Health Level Seven Specifications for Electronic Laboratory-Based Reporting of Public Health Information

Final Guideline for Implementation

Centers for Disease Control and Prevention

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Health Level Seven Specifications for Electronic Laboratory-Based Reporting of Public Health Information

Final Guideline for Implementation with Cancer Registry Comments - October 1, 1997

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Document Summary

This document is a guide for implementing electronic communication of reportable information from laboratories to public health agencies using Health Level 7 (HL7). HL7 is an accredited, nationally-recognized standard for electronic data exchange in healthcare environments. HL7 is not a commercial software or data transfer package, but instead is a defined set of rules for sending simple text characters in groups that represent patient identifiers, clinician identifiers, laboratory test information, test results, and other clinical and administrative data. The standard allows communication between separate and different types of information systems. The implementation guide directly follows the specifications described in the HL7 Standard version 2.3 and focuses on one type of HL7 message, the Observational Report - Unsolicited (ORU). While HL7 has described the order and structure of data fields for sharing test results, it has not stipulated which coding system or dictionary of descriptive terms should be used to unambiguously identify specific tests and findings; this is the responsibility of the parties sharing the information. For sharing laboratory-based reports of public health findings, two coding systems are recommended: 1) Logical Observation Identifier Names and Codes (LOINC) for specific laboratory procedure names, and 2) the Systematized Nomenclature for Human and Veterinary Medicine (SNOMED) for descriptions of findings, notably organism names. The guide gives a description of the utility and requirement of each data field in the ORU message with some specific comments for cancer registry reporting, provides examples of complete messages, and provides tables of recommended codes. The guide has been provided for pilot-testing and may be changed as improvements are identified.

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 7 (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). The message is also applicable for pilot-testing of laboratory reporting of anatomic pathology results to cancer registries in accordance with the North American Association of Central Cancer Registries (NAACCR). The specifications given in this guide have been reviewed and revised with the assistance of Clement

MacDonald, MD, of the Regenstrief Institute and Co-Chair of HL7 Chapters 4 and 7, Hans Buitendijk, of Shared Medical Systems and Co-Chair of HL7 Chapter 7, Debbie Murray, Chair of the HL7 Implementation Committee, Stephen Moser, PhD, of the University of Alabama at Birmingham, Susan Abernathy of the National Immunization Program, CDC, Steven Steindel, PhD of the Public Health Practice Office, CDC, and David Eide of Group Health Cooperative of Puget Sound, Seattle, WA. Final review, revision, and addition of cancer registry reporting comments were provided by Warren Williams, National Center for Chronic Disease Prevention and Health Promotion, CDC.

1.2 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 laboratory findings of public health importance. This guide is an implementation guide based on the final release of HL7, version 2.3. No violations of the standard have been made. Any user-defined variations are clearly described. Reporting requirements vary by state. For reportable elements and reporting locations, laboratories are referred to state health departments in their states.

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2. Definitions

The specifications presented in this guide were developed using HL7 version 2.3. Many tables referenced in the discussion of the message segments below can be found in Appendix B at the end of the guide; tables not in the appendix can be found in the HL7 2.3 document. Information about the HL7 Standard for electronic data exchange can be found at the Duke HL7 Health Informatics Internet site on the world wide web (http://www.mcis.duke.edu/standards/HL7/hl7.htm). Readers are referred to the standard document and related documents on the web site for a more detailed explanation of each of the data types below.

2.1 Table Abbreviations

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

	Definition
SEQ	The sequence of the elements as they are numbered in the segment.
LEN	The length of the element.
DT	The data type of the element. The data types are described in 2.2 below.
OPT	Whether the field is required, optional, or conditional in a segment. Required fields are defined by HL7 2.3 and do not refer to requirements for reporting laboratory findings to public health agencies. The designations are: *R* Required. *O* Optional. *C* 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. *X* Not used with this trigger event. *B* 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.
RP/#	Indicates if element repeats and number of times.
TBL#	Specific table reference. Tables are listed in Appendix B.
ITEM#	HL7 unique item number for each element.
Element Name	Descriptive name of element in the segment.

2.2 Data Types

The abbreviated data type names used in the implementation guide are as follows:

	Data Type
CE	coded element
CK	composite ID w/check digit
CQ	composite quantity w/units
CX	extended composite ID w/check digit
DLN	driver's licence number
DT	date
EI	entity identifier
HD	hierarchic designator
ID	coded value
IS	sequence ID
NM	numeric
PT	processing type
SI	sequence ID
SN	structured numeric
ST	string
TQ	timing quantity
TS	time stamp
TX	text data
XAD	extended address
XCN	extended composite ID number and name for persons
XON	extended composite name and ID number for organizations
XPN	extended person name
XTN	extended telecommunications number

3. Communications

The specifications presented in this guide allow for acknowledgment messages to be sent from the receiver of the laboratory-based reporting message as a receipt to the sender. These acknowledgment messages may be useful in verifying that complete messages were received. The use of acknowledgment messages are not described in this guide; a full description can be found in HL7 2.3. Encryption and mechanisms for transmitting messages are not described in this guide.

4. Unsolicited Observation Message

Laboratories may report to public health agencies using the unsolicited observation message (i.e., ORU). The ORU is a collection of segments which are described below. The segments are not unique to the ORU but can be found in combination with other segments in other HL7 messages. The ORU does not contain certain elements that are important for public health reporting. For this reason, a segment for laboratory-based reporting of additional information to public health agencies (i.e., ZLR) has been defined. The addition of the ZLR follows HL7 convention for user-

defined segments as described further below. The ZLR is not defined in the HL7 2.3 standard and therefore no discussion of the segment will be found in the standard document.

4.1 ORU Message Structure

The message for reporting public health information follows the HL7 2.3 ORU structure. Braces "{ }" denote repeatable segments; brackets "[ ]" denote optional segments. Using the basic "building blocks" of PID, OBR, and OBX segments (in bold type below), a clinical report can be constructed as a three-level hierarchy with the patient information (PID) segment at the upper level, an order record (OBR) at the next level, and one or more observation records (OBX) at the bottom. The ZLR segment, defined for laboratory-based reporting, can be considered an extension of the OBR segment.

MSH		**Message Header**
{		
[		
PID		**Patient Identification**
[PD1]		Additional Demographics
[{NTE}]		Notes and Comments
[PV1		Patient Visit
[PV2]]		Patient Visit - Additional Info
]		
{		
[ORC]		Order Common
OBR		**Observation Request**
ZLR		**Additional Info for Lab-Based Reporting**
{[NTE]}		Notes and Comments
{		
[OBX]		**Observation/Result**
{[NTE]}		Notes and Comments
}		
{[CTI]}		Clinical Trial Identifier
}		
}		
[DSC]		Continuation Pointer

While certain elements of the message are required for laboratory-based reporting, messages with data populating non-required fields will not be rejected. While the ORU allows for the use of PD1, NTE, PV1, PV2, ORC, CTI, and DSC, these segments will not be 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 will not be rejected.

4.2 Segment Mapping

Each segment of the ORU used in the laboratory-based reporting message is discussed below. A table of the attributes for each segment leads a detailed description of each element.

4.2.1 MSH Segment - Message Header

The message header segment (MSH) defines the intent, source, destination, and some specifics of the syntax of a message. The attributes of the message header segment are listed in the table below.

MSH Attributes

SEQ	LEN	DT	OPT	TBL#	RP/#	ITEM#	Element Name
1	1	ST	R			00001	Field Separator
2	4	ST	R			00002	Encoding Characters
3	180	HD	O			00003	Sending Application
4	180	HD	O			00004	Sending Facility
5	180	HD	O			00005	Receiving Application
6	180	HD	O			00006	Receiving Facility
7	26	TS	O			00007	Date/Time Of Message
8	40	ST	O			00008	Security
9	7	CM	R	0076		00009	Message Type
10	20	ST	R			00010	Message Control ID
11	3	PT	R			00011	Processing ID
12	8	ID	R	0104		00012	Version ID
13	15	NM	O			00013	Sequence Number
14	180	ST	O			00014	Continuation Pointer
15	2	ID	O	0155		00015	Accept Acknowledgment Type
16	2	ID	O	0155		00016	Application Acknowledgment Type
17	2	ID	O			00017	Country Code
18	6	ID	O	0211	Y/3	00692	Character Set
19	60	CE	O			00693	Principal Language Of Message

Example Segment of MSH:

```
MSH|^~\&||MediLabCo-Seattle^45D0470381^CLIA|NPHSS|WA-DOH
|199602171830||ORU^R01||P|2.3
```

If elements that contain no data (e.g., "||") appear at the end of a segment, HL7 allows the elements to not appear. For example, the message above has no data populating elements 13-19, thus, the segment ends at element 12 (i.e., ...|2.3).

MSH-1 Field Separator (ST)

This field contains the separator between the segment ID, (i.e., "MSH") and the first real field, *MSH-2-encoding characters*. As such it serves as the separator and defines the character to be used as a separator for the rest of the message. Recommended value is '|', ASCII (124).

MSH-2 Encoding Characters (ST)

Recommended values for laboratory-based reporting are:

Component	'^'	ASCII(94)
Repetition	'~'	ASCII(126)
Escape	'\'	ASCII(92)
Subcomponent	'&'	ASCII(38)

Note that the characters in MSH-2 appear as:

|^~\&|

The order of the characters does not denote a hierarchy of separators; only '^' and '&' are to be used as separators in an element. Thus, an example of a compound element using components and subcomponents from PID-2 described later would appear as:

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

and not as:

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

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

MSH-3 Sending Application (HD)

Field is optional and may be left blank. The identification of the sending laboratory appears in MSH-4.

MSH-4 Sending Facility (HD)

The originator of the 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.cdc.gov/phppo/dls/dlshome.htm on the world wide web.

For example:

|MediLabCo-Seattle^45D0470381^CLIA|

The data type is a hierarchic designator (HD) which has the components:

<namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

HL7 allows MSH-4 to be entirely defined by the user. For laboratory-based reporting, MSH-4 is defined as the following:

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)

The field should contain either the abbreviation for the National Public Health Surveillance System (NPHSS) to denote an electronic laboratory-based report for communicable diseases or the abbreviation for the North American Association of Central Cancer Registries (NAACCR) for an electronic laboratory-based report for cancer pathology. For example:

|NPHSS|

Since only the first component of the HD ("namespace ID") is used, it is not necessary to use "^" for the second and third components since they are blank.

