

**Scalabull**

**Specification for External Interface,**

**HL7 (v2.3)**

Version 2.2, Jan 8, 2008

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## **Introduction**

This specification defines the HL7 message format and field usage for the electronic data interchange between the LABORATORY interface system and external client systems. This document is modeled after and designed for use with the HL7 Standard v2.3 (1997) document.

## **Conventions**

Within this document certain conventions are used to indicate various data attributes.

### **Shaded Fields**

Within the message segment attribute tables, a shaded field indicates that field as not supported by the LABORATORY interface system. Definitions of non-supported fields are not included in this specification.

### **Use of Brackets and Braces**

The use of brackets [ ] indicates that the item contained within the brackets is optional and may be omitted in the described application.

The use of braces { } indicates that the item contained within the braces may repeat in the described application.

Items contained in both braces and brackets [{ }] are optional. However, when the item is present, it may repeat.

### **Data Types**

The standard HL7 defined data types are used for this specification. Please refer to Chapter 2 of the HL7 v2.3 specification for definitions of the data types.

### **Message Delimiters**

In constructing messages certain special characters are used. They are the segment terminator, the field separator, the component separator, subcomponent separator, repetition separator, and escape character.

Delimiter values

| Delimiter            | Suggested Value | Encoding Character Position | Usage  |
|----------------------|-----------------|-----------------------------|--|
| Segment Terminator   | <cr><br>hex 0D  | -                           | Terminates a segment record. This value cannot be changed by implementors.   |
| Field Separator      |                 | -                           | Separates two adjacent data fields within a segment. It also separates the segment ID from the first data field in each segment. |
| Component Separator  | ^               | 1                           | Separates adjacent components of data fields where allowed.  |
| Repetition Separator | ~               | 2                           | Separates multiple occurrences of a field where allowed.   |

|                        |   |   |  |
|------------------------|---|---|--|
| Escape Character       | \ | 3 | Escape character for use with any field represented by an ST, TX or FT data type, or for use with the data (fourth) component of the ED data type. If no escape characters are used in a message, this character may be omitted. However, it must be present if subcomponents are used in the message. |
| Subcomponent Separator | & | 4 | Separates adjacent subcomponents of data fields where allowed. If there are no subcomponents, this character may be omitted.   |

## **HL7 Construct Rules**

HL7 messages are made up of groupings of message segments in a prescribed and delimited order. The type of message determines the message segments that will be used to construct any given message. The LABORATORY interface system supports the use of ORM messages to convey order data and ORU messages to convey result data.

## **Message Descriptions**

An HL7 Message is the atomic unit of data transferred between systems. It is comprised of a group of segments in a defined sequence.

Each message is defined by a message type that describes the purpose of the message. Additionally, messages of a specific type are created in response to certain trigger events. The message type and trigger event are included in the MSH segment so that the receiving system can determine the reason for and the purpose of the message.

## **ORM – General Order Message**

The ORM message type is used to transfer observation request (order) information from the Placer (requesting site) to the Filler (performing site). The trigger event that causes the creation of an ORM message would be O01, a new order on the system. In the MSH segment of an order message, we would find ORM^O01 as the message type and trigger event for that message.

The following table demonstrates the message segments that are supported for ORM messages. Note that for each ordered test an order group consisting of ORC segment and an OBR segment are required. There may be multiple order groups in an ORM message.

|          |                                       |
|----------|---------------------------------------|
| MSH      | Message Header                        |
| PID      | Patient Identification                |
| [{{NTE}} | Notes and Comments (for Patient ID)   |
| [PV1]    | Patient Visit                         |
| {ORC     | Common Order                          |
| OBR      | Order Detail                          |
| [{{NTE}} | Notes and Comments (for Order Detail) |
| [{{DG1}} | Diagnosis                             |
| }        |                                       |

## **ORU – Unsolicited Transmission of an Observation Message**

The unsolicited mode is used to transmit the values of new observations. It is the mode used by producing services to return the values of observations requested by an ordering system. The trigger event for ORU messages is R01, unsolicited observation message. In the MSH segment of an unsolicited observation message we would see ORU^R01 as the message type.

