the text associated with the code. This type has six components arranged in two groups as follows:
<identifier (ST)>^<text (ST)>^<name of coding system (ST)>^<alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)>

CE data type components are defined as follows:
(1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.
(2) Text (ST). Name or description of the item in question.
(3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item.
(4-6) Three components analogous to 1-3 for the alternate or local coding system.

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

|625-4^MICROORGANISM IDENTIFIED^LN^874634^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 antimicrobial 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 is only be used to identify the original Ordered Test. **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 hepatitis panel would appear just as ordered:

|^^^78334^Hepatitis Panel, Measurement^L|

Here the code is a user-defined “local” code, as indicated by the <L> in the sixth subcomponent. 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 - OBR (ID-2) 00239

Definition: ***This field has been retained for backward compatibility only***. It is not supported.

OBR.6 Requested date/time (TS-26, Not supported) 00240

Definition: ***This field has been retained for backward compatibility only***. Previously requested date/time. That information is now carried in the fourth component of the *OBR-27-quantity/timing*, but that information is not carried forward from the original Order message.

OBR.7 Observation date/time (TS-26, Required for Results Reporting) 00241

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. In the case of a specimen-associated study, this field shall represent the date and time the specimen was collected or obtained. (This is a results-only field except when the placer or a third party has already drawn the specimen.) This field is conditionally required. When the OBR is transmitted as part of a report message, the field **must** be filled in. If it is transmitted as part of a request **and** a sample has been sent along as part of the request, this field must be filled in because this specimen time is the physiologically relevant date-time of the observation.

For example: |200011270930|

OBR.8 Observation end date/time (TS-26, Optional) 00242

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. This is a results field except when the placer or a party other than the filler has already drawn the specimen.

This field is supported for this interface although timed specimen collection is generally not received for Public Health reporting.

OBR.9 Collection volume (CQ-20, Optional) 00243

Definition: For laboratory tests, the collection volume is the volume of a specimen. The default unit is ML. 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 of the HL7 2.3.1 Standard for full details about units.)

This field is supported for this interface but is generally not received with results.

OBR.10 Collector identifier (XCN-60, 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.

This field is supported for this interface but is generally not received.

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

Definition: This field is the action to be taken with respect to the specimens that accompany or precede this order. The purpose of this field is to further qualify (when appropriate) the general

action indicated by the order control code contained in the accompanying ORC segment. For example, when a new order (ORC - "NW") is sent to the lab, this field would be used to tell the lab whether or not to collect the specimen ("L" or "O"). Refer to *HL7 Table 0065 - Specimen action code* for valid values.

This field is not expected for this interface.

OBR.12 Danger code (CE-60, Optional) 00246

Definition: This field is the code and/or text indicating any known or suspected patient or specimen hazards, e.g., patient with active tuberculosis 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, free text without a code must be preceded by a component delimiter.

This field is not expected for this interface.

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. Relevant epidemiologically important information (e.g., day care center attendee, food handler, or nursing home patient) can be placed here; however there are no recommendations for specific use of this field for laboratory-based reporting. ICD codes used to support testing and reimbursement should be provided in OBR-31 (Reason for Study).

In our examples, we have not valued this field.

OBR.14 Specimen received date/time (TS-26, Required for ELR) 00248

Definition: For observations requiring a specimen, the specimen received date/time is the actual login time at the diagnostic service. This field must contain a value when the order is accompanied by a specimen, or when the observation required a specimen **and** the message is a report.

In our examples, we have not valued this field.

OBR.15 Specimen source (CM-300, Optional) 00249

Definition: This field identifies the site where the specimen should be obtained or where the service should be performed.

The first component contains the specimen source name or code (as a CE data type component). (Even in the case of observations whose name implies the source, a source may be required, e.g., blood culture – heart blood.) Refer *to HL7 table 0070 - Specimen source codes* for valid entries.

The second component should include free text additives to the specimen such as Heparin, EDTA, or Oxlate, when available.

The third is a free text component describing the method of collection when that information is a part of the order. When the method of collection is logically an observation result, it should be included as a result segment.

The fourth component specifies the body site from which the specimen was obtained, and the fifth is the site modifier. For example, the site could be antecubital fossa, and the site modifier "right." The components of the CE fields become subcomponents.

Refer to *HL7 Table 0163 – Body site*. Since the fields on this HL7 table already contain a modifier, there has not been a need to date to use the Body Site Modifier component.

The fifth component indicates whether the specimen is frozen as part of the collection method. Suggested values are F (Frozen); R (Refrigerated). If the component is blank, the specimen is assumed to be at room temperature.

Refer to *HL7 Table 0070 – Specimen source codes*.

An example for an isolate from a blood culture is:
|BLDV&Blood venous&HL70070^^^T-D8400&Antecubital Region&SNM^LACF&Left Antecubital Fossa&HL70163|

where
<BLDV> is the code, <Blood venous> is the text of the code, and HL7 0070 is the table from which the code and text were drawn.

An example for a specimen from a finger stick collection for blood lead testing where the specimen source is provided from an HL7 table of values:

|BLDC&Blood Capillary&HL70070|

An example for a stool specimen which yielded a reportable enteric organism is:

|STL&Stool=Fecal&HL70070|

It is strongly recommended that actual specimen sources be provided in OBR-15 and not surrogate descriptions such as "lavender-top" or "serum-separator tube".

Non-Coded Specimen Sources:
If coded text is not available, then the information is provided in the freetext field. The first two components would be blank, followed by the free-text specimen source.

A non-coded, free text specimen source in a field of a CE data type would appear as:
|^^Blood|

OBR.16 Ordering provider (XCN-80, Optional, Not expecting repeats) 00226

Definition: This field identifies the provider who ordered the test. Either the ID code or the name, or both, may be present. This is the same as *ORC-12-ordering provider*, but the interface expects the Ordering Provider in OBR-16. The ORC segment is created from a ZLR segment that comes with 2.3.z version Public Health Electronic Laboratory Reports. **This field is optional only if the Ordering Facility information is provided in the message. Generally, both Ordering Provider and Ordering Facility are received.**

For example: |1234567^Welby^M^J^Jr^Dr^MD|

Note: Ordering Provider Address appears in ORC-24. Public health agencies may request that the ordering provider's address also be provided so that health officials can contact providers to obtain additional information during public health investigations.

OBR.17 Order callback phone number (XTN-40, Optional, Not expecting repeats) 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.

For example: |^WPN^PH^^^206^2770908^^call before 5:00 pm only~^ASN^PH^^^206^5620767|

or

|^^^^^206^2770908|

This field is optional only if the Ordering Facility's phone number is provided in the message. Generally, both Ordering Provider and Ordering Facility are received.

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

Definition: This field is user field #1. Text sent by the placer will be returned with the results.

Not supported with this interface.

OBR.19 Placer field 2 (ST-60, Optional) 00252

Definition: This field is similar to placer field #1.

Not supported with this interface.

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

Definition: This field is definable for any use by the filler (diagnostic service).

Not supported with this interface.

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

Definition: This field is similar to filler field #1.

Not supported with this interface.

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

Definition: This field specifies the date/time results reported or the report status changed. This field is used to indicate the date and time that the results are composed into a report and released, or that a status, as defined in *ORC-5-order status*, is entered or changed.

For Electronic Laboratory Reporting, the actual report time is pulled from OBX-14, Date/time of the Observation.

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

Definition: This field is the charge to the ordering entity for the studies performed when applicable. The first component is a dollar amount when known by the filler. The second is a charge code when known by the filler (results only).

This field is not valued with this interface.

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

Definition: This field is the section of the diagnostic service where the observation was performed. If the study was performed by an outside service, the identification of that service should be recorded here. Refer to HL7 Table 0074 - Diagnostic service section ID for valid entries.

This field is not valued with this interface.

OBR.25 Result status (ID-1, Conditional) 00258

Definition: This field is the status of results for this order. Refer to *HL7 table 0123 - Result status* for valid entries. Some public health agencies may want to have preliminary results for certain tests. The decision to transmit final versus preliminary results may vary from state to state. Corrected results are also processed if sent, based on the use of the same accession/filler number in OBR-3.

Example:

|C| (this is a corrected report)

OBR.26 Parent result (CM-400, Optional) 00259

Definition: This field provides linkages to messages describing previously performed tests. This important information, together with the information in *OBR-29-parent* (the identifiers associated with the parent placer and filler), uniquely identifies the OBX segment from the previously performed test that is related to this order (description of OBX segment provided below). The value reported in this OBX segment in the parent result is the organism or chemical species about which this battery reports. For example, if the current battery (as designated in OBR-4) is an antimicrobial susceptibility test, the parent result in OBR-26 contains a result from a previously performed antimicrobial susceptibility test, which identified the organism on which the current susceptibility was run. HL7 specifies here the OBX-5 data will only show the text, or second component of the CE data type used in the previous message. However, for electronic laboratory reporting, all of the CE data type components of field OBX-5 from the previous parent message appear in this field of the present OBR, using subcomponent delimiters. This indirect linkage is preferred because the name of the organism in the parent result may undergo several preliminary values prior to finalization. *This is an exception to the HL7 description for this component.*

An example is:

|600-7&Microorganism identified&LN^^L-25116&Streptococcus pneumoniae&SNM|

In this example, <600-7> is the code for a microbial culture that appeared in a previous OBX-3; <Microorganism identified> is the text describing the code; and <LN> represents the name of the coding system, LOINC®. The second component of this field is not supported in this message and remains blank. The third component has the code for *Streptococcus pneumonia*e, the text name of the organism, and the code representing the name of the coding system, SNOMED®. The third component was the OBX-5 that appeared in the parent result. The report of the antimicrobial susceptibility testing performed on the previously identified *Streptococcus pneumoniae* will be given in the OBX segment described below. Most laboratory findings that will be reported will not require the “parent result” field to be populated. A notable exception is the reporting of antimicrobial susceptibility testing results.

For laboratories that develop an HL7 message for laboratory-based reporting only and do not use HL7 within their institution, the parent result field should be used to report the name of the organism on which sensitivities were performed. OBR-26 would therefore appear as:

|^^L-25116&Streptococcus pneumoniae&SNM|

HL7 2.3.1 states that OBR-26 should only be present when the parent result is identified by *OBR-29-parent numbe*r; however, as discussed, the parent result may not always be present when a laboratory uses HL7 for transmission of public health information only. For this reason, OBR-26 should be populated with information in the absence of a parent number. This is a deviation from the HL7 2.3.1 specifications, but is necessary to interpret data required for laboratory-based reporting.