MSH-6 Receiving Facility (HD)

Field is optional and may be left blank. Certain public health agencies may request that a unique identifier for the state health department or specific program appear here. For example:

|WA-DOH|

MSH-7 Date/Time of Message (TS)

Field will contain the date and time that the message was generated using the HL7-defined timestamp (TS) which has the following components:

YYYY[LL[DD[HHMM[SS[.S[S[S[S]]]]]]]] [+/-ZZZZ] ^ <degree of precision>

where Y=year, L=month, D=day, H=hour, M=minute, S=second, and Z=the time zone relative to Greenwich standard time.

For example, 6:30 pm, February 17, 1996 in the Pacific time zone would appear as:

|199602171830-0900|

The time zone is optional. Times reported will be assumed relative to the sending facility.

MSH-8 Security (ST)

Field is optional and may be left blank.

MSH-9 Message Type (CM)

The message is an unsolicited transmission of an observation message and appears as:

|ORU^R01|

MSH-10 Message Control ID (ST)

Field is required by HL7 2.3, however, the field will not be used for laboratory-based reporting.

MSH-11 Processing ID (PT)
Field appears as T for training, P for production, or D for debugging. Data sent for reporting should appear as a P; D can be used in early phases of implementation. For example:

|P|

MSH-12 Version ID (ID)
Version 2.3 is strongly recommended:

|2.3|

MSH-13 Sequence Number (NM)
Field is optional and may be left blank.

MSH-14 Continuation Pointer (ST)
Field is optional and may be left blank.

MSH-15 Accept Acknowledgment Type (ID)
Field is optional and may be left blank.

MSH-16 Application Acknowledgment Type (ID)
Field is optional and may be left blank.

MSH-17 Country Code (ID)
Field is optional and may be left blank.

MSH-18 Character Set (ID)
This field contains the character set for the entire message. Only printable 7-bit ASCII characters should be used for laboratory-based reporting. The field should be left blank; HL7 assumes that 7-bit ASCII characters are used when MSH-18 is left blank.

MSH-19 Principal Language of Message (CE)
Field is optional and may be left blank.

4.2.2 PID Segment - Patient Identification

The PID segment is used as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that is not likely to change frequently.

PID Attributes

SEQ	LEN	DT	OPT	TBL#	RP/#	ITEM#	Element Name
1	4	SI	O			00104	Set ID - Patient ID
2	20	CX	O			00105	Patient ID (External ID)
3	20	CX	R		Y	00106	Patient ID (Internal ID)
4	20	CX	O		Y	00107	Alternate Patient ID - PID
5	48	XPN	R			00108	Patient Name
6	48	XPN	O			00109	Mother's Maiden Name
7	26	TS	O			00110	Date/Time of Birth
8	1	IS	O	0001		00111	Sex
9	48	XPN	O		Y	00112	Patient Alias
10	1	IS	O	0005		00113	Race
11	106	XAD	O		Y	00114	Patient Address
12	4	IS	B			00115	County Code
13	40	XTN	O		Y	00116	Phone Number - Home
14	40	XTN	O		Y	00117	Phone Number - Business
15	60	CE	O	0296		00118	Primary Language
16	1	IS	O	0002		00119	Marital Status
17	3	IS	O	0006		00120	Religion
18	20	CX	O			00121	Patient Account Number
19	16	ST	O			00122	SSN Number - Patient
20	25	CM	O			00123	Driver's License Number - Patient
21	20	CX	O		Y	00124	Mother's Identifier
22	3	IS	O	0189		00125	Ethnic Group
23	60	ST	O			00126	Birth Place
24	2	ID	O	0136		00127	Multiple Birth Indicator
25	2	NM	O			00128	Birth Order
26	4	IS	O	0171	Y	00129	Citizenship
27	60	CE	O	0172		00130	Veterans Military Status
28	80	CE	O			00739	Nationality
29	26	TS	O			00740	Patient Death Date and Time
30	1	ID	O	0136		00741	Patient Death Indicator

Example Segment of PID

PID|1|10543^^^^^Columbia Valley Memorial Hospital&01D0355944&CLIA
|95101100001^^^^^MediLabCo-Seattle&45D0470381&CLIA|
|Doe^John^Q^Jr|Clemmons|19641004|M||W|2166 Wells Dr^Apt
B^Seattle^WA^98109^USA^^^King||^^^^^206^6793240|||M|||423523049|DOEJ34
556057^WA^19970801||N

PID-1 Set ID-patient ID (SI)

This field allows for multiple PID segments (i.e. multiple patient reports) with a single MSH. The Set ID field is used to identify repetitions. 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 should appear as:

|1|

PID-2 Patient ID (external ID) (CX)

HL7 2.3 has defined two places for a patient identifier (i.e., medical record number). PID-2 allows a reporting laboratory to provide the medical record number assigned at an original institution which submitted a specimen for testing. PID-3 allows a reporting laboratory to provide the medical record number assigned at their own institution. The field has the following components:

<ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

The <assigning facility> is a HD data type as described in MSH-4 and has the following subcomponents:

<namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

This field will be used for the patient's unique identifier that was assigned at an originating laboratory before the specimen was sent to a reference laboratory. The field will also contain the unique CLIA identifier for the originating laboratory. The institution that eventually performed the test and thus will report the result, for instance a commercial reference laboratory, will provide a unique patient identifier as well in PID-3 below.

For instance, an isolate from the Columbia Valley Memorial Hospital laboratory is sent to a reference laboratory named MediLabCo; the result is reported by MediLabCo. PID-2, the external ID, would contain the unique patient identifier (usually a medical record number) assigned at the originating institution (i.e., Columbia Valley Memorial Hospital) in the <ID (ST)> component. The unique CLIA identifier for Columbia Valley Memorial Hospital would appear in the <assigning facility (HD)> component. Since HL7 allows users to define the subcomponents of the HD data type, the assigning facility in PID-2 has the following definition for the laboratory-based reporting message:

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

This is analogous to the description of the sending facility in MSH-4. The above described example would appear as:

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

In this example, <10543> is the patient's medical record number, the <^^^^^> shows that the four HL7 components "check digit", "code identifying the check digit scheme employed", "assigning authority", and "identifier type code" are not required and thus are empty. The next component, <Columbia Valley Memorial Hospital &01D0355944&CLIA>, follows the user-defined HD data type described above and contains 1) the name of the originating laboratory, 2) the CLIA identifier for the originating laboratory, and 3) the coding system "CLIA" to denote that the preceding identifier is a nationally-unique identifier.

Some reporting laboratories may not have the unique patient identifiers that were assigned at the originating institution. If this is the case, PID-2 may be left blank.

PID-3 Patient ID (internal ID) (CX)

PID-3 is essentially the patient identifier (i.e., medical record number) from the laboratory which is submitting the report to public health officials. The field has the same components as PID-2:

<ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

The <assigning facility> is a HD data type as described above and has the following user-defined subcomponents:

<namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

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:

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

This is analogous to the description of the assigning facility in PID-2. **PID-3 (Patient ID - internal ID) will be the primary patient identifier for the laboratory-based reporting message.** In the laboratory reporting scenario described in PID-2, the unique patient identifier from MediLabCo would appear in this field along with the name and CLIA number for MediLabCo. The above described example would appear as:

|95101100001^^^^^MediLabCo-Seattle&45D0470381&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 in the "internal ID"; no information will appear in the "external ID". Equally, 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 in the "internal ID"; no information will appear in the "external ID".

If a hospital laboratory is reporting the results of a test performed at a reference laboratory, the "Alternate Patient ID" below should have the unique patient identifier assigned by the reference laboratory. The hospital laboratory that is reporting the finding would give their unique patient identifier here in PID-3.

This field, along with "Patient Name" (PID-5), are listed as required fields by HL7 2.3. 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 are available the message for reporting should still be sent with the following populating the field:***

|nodata|

This is an exception to the standard HL7 2.3 optionality for the PID segment.

PID-4 Alternate Patient ID (CX)

For laboratory-based reporting, PID-4 should be used for the unique patient identifier assigned by an outside laboratory that performed the test. For instance, 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 in PID-3, and the unique patient identifier from MediLabCo would appear in PID-4. Identification of the outside laboratory performing the test will appear in OBX-15 (i.e., Producer's ID). The CX data type and HD have been described above in PID-2 and PID-3. For example:

|95101100001^^^^^MediLabCo-Seattle&45D0470381&CLIA|

The patient's age should not be reported here, but should appear in ZLR-5 if no date of birth is known.

PID-5 Patient Name (XPN)

Field has the following components:

<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)> ^ <name type code (ID)>

For example:

|Doe^John^Q^Jr|

This field, along with "Patient ID (Internal ID)" (PID-3), are listed as required fields for HL7 2.3. 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 are available the message for reporting should still be sent with the following populating the field:***

|nodata|

This is an exception to the HL7 2.3 optionality for the PID segment.

Cancer Reporting Comment: PID-5 corresponds to NAACCR version 5.0 item numbers 2230,2240,2250

PID-6 Mother's Maiden Name (XPN)

The field is optional but is recommended if available. The components are the same as described in PID-5. For example:

|Clemmons|

PID-7 Date/Time of Birth (TS)

The field has the same structure as defined for MSH-7. The field should contain at least the year, month, and date. For example:

|19641004|

If the patient's age only is available, HL7 2.3 allows the degree of precision to be changed so that only the year is provided:

|1964|

This is strongly discouraged for laboratory-based reporting. An alternative method for sending patient age is provided in "Patient's Age" in the ZLR segment described below.

Cancer Reporting Comment: Corresponds to NAACCR version 5.0 item number 240

PID-8 Sex (IS)

HL7 allows users to define the values for Table 0001. The CDC-recommended values for the laboratory-based reporting message are:

Sex - Table 0001

Value	Description
F	Female
M	Male
H	Hermaphrodite, undetermined
T	Transsexual
U	Unknown / not stated

For example:

|M|

Cancer Reporting Comment: Corresponds to NAACCR version 5.0 item number 220

PID-9 Patient Alias (XPN)

This field contains the names by which the patient has been known at some time. Although the field is optional, it is recommended that the data be sent if available. The field may repeat multiple times for multiple different patient aliases.

Cancer Reporting Comment: Corresponds to NAACCR version 5.0 item number 2280

PID-10 Race (IS)

HL7 allows users to define the values for Table 0005. The values below are recommended for the laboratory-based reporting message:

Race - Table 0005

Value	Description
W	White
B	Black
A	Asian or Pacific Islander
I	American Indian or Alaskan Native
M	Multiracial
O	Other
U	Unknown

For example:

|W|

Cancer Reporting Comment: Corresponds to NAACCR version 5.0 item number 160. Note NAACCR codes for race are different.