The following table demonstrates the message segments that are supported for ORU messages.

|         |                                  |
|---------|----------------------------------|
| MSH     | Message Header                   |
| PID     | Patient Identification           |
| [PV1]   | Patient Visit                    |
| ORC     | Common Order                     |
| {OBR    | Order Detail                     |
| {{OBX   | Observation/Result               |
| {{NTE}} | Notes and Comments (for Results) |
| }}      |                                  |
| }}      |                                  |
| }       |                                  |

### Segment Descriptions

HL7 Messages are made up of groups of message segments in a prescribed and delimited order. Message segments, in turn, are made up of data elements in a prescribed and delimited order. Data elements may be comprised of a single data component or multiple data components and sub-components in a prescribed and delimited order.

### **MSH Message Header Segment**

The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.

MSH attributes

| FIELD # | LEN | DT | OPT | RP/# | ELEMENT NAME          | FIELD FORMAT/VALUE       |
|---------|-----|----|-----|------|-----------------------|--------------------------|
| 1       | 1   | ST | R   |      | Field Separator       |                          |
| 2       | 4   | ST | R   |      | Encoding Characters   | ^~\&                     |
| 3       | 180 | HD | O   |      | Sending Application   |                          |
| 4       | 180 | HD | R   |      | Sending Facility      |                          |
| 5       | 180 | HD | O   |      | Receiving Application |                          |
| 6       | 180 | HD | O   |      | Receiving Facility    |                          |
| 7       | 26  | TS | R   |      | Date/Time Of Message  | CCYYMMDDhhmm[ss[.ssss]]  |
| 8       | 40  | ST | O   |      | Security              |                          |
| 9       | 7   | CM | R   |      | Message Type          | ORM^O01, ORU^R01, or ACK |
| 10      | 20  | ST | R   |      | Message Control ID    |                          |
| 11      | 3   | PT | R   |      | Processing ID         | P or T                   |
| 12      | 8   | ID | R   |      | Version ID            | 2.3                      |

### **MSH field definitions**

### **MSH.01 Field separator (ST)**

Definition: This field contains the separator between the segment ID 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. The separator value is |, (ASCII 124).

### **MSH.02 Encoding characters (ST)**

Definition: This field contains the four characters in the following order: the component separator, repetition separator, escape character, and subcomponent separator. The values for these characters are ^~\&.

### **MSH.03 Sending application (HD)**

Definition: This field uniquely identifies the sending application. It will contain the client mnemonic (assigned by LABORATORY) in ORM messages and the literal **LABORATORY** in ORU messages.

### **MSH.04 Sending facility (HD)**

Definition: This field uniquely defines the sending facility. It will contain the client account number (assigned by LABORATORY) in ORM messages and the literal **LABORATORY** in ORU messages.

### **MSH.04 Receiving application (HD)**

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

Definition: This field uniquely identifies the receiving application. It will contain the literal **LABORATORY** in ORM messages and the client mnemonic (assigned by LABORATORY) in ORU messages.

### **MSH.06 Receiving facility (HD)**

Definition: This field uniquely identifies the receiving facility. It will contain the literal **LABORATORY** in ORM messages and the client account number (assigned by LABORATORY) in ORU messages.

### **MSH.07 Date/time of message (TS)**

Definition: This field contains the date/time that the sending system created the message.

### **MSH.09 Message type (CM)**

Components: <message type (ID)> ^ <trigger event (ID)>

Definition: This field contains the message type and trigger event for the message

The receiving system uses this field to determine which data segments to recognize, and possibly, the application to which to route the message. The second component is not required on response or acknowledgment messages.

### Message type

| Value | Description                    |
|-------|--------------------------------|
| ACK   | General acknowledgment message |
| ORM   | Order message                  |
| ORU   | Observation result/unsolicited |

### Event type

| Value | Description  |
|-------|--|
| O01   | ORM - Order message  |
| R01   | ORU/ACK – Unsolicited transmission of an observation message |

#### MSH.10 Message control ID (ST)

Definition: This field contains a number or other identifier that uniquely identifies the message. The receiving system echoes this ID back to the sending system in the message acknowledgment segment (MSA).