Below is an example of using 2 OBR’s to accomplish this:

OBR|1||05099009500|630-4^Microorganism Identified^LN^008086^Urine Culture, Comprehensive^L|||200002181000||||||200002220901||3^Ray^Tony^^^^MD|(336) 585-5000|||||||F <hex 0D0A>
OBX|1|CE|**630-4^Microorganism Identified^LN^997191^Result 1^L|1|L-26201^Vibrio cholerae^SNM^M520^Vibrio Cholerae^L**|||A|||F|||20000222|^LABCORP BURLINGTON^CLIA|||<hex 0D0A> **OBR**|2||05099009500|^^^997191^RESULT 1^L|||200002181000||||||200002220901|| 3^RAY^TONY^^^^MD|(336)585-5000|||||||F|**630-4&Microorganism Identified&LN&997191&RSLT#1&L^1^Vibrio cholerae**|||^05099009500|<hex 0D0A>

OBR.27 Quantity/timing (TQ-400, Optional, Not supported) 00221

Definition: This field contains information about how many services to perform at one service time and how often the service times are repeated, and to establish the duration of the request. See Section 4.4 of the HL7 standard, Version 2.3.1, "Quantity/Timing (TQ) Definition."

This field is not expected for this interface.

OBR.28 Result copies to (XCN-150, Optional, Repeating/5) 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.

For example: |1234567^Welby^M^J^Jr^Dr^MD ~ 4567891^Parsons^Melvin^C^^Dr^MD|
This field is not expected but Copy-to Provider information will be displayed if sent.

OBR.29 Parent (CM-200, Optional) 00261

Definition: This field relates a child to its parent when a parent/child relationship exists. The field is optional; however, it is recommended that the field be sent if available for laboratory-based reporting. This field may be sent when a parent result is provided. Reporting of antimicrobial susceptibility data requires that the parent result be populated with the name of the organism for which testing was performed (OBR-26). See OBR-26 for further description.

For example a parent result with no filler number would appear as:
|MB980167|

OBR.30 Transportation mode (ID-20, Optional) 00262

Definition: This field identifies how (or whether) to transport a patient, when applicable. Refer to *HL7 Table 0124 - Transportation mode* for valid codes.

This field is not expected for this results interface.

OBR.31 Reason for study (CE-300, Optional, Repeating) 00263

Definition: For public health reporting, ICD-9-CM codes used to support testing and reimbursement should be used here. This field can repeat to accommodate multiple diagnoses.

Refer to website http://www.cdc.gov/nchs/icd9.htm for information on ICD-9-CM codes.

The field would appear as:

OBR|…..||099.41^Other Venereal Diseases^I9C~483.1^Pneumonia due to other specified organism^I9C~V02.61^Carrier or Suspected carrier of infectious diseases ^I9C~070.41^VIRAL HEPATITIS^I9C~070.42^Viral Hepatitis^I9C|

The version of International Classification of Disease (ICD) does not impact the storage of these codes and descriptions.

OBR.32 Principal result interpreter (CM-200, Optional) 00264

Definition: This field identifies the physician or other clinician who interpreted the observation and is responsible for the report content.

This field is rarely sent but is supported. Principal result interpreter is preferable to the use of OBX-16, Responsible Observer.

OBR.33 Assistant result interpreter (CM-200, Optional) 00265

Definition: This field identifies the clinical observer who assisted with the interpretation of this study.

This field is rarely sent but is supported.

OBR.34 Technician (CM-200, Optional) 00266

Definition: This field identifies the performing technician.

This field is rarely sent but is supported.

OBR.35 Transcriptionist (CM-200, Optional) 00267

Definition: This field identifies the report transcriber.

This field is rarely sent but is supported.

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).

Not expected for this interface.

OBR.37 Number of sample containers (NM-4, Optional) 01028

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 which accompany the order.

Not expected for this interface.

OBR.38 Transport logistics of collected sample (CE-60, Optional) 01029

Definition: This field is the means by which a sample reaches the diagnostic service provider. This information is to aid the lab in scheduling or interpretation of results. Possible answers: routine transport van, public postal service, etc. If coded, requires a user-defined table.

Not expected for this interface.

OBR.39 Collector's comment (CE-200, 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.

Not expected for this interface.

OBR.40 Transport arrangement responsibility (CE-60, 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.

Not expected for this interface.

OBR.41 Transport arranged (ID-30, Optional) 01032

Definition: This field is an indicator of whether transport arrangements are known to have been made. *Refer to HL7 Table 0224 - Transport arranged* for valid codes.

Not expected for this interface.

OBR.42 Escort required (ID-1, Optional) 01033

Definition: This field is an indicator that the patient needs to be escorted to the diagnostic service department. Note: The nature of the escort requirements should be stated in the *OBR-43-planned patient transport comment* field. See *HL7 Table 0225 - Escort required* for valid values.

Not expected for this interface.

OBR.43 Planned patient transport comment (CE-200, Optional) 01034

Not expected for this interface.

OBR.44 Procedure code (CE-80, Optional) 00393

Definition: This field contains a unique identifier assigned to the procedure, if any, associated with the Universal Service ID reported in field 4. This field is a CE data type for compatibility with clinical and ancillary systems. This field will usually contain the HCFA Common Procedure Coding System (HCPCS) codes associated with the order. The HCPCS codes and modifiers of level II can be found at http://www.hcfa.gov/stats/anhcpcdl.htm.

Not expected for this interface.

OBR.45 Procedure code modifier (CE-80, Optional, Repeating) 01316

Definition: This field contains the procedure code modifier to the procedure code reported in field 44, when applicable. Procedure code modifiers are defined by regulatory agencies such as HCFA and the AMA. Multiple modifiers may be reported. The HCPCS codes and modifiers of level II can be found at http://www.hcfa.gov/stats/anhcpcdl.htm.

Not expected for this interface.

3.3.3 Observation/Result (OBX) Segment.

The OBX segment is used to transmit a single observation or observation fragment. It represents the smallest indivisible unit of a report. Its principal mission is to carry information about observations in report messages. While OBR gives general information about the order for the test and ORC gives information on all services that are requested, the OBX segment gives the specific, individual tests performed (OBX-3) and the specific results for each test (OBX-5). **Laboratory-based reporting to public health agencies focuses on OBX-3 and OBX-5 as the most informative elements of the message; thus, every effort should be made to make OBX-3 and OBX-5 as informative and unambiguous as possible.**

OBX Attributes

SEQ	HL7 LEN	NBS LEN	HL7 DT	HL7 R/O	HL7R P#	HL7 TBL#	HL7 ITEM#	ELEMENT NAME	ELR Usage
1	4	N/A	SI	R			00569	Set ID-OBX	
2	3	N/A	ID	C		0125	00570	Value type	SN, CE, TX, ST
3	80	2700	CE	R			00571	Observation identifier*	CHECK NEW LENGTHS
3.1		50						Identifier Code	LOINC Code
3.2		1000						Text	LOINC description
3.3		300						Name of Coding System	'LN'
3.4		50						Alternate Identifier	Local code here
3.5		1000						Text	Local description here
3.6		300						Alternate Coding System	"L"
4	20	N/A	ST	C			00572	Observation sub-ID	Used for processing but not mapped
5	65536[1]		**CE	C	Y[2]		00573	Observation value*	If CE data type in OBX-2, prefer SNOMED result code. **For SN data in this field, the length is 9(11,5) for each numeric value. For TX or ST data in this field, the length is 2000.
5.1	20	20						Result Code (SNOMED)	SNOMED Code
5.2	100	300						Result Text (SNOMED)	SNOMED Description
5.3	3	300						ID Type (SNOMED)	'SNM'
5.4	20	20						Alt. Result Code (Local)	Local code here
5.5	100	300						Alt. Description (Local)	Local description here
5.6	3	300						Alt. ID Type (Local)	"L"
6	60	20	CE	O			00574	Units	ISO Unit codes
7	60	20 high 20 low	ST	O			00575	Reference ranges	Associated with SN and CE results.
8	5	20	ID	O	Y/5	0078	00576	Abnormal flags	
9	5	N/A	NM	O			00577	Probability	Not supported
10	2	N/A	ID	O	Y	0080	00578	Nature of abnormal test	Not supported
11	1	1	ID	R		0085	00579	Observation result status	Required
12	26	N/A	TS	O			00580	Date last Obs normal values	Not supported
13	20	N/A	ST	O			00581	User defined access checks	Not supported
14	26	26	TS	R			00582	Date/time of the observation	Required
15	60		CE	O			00583	Producer's ID	Supported
15.1		20	ST					identifier	
15.2		100	ST					text	
15.3		N/A	ST					name of coding system	
15.4		N/A	ST					alternate identifier	Not supported
15.5		N/A	ST					alternate text	Not supported
15.6		N/A	ST					alternate coding system	Not supported
16	80	N/A	XCN	O	Y		00584	Responsible observer	Not supported
17	60		CE	O	Y		00936	Observation method	Supported
17.1		20	ST					identifier	
17.2		100	ST					text	
17.3		N/A	ST					name of coding system	
17.4		N/A	ST					alternate identifier	Not supported
17.5		N/A	ST					alternate text	Not supported
17.6		N/A	ST					alternate coding system	Not supported

* For laboratory-based reporting, LOINC® is strongly recommended for OBX-3, and SNOMED® is strongly recommended for OBX-5 when results are coded and CE data types are used.

** The data type for OBX-5 can vary and is determined by OBX-2.

1 The length of the observation value field is variable, depending upon value type. See *OBX-2-value type*.

2 Standard specifies that OBX-5 may repeat for multipart, single answer results with appropriate data types, e.g., CE, TX, and FT data types. Not expecting repeats in the result values; would prefer to use additional OBXs tied together with Observation sub-ids as described below.

Examples:

For Hepatitis A Virus reporting:

OBX|3|CE|5182-1^Hepatitis A Virus IgM Serum Antibody EIA^LN||G-A200^Positive^SNM|||||F|||
200312161330|45D0480381|<hex 0D0A>

This segment specifies that a third item in the report of a test for hepatitis A had a positive culture. This is the final result and was observed on December 16, 2003, at 1:30 p.m.

For Blood Lead reporting:

OBX|2|SN|10368-9^Quantitative Blood Lead ^LN||^45|:g/dL|||||F|||20040121800|45D0480382|<hex 0D0A>

This segment specifies that on January 21, 2004, at 8:00 a.m., the test for blood lead level resulted in 45 µg/dL. This is the final result.