PID-11 Patient Address (XAD)

This field contains the mailing address of the patient. This information is of great importance to agencies receiving laboratory-based reports. The information allows health officials to notify local agencies of potential public health problems in their jurisdictions.

Multiple addresses for the same person may be sent (using the repetition character "~") in the following sequence: the primary mailing address must be sent first in the sequence; if the primary mailing address is not sent then a repeat delimiter must be sent in the first sequence. The field has the following 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)>

For example:

|2166 Wells Dr^Apt B^Seattle^WA^98109^USA^^^King|

Cancer Reporting Comment: Corresponds to NAACCR version 5.0 item numbers 70,80,100,2330

PID-12 County Code (IS)

According to HL7 v. 2.3, county code should appear in the component <county/parish code> in the "Patient Address" field above. The element PID-12 was left in by HL7 for backward compatibility.

PID-13 Phone Number - Home (XTN)

Field will follow the HL7-defined structure for extended telecommunications number, data type XTN, which has the following components:

> [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <E-mail address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Components five through nine reiterate the basic function of the first component in a delimited form that allows the expression of both local and international telephone numbers. In HL7 Version 2.3, the recommended form for the telephone number is to use the delimited form rather than the unstructured form supported by the first component (which is left in for backward compatibility only). Alternative home phone numbers can be provided with the repeating character "~". For laboratory-based reporting, phone numbers provided in the first component of PID-13 will be accepted as well.

For example:

> |^^^^^206^6793240^^call after 5:00 pm only ~ ^^^^^206^6795772|

or

> |(206) 679-3240|

Cancer Reporting Comment: Corresponds to NAACCR version 5.0 item number 2360.

PID-14 Phone Number - Business (XTN)

Field will follow the HL7-defined structure for extended telecommunications number (XTN) as described in PID-13.

PID-15 Primary Language - Patient (CE)

This field contains the patient's primary language. HL7 recommends using ISO table 639 as the suggested values in *user-defined table 0296 - Language*. The field is optional and may be left blank.

PID-16 Marital Status (IS)

Field uses the values listed in HL7 Table 0002. Field is optional and may be left blank.

Marital Status - Table 0002

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

For example:

|M|

Cancer Reporting Comment: Corresponds to NAACCR version 5.0 item number 150.

PID-17 Religion (IS)

Field is optional and may be left blank.

Cancer Reporting Comment: Corresponds to NAACCR version 5.0 item number 260.

PID-18 Patient Account Number (CX)

Field is optional and may be left blank. The field may be used as an alternative patient identifier from the laboratory.

PID-19 Social Security Number (SSN) (ST)

This field contains the patient's social security number. The field is optional, however, it is recommended that the field be sent if available for laboratory-based reporting. The field should contain the 9 digit SSN without hyphens or spaces.

For example:

|423523049|

Cancer Reporting Comment: Corresponds to NAACCR version 5.0 item number 2320.

PID-20 Driver's License Number (DLN)

Field is optional and may be left blank. The data type "Driver's License Number" (DLN) has the following structure:

<license number (ST)> ^ <issuing state, province, country (IS)> ^ <expiration date (DT)

For example:

|DOEJ34556057^WA^19970801|

PID-21 Mother's Identifier (CX)

Field has the following components:

<ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)>^<identifier type code (IS)>^<assigning facility (HD)>

This field is optional; however, it is recommended that it be sent if available. The field may be used to further identify a neonatal patient during an admission for delivery. The fourth component, <assigning facility (HD)>, has the same subcomponents as described in PID-2 and PID-3. For example:

|10096^^^^^Columbia Valley Hospital&01D0355944&CLIA|

PID-22 Ethnic Group (IS)

HL7 allows users to define the values for Table 0189. The following table should be used for laboratory-based reporting if the ethnic group of the patient is known:

Ethnic Group - Table 0189

Value	Description
H	Hispanic
N	Non-Hispanic
U	Unknown

For example:

|N|

Cancer Reporting Comment: Corresponds to NAACCR version 5.0 item number 190. Note that NAACCR codes for ethnic group are different

PID-23 Birth Place (ST)

Field is optional and may be left blank.

PID-24 Multiple Birth Indicator (ID)

Field is optional and may be left blank. HL7 requires the use of *HL7 table 0136 - Yes/No Indicator* for PID-24 where Y=yes and N=no.

PID-25 Birth Order (NM)

Field is optional and may be left blank.

PID-26 Citizenship (IS)

Field is optional and may be left blank.

PID-27 Veteran's Military Status (CE)

Field is optional and may be left blank.

PID-28 Nationality (CE)
Field is optional and may be left blank.

PID-29 Patient death date and time (TS)
Field is optional for HL7 2.3 but is recommended for laboratory-based reporting if available.

PID-30 Patient death indicator (ID)
Field is optional for HL7 2.3 but is recommended for laboratory-based reporting if available. HL7 requires the use of *HL7 table 0136 - Yes/No Indicator* for PID-30 where Y=yes and N=no.

An example for a patient that died is:

|Y|

4.2.3 OBR Segment - Observation Request

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 are being requested or are being reported. The OBR is somewhat analogous to a generic lab slip which gets filled when a lab test is requested by a physician. The individual test names and results for the panel of tests that was performed are reported in OBX segments which are described below. There can be many OBX's per OBR, and there can be many OBR's per PID. There is only one ZLR per OBR and for laboratory-based reporting there should be only one PID per MSH.

OBR Attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	Element Name
1	4	SI	C			00237	Set ID - OBR
2	75	EI	C			00216	Placer Order Number
3	75	EI	C			00217	Filler Order Number
4	200	CE	R			00238	Universal Service ID
5	2	ID	B			00239	Priority
6	26	TS	B			00240	Requested Date/time
7	26	TS	C			00241	Observation Date/Time
8	26	TS	O			00242	Observation End Date/Time
9	20	CQ	O			00243	Collection Volume
10	60	XCN	O	Y		00244	Collector Identifier
11	1	ID	O		0065	00245	Specimen Action Code
12	60	CE	O			00246	Danger Code
13	300	ST	O			00247	Relevant Clinical Info.
14	26	TS	C			00248	Specimen Received Date/Time
15	300	CM	O		0070	00249	Specimen Source
16	80	XCN	O	Y		00226	Ordering Provider
17	40	XTN	O	Y/2		00250	Order Callback Phone Number
18	60	ST	O			00251	Placer field 1
19	60	ST	O			00252	Placer field 2
20	60	ST	O			00253	Filler Field 1
21	60	ST	O			00254	Filler Field 2
22	26	TS	C			00255	Results Rpt/Status Chng - Date/Time
23	40	CM	O			00256	Charge to Practice
24	10	ID	O		0074	00257	Diagnostic Serv Sect ID
25	1	ID	C		0123	00258	Result Status
26	400	CM	O			00259	Parent Result
27	200	TQ	O	Y		00221	Quantity/Timing
28	150	XCN	O	Y/5		00260	Result Copies To
29	150	CM	O			00261	Parent
30	20	ID	O		0124	00262	Transportation Mode
31	300	CE	O	Y		00263	Reason for Study
32	200	CM	O			00264	Principal Result Interpreter
33	200	CM	O	Y		00265	Assistant Result Interpreter
34	200	CM	O	Y		00266	Technician
35	200	CM	O	Y		00267	Transcriptionist
36	26	TS	O			00268	Scheduled Date/Time
37	4	NM	O			01028	Number of Sample Containers

38	60	CE	O	Y		01029	Transport Logistics of Collected Sample
39	200	CE	O	Y		01030	Collector's Comment
40	60	CE	O			01031	Transport Arrangement Responsibility
41	30	ID	O		0224	01032	Transport Arranged
42	1	ID	O		0225	01033	Escort Required
43	200	CE	O	Y		01034	Planned Patient Transport Comment

Examples of OBR segments:

For antimicrobial susceptibility testing:

OBR|2||MB99012|06730^MIC susceptibility test^L|||199601301530|||||||BLDV^Blood venous |^Jones^Marcus^F^Jr^Dr^MD|^^^^^206^3231921|||||||F|600-7&Microorganism identified, Blood Culture&LN^^L-25116&Streptococcus pneumoniae&SNM

For Hepatitis A Virus testing:

OBR|1||SER122145|78334^Hepatitis Panel, Measurement^L|||199603210830|||||||BLDV|^Welby^M^J^Jr^Dr^MD|^^^^^206^4884144|||||||F

For blood lead testing:

OBR|5||CH96779||||199601210730|||||||BLDC^Blood capillary|^Everett^C^Sr^Dr^MD |^^^^^206^488-0911|||||||F

OBR-1 Set ID - OBR (SI)

Field should identify the sequence number of one of multiple OBR's under one PID. For the first order transmitted, the sequence number is 1, for the second order, it is 2, and so on. If more than one OBR per PID is transmitted, this field should be used.

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

|2|

OBR-2 Placer Order Number (EI)

The placer order number identifies an order uniquely among all orders from a particular ordering application. This field should be sent if available. The data type "EI" is described below. This field should not contain the accession number for a specimen.

OBR-3 Filler Order Number (EI)

The field has the following components:

<unique filler ID (ST)> ^ <filler application ID>

The field will be used to report the laboratory specimen accession number. This is the unique identifier that the laboratory uses to track specimens. The second component is not used. For example:

|MB99012|

Cancer Reporting Comment: Corresponds to NAACCR version 5.0 item number 2780. The combination of laboratory ID and filler order number will uniquely identify a case. If a filler order number may recycle with a single year period, a month identifier (01 through 12) should be prepended to it.

OBR-4 Universal Service ID (CE)

This field is the identifier code for the requested observation/test/battery. The field is a compound element (CE) and has the following components:

<identifier (ID)> ^ <text (ST)> ^ <name of coding system (ST)>^<alternate identifier (ID)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

An example for a report of antimicrobial susceptibility would appear as:

|P3-55230^MIC susceptibility test, NOS^SNM|

The first component of the field, <P3-55230> is the Systematized Nomenclature of Human and Veterinary Medicine (SNOMED) code for a general MIC test which has been performed and which will have its individual antimicrobial susceptibility results reported in the OBX segment described later. The second component is the name of the test, <MIC susceptibility test, NOS> as it appears in the SNOMED coding system. SNOMED is described further in OBX-5 below. The third component is the name of the coding system, <SNM> which has the table where the codes and names of the tests can be found. Coding systems other than SNOMED, such as LOINC (Logical Observation Identifier Names and Codes) or local codes can be used for OBR-4.