#### MSH.11 Processing ID (PT)

Components: <processing ID (ID)> ^ <processing mode (ID)>

Definition: This field defines whether the message is part of a production, training, or debugging system.

### Processing ID

| Value | Description |
|-------|-------------|
| P     | Production  |
| T     | Training    |

#### MSH.12 Version ID (ID)

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

### Version ID

| Value | Description                 |
|-------|-----------------------------|
| 2.3   | Release 2.3      March 1997 |

#### Example MSH Segment

```
MSH|^~\&|LABORATORY|LABORATORY|COOPER|9010|20060214084429||ORU^R01|
200602140002|T|2.3
```



## PID - Patient Identification Segment

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

PID Attributes

| FIELD # | LEN | DT  | OPT | RP/# | ELEMENT NAME               | FIELD FORMAT/VALUE            |
|---------|-----|-----|-----|------|----------------------------|-------------------------------|
| 1       | 4   | SI  | O   |      | Set ID - Patient ID        |                               |
| 2       | 20  | CX  | O   |      | Patient ID (External ID)   |                               |
| 3       | 20  | CX  | R   | Y    | Patient ID (Internal ID)   |                               |
| 4       | 20  | CX  | O   | Y    | Alternate Patient ID - PID |                               |
| 5       | 48  | XPN | R   | Y    | Patient Name               | Last^First^MI                 |
| 6       | 48  | XPN | O   |      | Mother's Maiden Name       |                               |
| 7       | 26  | TS  | R   |      | Date/Time of Birth         | CCYYMMDD[hymm[ss[.ssss]]<br>] |
| 8       | 1   | IS  | R   |      | Sex                        | <b>M, F, or U</b>             |

### PID field definitions

#### PID.01 Set ID patient ID (SI)

Definition: This field contains the sequential number that identifies this transaction within the batch. For the first occurrence of the segment the sequence number will be 1, for the second occurrence the sequence number will be 2, etc.

#### PID.02 Patient ID (external ID) (CX)

Definition: For both ORM and ORU messages, this field will always contain the primary identifier used by the client or to uniquely identify a patient (e.g., medical record number, billing number, birth registry, etc.).

#### PID.03 Patient ID (internal ID) (CX)

Definition: For ORM messages this field will be empty. In ORU messages, this field will contain the primary identifier used by LABORATORY to uniquely identify the order.

#### PID.04 Alternate Patient ID (CX)

Definition: In ORM messages this field may contain an alternate identifier used by the placer to uniquely identify a patient.

#### PID.05 Patient name (XPN)

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) >

Definition: This field contains the legal name of the patient.

#### PID.07 Date/Time of birth (TS)

Definition: This field contains the patient's date of birth. Time may be included for newborns less than 24 hours of age.

## PID.08 Sex (IS)

Definition: This field contains the patient's sex.

User-defined Table 0001 - Sex

| Value | Description |
|-------|-------------|
| F     | Female      |
| M     | Male        |
| U     | Unknown     |

### Example PID Segment:

PID|1|3014489|T0595530||MOUSE^MICKY||20011212|F

## ORC Common Order Segment

The Common Order segment (ORC) is used to transmit fields that are common to all orders (all types of services that are requested). The ORC segment is required in Order (ORM) messages. Although the ORC segment is optional in Result (ORU) messages, LABORATORY will send an ORC segment as part of each ORU message.

### ORC attributes

| FIELD # | LEN | DT  | OPT | RP/# | ELEMENT NAME             | FIELD FORMAT/VALUE             |
|---------|-----|-----|-----|------|--------------------------|--------------------------------|
|         | 2   | ID  | R   |      | Order Control            | <b>NW, RE</b>                  |
|         | 22  | EI  | C   |      | Placer Order Number      |                                |
|         | 22  | EI  | C   |      | Filler Order Number      |                                |
|         | 22  | EI  | O   |      | Placer Group Number      |                                |
|         | 2   | ID  | O   |      | Order Status             |                                |
|         | 1   | ID  | O   |      | Response Flag            |                                |
|         | 200 | TQ  | O   |      | Quantity/Timing          |                                |
|         | 200 | CM  | O   |      | Parent                   |                                |
|         | 26  | TS  | O   |      | Date/Time of Transaction | CCYYMMDDhhmm[SS[.ssss]]        |
|         | 120 | XCN | O   |      | Entered By               |                                |
|         | 120 | XCN | O   |      | Verified By              |                                |
|         | 120 | XCN | O   |      | Ordering Provider        | ID^Last^First^MI^Suffix^Prefix |