For patient age and employment:

OBR|2|||^ Additional Patient Demographics| <hex 0D0A>
OBX|1|NM|21612-7^reported patient age^LN||47|yr^year^ANSI+||<hex 0D0A>
OBX|2|TX|11294-6^Current employment^LN||laboratory technician||<hex 0D0A>

OBX field definitions

OBX.1 Set ID - observation simple (SI-4, Optional) 00569

Definition: This field contains the sequence number. There can be many OBX's per OBR. The set ID allows the receiver to maintain the relational aspects of the message.

This field can be used to track a number of results within one test panel. For example,

OBR|1||Hepatitis Panel||...
OBX|1|NM|LOINC Code for result 1||...
OBX|2|NM|LOINC Code for result 2||...

OBX.2 Value type (ID-3, Conditional) 00570

Definition: This field contains the data type that defines the format of the observation value in OBX-5. An explanation of possible data types is given in Appendix D.

The value of an ID data type follows the formatting rules for an ST data type except that it is drawn from a table of HL7 legal values.

This field contains the data type of the observation value reported in OBX-5. For instance, if the value in OBX-2 is "CE", then the result reported in OBX-5 must be a coded element. When the value type is TX or FT, then the results in OBX-5 are bulk text. The choices allowed for the value type of an observation are listed in *HL7 Table 0125 - Value typ*e. All HL7 data types are valid in this field except CM, CQ, SI and ID. TX should not be used except to send large amounts of text. ST should be used to send short, and possibly encodable, text strings. For laboratory-based reporting, the CE and SN data types should be used whenever possible so that results can be interpreted easily

When no standard format for the reported result is available, it is recommended to use: (see OBX-5 for additional explanation)

1) CE with subsequent NTE for non-standard coded results where the result is a text blob

2) TX for results that are truly free text

Observations that are usually reported as numbers will sometimes have the string (ST) data type because non-numeric characters are often reported as part of the result, e.g., “<0.06" to indicate the result was lower than detected by the present mechanism. In the example, "<0.06," "<" is a text symbol and the digit, “0.06" is considered a numeric value. However, this usage of the ST type should be discouraged since the SN (structured numeric) data type now accommodates such reporting. The SN data type is described under OBX-5 below.

OBX.3 Observation identifier (CE-590, Required) 00571

Definition: This field contains a unique identifier for the result being reported.

For reporting of laboratory results, OBX-3 is the specific test that has been performed. Because OBX-3 is designated as a coded element, different coding schemes can be used to describe the test or observation in OBX-3. The description in OBX-3 essentially “points” to a master observation table that may provide other attributes of the observation to be used by the receiving system to process the message. For laboratory-based reporting, it is necessary for the observation to have a code in OBX-3 that can be easily interpreted by the public health application receiving the message. **For this reason, the laboratory-based reporting message strongly recommends that LOINC® (discussed below) be used as the coding system in OBX-3 for reporting tests that identify cases of illness that are reportable to public health agencies.** This decision was made to minimize any ambiguity in reporting test results. Thus, whenever possible, OBX-3 should be used as the informative element of the ORU, the focal point of the report. In other words, it is strongly recommended that OBX-3 be populated with as specific a LOINC® code as possible to prevent any misinterpretation of reported results.

Following this method, the first component of the field is the **L**ogical **O**bservation **I**dentifiers **N**ames and **C**odes® (LOINC®) code for a test which has been performed and which will have its individual results reported in the OBX segment described later. The second component is the name of the test as it appears in the LOINC® coding system. The third component is a code representing the name of the coding system that has the table where the codes and names of the tests can be found e.g., LN is the code for LOINC®. Coding systems other than LOINC®, such as SNOMED® (the Systematized Nomenclature of Human and Veterinary Medicine) or local codes can be used for OBR-4. The codes for identifying coding systems are found in the HL7 Standard Version 2.3.1 at section 7.5.4. Codes that we anticipate for use in public health reporting are shown in Appendix C, *User Table 0396*.

> LOINC® (Logical Observation Identifier Names and Codes) is a collection of tables which provide sets of universal names and ID codes for identifying laboratory and clinical test results. The LOINC® codes are not intended to transmit all possible information about a test. They are only intended to *identify* the test result. The level of detail in the LOINC® definitions was intended to distinguish tests that are usually distinguished as separate test results within the master file of existing laboratory systems. For laboratory-based reporting of public health information, a subset of LOINC® codes has been selected and will be made available at the CDC web site. General information about LOINC® codes can be found at: http://www.regenstrief.org

LOINC® codes are not recommended for pathology reports for cancer registries.

Some reports currently cannot be described with OBX-3 alone, for instance, the initial identification of an organism may have an OBX-3 which is general, such as “Microbial Culture.” In this setting, OBX-5 would identify the specific organism that has triggered a report to be sent to a public health agency, such as *“Neisseria meningitidi*s”. Another example would be reporting of antimicrobial sensitivity results where it is necessary to use OBR-26 (Parent Result) which identifies the organism on which testing was performed. However, it is still strongly recommended to use LOINC® codes for OBX-3 even if the chosen term is not organism-specific.

An example for a Hepatitis A Virus result is:

|5182-1^Hepatitis A Virus IgM Serum Antibody EIA^LN|

where <5182-1> is the identifier from the LOINC® table for the Enzyme Immunoassay for Hepatitis A Virus IgM antibody, <Hepatitis A Virus IgM Serum Antibody EIA> is the text name as it appears in the table, and <LN> is the name of the coding system. Any further description of the testing may appear in *OBX-17 Observation method* but is not required. For antimicrobial susceptibility testing, the antimicrobial test for which minimum inhibitory concentrations (MICs) have been performed may appear as:

|524-9^Vancomycin Susceptibility MIC^LN|

where <524-9> is the identifier from the LOINC® table for the vancomycin MIC test, <Vancomycin Susceptibility MIC> is the text name as it appears in the table, and <LN> represents the name of the coding system. Identification of the method as broth dilution may appear in *OBX-17 Observation method* using CDC method codes described below, but is not required. Refer to http://www.phppo.cdc.gov/clia/testcat.asp for the CDC Test Complexity Files. These codes represent specific tests which can be used to further describe the method of test performed in OBX-17.

An example for coding a report of lead level from a capillary blood specimen:

|10368-9^Quantitative Blood Lead^LN|

For reporting an isolate of *Neisseria meningitidi*s, OBX-3 would have the test which yielded the isolate. The result of the culture (i.e., the growth of *Neisseria meningitidi*s) would be reported in OBX-5 below. OBX-3 would appear as:

|600-7^Microorganism identified, Blood Culture^LN|

For public health reporting, patient age is sometimes needed when the birth date may not be available. The PID segment in HL7 Version 2.3.1 has only a field for date of birth, not for patient age. Many applications compute patient age based on birth date. In the absence of birth date, patient age may be recorded within an ORU message in an additional OBR/OBX combination of segments. This usage is shown in the example of a complete ORU message in Appendix A. The suggested data type for patient age is NM, which is recorded in OBX-2. The LOINC® code for age is represented in OBX-3 and actual age is represented in OBX-5. Patient age can be 'reported age' at the time of diagnosis (LOINC® code 21612-7) or 'estimated age' (LOINC® code 21611-9). For situations where birth date is unknown, age may be estimated by a third party on the basis of physical evidence.

A similar method may be used to record employment information that is not otherwise available in an ORU message. Several different LOINC® codes identifying History of Occupation, Usual Occupation, Current Employment, Age at Diagnosis, Industry etc., are available. The appropriate LOINC® code should be represented when sending patient employment information. This usage is shown in the example of a complete ORU message on page A-1 of Appendix A.

OBX.4 Observation sub-ID (ST-20, Conditional) 00572

> Definition: This field is used to distinguish between multiple OBX segments with the same observation ID organized under one OBR. For example, a blood culture may have three different organisms growing or a chest X-ray report might include three separate diagnostic impressions. The standard requires three OBX segments, one for each impression. By recording 1 in the Sub-ID of the first of these OBX segments, 2 in the second, and 3 in the third, each OBX segment can be uniquely identified for editing or replacement. The sub-identifier can be further extended by adding decimals (e.g., 2.1, 2.2). It is strongly recommended that numeric values be used for laboratory-based reporting so that receiving applications can maintain easily the relational quality of the data.

The sub-identifier is also used to group related components in reports such as surgical pathology. It is traditional for surgical pathology reports to include all the tissues taken from one surgical procedure in

one report. Consider, for example, a single surgical pathology report that describes the examination of gallbladder and appendix tissue. This report would be transmitted roughly as shown below.

Example of sub-identifier usage:

OBR|1|||88304&Surg Path Report...
OBX|1|CE|88304&ANT|1|T57000^GallBladder^SNM...
OBX|2|TX|88304&GDT|1|This is a normal gallbladder...
OBX|3|TX|88304&MDT|1|Microscopic exam shows histologically normal gallbladder...
OBX|4|CE|88304&IMP|1|M-00100^NML^SNM...
OBX|5|CE|88304&ANT|2|T66000^Appendix^SNM...
OBX|6|TX|88304&GDT|2|This is a red, inflamed, swollen, boggy appendix …
OBX|7|TX|88304&MDT|2|Infiltration with many PMN's – Indicating inflamatory change...
OBX|8|CE|88304&IMP|2|M-40000^InflammationNOS^SNM...

The example above has two segments for each component of the report, one for each of the two tissues, the gall bladder and the appendix. Thus, there are two |88304&ANT| segments; there are two |88304&GDT| segments, and there are two |88304&MDT| segments. Segments that apply to the gallbladder all have the sub-identifier 1. Segments that apply to the appendix all have sub-identifier 2. The use of the sub ID to distinguish repeating OBXs for the same observation ID is really a special case of using the sub ID to group related subdivisions of information within the overall observation category. Its use must be carefully structured to avoid introducing ambiguities.

Refer to the 2.3.1 Microbiology Implementation Specifications for an explanation of how to use OBR-26 to link information reported under OBR|1| to the parent results from OBX-3, 4, and 5.

OBX.5 Observation value (*Data type varies, User-assigned, Conditional, Not Supporting Repeats 00573

Definition: The results of the test appear here. **For laboratory-based reporting, SNOMED® is strongly recommended for OBX-5 whenever the CE data type is indicated in OBX-2.**

If CE appears in OBX-2, it is assumed that the result in OBX-5, components 1,2,and 3, is coded using SNOMED®. For numeric results, the SN data type is preferred for OBX-2, and thus, SNOMED® is not required. OBX-5 may have either the SNOMED® code for “positive” or the SNOMED®-specific names of organisms identified in the tests described in OBX-3. It is strongly recommended that the SNOMED® code be used for the modifiers “positive,” “negative,” and “indeterminate.” Other modifiers should be avoided such as “limited findings,” “insufficient specimen,” “patient not at bedside,” or “see technician.”, especially since these modifiers are more internal to the Laboratory Information System Further information on SNOMED® can be found at the SNOMED® Internet site at http://www.snomed.org.