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 "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.** No specific coding system is described for OBR-4 and information in OBR-4 will not be used routinely. Examples of messages for different laboratory-reportable findings are given in Appendix A.

An example for a report of a hepatitis panel would appear as:

|78334^Hepatitis Panel, Measurement^L|

Here the code is a user-defined "local" code as indicated by the <L> in the third subcomponent. Note that the "Universal Service ID" is a code which often describes 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 segment 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 alone. Information in OBR-4 will not be used routinely. An example of this is given in Appendix A for Blood Lead reporting.

OBR-5 Priority (ID)

Field is optional and may be left blank.

OBR-6 Requested Date/Time (TS)
Field is optional and may be left blank.

OBR-7 Observation Date/Time (TS)
Field follows the HL7 timestamp (TS) structure described previously. This field is the clinically relevant date/time of the observation. Field should reflect the specimen collection date/time. For example:

|199601301530|

OBR-8 Observation End Date/Time (TS)
Field is optional and may be left blank.

OBR-9 Collection Volume (CQ)
Field is optional and may be left blank.

OBR-10 Collector Identifier (XCN)
Field is optional and may be left blank.

OBR-11 Specimen Action Code (ID)
Field is optional and may be left blank.

OBR-12 Danger Code (CE)
Field is optional and may be left blank.

OBR-13 Relevant Clinical Information (ST)
Field is optional and may be left blank. 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 gases, 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, or nursing home patient) can be placed here; however, there are no recommendations for specific use of this field for laboratory-based reporting.

OBR-14 Specimen Received Date/Time (TS)
Field is optional and may be left blank.

OBR-15 Specimen Source (CM)
Field will use HL7 Table 0070 for specimen sources found in Appendix B. The field has the data type "composite" (i.e., CM) and has the following components:

<specimen source name or code (CE)> ^ <additives (TX)> ^ <freetext (TX)> ^ <body site (CE)> ^ <site modifier (CE)>

The component <specimen source name or code (CE)>, <body site (CE)>, and <site modifier (CE)> are coded elements and have the subcomponents <code&text&name of coding system> as described previously.

An example for an isolate from a blood culture is:

|BLDV&Blood venous^^^T-D8400&Antecubital Region&SNM^LACF&Left Antecubital Fossa|

where <BLDV> is the code, <Blood venous> is the text of the code. Since there is no description for the third subcomponent "coding system", it is assumed that HL7 table 0070 is used since it is the default coding system. Additional description can be given in the "body site" and "site modifier" fields using SNOMED or HL7 codes. Here, <T-D8400&Antecubital Region&SNM> is the SNOMED code for the body site, and <LACF&Left Antecubital Fossa> is the site modifier. Since there is no third subcomponent in the final component, it is assumed that the coding system is HL7 table 0163, "Administrative Site".

An example for a specimen from a finger stick collection for blood lead testing where only the specimen source is provided:

|BLDC&Blood Capillary|

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

|STL&Stool=Fecal|

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".

OBR-16 Ordering Provider (XCN)

The field has the data type "extended composite ID number and name for persons" (XCN) which differs from XPN previously described. The components are:

<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)>

For example:

|^Jones^Marcus^F^Jr^Dr^MD|

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. However, HL7 has not provided for the ordering provider's address in the ORU. For this reason, the ordering provider's address should be given in the ZLR segment described below.

OBR-17 Order Callback Phone Number (XTN)

The phone number for the ordering provider listed in OBR-16 should appear here. The components have been previously described in PID-13.

For example:

|^^^^^206^277-0908^^call before 5:00 pm only~ ^^^^^206^5620767|

or

|(206) 277-0908|

OBR-18 Placer Field #1 (ST)
Field is optional and may be left blank.

OBR-19 Placer Field #2 (ST)
Field is optional and may be left blank.

OBR-20 Filler Field #1 (ST)
Field is optional and may be left blank.

OBR-21 Filler Field #2 (ST)
Field is optional and may be left blank.

OBR-22 Results Report/Status Change - Date/Time (TS)
This field specifies the date/time results reported or 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 Order Status, is entered or changed. It is recommended that this be sent if available.

OBR-23 Charge to Practice (CM)
Field is optional and may be left blank.

OBR-24 Diagnostic Service Section ID (ID)
Field is optional and may be left blank.

OBR-25 Result Status (ID)

This field is required and may have the following values found in HL7-defined Table 0123:

Result Status - Table 0123

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
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)
Z	No record of this patient. (Used only on queries)

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.

OBR-26 Parent Result (CM)

Field has the following components:

> <OBX-3-observation identifier of parent result (CE)> ^ <OBX-4-sub-ID of parent result (ST)> ^ <part of OBX-5-observation results from parent (TX) [see discussion]>

The first component is a coded element and has the following structure:

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

This field is defined so that links to messages describing previously-performed tests can be made. This important information, together with the information in OBR-29 parent number, uniquely identifies the parent result's OBX segment related to this order (a full description of the OBX segment is listed below). For instance, if the current battery (as designated in the present OBR-4) is an antimicrobial susceptibility test, the present parent result (OBR-26) contains the result from a previously-performed test which identified the organism on which the sensitivities are presently run. Thus, the OBX-3, OBX-4, and OBX-5 from a previous message appear in this field of the present OBR.

It is important to note that this field does not take the entire result field from the parent. It is meant only for the text name of the organism or chemical subspecies identified. This field is included only to provide a method for linking back to the parent result for those systems which could not generate unambiguous Observation ID's and sub-ID's.

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 which appeared in a previous OBX-3, <Microorganism identified> is the text describing the code, and <LN> is the name of the coding system, LOINC. The second component is not used in this message and remains blank. The third component has the SNOMED code for *Streptococcus pneumoniae*, the text name of the organism, and the name of the coding system. 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 states that OBR-26 should only be present when the parent result is identified by *OBR-29-parent number*; 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 specifications but is necessary to interpret data required for laboratory-based reporting. As described below for OBX-3 and OBX-5, LOINC is recommended for the first component of the field and SNOMED for the third component. This is discussed at length below in the description of the OBX segment.

OBR-27 Quantity/Timing (TQ)

Field is optional and may be left blank.

OBR-28 Result Copies (XCN)

Send if available using the extended composite identification number and name for persons (XCN) as described in OBR-16. The field would appear as:

|^Parsons^Melvin^C^^Dr^MD|

OBR-29 Parent Number (CM)

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). The parent number, essentially the accession number of the parent result, is a composite (CM) field which has the following components for OBR-29:

<parent's placer order number> ^ <parent's filler order number>

For a parent result with no placer order number, the field would appear as:

|^MB980167|

See also OBR-26 for further description.

OBR-30 Transportation Mode (ID)

Field is optional and may be left blank.

OBR-31 Reason for Study (CE)

Field is optional and may be left blank.

OBR-32 Principal Result Interpreter (CM)

Field has the following components:

<name (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)>

Subcomponents of name are:

<ID number (ST)> & <family name (ST)> & <given name (ST)> & <middle initial or name (ST)> & <suffix (e.g., Jr., III) (ST)> & <prefix (e.g., Dr.)> & <degree (e.g., MD) (ST)> & <source table (IS)> & <assigning authority (HD)>

Subcomponents of facility are:

<namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

This field identifies the physician or other clinician who interpreted the observation and is responsible for the report content. Field is optional for laboratory-based reporting of communicable disease results and may be left blank.

Cancer Reporting Comment: This field is listed as optional by HL7. For anatomic pathology reporting, the name of the pathologist responsible for the interpretation of the pathologic examination should appear here. The ID number is the reporting pathologist's license number with the state of licensure appended (e.g., 99999999WA)

OBR-33 Assistant Result Interpreter (CM)

Field is optional and may be left blank.

OBR-34 Technician (CM)

Field is optional and may be left blank.

OBR-35 Transcriptionist (CM)

Field is optional and may be left blank.

OBR-36 Scheduled - Date/Time (TS)

Field is optional and may be left blank.

OBR-37 Number of sample containers (NM)
Field is optional and may be left blank.

OBR-38 Transport logistics of collected sample (CE)
Field is optional and may be left blank.

OBR-39 Collector's comment (CE)
Field is optional and may be left blank.

OBR-40 Transport arrangement responsibility (CE)
Field is optional and may be left blank.

OBR-41 Transport arranged (ID)
Field is optional and may be left blank.

OBR-42 Escort required (ID)
Field is optional and may be left blank.

OBR-43 Planned patient transport comment (CE)
Field is optional and may be left blank.

4.2.4 ZLR Segment - Additional Information for Laboratory-Based Reporting

The Observation Results Unsolicited (ORU) message defined in HL7 2.3 does not contain certain data elements which are of importance to public health officials. To allow laboratories to send this information, a "Z segment" has been constructed and is described below. HL7 allows users to define unique segments which can be used in trading-partner relationships such as reporting of public health information to public health agencies. By convention, HL7 has defined any segment beginning with the letter "Z" to be a *user-defined* segment and thus, there is no description of the ZLR segment in the HL7 2.3 standard document. The ZLR segment is defined below and is unique to the laboratory-based reporting message for public health information. The ZLR segment ***must*** follow each OBR segment and there can be only one ZLR per OBR. Since ZLR is user-defined, additions to the segment can be made to accommodate changing needs for reporting. Public health agencies should notify reporting laboratories when changes are made. For some laboratories, the construction of user-defined segments may not be possible. In these situations, reporting may be possible without the use of the ZLR after consultation with health agencies which will be receiving the data electronically.

ZLR Attributes

SEQ	LEN	DT	TBL#	RP/#	ITEM#	OPT	Element Name
1	106	XAD			*	*	Ordering Provider's Address
2	90	XON			*	*	Ordering Facility Name
3	106	XAD			*	*	Ordering Facility Address
4	40	XTN			*	*	Ordering Facility Phone
5	20	SN	Z-0001		*	*	Patient Age
6	40	XPN			*	*	Next of Kin/Assoc. Party Name
7	40	CE	0063		*	*	Next of Kin/Assoc. Party Relationship
8	106	XAD			*	*	Next of Kin/Assoc. Party Address
9	40	XPN			*	*	Next of Kin/Assoc. Party Phone

* ZLR is a user-defined segment for laboratory-based reporting, thus there are no requirements or item numbers for reporting which have been defined in HL7 version 2.3.