## ORC use notes

### Duplicate fields

The ORC is intended to uniformly define the fields that are common to all orders (i.e., requested services). Some ORC fields are duplicated in order detail segments (e.g., OBR). For example, *ORC-2-placer order number* has the same meaning and purpose as *OBR-2-placer order number* field.

The rule for using these duplicate fields is that the value must appear in the OBR segment if it does not appear in the ORC. However, it is recommended to send the field value in both places

to avoid confusion. LABORATORY will send values for duplicate fields in both the ORC and the OBR segments

## ORC field definitions

### ORC.01 Order control (ID)

Definition: Determines the function of the order segment.

#### Order control codes and their meaning

| Value | Description | Originator |
|-------|-------------|------------|
| NW    | New order   | P          |
| RE    | Results     | F          |

### ORC.02 Placer order number (EI)

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: The *Placer Order Number* must be totally unique. The format for this field will be AccountNumber-Order Number. For example: 12345-252161

*ORC-2-Placer Order Number* is the same as *OBR-2-Placer Order Number*.

### ORC.03 Filler order number (EI)

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field is the order number associated with the filling application. *ORC-3 Filler Order Number* is the same as *OBR-2-Filler Order Number*.

### ORC.09 Date/time of transaction (TS)

Definition: This field is the date and time the current transaction enters the ordering application. For messages creating new orders, this is the date and time the order was entered on the sending application.

### ORC.12 Ordering provider (XCN)

Components: <ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID )> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Definition: This field is the identity of the person who is responsible for creating the request (i.e., ordering physician). *ORC-12-Ordering Provider* is the same as *OBR-16-Ordering Provider*.

#### Example ORC Segment:

```
ORC|NW|A02000086|||20060223165722||41514^FEELGOOD^FRANCIS^^^M.D.
```

## OBR Observation Request Segment

The Observation Request (OBR) segment is used to transmit information specific to an order for a diagnostic study (e.g., laboratory). The information in the OBR segment will apply to a single specimen. However, there is not a one-to-one relationship between specimen and tests ordered. Different test batteries will require their own order segments even when they can be performed on a single specimen. In this case, the specimen information must be duplicated in each of the order segments that employ that specimen.

When reporting the observations, the filling service shall copy the appropriate order (specimen) information from the original order segment into each of the new order

segments so that a separate “order” segment is returned to the placer as a “header” for each separate battery of observations.

When observation results are reported, the message returned to the placer will include the order segment (OBR) followed by observation (OBX) segments for each distinct observation generated by the order. The number of such observation segments will depend upon the number of individual measurements performed in the process.