For reporting to public health jurisdictions, the Centers for Disease Control and Prevention (CDC) will authorize and distribute a subset of SNOMED® codes to third party reporting entities. An authorization to use these codes without charge can be obtained from CDC by contacting the Integrated Health Information Systems Office at 404-639-7438.

For example, when a Hepatitis A Virus IgM antibody has been identified in a reference laboratory, a report for a public health agency is triggered. The OBX-3 would contain the code for the Hepatitis A IgM test and OBX-5 would indicate that the test was positive. The OBX segment would appear as:

OBX|1|CE|5182-1^Hepatitis A Virus IgM Serum Antibody EIA^LN||G-A200^Positive^SNM|...

where OBX-3 uses a LOINC® code and OBX-5 uses a SNOMED® code.

For antimicrobial susceptibility testing, the OBX segment would appear as:

OBX|1|SN|7059-9^Vancomycin Susceptibility, Gradient Strip^LN||<^1|...

where OBX-3 uses a LOINC® code and OBX-5 has a numeric value. The value type listed in OBX-2 determines the structure of the reported result here (i.e., SN) and thus, SNOMED® is not recommended in this example. The SN data type has the following structure:

<comparator> ^ <num1(NM)> ^ <separator or suffix> ^ <num2 (NM)>

Some examples of the SN representation are:

Data Type Syntax	Data Type Meaning
|>^100|	Greater than 100
|^100^-^200|	equal to range of 100 through 200
|^1^:^228|	ratio of 1 to 128 (e.g., the results of a serological test)
|^2^+|	categorical response (e.g., an interpretation of occult blood positivity)

For results of a culture that yielded *Neisseria meningitides*, OBX-2 would be listed as a coded element (CE) and OBX-5 would appear as:

|L-22202^Neisseria meningitidis^SNM|

It is strongly recommended that the data types CE and SN be used whenever possible to minimize ambiguity in reporting. In those cases where laboratories have a local code which represents a canned comment, the local code can be placed in OBX5 as a CE data type, and the canned comment can be placed in an NTE directly following the OBX segment. For example:

OBX|1|CE|600-7^Microorganism identified, Blood Culture^LN||^^^SALMPRES^^L|...
NTE|1|L|Numerous colonies of Salmonella were present on culture. A sub-
NTE|2|L|culture was inoculated and sent for further species identification.

For true free text results, i.e., those for which no local code is available, the TX data type should be used. For example:

OBX|1|TX|600-7^Microorganism identified, Blood Culture^LN|1|Many colonies of Neisseria|…
OBX|2|TX|600-7^Microorganism identified, Blood Culture^LN|1|meningitidis were found on|…
OBX|3|TX|600-7^Microorganism identified, Blood Culture^LN|1|organism-specific culture|…
OBX|1|TX|600-7^Microorganism identified, Blood Culture^LN|1|media|…

An example of a complete OBX segment coded for reported age of the patient at the time of diagnosis would appear as:

OBX|1|NM|21612-7^reported patient age^LOINC||47|yr^year^ANSI+||<hex 0D0A>

Similarly, a complete OBX segment for patient employment would appear as:

OBX|2|TX|11294-6^Current employment^LN||coal miner||||||F<hex 0D0A>

OBX.6 Units (CE-60, Optional) 00574

Definition: This field contains the units for the observation value in OBX-5. The default value is an ISO+abbreviation. The ISO+ and ANSI+ customary units are shown in Section 7.3.2.6.2 of the HL7 Version 2.3.1 standard.

For example: |μg/mL^microgram/milliliter^ISO+|

The units for age would be yr, wk, mo, d (in ANSI+ standards representation) in OBX-6.
For example:

|mo^month^ANSI+|

OBX.7 References range (ST-60, Optional) 00575

Definition: When the observation quantifies the amount of a toxic substance, then the upper limit of the range identifies the toxic limit. If the observation quantifies a drug, the lower limits identify the lower therapeutic bounds and the upper limits represent the upper therapeutic bounds above which toxic side effects are common.

If numeric, the values of this field may report several values in one of the following three formats:

Format	When to Use
lower limit-upper limit	when both lower and upper limits are defined, e.g., for potassium "3.5 - 4.5"
> lower limit	if no upper limit, e.g., ">10"
< upper limit	if no lower limit, e.g., "<15"

If alphabetical, the normal value may be reported in OBX-7. For instance, the normal result on an assay may be “pink”.

For example:
|1.1-8.0| portrays a normal (acceptable) range for an adult blood lead in certain states.

OBX.8 Abnormal flags (ID-5, Optional, Repeating not supported) 00576

Definition: This field contains the microbiology sensitivity interpretations. Refer to *HL7 Table 0078 - Abnormal flags* for valid entries.

Abnormal flags should be used for reporting microbiology sensitivity data. Abnormal flags for antimicrobial sensitivity reporting should conform to the recommendations of National Committee of Clinical Laboratory Standards (NCCLS, http://www.nccls.org). For most reported findings, the allowable values are S, I, or R, and should be provided in addition to the numeric value in OBX-5. For ELR, when findings other than susceptibility results are sent, the abnormal flag should be valued (e.g., "H", "N", or "A") to distinguish between tests that are interpreted as normal and those that are interpreted as abnormal.

This field is not expected in this interface.

OBX.9 Probability (NM-5, Optional) 00577

Definition: This field contains the probability of a result being true for results with categorical values. It mainly applies to discrete coded results. It is a decimal number represented as an ASCII string that must be between 0 and 1, inclusive.

This field is not expected in this interface.

OBX.10 Nature of abnormal test (ID-2, Optional, Repeating) 00578

Definition: This field contains the nature of the abnormal test.

This field is not expected in this interface.

OBX.11 Observation result status (ID-1, Required) 00579

Definition: This field contains the observation result status. Refer to *HL7 Table 0085 - Observation result status codes interpretation* for valid values. This field reflects the current

completion status of the results for data contained in the *OBX-5-observation value* field. It is a required field. Previous versions of HL7 stated this implicitly by defining a default value of "F" indicating that the result has been verified to be correct and final.

Example:
|OBX|1|…|C| portrays a corrected result in OBX-11.

OBX.12 Date last observation normal values (TS-26, Optional) 00580

Definition: This field contains the changes in the observation methods that would make values obtained from the old method not comparable with those obtained from the new method. Null if there are no normals or units. If present, a change in this date compared to date-time recorded, the receiving system's test dictionary should trigger a manual review of the results to determine whether the new observation ID should be assigned a new ID in the local system to distinguish the new results from the old.

This field is not expected in this interface.

OBX.13 User defined access checks (ST-20, Optional) 00581

Definition: This field permits the producer to record results-dependent codes for classifying the observation at the receiving system. For ELR, this field should be populated with the reportable condition if available.

This field is not expected in this interface.

OBX.14 Date-time of the observation (TS-26, Optional) 00582

Definition: Records the time of the observation. It is the physiologically relevant date-time or the closest approximation to that date-time of the observation. This field is required in two circumstances. The first is when the observations (OBX's) reported beneath one report header (OBR) have different dates, for instance when one measurement within a battery may have a different time/date than another measurement.

For example: |200012161330| is the date/time when the result was read by the laboratory.

OBX.15 Producer's ID (CE-60, Optional) 00583

Definition: Contains a unique identifier of the responsible producing service. It should be included for all ELR messages that are reported to public health agencies. For most reports the CLIA identifier here will be identical to the CLIA identifier listed as the assigning facility in PID-3 (Patient ID, Internal). When the test results are produced at outside laboratories, the CLIA identifier for the laboratory that performed the test should appear here and will be different from the CLIA identifier listed as the assigning facility in PID-3.

For example: |01D0301145^MediLabCo^CLIA|
or
|01D0301145|

OBX.16 Responsible observer (XCN-80, Optional, Repeating) 00584

Definition: This field contains the identifier of the individual directly responsible for the observation (the person who either performed or verified it).

This field is not expected in the ELR message. A responsible observer would be listed in OBR - 31

OBX.17 Observation method (CE-60, Optional, Repeating) 00936

Definition: This field is used to transmit the method or procedure by which an observation was obtained when the sending system wishes to distinguish among one measurement obtained by different methods and the distinction is not implicit in the test ID.

For a list of observation method codes, see www.fda.gov.

3.3.4 Notes and Comments (NTE) Segment

The NTE segment is a common format for sending notes and comments. This optional, repeating segment may be inserted after any of the OBX segments in the ORU message. The NTE segment applies to the information in the segment that immediately precedes it, i.e., the observation reported in the preceding OBX segment. The NTE segment is not further defined by HL7.

NTE attributes

SEQ	HL7 LEN	NBS LEN	HL7 DT	HL7 OPT	HL7 RP/#	HL7 TBL #	HL7 ITEM #	ELEMENT NAME	ELR Usage
1	4	N/A	SI	O			00096	Set ID – NTE	Supported
2	8	N/A	ID	O		0105	00097	Source of Comment	Not used
3	64k		FT	O	Y		00098	Comment	Supported
4	60	N/A	CE	O			01318	Comment Type	Not Supported

NTE field definitions

NTE.1 Set ID (SI-4, Optional) 00096

Definition: This field may be used where multiple NTE segments are included in a message. Their numbering must be described in the application message definition.

NTE.2 Source of comment (ID-8, Optional) 00097

Definition: This field is used when source of comment must be identified. HL7-defined *table 0105 Source of Comment* may be extended locally during implementation.

NTE.3 Comment (FT-64k, Optional) 00098

Definition: This field contains the comment contained in the segment.

NTE.4 Comment type (CE-60, Optional) 01318

Definition: This field contains a value to identify the type of comment text being sent in the specific comment record. Allowable values are given in *User-defined table 0364 – Comment Type.*

Not supported for this interface.

4 HL7 Batch Protocol

There are instances when it is convenient to transfer a batch of HL7 messages for reporting to public health agencies. Such a batch could be sent online using a common FTP protocol, or offline via tape or diskette.