Examples of ZLR segments:

ZLR|115 Pike Plaza^Suite 2100^Seattle^WA^98122|Northwest Surgical Associates, Ltd.^^57Y0470381^^^CLIA|2217 Rainier Way^^Renton^WA^98002|^^^helpline@surgassoc.com ^^206^5549097^^press "1" to speak with front desk, press "2" for scheduling|^63^Y|
Doe^Jane|spouse|2166 Wells Dr^Apt B^Seattle^WA^98109^^^^King|^^^^^206^6793240

ZLR-1 Ordering Provider's Address (XAD)

This field contains the relevant address information for the ordering provider described in OBR-16. The field has the HL7-defined data type Extended Address (XAD) which has the following components:

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

For example:

|115 Pike Plaza^Suite 2100^Seattle^WA^98122|

ZLR-2 Ordering Facility Name (XON)

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. ZLR-2 has the HL7-defined data type Extended Organization Name (XON) which has the following components:

<organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit (NM)> ^ < check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^ <assigning facility (HD)>

The facility's CLIA identifier should be placed in the third component <ID number (ID)> 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. For example:

|Northwest Surgical Associates, Ltd.^^57Y0470381^^^CLIA|

ZLR-3 Ordering Facility Address (XAD)

This field further describes the laboratory identified in ZLR-2 above. The field is the HL7-defined data type XAD as described in ZLR-1. For example:

|2217 Rainier Way^^Renton^WA^98002|

ZLR-4 Ordering Facility Phone Number (XTN)

This field further describes the laboratory identified in ZLR-1 above. The field is the HL7-defined data type Extended Telephone Number (XTN) which has the following components:

[NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <E-mail address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

For example:

|^^^helpline@surgassoc.com^^206^5549097^^press "1" to speak with front desk, press "2" for scheduling|

ZLR-5 Patient's Age (SN)

This field contains the patient's age when no date of birth is known. It is not necessary to provide this information when PID-7 (Date of Birth) is populated. The field has the HL7-defined data type of the structured numeric (SN):

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

For example, a report for a 63 year-old patient would have:

|^63^Y|

Acceptable suffixes are the following:

Age Suffix - Table Z0001

Value	Description
Y	Years
M	Months
D	Days
H	Hours

If no suffix is provided, then the age is presumed to be years.

ZLR-6 Next of Kin or Associated Party Name (XPN)

This field is analogous to NK1-2 (Name) which is described in the HL7 2.3 standard document. The field contains the name of the next of kin or associated party. This field may be used to describe the Guardian or Employer of the patient for blood lead reporting messages. 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. The field has the HL7-defined data type of the extended person name (XPN):

<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)> ^ <name type code (ID)>

For example:

|Doe^Jane|

ZLR-7 Next of Kin or Associated Party Relationship (CE)

This field is analogous to NK1-3 (Relationship) which is described in the HL7 2.3 standard document. The field contains the actual personal relationship that the next of kin/associated parties has to the patient. The user-defined table *0063 - Relationship* is used for appropriate values. The field has the HL7-defined data type of the coded element (CE):

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

Relationship - Table 0063

Value	Description
Parent	Parent
Mother	Mother
Father	Father
Grand-Parent	Grand-Parent
Grand-Mother	Grand-Mother
Grand-Father	Grand-Father
Sibling	Sibling
Sister	Sister
Brother	Brother
Child	Child
Daughter	Daughter
Son	Son
Spouse	Spouse
Wife	Wife
Husband	Husband
Employer	Employer
Friend	Friend
Emergency Contact	Emergency Contact

For example:

|spouse|

ZLR-8 Next of Kin or Associated Party Address (XAD)

This field is analogous to NK1-4 (Address) which is described in the HL7 2.3 standard document. The field contains the address of the next of kin/associated party identified in ZLR-3 above. This field may be used to provide the address of the Guardian or Employer of the patient for lead reporting messages. Multiple addresses are allowed for the same person. The primary mailing address must be sent in the first sequence. If the mailing address is not sent, then the repeat delimiter must be sent in the first sequence. The field has the HL7-defined data type of XAD as described in ZLR-3 above. For example:

|2166 Wells Dr^Apt B^Seattle^WA^98109^^^^King|

ZLR-9 Next of Kin or Associated Party Phone Number (XTN)

This field provides the phone number for the Next of Kin or Associated Party described in ZLR-6. It is analogous to NK1-5. The field has the HL7-defined data type of the XTN as described in ZLR-4. For example:

|^^^^^206^6793240|

4.2.5 OBX Segment - Observation/Result

The OBX segment is used to transmit a single observation or observation fragment. It represents the smallest indivisible unit of a report. The principal mission of the segment is to carry information about observations in report messages. Whereas OBR gives general information about the order of the test, 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 and thus, full effort should be made to make OBX-3 and OBX-5 as informative and unambiguous as possible.**

OBX Attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	Element Name
1	10	SI	O			00569	Set ID - OBX
2	2	ID	C		0125	00570	Value Type
3	590	CE	R			00571	Observation Identifier
4	20	ST	C			00572	Observation Sub-ID
5	65536[1]	*	C	Y[2]		00573	Observation Value
6	60	CE	O			00574	Units
7	10	ST	O			00575	References Range
8	5	ID	O	Y/5	0078	00576	Abnormal Flags
9	5	NM	O			00577	Probability
10	2	ID	O	Y	0080	00578	Nature of Abnormal Test
11	1	ID	R		0085	00579	Observ Result Status
12	26	TS	O			00580	Date Last Obs Normal Values
13	20	ST	O			00581	User Defined Access Checks
14	26	TS	O			00582	Date/Time of the Observation
15	60	CE	O			00583	Producer's ID
16	80	XCN	O			00584	Responsible Observer
17	60	CE	O	Y		00936	Observation Method

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

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

Example Segments for OBX:

For Hepatitis A Virus reporting:

```
OBX|3|CE|5182-1^Hepatitis A Virus IgM Serum Antibody EIA^LN||G-
A200^Positive^SNM||||||F|||199603241500|45D0480381
```

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

2 May repeat for multipart, single answer results with appropriate data types, e.g., CE, TX, and FT data types.

For antimicrobial susceptibility testing:

OBX|1|SN|524-9^Vancomycin Susceptibility MIC^LN|
|<^1|^µg/mL^ISO+||S|||F|||199602161300|01D0301145

For Blood Lead reporting:

OBX|2|SN|10368-9^Quantitative Blood Lead
^LN||^45|µg/dL|||||F|||199601210800|45D0480381

OBX-1 Set ID - Observation Simple (SI)

This field contains the sequence number as described for OBR-1. There may be many OBX's per OBR. The set ID allows the receiver to maintain the relational aspects of the message. For example:

|1|

OBX-2 Value Type (ID)

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 are bulk text. The choices allowed for the value type of an observation are listed below in *HL7 Table 0125 - Value type*.

Value Type - Table 0125

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

Although NM is a valid type, observations which 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. For example, the value type for structured numeric would be:

|SN|

All valid HL7 data types for use in OBX-2 are listed in the table above. 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.

Cancer Reporting Comment: Pathology reporting will require use of the TX, ST, and FT if the OBX segment contains all lab report text of a particular category.

OBX-3 Observation Identifier (CE)

This field contains a unique identifier for the observation. For reporting of laboratory results, OBX-3 is the specific test that has been performed. The format is that of the coded element (CE) which has the following structure:

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

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 that OBX-3 have a code for the observation which can be easily interpreted by the public health application receiving the message. **For this reason, the laboratory-based reporting message strongly recommends that LOINC be used as the coding system in OBX-3 for reporting tests that identify cases of illness which 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. LOINC codes are not recommended for pathology reports for cancer registries.

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 have been selected and will be made available at the CDC web site. General information about LOINC codes can be found at: http://www.mcis.duke.edu/standards/termcode/loinc.htm.

Some reports currently can not 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 which has triggered a report to be sent to a public health agency such as "*Neisseria meningitidis*". 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 MIC's 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> IS 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.

An example for reporting a lead level from a capillary blood specimen:

|10368-9^Quantitative Blood Lead^LN|

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

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

Cancer Reporting Comments: A locally defined coding scheme representing the pathology report. Described in below table to represent classification of a local text coding scheme.

NAACCR Text Classification Grouping - Table C0001

Value	Description
CH	Clinical History
NS	Nature of Specimen
GP	Gross Pathology
MP	Microscopic Pathology
FD	Final Diagnosis
CM	Comment Section
SR	Supplemental Reports/addendum
PR	Staging Parameters
GN	General lab report, used if report text is stored in such a way that it may not be broken down into above categories.

For example:

|CH^Clinical History^L|

OBX-4 Observation Sub ID (ST)

This field is used to distinguish between multiple OBX segments with the same observation ID organized under one OBR. Thus, the Sub-ID allows related OBX segments to be linked. For example a blood culture may have three different organisms growing. By putting a "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. 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. For example:

|1|

OBX-5 Observation Value (*Data type varies)

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.** Thus, if CE appears in OBX-2, it is assumed that the result in OBX-5 is a SNOMED code. For numeric results, the SN data type is preferred for OBX-2, and thus, SNOMED is not required. For instance, OBX-5 may have 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 SNOMED 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". Pathology reports for cancer registries will be TX or ST. Further information on SNOMED can be found at the HL7 Health Informatics Internet site on the World Wide Web (http://www.mcis.duke.edu/standards/termcode/snomed.htm).

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 second example. The SN data type has the following structure:

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

Some examples of the SN representation are:

|>^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 which yielded *Neisseria meningitidis*, 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.

Cancer Reporting Comments: This is the field which will contain the text or SNOMED codes for the following NAACCR version 5.0 item numbers, 2860,2520,2580,2570,2680,2600.

OBX-6 Units (CE)

The units describing the results of the test appear here. For instance, <mm> or <µg/mL> would be placed here. A table of the appropriate units is provided in the appendix. The HL7-defined, default coding system for units is based on an enhanced international standard (ISO+) which is described at length in the HL7 2.3 standard document. For example:

|µg/mL^microgram/milliliter^ISO+|

OBX-7 Reference Range (ST)

This field is designated as ST for string, and thus, there is no current standardized scheme for describing a reference range. HL7 recommends that reference ranges for numeric values be reported in the format:

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"

For alphabetical values, the normal value may be reported in OBX-7 as well. For instance, the normal result for an assay may be “pink”.