### OBR attributes

| FIELD # | LEN | DT  | OPT | RP/# | ELEMENT NAME                        | FIELD FORMAT/VALUE             |
|---------|-----|-----|-----|------|-------------------------------------|--------------------------------|
| 1       | 4   | SI  | C   |      | Set ID OBR                          |                                |
| 2       | 75  | EI  | R   |      | Placer Order Number                 |                                |
| 3       | 75  | EI  | C   |      | Filler Order Number                 |                                |
| 4       | 200 | CE  | R   |      | Universal Service ID                | Code^Description^Code Scheme   |
| 5       | 2   | ID  | B   |      | Priority                            |                                |
| 6       | 26  | TS  | B   |      | Requested Date/time                 |                                |
| 7       | 26  | TS  | C   |      | Observation Date/Time #             | CCYYMMDDhhmm[ss[.ssss]]        |
| 8       | 26  | TS  | O   |      | Observation End Date/Time #         |                                |
| 9       | 20  | CQ  | O   |      | Collection Volume                   |                                |
| 10      | 60  | XCN | O   | Y    | Collector Identifier                |                                |
| 11      | 1   | ID  | O   |      | Specimen Action Code                | <b>A, G, or O</b>              |
| 12      | 60  | CE  | O   |      | Danger Code                         |                                |
| 13      | 300 | ST  | O   |      | Relevant Clinical Info.             |                                |
| 14      | 26  | TS  | C   |      | Specimen Received Date/Time         | CCYYMMDDhhmm[ss[.ssss]]        |
| 15      | 300 | CM  | O   |      | Specimen Source                     |                                |
| 16      | 80  | XCN | O   | Y    | Ordering Provider                   | ID^Last^First^MI^Suffix^Prefix |
| 17      | 40  | XTN | O   | Y/2  | Order Callback Phone Number         |                                |
| 18      | 60  | ST  | O   |      | Placer field 1                      |                                |
| 19      | 60  | ST  | O   |      | Placer field 2                      |                                |
| 20      | 60  | ST  | O   |      | Filler Field 1                      |                                |
| 21      | 60  | ST  | O   |      | Filler Field 2                      |                                |
| 22      | 26  | TS  | C   |      | Results Rpt/Status Chng - Date/Time | CCYYMMDDhhmm[ss[.ssss]]        |
| 23      | 40  | CM  | O   |      | Charge to Practice                  |                                |
| 24      | 10  | ID  | O   |      | Diagnostic Serv Sect ID             |                                |
| 25      | 1   | ID  | C   |      | Result Status                       | <b>I, F, P, or C</b>           |
| 26      | 400 | CM  | O   |      | Parent Result                       |                                |
| 27      | 200 | TQ  | O   | Y    | Quantity/Timing                     | <b>^^^^^S, R, or empty</b>     |
| 28      | 150 | XCN | O   | Y/5  | Result Copies To                    |                                |
| 29      | 150 | CM  | O   |      | Parent                              |                                |

### OBR field definitions

**OBR.01 Set ID OBR (SI)**

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment the sequence number will be 1, for the second occurrence the sequence number will be 2, etc.

**OBR.02 Placer order number (EI)**

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field is identical to *ORC-2-placer order number*.

**OBR.03 Filler order number (EI)**

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This is the filler's permanent identifier for an order and its associated observations. *OBR-3-filler order number* is identical to *ORC-3-filler order number*.

**OBR.04 Universal service ID (CE)**

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

Definition: This field is the identifier code for the requested observation/test/battery. This can be based on local and/or "universal" codes. The LABORATORY test/profile codes will be used in this field.

**OBR.07 Observation date/time (TS)**

Definition: This field is the date and time the specimen was collected or obtained.

**OBR.11 Specimen action code (ID)**

Definition: This field is the action to be taken with respect to the specimens that accompany or precede this order. The purpose of this field is to further qualify (when appropriate) the general action indicated by the order control code contained in the accompanying ORC segment.

Specimen action code

| Value | Description                                 |
|-------|---|
| A     | Add ordered tests to the existing specimen  |
| G     | Generated order; reflex order               |
| O     | Specimen obtained by service other than Lab |

**OBR.14 Specimen received date/time (TS)**

Definition: For observations requiring a specimen, the specimen received date/time is the actual login time at the diagnostic service.

**OBR.16 Ordering provider (XCN)**

Components: <ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID )> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field identifies the provider who ordered the test. Either the ID code or the name, or both, may be present. This field is the same as *ORC-12-ordering provider*.

## OBR.22 Results rpt/status change date/time (TS)

Definition: This field specifies the date/time when the results were reported or status of a result was changed. This field is used to indicate the date and time that the results are composed into a report and released.

## OBR.25 Result status (ID)

Definition: This field is the status of results for this order. This conditional field is required whenever the OBR is contained in a report message. It is not required as part of an initial order.

| Result Status |  |
|---------------|--|
| Value         | Description  |
| I             | Pending; Procedure incomplete  |
| C             | Correction to results  |
| F             | Final results; results stored and verified. Can only be changed with a corrected result. |
| P             | Preliminary results  |

## OBR.26 Parent result (CM)

Definition: When a reflex test is reported, this field will contain the OBR-4-1 value from the parent test that caused the reflex test to be spawned.