4.1 HL7 batch file structure

A batch of HL7 messages may be sent online using a common file transfer protocol or offline via tape or diskette. If needed, a group of batches may be sent using the file header and trailer segments. The FHS and FTS are optional and need not be sent if the transaction is one batch of records. The file/batch syntax follows:

Segment Syntax	**Segment Description**
[FHS]	(file header segment)
{ [BHS]	(batch header segment)
{ [MSH	(zero or more HL7 messages)
PID	
OBR	
....	
] }	
[BTS]	(batch trailer segment)
}	
[FTS]	(file trailer segment)

The sequence numbering protocol has a natural application in batch transfers. See the discussion of batch acknowledgments that follows. A batch for reporting to public health agencies will consist of a single type of message (i.e., ORU). Batches should usually contain at least one HL7 message. There are only two cases in which an HL7 batch file may contain zero HL7 messages:
a) a batch containing zero HL7 messages may be sent to meet a requirement for periodic submission of batches when there are no messages to send,
b) a batch containing zero negative acknowledgment messages may be sent to indicate that all the HL7 messages contained in the batch being acknowledged are implicitly acknowledged. The attribute tables and field definitions for batch-related segments are given below.

Related Segments and Data Usage

The following segments relate to the HL7 Batch Protocol: 1) BHS - Batch Header, 2) BTS -Batch Trailer, 3) FHS - File Header, and 4) FTS - File Trailer. The BTS segment contains a field, *BTS-3-batch total*s, which may have one or more totals drawn from fields within the individual messages. The method for computing such totals resides with the sending facility.

All four of the File and Batch Header and Trailer segments are required when sending batches without going through the PHIN-MS interface that resides on the Laboratory Trading Partners' servers. If the batch segments are sent through PHIN-MS translators, the interface will provide the appropriate segments and batch counts that are used for processing the message through its transport lifecycle.

4.2 Acknowledging Batches

In general, the utility of sending batches of data is that the data is accepted all at once, with errors processed on an exception basis. However, it is a permissible application of HL7 to acknowledge all messages. Several options for acknowledgment are given in the HL7 2.3.1 standard document and are not addressed further here.

4.3 Batch Segments

4.3.1 File Header (FHS) Segment

The FHS segment is used to head a file (group of batches). Ideally, a single sending facility, for instance a regional laboratory could send a group of batches of reportable findings from separate laboratories within the consortium. In this setting, each separate BHS would have a different CLIA identifier. The FHS would have a different CLIA number as well, or would have the same CLIA number as the one batch that was performed at the sending facility. This complexity of message processing is not common yet, either at laboratories or public health agencies. The description of batch reporting in this guide demonstrates reporting from a single facility and thus the CLIA number is the same for MSH, BHS, and FHS.

FHS Attributes

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM#	ELEMENT NAME	ELR Usage
1	1	ST	R			00067	File field separator	Supported
2	4	ST	R			00068	File encoding characters	Supported
3	15	ST	O			00069	File sending application	Supported
4	20	ST	O			00070	File sending facility	Supported
5	15	ST	O			00071	File receiving application	Supported
6	20	ST	O			00072	File receiving facility	Supported
7	26	TS	O			00073	File creation date/time	Supported
8	40	ST	O			00074	File security	Not used
9	20	ST	O			00075	File name/ID/type	Supported
10	80	ST	O			00076	File comment	Not used
11	20	ST	O			00077	File control ID	Not used
12	20	ST	O			00078	Reference file control ID	Not used

File header field definitions

Usage notes: FHS fields 1-8 have the same definitions as the corresponding fields in the MSH segment and are not repeated here.

FHS.9 File name/ID (ST-20, Optional) 00075

Definition: This field can be used by the application processing file. Its use is not further specified.

FHS.10 File header comment (ST-80, Optional) 00076

Definition: This field contains the free text field, the use of which is not further specified.

FHS.11 File control ID (ST-20, Optional) 00077

Definition: This field is used to identify a particular file uniquely. Use Timestamp plus a counter similar to MSH-10 to uniquely identify the file here. It can be echoed back in *FHS-12-reference file control ID*.

FHS.12 Reference file control ID (ST-20, Optional) 00078

Definition: This field contains the value of *FHS-11-file control ID* when this file was originally transmitted. Not present if this file is being transmitted for the first time.

4.3.2 File Trailer (FTS)

Used to define the end of a file.

FTS Attributes

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM#	ELEMENT NAME	ELR Usage
1	10	NM	O			00079	File batch count	Supported
2	80	ST	O			00080	File trailer comment	Not used

FTS field definitions

FTS.1 File batch count (NM-10, Optional) 00079

Definition: This field contains the number of batches contained in the file.

FTS.2 File trailer comment (ST-80, Optional) 00080

Definition: The use of this free text field is not further defined in the HL7 protocol.

4.3.3 Batch Header (BHS) Segment

Used to define the start of a batch of ORU Unsolicited Laboratory Result messages being sent from a Laboratory to a specific state.

BHS Attributes

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM#	ELEMENT NAME	ELR Usage
1	1	ST	R			00067	Batch field separator	Supported
2	4	ST	R			00068	Batch encoding characters	Supported
3	15	ST	O			00069	Batch sending application	Supported
4	20	ST	O			00070	Batch sending facility	Supported
5	15	ST	O			00071	Batch receiving application	Supported
6	20	ST	O			00072	Batch receiving facility	Supported
7	26	TS	O			00073	Batch creation date/time	Supported
8	40	ST	O			00074	Batch security	Not Used
9	20	ST	O			00075	Batch name/ID/type	Supported
10	80	ST	O			00076	Batch comment	Not used
11	20	ST	O			00077	Batch control ID	Not used
12	20	ST	O			00078	Reference batch control ID	Not used

Batch Header field definitions

Usage notes: BHS fields 1-8 have the same definitions as the corresponding fields in the MSH segment and are not repeated here. BHS segment was not shown in the examples, but the field definitions are provided below for reference.

BHS.9 Batch name/ID/type (ST-20, Optional) 00089

Definition: This field can be used by the application processing the batch. It can have extra components if needed.

BHS.10 Batch comment (ST-80, Optional) 00090

Definition: This field is a comment field that is not further defined in the HL7 protocol.

BHS.11 Batch control ID (ST-20, Optional) 00091

Definition: This field is used to uniquely identify a particular batch. Use Timestamp and a counter similar to MSH-10 to uniquely identify the batch. It can be echoed back in BHS-12-reference batch control ID if an answering batch is needed.

BHS.12 Batch reference batch control ID (ST-20, Optional) 00092

Definition: This field contains the value of BHS-11-batch control ID when this batch was originally transmitted. This field is not valued if this batch is being sent for the first time.

4.3.4 Batch Trailer (BTS) Segment

Used to define the end of a batch.

BTS Attributes

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM#	ELEMENT NAME
1	10	ST	O			00093	Batch message count
2	80	ST	O			00094	Batch comment
3	100	NM	O	Y		00095	Batch totals

BTS field definitions

Usage notes: BTS segment was not shown in the examples, but the field definitions are provided below for reference.

BTS.1 Batch message count (ST-10, Optional) 00093

Definition: This field contains the count of the individual messages contained within the batch.

BTS.2 Batch comment (ST-80, Optional) 00094

Definition: This field is a comment field that is not further defined in the HL7 protocol.

BTS.3 Batch totals (NM-100, Optional, Repeating) 00095

Definition: This field contains the batch total. The numbers of messages should be counted and represented here to allow recipients to have simple batch level auditing.

5 APPENDIX A. HL7 Examples of Report Messages

Example messages for laboratory-based reporting of findings of public health importance.

Example 1: Hepatitis A Virus

MSH|^~\&||MediLabCo-Seattle^45D0470381^CLIA|WADOH|WA|199605171830||ORU^R01|
199605170123|P|2.3.1 <hex 0D0A>
PID|||10543^^^^^Columbia Valley Memorial Hospital&01D0355944&CLIA|95101100001^^^^^
MediLabCo- Seattle&45D0470381&CLIA||Doe^John^Q^Jr|Clemmons||M||W| 2166 Wells Dr
^AptB^Seattle^WA^98109^USA^^^King||^PRN^PH^^^206^6793240|||M|||423523049|
DOEJ34556057^WA^19970801||N <hex 0D0A>
NK1|1|Doe^Jane^Lee^^^^L|SPO^spouse^HL70063|2166 Wells Dr^Apt
B^Seattle^WA^98109^
USA^M^^King^^A|^PRN^PH^^^206^6793240|<hex 0D0A>
ORC||||||||||||||||||||MediLabCo - Northwest Pathology Ltd., Central
Campus^^45D0470381^^^CLIA|2217 Rainier Way^^Renton^WA^98002^USA^M^^Black
Hawk^^A| ^WPN^PH^helpline@medilab.com^^206^5549097 |115 Pike Plaza^Suite
2100^Seattle^WA^98122^USA^^^^^A|<hex 0D0A>
OBR|1||SER122145|^^^78334^Hepatitis Panel, Measurement^L|||199603210830 |||||||BLDV|
^Welby^M^J^Jr^Dr^MD|^WPN^PH^^^206^4884144|||||||F <hex 0D0A>
OBX||CE|5182-1^Hepatitis A Virus, Serum Antibody EIA^LN||G-A200^Positive^SNM|||||F||
|199603241500|45D0480381 <hex 0D0A>
OBR|2|||^Additional patient demographics|<hex 0D0A>
OBX|1|NM|21612-7^reported patient age^LN||47|yr^year^ANSI+||<hex 0D0A>
OBX|2|TX|11294-6^Current employment^LN||food handler||<hex 0D0A>

Example 2: Lead

MSH|^~\&||MediLabCo-Seattle^45D0470381^CLIA|WADOH|WA|200112171830|
|ORU^R01|200112170897|P|2.3.1 <hex 0D0A>
PID|||10543^^^^^Columbia Valley Memorial Hospital&01D0355944&CLIA~95101100001^^^^^
MediLabCo-Seattle&45D0470381&CLIA||Doe^Jared^Q^Jr|Clemmons|19900602|M||W||
2166WellsDr^AptB^Seattle^WA^98109||^^^^^206^6793240|||M|||423523049|||N <hex 0D0A>
NK1|1|Doe^Jane^Lee^^^^L|MTH^Mother^HL70063|2166 Wells Dr^Apt B^Seattle^WA^98109^
USA^M^^King^^A|^PRN^PH^^^206^6793240|<hex 0D0A>
ORC||||||||||||||||||||MediLabCo - Northwest Pathology Ltd., Central
Campus^^45D0470381^^^CLIA|2217 Rainier Way^^Renton^WA^98002^USA^M^^Black
Hawk^A|^WPN^PH^helpline@medilab.com^^206^5549097|115 Pike Plaza^Suite
2100^Seattle^WA ^98122^USA^^^^A|<hex 0D0A>
OBR|1||CHEM9700122|^^^3456543^Blood lead test^L|||200111270930|||||||BLDC^Blood capillary
|^Welby^M^J^Jr^Dr^MD|^WPN^PH^^^206^4884144|||||||F <hex 0D0A>
OBX||SN|10368-9^Quantitative Blood Lead^LN||^45|µg/dL|||||F|||200111300800|
45D0480381<hex 0D0A>

6 APPENDIX B: Code Tables

NOTE: Where only selected values are listed for HL7 tables, please refer to the HL7 Standard for complete listings. In this appendix, values are selected from standard codes where available. Values that are assigned by NIP are italicized.