OBX-8 Abnormal Flags (A)

Microbiology sensitivity interpretations should appear as listed in HL7 table 0078. Abnormal flags should be used for reporting microbiology sensitivity data.

Abnormal Flags - Table 0078

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 sensitivities only:	
S	Sensitive
R	Resistant
I	Intermediate
MS	Moderately sensitive
VS	Very sensitive

Abnormal flags for antimicrobial sensitivity reporting should conform to the recommendations of the National Committee for 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.

OBX-9 Probability (NM)

Field is optional and may be left blank.

OBX-10 Nature of Abnormal Test (ID)

Field is optional and may be left blank.

OBX-11 Observation Result Status (ID)

This field is required field.

Observation Result Status Codes Interpretation - Table 0085

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
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 retransmitting 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

For example:

|F|

Cancer Reporting Comment: Corresponds to NAACCR version 5.0 item number 2830

OBX-12 Date Last Observation Normal Values (TS)

Field is optional and may be left blank.

OBX-13 User Defined Access Checks (ST)

Field is optional and may be left blank.

OBX-14 Date/Time of the Observation (TS)

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. The field follows the HL7-defined timestamp (TS).

|199602161300|

OBX-15 Producer's ID (CE)

This field contains a unique identifier of the responsible producing service. It should be reported for all 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. The CE data type has been described previously. For example:

|01D0301145^MediLabCo^CLIA|

or

|01D0301145|

OBX-16 Responsible Observer (XCN)

Field is optional and may be left blank.

OBX-17 Observation Method (CE)

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. The Centers for Disease Control and Prevention (CDC) Method Code (CDCM) can be used in OBX-17 to further describe tests identified in OBX-3. These codes can be obtained from Public Health Practice Office, Centers for Disease Control and Prevention, 4770 Buford Highway, Atlanta, GA, 30421, or via FTP at:

ftp.cdc.gov/pub/laboratory_info/CLIA

or via Gopher at:

gopher.cdc.gov:70/11/laboratory_info/CLIA

Cancer Reporting Comment: NAACCR currently specifies the use of a locally-defined classification for additional information to indicate how a particular observation has been confirmed.

NAACCR Additional Information on Observation Method

Value	Description
1	Positive Histology *Indicated when sample is: tissue specimen from biopsy, frozen section, surgery, autopsy, dilation and curettage, or bone marrow biopsy/aspiration. Also includes hematologic confirmation of leukemia (that is, a peripheral blood smear).*
2	Positive exfoliative cytology, no positive histology *Indicated by: microscopic examination of cells removed from a neoplasm. Fine-needle aspiration is frequently used to obtain a cytologic specimen. Cells may be recovered from exudate, secretions, or washings from tissue, and includes cervical and vaginal smears. Also includes paraffin-block specimens from concentrated spinal, pleural, or peritoneal fluid.*
3	Bone Marrow
4	Positive microscopic confirmation, method not specified *Indicated when: the case is reported as microscopically confirmed, but the specific method (histology, cytology) is unknown.*
5	Positive laboratory test/marker study *Indicated by: diagnosis of cancer based on certain laboratory tests or marker studies that are clinically diagnostic (for instance, an abnormal electrophoretic spike for multiple myeloma or Waldenstrom's macroglobulinemia).*
6	Direct visualization without microscopic confirmation *Indicated when: diagnosis made at surgical exploration or by endoscopy (colposcope, mediastinoscope, laparoscope). Also includes autopsies where the only information is from a gross autopsy report.*
7	Radiology and other imaging techniques without microscopic confirmation *Indicated when: diagnosis is by radiology, ultrasound, computerized tomography, or MRI.*
8	Clinical diagnosis only (other than items 5, 6, and 7) *Indicated when: case has been diagnosed by clinical methods not mentioned previously.*

For example:

|2^Fine Needle Aspiration^L|

5. 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 file transfer protocol, or offline via tape or diskette.