## OBR.27 Quantity/timing (TQ)

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration (ST)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ID)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing (CM)>

Definition: The 6<sup>th</sup> component of this field contain will contain the placer's priority for the requested observations.

## DG1 – Diagnosis Segment

The DG1 segment contains patient diagnosis information. Multiple DG1 segments may be used to send multiple diagnoses. The DG1 segment is associated only with ORM messages.

Figure 6-2. DG1 attributes

| SEQ | LEN | DT | OPT   | RP/# | TBL# | ITEM# | ELEMENT NAME            |
|-----|-----|----|-------|------|------|-------|-------------------------|
| 1   | 4   | SI | R     |      |      | 00375 | Set ID DG1              |
| 2   | 2   | ID | (B) R |      | 0053 | 00376 | Diagnosis Coding Method |
| 3   | 60  | CE | O     |      | 0051 | 00377 | Diagnosis Code          |

## DG1 field definitions

### DG1.01 Set ID - DG1 (SI)

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment the sequence number will be 1, for the second occurrence the sequence number will be 2, etc.

### DG1.03 Diagnosis code (CE)

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

Definition: This field contains the diagnosis code assigned to this diagnosis. It is assumed that ICD9 coding will be used

## OBX Observation/result Segment

The OBX segment is used to transmit a single observation value in report messages (ORU).

OBX attributes

| FIELD # | LEN   | DT | OPT | RP/# | ELEMENT NAME                 | FIELD FORMAT/VALUE      |
|---------|-------|----|-----|------|------------------------------|-------------------------|
| 1       | 10    | SI | O   |      | Set ID - OBX                 |                         |
| 2       | 2     | ID | C   |      | Value Type                   |                         |
| 3       | 590   | CE | R   |      | Observation Identifier       |                         |
| 4       | 20    | ST | C   |      | Observation Sub-ID           |                         |
| 5       | 65536 | *  | C   | Y    | Observation Value            |                         |
| 6       | 60    | CE | O   |      | Units                        |                         |
| 7       | 10    | ST | O   |      | References Range             |                         |
| 8       | 5     | ID | O   | Y/5  | Abnormal Flags               |                         |
| 9       | 5     | NM | O   |      | Probability                  |                         |
| 10      | 2     | ID | O   | Y    | Nature of Abnormal Test      |                         |
| 11      | 1     | ID | R   |      | Observ Result Status         | <b>C, F, or P</b>       |
| 12      | 26    | TS | O   |      | Date Last Obs Normal Values  |                         |
| 13      | 20    | ST | O   |      | User Defined Access Checks   |                         |
| 14      | 26    | TS | O   |      | Date/Time of the Observation | CCYYMMDDhhmm[ss[.ssss]] |
| 15      | 60    | CE | O   |      | Producer's ID                |                         |

## OBX field definitions

### OBX.01 Set ID observation simple (SI)

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment the sequence number shall be one, for the second occurrence the sequence number shall be two, etc.

### OBX.02 Value type (ID)

Definition: This field contains the format of the observation value in OBX-05. It must be valued if *OBX-11-Observation result status* is not valued with an 'X'.

Value type

| Value | Description         |
|-------|---------------------|
| NM    | Numeric             |
| ST    | String Data.        |
| TX    | Text Data (Display) |

The full definition of these data types is given in Chapter 2 of the HL7 2.3 specification, Section 2.8, "Data Types."



**OBX.03 Observation identifier (CE)**

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

Definition: This field contains a unique identifier for the observation. The format is that of the Coded Element (CE). Example: 2695^Folic Acid. The LABORATORY result codes will be used for this field.

**OBX.04 Observation subID (ST)**

Definition: This field is used to distinguish between multiple OBX segments with the same observation ID organized under one OBR.

**OBX.05 Observation value (\*)**

Definition: This field contains the value observed by the filler. \* *OBX-2-value type* contains the data type for this field according to which the observation value is formatted.

**OBX.06 Units (ST)**

Definition: This field contains the units of measure for the observation value.

**OBX.07 References range (ST)**

Definition: This field contains the normal reference values for the reported observation.

Numeric Formats:

- a) lower limit-upper limit    nnnn.nnnn-nnnn.nnnn
- b) > lower limit                >nnnn.nnnn
- c) < upper limit                <nnnn.nnnn

Alphanumeric normal values may also be reported in this field.