User-defined Table 0001 - Sex [values suggested by HL7] (use in PID-8, NK1-15)

Value	Description
F	Female
M	Male
H	Hermaphrodite, Undetermined
T	Transsexual
O	Other
U	Unknown

User-defined Table 0002 – Marital Status (use in PID-16)

Value	Description
A	Separated
D	Divorced
M	Married
S	Single
W	Widowed

User-defined Table 0005 - Race [These values are compliant with OMB directive for combined format] (use in PID-10)

Value	Description
I	American Indian or Alaska Native
A	Asian
P	Native Hawaiian or Other Pacific Islander
B	Black or African-American
W	White
H	Hispanic or Latino
O	Other
U	Unknown

User-defined Table 0063 - Relationship (From HL7 standard, Version 2.3.1) (use in NK1-3, NK1-31, IN1-17, IN2-62)

Value	Description
ASC	Associate
BRO	Brother
CGV	Care giver
CHD	Child
DEP	Handicapped dependent
DOM	Life partner
EMC	Emergency contact
EME	Employee
EMR	Employer
EXF	Extended family
FCH	Foster child
FND	Friend
FTH	Father

Value	Description
GCH	Grandchild
GRD	Guardian
GRP	Grandparent
MGR	Manager
MTH	Mother
NCH	Natural child
NON	None
OAD	Other adult
OTH	Other
OWN	Owner
PAR	Parent
SCH	Stepchild
SEL	Self
SIB	Sibling
SIS	Sister
SPO	Spouse
TRA	Trainer
UNK	Unknown
WRD	Ward of court

HL7-defined Table 0070 – Specimen Source Codes (use in OBR-15)

Value	Description
ABS	Abscess
AMN	Amniotic fluid
ASP	Aspirate
BPH	Basophils
BIFL	Bile fluid
BLDA	Blood arterial
BBL	Blood bag
BLDC	Blood capillary
BPU	Blood product unit
BLDV	Blood venous
BON	Bone
BRTH	Breath (use EXHLD)
BRO	Bronchial
BRN	Burn
CALC	Calculus (=Stone)
CDM	Cardiac muscle
CNL	Cannula
CTP	Catheter tip
CSF	Cerebral spinal fluid
CVM	Cervical mucus
CVX	Cervix
COL	Colostrum
CBLD	Cord blood
CNJT	Conjunctiva
CUR	Curettage
CYST	Cyst
DIAF	Dialysis fluid
DOSE	Dose med or substance
DRN	Drain
DUFL	Duodenal fluid

Value	Description
EAR	Ear
EARW	Ear wax (cerumen)
ELT	Electrode
ENDC	Endocardium
ENDM	Endometrium
EOS	Eosinophils
RBC	Erythrocytes
EYE	Eye
EXHLD	Exhaled gas (=breath)
FIB	Fibroblasts
FLT	Filter
FIST	Fistula
FLU	Body fluid, unsp
GAS	Gas
GAST	Gastric fluid/contents
GEN	Genital
GENC	Genital cervix
GENL	Genital lochia
GENV	Genital vaginal
HAR	Hair
IHG	Inhaled Gas
IT	Intubation tube
ISLT	Isolate
LAM	Lamella
WBC	Leukocytes
LN	Line
LNA	Line arterial
LNV	Line venous
LIQ	Liquid NOS
LYM	Lymphocytes
MAC	Macrophages
MAR	Marrow
MEC	Meconium
MBLD	Menstrual blood
MLK	Milk
MILK	Breast milk
NAIL	Nail
NOS	Nose (nasal passage)
ORH	Other
PAFL	Pancreatic fluid
PAT	Patient
PRT	Peritoneal fluid /ascites
PLC	Placenta
PLAS	Plasma
PLB	Plasma bag
PLR	Pleural fluid (thoracentesis fld)
PMN	Polymorphonuclear neutrophils
PPP	Platelet poor plasma
PRP	Platelet rich plasma
PUS	Pus
RT	Route of medicine
SAL	Saliva

Value	Description
SEM	Seminal fluid
SER	Serum
SKN	Skin
SKM	Skeletal muscle
SPRM	Spermatozoa
SPT	Sputum
SPTC	Sputum - coughed
SPTT	Sputum - tracheal aspirate
STON	Stone (use CALC)
STL	Stool = Fecal
SWT	Sweat
SNV	Synovial fluid (Joint fluid)
TEAR	Tears
THRT	Throat
THRB	Thrombocyte (platelet)
TISS	Tissue
TISG	Tissue gall bladder
TLGI	Tissue large intestine
TLNG	Tissue lung
TISPL	Tissue placenta
TSMI	Tissue small intestine
TISU	Tissue ulcer
TUB	Tube NOS
ULC	Ulcer
UMB	Umbilical blood
UMED	Unknown medicine
URTH	Urethra
UR	Urine
URC	Urine clean catch
URT	Urine catheter
URNS	Urine sediment
USUB	Unknown substance
VOM	Vomitus
BLD	Whole blood
BDY	Whole body
WAT	Water
WICK	Wick
WND	Wound
WNDA	Wound abscess
WNDE	Wound exudate
WNDD	Wound drainage
XXX	To be specified

HL7-defined Table 0078 - Abnormal flags (use in OBX-8)

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

HL7-defined Table 0085 - Observation result status codes interpretation (use in OBX-11)

Value	Description
C	Record coming over is a correction and thus replaces a final result
D	Deletes the OBX record
F	Final results; Can only be changed with a corrected result
I	Specimen in lab; results pending
N	Not asked; used to affirmatively document that the observation identified in the OBX was not sought when the universal service ID in OBR-4 implies that it would be sought
O	Order detail description only (no result)
P	Preliminary results
R	Results entered - not verified
S	Partial results
X	Results cannot be obtained for this observation
U	Results status change to Final without re-transmitting results already sent as 'preliminary.' e.g., radiology changes status from preliminary to final
W	Post original as wrong; e.g., transmitted for wrong patient

HL7-defined Table 0103 - Processing ID (use in MSH-11)

Value	Description
D	Debugging
P	Production
T	Training

HL7-defined Table 0104 - Version ID (use in MSH-12)

Value	Description
2.0	Release 2.0 September 1988
2.0D	Demo 2.0 October 1988

Value	Description
2.1	Release 2.1March 1990
2.2	Release 2.2December 1994
2.3	Release 2.3March 1997
2.3.1	Release 2.3.1May 1999
2.3.1	Release 2.3.1 October 2000

HL7-defined Table 0105 - Source of comment (use in NTE-2)

Value	Description
L	Ancillary (filler) department is source of comment
P	Orderer (placer) is source of comment
O	Other system is source of comment

HL7- Defined Table 0123 – Result Status (use in OBR-25)

Value	Description
O	Order received; specimen not yet received
I	No results available; specimen received, procedure incomplete
S	No results available; procedure scheduled, but not done
A	Some, but not all, results available
P	Preliminary: A verified early result is available, final results not yet obtained
C	Correction to results
C	Correction to results
R	Results stored; not yet verified
F	Final results; results stored and verified. Can only be changed with a corrected result.
X	No results available; Order canceled.
Y	No order on record for this test. (Used only on queries)
Y	No order on record for this test. (Used only on queries)
Z	No record of this patient. (Used only on queries)

HL7-defined Table 0125 – Value Type (use in OBX-2)

Value type	Description
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)

Value type	Description
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

HL7-defined Table 0136 - Yes/No indicator (use in PID-24,30)

Value	Description
Y	Yes
N	No
“”<null>	*Not obtained (when used by immunization registries as defined in PD1-12)*

HL7-defined Table 0163 - Administrative Site [only selected values listed] (use in RXR-2)

Value	Description
LT	Left Thigh
LA	Left Arm
LD	Left Deltoid
LG	Left Gluteous Medius
LVL	Left Vastus Lateralis
LLFA	Left Lower Forearm
RA	Right Arm
RT	Right Thigh
RVL	Right Vastus Lateralis
RG	Right Gluteous Medius
RD	Right Deltoid
RLFA	Right Lower Forearm

User-defined Table 0189 - Ethnic Group [These values are compliant with the OMB directive] (use in PID-22)

Value	Description
H	Hispanic or Latino
NH	not Hispanic or Latino
U	Unknown

HL7-defined Table 0190 - Address type (use in all XAD data types; including PID-11)

Value	Description
C	Current or Temporary
P	Permanent
M	Mailing
B	Firm/Business
O	Office
H	Home
N	Birth (nee)
F	Country of Origin
L	Legal Address
BLD	Birth delivery location [*use for birth facility*]
BR	Residence at birth [*use for residence at birth*]
RH	Registry home

Value	Description
BA	Bad address

HL7-defined Table 0200 - Name type (use in all XCN, XPN data types; including PID-5,6,9)

Value	Description
A	Alias Name
L	Legal Name
D	Display Name
M	Maiden Name
C	Adopted Name
B	Name at Birth
P	Name of Partner/Spouse
U	Unspecified

HL7-defined Table 0201 - Telecommunication use code (use in all XTN data types; including PID-13,14)

Value	Description
PRN	Primary Residence Number
ORN	Other Residence Number
WPN	Work Number
VHN	Vacation Home Number
ASN	Answering Service Number
EMR	Emergency Number
NET	Network (email) Address
BPN	Beeper Number

HL7-defined Table 0202 - Telecommunication equipment type (use in all XTN data types; including PID-13, 14)

Value	Description
PH	Telephone
FX	Fax
MD	Modem
CP	Cellular Phone
BP	Beeper
Internet	Internet Address: Use Only if Telecommunication Use Code is NET
X.400	X.400 email address: Use Only if Telecommunication Use Code is NET

User-defined Table 0203 - Identifier type [values suggested by HL7; *with NIP-suggested additions*] (use in all CX, XCN type codes; including PID-2,3,4,18,21)

Value	Description
AM	American Express
AN	Account Number
ANON	Anonymous Identifier
BR	Birth Registry Number
DI	Diner's Club Card
DL	Driver's License Number
DN	Doctor Number
DS	Discover Card
EI	Employee Number
EN	Employer Number