5.1 HL7 Batch File Structure

The structure of an HL7 batch file is given by the following (using the HL7 abstract message syntax defined in 4.1 above):

```
[FHS]                          File Header Segment
   {
   [BHS]                       Batch Header Segment
      {
         [MSH, PID, OBR,etc.   Zero or more HL7 messages
         ]
      }
   [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. See "Related Segments and Data Usage" below.

5.1.1 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 totals*, 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.

5.1.2 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 standard document and are not addressed here.

5.2 Batch Segments

5.2.1 BHS Segment - Batch Header

The BHS segment is defined by HL7 2.3 and identifies the start of a batch. The fields in BHS are in the following table:**BHS Attributes**

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	Element Name
1	1	ST	R			00081	Batch Field Separator
2	3	ST	R			00082	Batch Encoding Characters
3	15	ST	O			00083	Batch Sending Application
4	20	ST	O			00084	Batch Sending Facility
5	15	ST	O			00085	Batch Receiving Application
6	20	ST	O			00086	Batch Receiving Facility
7	26	TS	O			00087	Batch Creation Date/Time
8	40	ST	O			00088	Batch Security
9	20	ST	O			00089	Batch Name/ID/Type
10	80	ST	O			00090	Batch Comment
11	20	ST	O			00091	Batch Control ID
12	20	ST	O			00092	Reference Batch Control ID

Example Segment of BHS:

BHS|^~\&||45D0470381|NPHSS|WA-DOH|19961104

BHS-1 Batch Field Separator (ST)

This field contains the separator between the segment ID and the first real field*, BHS-2-batch encoding characters*. The field is analogous to MSH-1 described previously. Required value for laboratory-based reporting is "|", (ASCII 124).

BHS-2 Batch Encoding Characters (ST)

This field is analogous to MSH-2 and should contain the same characters:

|^~\&|

BHS-3 Batch Sending Application (ST)

Field is optional and may be left blank.

BHS-4 Batch Sending Facility (ST)

Field is analogous to MSH-4 and should contain the same CLIA identification number. For example:

|45D0470381|

BHS-5 Batch Receiving Application (ST)
Field is analogous to MSH-5:

|NPHSS|

BHS-6 Batch Receiving Facility (ST)
Field is optional but may contain the public health agency receiving the batch. For example:

|WADOH|

BHS-7 Batch Creation Date/Time (TS)
This field contains the date/time that the sending system created the message. Field is optional and may be left blank.

BHS-8 Batch Security (ST)
Field is optional and may be left blank.

BHS-9 Batch Comment (ST)
Field is optional and may be left blank.

BHS-10 Batch Control ID (ST)
Field is optional and may be left blank.

BHS-11 Reference Batch Control ID (ST)
Field is optional and may be left blank.

5.2.2 BTS Segment - Batch Trailer
The BTS Segment defines the end of a batch.

BTS Attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	Element Name
1	10	ST	O			00093	Batch Message Count
2	80	ST	O			00090	Batch Comment
3	100	NM	O	Y		00095	Batch Totals

Example Segment of BTS:

BTS|62

BTS-1 Batch Message Count (ST)
This field contains the count of the individual messages contained within the batch. The count should reflect then number of MSH segments within the batch.

BTS-2 Batch Comment (ST)
Field is optional and may be left blank.

BTS-3 Batch Totals (NM)
Field is optional and may be left blank.

5.3 File Segments for Batch Reporting

5.3.1 FHS Segment - File Header

The FHS segment is used to head a file (group of batches). Ideally, a single sending facility, for instance a regional laboratory for a hospital consortium, 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	OPT	RP/#	TBL#	ITEM #	Element Name
1	1	ST	R			00067	File Field Separator
2	4	ST	R			00068	File Encoding Characters
3	15	ST	O			00069	File Sending Application
4	20	ST	O			00070	File Sending Facility
5	15	ST	O			00071	File Receiving Application
6	20	ST	O			00072	File Receiving Facility
7	26	TS	O			00073	File Creation Date/Time
8	40	ST	O			00074	File Security
9	20	ST	O			00075	File Name/ID
10	80	ST	O			00076	File Header Comment
11	20	ST	O			00077	File Control ID
12	20	ST	O			00078	Reference File Control ID

Example Segment of FHS:

FHS|^~\&||45D0470381|NPHSS|WA-DOH|19961104

FHS-1 File Field Separator (ST)
This field has the same definition as the corresponding field in MSH-1 segment: '|'

FHS-2 File Encoding Characters (ST)
This field has the same definition as the corresponding field in the MSH-2:

|^~\&|

FHS-3 File Sending Application (ST)
Field is optional and may be left blank.

FHS-4 File Sending Facility (ST)
This field should contain the CLIA identifier for the sending facility, analogous to BHS-4 and MSH-4

FHS-5 File Receiving Application (ST)
This field has the same definition as the corresponding field in MSH-5:

|NPHSS|

FHS-6 File Receiving Facility (ST)
This field may contain an identifier for the public health agency. For example:

|WADOH|

FHS-7 File Creation Date/Time (TS)
Field is optional and may be left blank.

FHS-8 File Security (ST)
Field is optional and may be left blank.

FHS-9 File Name ID (ST)
Field is optional and may be left blank.

FHS-10 File Header Comment (ST)
Field is optional and may be left blank.

FHS-11 File Control ID (ST)
Field is optional and may be left blank.

FHS-12 Reference File Control (ST)
Field is optional and may be left blank.

5.3.2 FTS Segment - File Trailer
The FTS segment defines the end of a file (i.e., a group of batches).

FTS Attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	Element Name
1	10	NM	O			00079	File Batch Count
2	80	ST	O			00080	File Trailer Comment

Example Segment of FTS:

FTS|1

FTS-1 File Batch Count (NM)

This field contains the number of batches contained in this file. For laboratory-based reporting, it is expected that only one batch per file will be sent usually.

FTS-2 File Trailer Comment (ST)

Field is optional and may be left blank.

Appendix A. 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|NPHSS|WA-DOH
|199602171830||ORU^R01||P|2.3
PID||10543^^^^^Columbia Valley Memorial Hospital&01D0355944&CLIA
|95101100001^^^^^MediLabCo- Seattle&45D0470381&CLIA|
|Doe^John^Q^Jr|Clemmons|19641004|M||W|2166 Wells Dr^Apt
B^Seattle^WA^98109^USA^^^King||^^^^^206^6793240|||M
|||423523049|DOEJ34556057^WA^19970801||N
OBR|||SER122145|78334^Hepatitis Panel, Measurement^L|||199603210830
|||||||BLDV|^Welby^M^J^Jr^Dr^MD|^^^^^206^4884144|||||||F
ZLR|MediLabCo - Northwest Pathology Ltd., Central Campus^^45D0470381
^^^CLIA|2217 RainierWay^^Renton^WA^98002|^^^helpline@medilab.com
^^206^5549097|115 Pike Plaza^Suite 2100^Seattle^WA^98122|^63^Y
|Doe^Jane|spouse|2166 Wells Dr^Apt B^Seattle^WA^98109^^^^King
|^^^^^206^6793240
OBX||CE|5182-1^Hepatitis A Virus, Serum Antibody EIA^LN||G-
A200^Positive^SNM|||||F|||199603241500|45D0480381

Example 2: Bordetella pertussis

MSH|^~\&||MediLabCo-Seattle^45D0470381^CLIA|NPHSS|WA-DOH
|199602171830||ORU^R01||P|2.3
PID||10543^^^^^Columbia Valley Memorial Hospital&01D0355944&CLIA
|95101100001^^^^^MediLabCo-Seattle&45D0470381&CLIA|
|Doe^John^Q^Jr|Clemmons|19641004|M||W|2166 Wells Dr^Apt
B^Seattle^WA^98109^USA^^^King||^^^^^206^6793240|||M|||423523049|DOE
J34556057^WA^19970801||N
OBR|||MICR9700342||||199611270930|||||||THRT^Throat|^Welby^M^J^Jr^Dr^MD
|^^^^^206^4884144|||||||F
ZLR|MediLabCo - Northwest Pathology Ltd., Central Campus^^45D0470381^^^
CLIA |2217 Rainier Way^^Renton^WA^98002|^^^helpline@medilab.com
^^206^5549097|115 Pike Plaza^Suite 2100^Seattle^WA^98122|^63^Y
|Doe^Jane|spouse|2166 Wells Dr^Apt B^Seattle^WA^98109^^^^King
|^^^^^206^6793240
OBX||CE|626-2^Microorganism identified, Throat Culture^LN||L-
12801^Bordetella pertussis^SNM|||||F|||199602161330|45D0470381

Example 3: Lead

MSH|^~\&||MediLabCo-Seattle^45D0470381^CLIA|NPHSS|WA-DOH
|199602171830||ORU^R01||P|2.3
PID||10543^^^^^Columbia Valley Memorial Hospital&01D0355944&CLIA
|95101100001^^^^^MediLabCo-Seattle&45D0470381&CLIA|
|Doe^Jared^Q^Jr|Clemmons||M||W|2166 Wells Dr^Apt
B^Seattle^WA^98109^USA^^^King||^^^^^206^6793240|||M|||423523049|DOE
J34556057^WA^19970801||N
OBR|||CHEM9700122||||199611270930|||||||BLDC^Blood capillary
|^Welby^M^J^Jr^Dr^MD|^^^^^206^4884144|||||||F
ZLR|MediLabCo - Northwest Pathology Ltd., Central Campus^
^45D0470381^^^CLIA|2217 Rainier Way^^Renton^WA^98002|
^^^helpline@medilab.com^^206^5549097|115 Pike Plaza^Suite
2100^Seattle^WA^98122|^3^Y|Doe^Jane|mother|2166 Wells Dr^Apt
B^Seattle^WA^98109^^^^King|^^^^^206^6793240
OBX||SN|10368-9^Quantitative Blood
Lead^LN||^45|µg/dL|||||F|||199601210800|45D0480381

Example 4: Drug-Resistant *Streptococcus pneumoniae*

MSH|^~\&||MediLabCo-Seattle^45D0470381^CLIA|NPHSS|WA-DOH
|199602171830||ORU^R01||P|2.3
PID||10543^^^^^Columbia Valley Memorial Hospital&01D0355944&CLIA
|95101100001^^^^^MediLabCo-Seattle&45D0470381&CLIA|
|Doe^John^Q^Jr|Clemmons|19641004|M||W|2166 Wells Dr^Apt
B^Seattle^WA^98109^USA^^^King||^^^^^206^6793240|||M|||423523049|DOE
J34556057^WA^19970801||N
OBR|||MB99012|06730^MIC susceptibility test^L|
||199601301530|||||||BLDV^Blood venous|^Jones^Marcus^F^Jr^Dr^MD
|^^^^^206^3231921|||||||F|600-7&Microorganism identified, Blood
Culture&LN^^L-25116&Streptococcus pneumoniae&SNM
ZLR|MediLabCo - Northwest Pathology Ltd., Central
Campus^^45D0470381^^^CLIA|2217 Rainier
Way^^Renton^WA^98002|^^^helpline@medilab.com^^206^5549097|115
Pike Plaza^Suite 2100^Seattle^WA^98122|^3^Y|Doe^Jane|mother|2166
Wells Dr^Apt B^Seattle^WA^98109^^^^King|^^^^^206^6793240
OBX|1|SN|524-9^Vancomycin Susceptibility,
MIC^LN||<^1|^µg/mL^ISO+||S|||F||199602161300|01D0301145
OBX|2|SN|384-8^Oxacillin Susceptibility, Agar Diffusion (Kirby
Bauer)^LN||^16|^mm^ISO+||R|||F||199602161300|01D0301145
OBX|3|SN|141-2^Ceftriaxone Susceptibility,
MIC^LN||^4|^µg/mL^ISO+||R|||F||199602161300|01D0301145

Appendix B. HL7- and User-Defined Tables

Type	Table	Table Name	Value	Description
User	*0001*	*Sex*		
	0001		F	Female
	0001		M	Male
	0001		O	Other
	0001		U	Unknown

Type	Table	Table Name	Value	Description
User	*0002*	*Marital Status*		
	0002		A	Separated
	0002		D	Divorced
	0002		M	Married
	0002		S	Single
	0002		W	Widowed

Type	Table	Table Name	Value	Description
User	*0005*	*Race*		
	0005		W	White
	0005		B	Black
	0005		A	Asian or Pacific Islander
	0005		I	American Indian or Alaskan Native
	0005		M	Multiracial
	0005		O	Other
	0005		U	Unknown

Type	Table	Table Name	Value	Description
User	*0006*	*Religion*		
	0006			No suggested values

Type	Table	Table Name	Value	Description
User	*0063*	*Relationship*		
	0063		Parent	Parent
	0063		Mother	Mother
	0063		Father	Father
	0063		Grand-Parent	Grand-Parent
	0063		Grand-Mother	Grand-Mother
	0063		Grand-Father	Grand-Father
	0063		Sibling	Sibling
	0063		Sister	Sister
	0063		Brother	Brother
	0063		Child	Child
	0063		Daughter	Daughter
	0063		Son	Son
	0063		Spouse	Spouse
	0063		Wife	Wife
	0063		Husband	Husband
	0063		Employer	Employer
	0063		Friend	Friend
	0063		Emergency Contact	Emergency Contact

Type	Table	Table Name	Value	Description
HL7	*0065*	*Specimen Action Code*		
	0065		A	Add ordered tests to the existing specimen
	0065		G	Generated order; reflex order
	0065		L	Lab to obtain specimen from patient
	0065		O	Specimen obtained by service other than Lab
	0065		P	Pending specimen; Order sent prior to delivery