**OBX.08 Abnormal flags (ID)**

Definition: This field contains a flag indicating the normalcy status of the result.

Abnormal flags

| Value | Description              |
|-------|--------------------------|
| L     | Below low normal         |
| H     | Above high normal        |
| LL    | Below lower panic limits |
| HH    | Above upper panic limits |
| A     | Abnormal alpha result    |

**OBX.11 Observ result status (ID)**

Definition: This field contains the observation result status. This field reflects the current completion status of the result for one Observation Identifier.

### Observation result status codes interpretation

| Value | Description   |
|-------|---|
| C     | Record coming over is a correction and thus replaces a final result |
| F     | Final results; Can only be changed with a corrected result.         |
| I     | Result is pending   |
| P     | Preliminary results   |

#### OBX.14 Datetime of the observation (TS)

Definition: This field contains the date and time the observation was validated and released for reporting.

#### OBX.15 Producer's ID (CE)

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

Definition: This field contains a unique identifier of the site performing the observation.

### NTE Notes and Comments Segment

The NTE segment is used for sending notes and comments. NTE segments are optional and repeating and may appear in the HL7 message following a PID, OBR, or OBX segment. In each case the notes contained in the NTE group will pertain specifically to the PID, OBR, or OBX segment which they follow.

#### NTE attributes

| FIELD # | LEN | DT | OPT | RP/# | ELEMENT NAME      | FIELD FORMAT/VALUE |
|---------|-----|----|-----|------|-------------------|--------------------|
| 1       | 4   | SI | O   |      | Set ID – NTE      |                    |
| 2       | 8   | ID | O   |      | Source of Comment |                    |
| 3       | 64k | FT | O   | Y    | Comment           |                    |

### NTE field definitions

#### NTE.01 Set ID NTE (SI)

Definition: This field is used to sequentially number the segments in an NTE group. For the first occurrence of the segment the sequence number shall be one, for the second occurrence the sequence number shall be two, etc.

#### NTE.03 Comment (FT)

Definition: This field contains the text of the comment and can contain leading spaces or be empty to indicate a blank line in the message. There will be one NTE segment for each line of the comment.

## Sample Messages

### ORM Message

```
MSH|^~\&|PLIOO|41591|LABORATORY|LABORATORY|20060223165722||ORM^O01|
200602230001|T|2.3
PID|1|748798521||14574|SIMPSON^MARGE^||19620628|F
ORC|NW|A02000086|||||20060223165722||41514^FEELGOOD^FRANCIS^^^^M.D.
OBR|1|A02000086||1000^CBC||20060106130000|||O||||
41514^FEELGOOD^FRANCIS^^^^M.D.||OHB|||||||^^^^^R
ORC|NW|A02000086|||||20060223165722||41514^FEELGOOD^FRANCIS^^^^M.D.
OBR|1|A02000086||2217^GLUCOSE||20060106130000|||O||||
41514^FEELGOOD^FRANCIS^^^^M.D.||OHB|||||||^^^^^R
```

### ORU Message

```
MSH|^~\&|LABORATORY|LABORATORY|COOPER|9010|20060214084429||ORU^R01|
200602140002|T|2.2
PID|1|3014489|T0595530||MOUSE^MICKY||20011212|F
ORC|RE|1062|T0595530||||||229945^DOGOOD^DANIEL^D^III^DR
OBR|1|1062|T0595530|2025^AMYLASE||20060208075400|||O||
20060213132200||229945^DO-GOOD^DANIEL^D^III^DR |||||F||^R
OBX|1|NM|2205^AMYLASE|1|45|U/L|30 - 120|||F||200602131335|MAIN
NTE|1|CODE|
NTE|2|CODE|          UNLESS OTHERWISE INDICATED, ALL TESTING PERFORMED AT
NTE|3|CODE|CLINICAL PATHOLOGY LABORATORIES, INC. 9200 WALL ST AUSTIN,
TX 78754
NTE|4|CODE|          CLIA NUMBER 45D0505003  CAP ACCREDITATION NO. 21525-01
```