Value	Description
FI	Facility Identifier
GI	Guarantor Internal Identifier
GN	Guarantor External Identifier
LN	License Number
LR	Local Registry ID
MS	MasterCard
MA	Medicaid Number
MC	Medicare Number
MR	Medical Record Number
NE	National Employer Identifier
NH	National Health Plan Identifier
NI	National Unique Individual Identifier
NPI	National Provider Identifier
PI	Patient Internal Identifier
PN	Person Number
PRN	Provider Number
PT	Patient External Identifier
RRI	Regional Registry ID
RR	Railroad Retirement Number
SL	State License
SR	State Registry ID
SS	Social Security Number
U	Unspecified
UPIN	Medicare/HCFA's Universal Physician ID Numbers
VS	VISA
VN	Visit Number
WC	WIC Identifier
XX	Organization Identifier
VEI	*Vaccinator Employee Number*
OEI	*Orderer Employee Number*
REI	*Recorder Employee Number*

User-defined Table 0204 - Organizational name type [values suggested by HL7] (use in all XON data types)

Value	Description
A	Alias Name
L	Legal Name
D	Display Name
SL	Stock Exchange Listing Name

HL7-defined Table 0207 - Processing mode (use in MSH-11)

Value	Description
A	Archive
R	Restore from archive
I	Initial load
<blank>	Not present (the default, meaning *current* processing)

User-defined Table 0289 - County/parish (use in all XAD; including PID-11)
A complete list of FIPS 6-4 county codes is available at <www.itl.nist.gov/div897/pubs/fip6-4.htm>.
According to the FIPS guidance, the 2-letter state code (available at <www.itl.nist.gov/div897/pubs/fip5-

2.htm>) plus the numeric county code should be used (e.g., AZ001 represents Apache County, Arizona and AL001 represents Autauga County, Alabama).

User-defined Table 0360 - Degree [selected values suggested by HL7; *with NIP-suggested additions*] (use in all XPN data types, including PID-5,6,9)

Value	Description
PN	Advanced Practice Nurse
AA	Associate of Arts
AAS	Associate of Applied Science
AS	Associate of Science
BA	Bachelor of Arts
BN	Bachelor of Nursing
BS	Bachelor of Science
BSN	Bachelor of Science in Nursing
CER	Certificate
CANP	Certified Adult Nurse Practitioner
CMA	Certified Medical Assistant
CNP	Certified Nurse Practitioner
CNM	Certified Nurse Midwife
CNA	Certified Nurse's Assistant
CRN	Certified Registered Nurse
CNS	Certified Nurse Specialist
CPNP	Certified Pediatric Nurse Practitioner
DIP	Diploma
PHD	Doctor of Philosophy
MD	Doctor of Medicine
DO	Doctor of Osteopathy
EMT	Emergency Medical Technician
EMT-P	Emergency Medical Technician - Paramedic
FPNP	Family Practice Nurse Practitioner
HS	High School Graduate
JD	Juris Doctor
LPN	Licensed Practical Nurse
MA	Master of Arts
MBA	Master of Business Administration
MPH	Master of Public Health
MS	Master of Science
MSN	Master of Science – Nursing
MDA	Medical Assistant
MT	Medical Technician
NG	Non-Graduate
NP	Nurse Practitioner
PharmD	Doctor of Pharmacy
PA	Physician Assistant
PHN	Public Health Nurse
RMA	Registered Medical Assistant
RN	Registered Nurse
RPH	Registered Pharmacist
SEC	Secretarial Certificate
TS	Trade School Graduate

User-defined Table 0361 – Sending/receiving application (use in MSH-3, MSH-5, FHS-3, FHS-5, BHS-3, BHS-5) [locally-defined]

User-defined Table 0364 – Comment Type (use in NTE-4)

Value	Description
PI	Patient Instructions
AI	Ancillary Instructions
GI	General Instructions
1R	Primary Reason
2R	Secondary Reason
GR	General Reason
RE	Remark
DR	Duplicate/Interaction Reason

User-defined Table 0396 – Coding System [Only selected values listed] [From HL7 Standard, Version 2.3.1] (Use in OBR-4, 26, OBX-3, 5,17)

Value	Description
99zzz or L	Local general code (where z is an alphanumeric character)
ART	WHO Adverse Reaction Terms
C4	CPT-4
C5	CPT-5
CDCA	CDC Analyte Codes
CDCM	CDC Methods/Instruments Codes
CDS	CDC Surveillance
CPTM	CPT Modifier Code
CST	COSTART
CVX	CDC Vaccine Codes
E	EUCLIDES
E5	Euclides quantity codes
E6	Euclides Lab method codes
E7	Euclides Lab equipment codes
ENZC	Enzyme Codes
HB	HIBCC
HCPCS	HCFA Common Procedure Coding System
HHC	Home Health Care
HL7nnnn	HL7 Defined Codes where nnnn is the HL7 table number
HPC	HCFA Procedure Codes (HCPCS)
I10	ICD-10
I10P	ICD-10 Procedure Codes
I9	ICD9
I9C	ICD-9CM
ISOnnnn	ISO Defined Codes where nnnn is the ISO table number
LB	Local billing code
LN	Logical Observation Identifier Names and Codes (LOINC®)
MCD	Medicaid
MCR	Medicare
MEDR	Medical Dictionary for Drug Regulatory Affairs (MEDDRA)
MVX	CDC Vaccine Manufacturer Codes
NDC	National drug codes
NPI	National Provider Identifier
SNM	Systemized Nomenclature of Medicine (SNOMED®)
SNM3	SNOMED International
SNT	SNOMED topology codes (anatomic sites)
UML	Unified Medical Language
UPC	Universal Product Code

Value	Description
UPIN	UPIN
W1	WHO record # drug codes (6 digit)
W2	WHO record # drug codes (8 digit)
W4	WHO record # code with ASTM extension
WC	WHO ATC

HL7-defined Table 4000 - Name/address representation (use in all XPN, XAD data types) (PID-5,6,9,11)

Value	Description
I	Ideographic (e.g., Kanji)
A	Alphabetic (e.g., Default or some single-byte)
P	Phonetic (e.g., ASCII, Katakana, Hirigana, etc.)

7 APPENDIX C: Data Types used in this Implementation

HL7 Ref#	Data Type	Description	Notes
2.8.3	CE - coded element with formatted values	This data type transmits codes and the text associated with the code. To allow all six components of a CE data type to be valued, the suggested length of a field of this data type is at least 60. Components: <identifier (ST)>^<text (ST)>^<name of coding system (ST)>^ <alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)> Components are defined as follows: (1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here. (2) Text (ST). Name or description of the item in question. Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item. (4-6) Three components analogous to 1-3 for the alternate or local coding system.	For HL7-defined tables, the third component, name of coding system, is constructed by appending the table number to the string "HL7." For example, the HL7 table number 0163 would be designated in the "name of coding system" component as "HL70163." The second set of codes must carry the same meaning as the first set. For example, for immunization data, a first set using CVX codes followed by a second set using CPT codes may be used to record the administration of a single vaccine. The presence of two sets of equivalent codes in this data type is semantically different from a repetition of a CE-type field. With repetition, several distinct codes (with distinct meanings) may be transmitted.
2.8.5	CK - composite ID with check digit	Components: <ID number (NM)>^<check digit (NM)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)> Components are defined as follows: (1) ID number (NM). (2) Check digit (NM). This is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null. (3) Code identifying the check digit scheme employed (ID). Check digit scheme codes are defined in *HL7 Table 0061 - Check digit scheme*. Note: Mod 10 and Mod 11 check digit algorithms are defined in the HL7 Standard Section 2.8.5.3.	This data type is used for certain fields that commonly contain check digits, e.g., *PID-3-Patient identifier list*. If a user is not using check digits for a CK field, the second and third components are not valued.
2.8.7	CN - Composite ID number and name	Components: <ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <source table (IS)> ^ <assigning authority (HD)>	
2.8.6	CM - composite	A field that is a combination of other meaningful data fields. Each portion is called a component. The specific components of CM fields are defined within the field descriptions.	The CM data type is maintained strictly for backward compatibility and may not be used for the definition of new fields.
2.8.9	CP - composite price	Components: <price (MO)>^<price type (ID)>^<from value (NM)>^<to value (NM)>^<range units (CE)>^<range type (ID)>	See HL7 Standard for component definitions.

HL7 Ref#	Data Type	Description	Notes
2.8.10	CQ - composite quantity with units	Components: <quantity (NM)>^<units (CE)>	Future use of this data type will be avoided because the same information can be sent as a CE data type.
2.8.12	CX - extended composite ID with check digit	Components: <ID (ST)>^<check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)>^<identifier type code (IS)>^<assigning facility (HD)> Components are defined as follows: (1) ID (ST). (2) Check digit (ST). Defined as in the CK data type except as a The check digit used in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null. (3) Code identifying the check digit scheme employed (ID). (4) Assigning authority (HD). Subcomponents of (4): <application identifier 1 (ID)> & <application identifier 2 (ID)> & <application identifier 3 (ID)> & <application identifier 4 (ID)> & <application identifier 5 (ID)> & <application identifier 6 (ID)> (5) Identifier type code (IS). A code corresponding to the type of identifier. This code may be used as a qualifier to the "Assigning authority" component. Refer to *User-defined Table 0203 - Identifier type* for suggested values. (6) Assigning facility (HD). The place or location identifier where the identifier was first assigned to the patient part of the history of the identifier. Subcomponents of (6): <namespace ID (IS)>&<universal ID (ST)>&<universal ID type (ID)>	Refer to *User-defined Table 0203 - Identifier type* for suggested values for component 5.
2.8.13	DLN - driver's license number	Components: <license number (ST)>^<issuing state, province, country (IS)>^<expiration date (DT)>	This data type gives the driver's license information. See HL7 Standard for component definitions and tables to use.
2.8.15	DT - date	Format: YYYY[MM[DD]]	The precision of a date may be expressed by limiting the number of digits used with the format specification YYYY[MM[DD]].
2.8.17	EI - entity identifier	Components: <entity identifier (ST)>^<namespace ID (IS)>^<universal ID (ST)>^<universal ID type (ID)> Components are defined as follows: (1) Entity identifier (ST). This component is usually defined to be unique within the series of identifiers created by the assigning authority, defined by a hierarchic designator, represented by components (2) through (4). (These are as defined here at 2.8.20, "HD - hierarchic designator.")	The entity identifier defines a given entity within a specified series of identifiers.
2.8.18	FC - financial class	Components: <financial class (IS)>^<effective date (TS)> Components are defined as follows: (1) Financial class (IS). The financial class assigned to a person. Refer to *User-defined Table 0064 - Financial class* for suggested values. (2) Effective date (TS). The effective date/time of the person's assignment to the financial class specified in the first component.	Used in immunization registries to classify VFC eligibility.