	0065		R	Revised order
	0065		S	Schedule the tests specified below

Type	Table	Table Name	Value	Description
HL7	*0070*	*Specimen Source Codes*		
	0070		ABS	Abcess
	0070		AMN	Amniotic fluid
	0070		ASP	Aspirate
	0070		BPH	Basophils
	0070		BIFL	Bile fluid
	0070		BLDA	Blood arterial
	0070		BBL	Blood bag
	0070		BLDC	Blood capillary
	0070		BPU	Blood product unit
	0070		BLDV	Blood venous
	0070		BON	Bone
	0070		BRTH	Breath (use EXHLD)
	0070		BRO	Bronchial
	0070		BRN	Burn
	0070		CALC	Calculus (=Stone)
	0070		CDM	Cardiac muscle
	0070		CNL	Cannula
	0070		CTP	Catheter tip
	0070		CSF	Cerebral spinal fluid
	0070		CVM	Cervical mucus
	0070		CVX	Cervix
	0070		COL	Colostrum
	0070		CBLD	Cord blood
	0070		CNJT	Conjunctiva
	0070		CUR	Curettage
	0070		CYST	Cyst
	0070		DIAF	Dialysis fluid
	0070		DOSE	Dose med or substance
	0070		DRN	Drain
	0070		DUFL	Duodenal fluid
	0070		EAR	Ear
	0070		EARW	Ear wax (cerumen)
	0070		ELT	Electrode
	0070		ENDC	Endocardium
	0070		ENDM	Endometrium
	0070		EOS	Eosinophils
	0070		RBC	Erythrocytes

	0070		EYE	Eye
	0070		EXHLD	Exhaled gas (=breath)
	0070		FIB	Fibroblasts
	0070		FLT	Filter
	0070		FIST	Fistula
	0070		FLU	Body fluid, unsp
	0070		GAS	Gas
	0070		GAST	Gastric fluid/contents
	0070		GEN	Genital
	0070		GENC	Genital cervix
	0070		GENL	Genital lochia
	0070		GENV	Genital vaginal
	0070		HAR	Hair
	0070		IHG	Inhaled Gas
	0070		IT	Intubation tube
	0070		ISLT	Isolate
	0070		LAM	Lamella
	0070		WBC	Leukocytes
	0070		LN	Line
	0070		LNA	Line arterial
	0070		LNV	Line venous
	0070		LIQ	Liquid NOS
	0070		LYM	Lymphocytes
	0070		MAC	Macrophages
	0070		MAR	Marrow
	0070		MEC	Meconium
	0070		MBLD	Menstrual blood
	0070		MLK	Milk
	0070		MILK	Breast milk
	0070		NAIL	Nail
	0070		NOS	Nose (nasal passage)
	0070		ORH	Other
	0070		PAFL	Pancreatic fluid
	0070		PAT	Patient
	0070		PRT	Peritoneal fluid /ascites
	0070		PLC	Placenta
	0070		PLAS	Plasma
	0070		PLB	Plasma bag
	0070		PLR	Pleural fluid (thoracentesis fld)
	0070		PMN	Polymorphonuclear neutrophils

	0070		PPP	Platelet poor plasma
	0070		PRP	Platelet rich plasma
	0070		PUS	Pus
	0070		RT	Route of medicine
	0070		SAL	Saliva
	0070		SEM	Seminal fluid
	0070		SER	Serum
	0070		SKN	Skin
	0070		SKM	Skeletal muscle
	0070		SPRM	Spermatozoa
	0070		SPT	Sputum
	0070		SPTC	Sputum - coughed
	0070		SPTT	Sputum - tracheal aspirate
	0070		STON	Stone (use CALC)
	0070		STL	Stool = Fecal
	0070		SWT	Sweat
	0070		SNV	Synovial fluid (Joint fluid)
	0070		TEAR	Tears
	0070		THRT	Throat
	0070		THRB	Thrombocyte (platelet)
	0070		TISS	Tissue
	0070		TISG	Tissue gall bladder
	0070		TLGI	Tissue large intestine
	0070		TLNG	Tissue lung
	0070		TISPL	Tissue placenta
	0070		TSMI	Tissue small intestine
	0070		TISU	Tissue ulcer
	0070		TUB	Tube NOS
	0070		ULC	Ulcer
	0070		UMB	Umbilical blood
	0070		UMED	Unknown medicine
	0070		URTH	Urethra
	0070		UR	Urine
	0070		URC	Urine clean catch
	0070		URT	Urine catheter
	0070		URNS	Urine sediment
	0070		USUB	Unknown substance
	0070		VOM	Vomitus
	0070		BLD	Whole blood
	0070		BDY	Whole body

	0070		WAT	Water
	0070		WICK	Wick
	0070		WND	Wound
	0070		WNDA	Wound abscess
	0070		WNDE	Wound exudate
	0070		WNDD	Wound drainage
	0070		XXX	To be specified in another part of the message

Type	Table	Table Name	Value	Description
HL7	*0078*	*Abnormal Flags*		
	0078		L	Below low normal
	0078		H	Above high normal
	0078		LL	Below lower panic limits
	0078		HH	Above upper panic limits
	0078		<	Below absolute low-off instrument scale
	0078		>	Above absolute high-off instrument scale
	0078		N	Normal (applies to non-numeric results)
	0078		A	Abnormal (applies to non-numeric results)
	0078		AA	Very abnormal (applies to non-numeric units, analogous to panic limits for numeric units)
	0078		null	No range defined, or normal ranges don't apply
	0078		U	Significant change up
	0078		D	Significant change down
	0078		B	Better--use when direction not relevant
	0078		W	Worse--use when direction not relevant
	0078		S	Sensitive (microbiology sensitivities only)
	0078		R	Resistant (microbiology sensitivities only)
	0078		I	Intermediate (microbiology sensitivities only)
	0078		MS	Moderately sensitive (microbiology sensitivities only)
	0078		VS	Very sensitive (microbiology sensitivities only)

Type	Table	Table Name	Value	Description
HL7	*0080*	*Nature of Abnormal Testing*		
	0080		A	An age-based population
	0080		N	None - generic normal range
	0080		R	A race-based population
	0080		S	A sex-based population

Type	Table	Table Name	Value	Description
HL7	*0085*	*Observation Result Status Codes Interpretation*		
	0085		C	Record coming over is a correction and thus replaces a final result
	0085		D	Deletes the OBX record
	0085		F	Final results; Can only be changed with a corrected result.
	0085		I	Specimen in lab; results pending
	0085		P	Preliminary results
	0085		R	Results entered -- not verified
	0085		S	Partial results
	0085		X	Results cannot be obtained for this observation
	0085		U	Results status change to Final. Results did not change (don't transmit test). E.g., radiology changes status from preliminary to final
	0085		W	Post original as wrong, e.g., transmitted for wrong patient

Type	Table	Table Name	Value	Description
HL7	*0123*	*Result Status*		
	0123		O	Order received; specimen not yet received
	0123		I	No results available; specimen received, procedure incomplete
	0123		S	No results available; procedure scheduled, but not done
	0123		A	Some, but not all, results available
	0123		P	Preliminary: A verified early result is available, final results not yet obtained
	0123		C	Correction to results
	0123		R	Results stored; not yet verified
	0123		F	Final results; results stored and verified. Can only be changed with a corrected result.
	0123		X	No results available; Order canceled.
	0123		Y	No order on record for this test. (Used only on queries)
	0123		Z	No record of this patient. (Used only on queries)

Type	Table	Table Name	Value	Description
HL7	*0125*	*Value Type*		
	0125		AD	Address
	0125		CE	Coded Entry
	0125		CF	Coded Element With Formatted Values
	0125		CK	Composite ID With Check Digit
	0125		CN	Composite ID And Name
	0125		CP	Composite Price
	0125		CX	Extended Composite ID With Check Digit
	0125		DT	Date
	0125		ED	Encapsulated Data
	0125		FT	Formatted Text (Display)
	0125		ID	Coded Value
	0125		MO	Money
	0125		NM	Numeric
	0125		PN	Person Name
	0125		RP	Reference Pointer
	0125		SN	Structured Numeric
	0125		ST	String Data
	0125		TM	Time
	0125		TN	Telephone Number
	0125		TS	Time Stamp (Date & Time)
	0125		TX	Text Data (Display)
	0125		XAD	Extended Address
	0125		XCN	Extended Composite Name And Number For Persons
	0125		XON	Extended Composite Name And Number For Organizations
	0125		XPN	Extended Person Number
	0125		XTN	Extended Telecommunications Number

Type	Table	Table Name	Value	Description
HL7	*0136*	*Yes/No Indicator*		
	0136		Y	Yes
	0136		N	No

Type	Table	Table Name	Value	Description
HL7	*0163*	*Administra-tive Site*		
	0163		BE	Bilateral Ears
	0163		OU	Bilateral Eyes
	0163		BN	Bilateral Nares
	0163		BU	Buttock
	0163		CT	Chest Tube
	0163		LA	Left Arm
	0163		LAC	Left Anterior Chest
	0163		LACF	Left Antecubital Fossa
	0163		LD	Left Deltoid
	0163		LE	Left Ear
	0163		LEJ	Left External Jugular
	0163		OS	Left Eye
	0163		LF	Left Foot
	0163		LG	Left Gluteus Medius
	0163		LH	Left Hand
	0163		LIJ	Left Internal Jugular
	0163		LLAQ	Left Lower Abd Quadrant
	0163		LLFA	Left Lower Forearm
	0163		LMFA	Left Mid Forearm
	0163		LN	Left Naris
	0163		LPC	Left Posterior Chest
	0163		LSC	Left Subclavian
	0163		LT	Left Thigh
	0163		LUA	Left Upper Arm
	0163		LUAQ	Left Upper Abd Quadrant
	0163		LUFA	Left Upper Forearm
	0163		LVG	Left Ventragluteal
	0163		LVL	Left Vastus Lateralis
	0163		NB	Nebulized
	0163		PA	Perianal
	0163		PERIN	Perineal
	0163		RA	Right Arm
	0163		RAC	Right Anterior Chest
	0163		RACF	Right Antecubital Fossa
	0163		RD	Right Deltoid
	0163		RE	Right Ear
	0163		REJ	Right External Jugular

	0163		OD	Right Eye
	0163		RF	Right Foot
	0163		RG	Right Gluteus Medius
	0163		RH	Right Hand
	0163		RIJ	Right Internal Jugular
	0163		RLAQ	Rt Lower Abd Quadrant
	0163		RLFA	Right Lower Forearm
	0163		RMFA	Right Mid Forearm
	0163		RN	Right Naris
	0163		RPC	Right Posterior Chest
	0163		RSC	Right Subclavian
	0163		RT	Right Thigh
	0163		RUA	Right Upper Arm
	0163		RUAQ	Right Upper Abd Quadrant
	0163		RUFA	Right Upper Forearm
	0163		RVL	Right Vastus Lateralis
	0163		RVG	Right Ventragluteal

Type	**Table**	**Table Name**	**Value**	**Description**
User	*0171*	*Citizenship*		
	0171			No suggested values or use ISO 3166

Type	**Table**	**Table Name**	**Value**	**Description**
User	*0189*	*Ethnic Group*		
	0189		H	Hispanic
	0189		N	Non-Hispanic
	0189		U	Unknown

Type	**Table**	**Table Name**	**Value**	**Description**
User	*0296*	*Language*		
	0296			No suggested values or ISO 639

Type	**Table**	**Table Name**	**Value**	**Description**
User	*Z0001*	*Age Suffix*		
	Z0001		Y	Years
	Z0001		M	Months
	Z0001		D	Days
	Z0001		H	Hours

Type	Table	Table Name	Value	Description
User	*C0001*	*NAACCR Classification Grouping*		
	C0001		CH	Clinical History
	C0001		NS	Nature of Specimen
	C0001		GP	Gross Pathology
	C0001		MP	Microscopic Pathology
	C0001		FD	Final Diagnosis
	C0001		CM	Comment Section
	C0001		SR	Supplemental Reports / Addendum
	C0001		PR	Staging Parameters
	C0001		GN	General Laboratory Report (used if report of text is stored in such a way that it may not be broken down into above categories)

Type	Table	Table Name	Value	Description
User	*C0002*	*NAACCR Additional Information on Observation Method*		
	C0002		1	Positive Histology *Indicated when sample is: tissue specimen from biopsy, frozen section, surgery, autopsy, dilation and curettage, or bone marrow biopsy/aspiration. Also includes hematologic confirmation of leukemia (that is, a peripheral blood smear).*
	C0002		2	Positive exfoliative cytology, no positive histology *Indicated by: microscopic examination of cells removed from a neoplasm. Fine-needle aspiration is frequently used to obtain a cytologic specimen. Cells may be recovered from exudate, secretions, or washings from tissue, and includes cervical and vaginal smears. Also includes paraffin-block specimens from concentrated spinal, pleural, or peritoneal fluid.*
	C0002		3	Bone Marrow
	C0002		4	Positive microscopic confirmation, method not specified *Indicated when: the case is reported as microscopically confirmed, but the specific method (histology, cytology) is unknown.*
	C0002		5	Positive laboratory test/marker study *Indicated by: diagnosis of cancer based on certain laboratory tests or marker studies that are clinically diagnostic (for instance, an abnormal electrophoretic spike for multiple myeloma or Waldenstrom's macroglobulinemia).*
	C0002		6	Direct visualization without microscopic

				confirmation *Indicated when: diagnosis made at surgical exploration or by endoscopy (colposcope, mediastinoscope, laparoscope). Also includes autopsies where the only information is from a gross autopsy report.*
	C0002		7	Radiology and other imaging techniques without microscopic confirmation *Indicated when: diagnosis is by radiology, ultrasound, computerized tomography, or MRI.*
	C0002		8	Clinical diagnosis only (other than items 5, 6, and 7) *Indicated when: case has been diagnosed by clinical methods not mentioned previously.*