HL7 Ref#	Data Type	Description	Notes
2.8.19	FT - formatted text data	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 FT field is of arbitrary length (up to 64K) and may contain formatting commands enclosed in escape characters.	
2.8.20	HD - hierarchic designator	A unique name that identifies the system which was the source of the data. The HD is designed to be used either as a local version of a site-defined application identifier or a publicly-assigned UID. Syntactically, the HD is a group of two application identifiers: one defined by the first component, and one defined by the second and third components. Components: <namespace ID (IS)>^ <universal ID (ST)>^<universal ID type (ID)> Components are defined as follows: (1) Namespace ID (IS). Refer to *User-defined Table 0300 - Namespace ID* for suggested values. (2) Universal ID (ST). The UID is a string formatted according to the scheme defined by the third component, UID type. The UID is intended to be unique over time within the UID type. It is rigorously defined by the scheme constructing it. The UID must follow the syntactic rules of the particular scheme defined in the third component. (3) Universal ID type (ID). Governs the interpretation of the second component of the HD. If it is a known UID, refer to *HL7 Table 0301 - Universal ID type* for valid values.	Used in fields that formerly used the IS data type. When only the first HD component is valued, it looks like a simple IS data type. Designed to be an application identifier, either as a local version of a site-defined application identifier or a publicly-assigned universal ID (UID). The HD is a group of two application identifiers: one defined by the first component, and one defined by the second and third components. If the first component is present, the second and third components are optional. The second and third components must either both be valued (both non-null), or both be not valued (both null).
2.8.21	ID - coded value for HL7-defined tables	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. Examples of ID fields include *MSH-12-Version ID* and *PD1-12-Protection indicator*.	This data type should be used only for HL7 tables. The reverse is not true, since in some circumstances, it is more appropriate to use the CE data type for HL7 tables.
2.8.22	IS - coded value for user-defined tables	The value of such a field follows the formatting rules for an ST field except that it is drawn from a site-defined (or user-defined) table of legal values. An example of an IS field is *PID-8-Sex*.	This data type should be used only for user-defined tables. The reverse is not true, since in some circumstances, it is more appropriate to use the CE data type for user-defined tables.
2.8.23	JCC - job code/class	Format: <job code (IS)>^<job class (IS)>	See HL7 Standard for component definitions and tables to use.
2.8.26	NM - numeric	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. Leading zeros, or trailing zeros after a decimal point, are not significant.	

HL7 Ref#	Data Type	Description	Notes
2.8.31	PT - processing type	Components: <processing ID (ID)>^<processing mode (ID)> Components are defined as follows: (1) Processing ID (ID). A value that defines whether the message is part of a production, training, or debugging system. Refer to *HL7 Table 0103 - Processing ID* for valid values. (2) Processing mode (ID). A value that defines whether the message is part of an archival process or an initial load. Refer to *HL7 Table 0207 - Processing mode* for valid values. The default (blank) means current processing.	
2.8.38	SI - sequence ID	A non-negative integer in the form of an NM field.	The uses of this data type are defined in the chapters defining the segments and messages in which it is used.
2.8.39	SN - Structured numeric	<comparator (ST)> ^ <num1 (NM)> ^ <separator/suffix (ST)> ^ <num2 (NM)>	
2.8.40	ST - string data	Any printable ASCII characters except the defined delimiter characters. To include any HL7 delimiter character (except the segment terminator) within a string data field, use the appropriate HL7 escape sequence. String data is left justified with trailing blanks optional.	The ST data type is intended for short strings (less than 200 characters). For longer strings, the TX or FT data types should be used.
2.8.41	TM - time	Format: HH[MM[SS[.S[S[S[S]]]]]][+/-ZZZZ] Precision of a time is expressed by limiting the number of digits used within the format, using a 24-hour clock notation. Thus, HH is used to specify precision only to hour.	The time is understood to refer to the local time of the sender.
2.8.44	TS - time stamp	Contains the exact time of an event, including the date and time. Format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^ <degree of precision> The date portion of a time stamp follows the rules of a date field (DT) and the time portion follows the rules of a time field (TM). HL7 recommends, but does not require, that all systems routinely send the time zone offset.	The optional degree of precision component is retained only for backwards compatibility. Immunization registries will not value this component. Instead, the precision of the data may be indicated by limiting the number of digits valued.
2.8.45	TX - text data	String data meant for user display (on a terminal or printer). Not necessarily left justified. Leading spaces may contribute to clarity of the presentation to the user.	
2.8.47	VID - version identifier	Components: <version ID (ID)>^<internationalization code (CE)>^<international version ID (CE)> Components are defined as follows: (1) Version ID (ID). Used to identify the HL7 version. Refer to *HL7 Table 0104 - Version ID* for valid values. (2) Internationalization code (CE). Used to identify the international affiliate country code. ISO 3166 provides a list of country codes that may be used (see *User-defined Table 0212 - Nationality*). (3) International version ID (CE). Used when the international affiliate has more than a single local version associated with a single U.S. version.	

HL7 Ref#	Data Type	Description	Notes
2.8.48	XAD - extended address	Components: <street address (ST)>^ <other designation (ST)>^<city (ST)>^<state or province (ST)>^<zip or postal code (ST)>^<country (ID)>^<address type (ID)>^<other geographic designation (ST)>^<county/parish code (IS)>^<census tract (IS)>^<address representation code (ID)> Components are defined as follows: (1) Street address (ST). The street or mailing address of a person or institution. (2) Other designation (ST). Second line of address (e.g., Suite 555, or Fourth Floor). (3) City (ST). (4) State or province (ST). State or province should be represented by the official postal service codes for that country. (5) Zip or postal code (ST). Zip or postal codes should be represented by the official codes for that country. In the U.S., the zip code takes the form 99999[-9999], while the Canadian postal codes take the form A9A-9A9. (6) Country (ID). Defines the country of the address. ISO 3166 provides a list of country codes that may be used (see *User-defined Table 0212 - Nationality*). (7) Address type (ID). Type is optional and defined by *HL7 Table 0190 - Address type*. (8) Other geographic designation (ST). Other geographic designation includes county, bioregion, SMSA, etc. (9) County/Parish Code (IS). This component should not duplicate component 8. Refer to *User-defined Table 0289 - County/Parish* for values. *(10)* Census Tract (IS). Refer to *User-defined Table 0288 - Census tract* for values. *(11)* Address representation code (ID). See *HL7 Table 4000 - Name/address representation.*	*HL7 Table 0190 - Address type* allows user to designate the type of address (e.g., mailing, residence at birth, birth delivery location). When this field is allowed to repeat, several addresses can be recorded in the field, with each type noted.
2.8.49	XCN - extended composite ID number and name for persons	Components: <ID number (ST)>^<family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., Jr. or III) (ST)>^<prefix (e.g., Dr.) (ST)>^<degree (e.g., MD) (IS)>^<source table (IS)>^<assigning authority (HD)>^<name type code (ID)>^<identifier check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<identifier type code (IS)>^<assigning facility ID (HD)>^<name representation code (ID)> Components are defined as follows: (1) ID number. This string refers to the coded ID according to a User-defined table. If the first component is present, either the source table or the assigning authority must be valued. (2) family name/last name (3) given name/first name (4) second and further given names or initials (5) suffix (6) prefix (7)degree (8) Source table (IS). Refer to user-defined table 0297 - CN ID Source for suggested values. Used to delineate the first component. (9) Assigning authority (HD). Subcomponents of (9): <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)> (10) Name type code (ID). Refer to User-defined Table 0200 - Name type for valid values. (11) Identifier check digit (ST). (12) Code identifying the check digit scheme employed (ID). (13) Identifier type code (IS). Refer to user-defined table 0203 - Identifier type for valid values. (14) Assigning facility (HD). Subcomponents of (14): <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)> 15) Name representation code (ID). See HL7 Table 4000 - Name/address representation for valid values.	

HL7 Ref#	Data Type	Description	Notes
2.8.50	XON - extended composite name and identification number for organizations	Components: <organization name (ST)>^<organization name type code (IS)>^<ID number (NM)>^<check digit (NM)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)>^<identifier type code (IS)>^<assigning facility ID (HD)>^<name representation code (ID)> Components are defined as follows: (1) Organization name (ST). The name of the specified organization. (2) Organization name type code (IS). Refer to *User-defined Table 0204 - Organizational name type*. (3-5)Defined as in CK (1-3). (6) Assigning authority (HD). Subcomponents of (9): <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)> (7) Identifier type code (IS). Refer to *user-defined table 0203 - Identifier type* for valid values. (8) Assigning facility (HD). Subcomponents of (8): <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)> (9) Name representation code (ID). See *HL7 Table 4000 - Name/address representation* for valid values.	See CK (1-3) for XON components (3-5).
2.8.51	XPN - extended person name	Components: <family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., Jr. or III) (ST)>^<prefix (e.g., Dr.) (ST)>^<degree (e.g., MD) (IS)>^<name type code (ID)>^<name representation code (ID)> Components are defined as follows: (1) family name/last name (2) given name/first name (3) second and further given names or initials (5) suffix (6) prefix (7) (7)degree (7) Name type code (ID). Refer to *HL7 Table 0200 - Name type* for valid values. Name representation code (ID). Refer to *HL7 Table 4000 - Name/address representation* for valid values.	
2.8.52	XTN - extended telecommunication number	Format and Components: [NNN] [(999)]999-9999[X99999][B99999][C any text]^<telecommunication use code (ID)>^<telecommunication equipment type (ID)>^<email address (ST)>^<country code (NM)>^<area/city code (NM)>^<phone number (NM)>^<extension (NM)>^<any text (ST)> For codes, refer to *HL7 Table 0201 - Telecommunication use code* and *HL7 Table 0202 - Telecommunication equipment type*.	Note: To interoperate with CEN's Telecommunication data attribute group, HL7 allows use of the second component for email addresses. When used for an Internet address, the first component will be null; the second component will have the code NET, and the type of Internet address is specified with Internet or X.400 in the third component. When used for an Internet address, the first component of the XTN data type will be null. If the @-sign is being used as a subcomponent delimiter, the HL7 subcomponent escape sequence may be used (See Section 2.9 of the HL7 Standard).