# Chapter 4
# Order Entry

## 4.1 OVERVIEW

The Order Entry transaction set provides for the transmission of orders or information about orders between applications that capture the order, by those that fulfill the order, and other applications as needed. An order is a request for material or services, usually for a specific patient. These services include medications from the pharmacy, clinical observations (e.g., vitals, I&Os) from the nursing service, tests in the laboratory, food from dietary, films from radiology, linens from housekeeping, supplies from central supply, an order to give a medication (as opposed to delivering it to the ward), etc.

Most orders are associated with a particular patient. However, the Standard also allows a department to order from another ancillary department without regard to a patient (e.g., floor stock), as well as orders originating in an ancillary department (i.e., any application may be the placer of an order or the filler of an order).

We refer to the person or entity who places the order as the placer. We refer to the person or entity that carries out the order as the filler (producer in ASTM terminology). In the case where the person or entity that carries out the order also requests the order, this person or entity is referred to as the filler and placer of the order. The filler may also request another application to assign a filler or placer order number (see Notes I and L, for order control codes).

This chapter defines the transactions at the seventh level, i.e., the abstract messages. Various schemes may be used to generate the actual characters that make up the messages according to the communications environment. The HL7 Encoding Rules will be used where there is not a complete Presentation Layer. This is described in Chapter 2, Section 2.4.8. The examples included in this chapter were constructed according to the HL7 Encoding Rules.

### 4.2.1 Preface (organization of this chapter)

This chapter describes the messages used to generate orders. Specific transaction sets have been defined for orders: a) clinical observations and diagnostic studies, b) treatments, c) diets, d) supplies, and e) other orders. This chapter is organized accordingly. The first sections (4.1 and 4.2) present the overall structure and rationale for these messages. Section 4.3 presents the message segments that are common to all of the order entry messages. Section 4.4 describes the quantity/timing (TQ) data type. Sections 4.5 to 4.8 describe the messages for each of the major categories of orders listed above. Each section about a type of order is organized into background and overview, message structure, and message segments (that are specific to the order class in question). Special discussions of the use of fields, segments or messages, and examples are included.

Segments are introduced in order of occurrence in a message. A cross-reference list of segments to page numbers is included at the end of the chapter. A list of legally defined values for a field is included in the body of the text, along with the field definition for easier reference.

Orders for laboratory tests, bedside monitoring, diagnostic imaging, electrocardiograms, vital signs, etc., are subsumed under the observation message set (4.5). In the development of the treatment order transaction set (4.8), the focus has been on medication treatments, but the same transaction set works well for total parenteral nutrition (TPN). There is hope that it is also sufficient for other kinds of treatment orders, such as those performed by the nursing service. But it has not yet been exercised in that context and may well need further development. The orders for dietary (4.6) include all of the usual diet specifications including snacks and guest trays. Supply orders (4.7) are different in that they often are not patient-centered (e.g., requests to stock the ward supply room).

### 4.2.3 Glossary

4.2.4.1 **filler**: the application responding to, i.e., performing, a request for services (orders) or producing an observation. The filler can also originate requests for services (new orders), add additional services to existing orders, replace existing orders, put an order on hold, discontinue an order, release a held order, or cancel existing orders.

4.2.4.2 **observation segment**: an OBX segment defined in Chapter 7.

4.2.4.3 **order**: a request for a service from one application to a second application. The second application may in some cases be the same; i.e., an application is allowed to place orders with itself.

4.2.4.4 **order detail segment**: one of several segments that can carry order information. Examples are OBR and RXO. Future ancillary-specific segments may be defined in subsequent releases of the standard if they become necessary.

4.2.4.5 **placer**: the application or individual originating a request for services (order).

4.2.4.6 **placer order group**: a list of associated orders coming from a single location regarding a single patient.

# 4.3 ORDER MESSAGE DEFINTIONS

## 4.4.1 ORM - general order message

The function of this message is to initiate the transmission of information about an order. This includes placing new orders, cancellation of existing orders, discontinuation, holding, etc. ORM messages can originate also with a placer, filler, or an interested third party.

The trigger event for this message is any change to an order. Such changes include submission of new orders, cancellations, updates, patient and nonpatient specific orders, etc.

| ORM | General Order Message | | | | Chapter |
|---|---|---|---|---|---|
| MSH | Message Header | | | | 2 |
| [{NTE}] | Notes and Comments (for Header) | | | 2 | |
| [ | | | | | |
| PID | Patient Identification | | 3 | | |
| [{NTE}] | Notes and Comments (for Patient ID) | | | 2 | |
| [{AL1}] | Allergy | 3 | | | |
| [PV1] | Patient Visit | | 3 | | |
| ] | | | | | |
| { | | | | | |
| ORC | Common Order | | | 4 | |
| [ | | | | | |
| Order Detail Segment OBR, etc. | | 4 | | | |
| [{NTE}] | Notes and Comments (for Detail) | | | 2 | |
| [ | | | | | |
| { | | | | | |
| OBX | Observation/Result | | 7 | | |
| [{NTE}] | Notes and Comments (for Results) | | 2 | | |
| } | | | | | |
| ] | | | | | |
| ] | | | | | |
| [BLG] | Billing segment | | | 4 | |
| } | | | | | |

### 4.4.2.1 ORM use notes

a)The abstract message syntax for some order segments vary slightly. Please refer to the appropriate sections for specific examples: for supply orders (RQ), see Section 4.7; for pharmacy, see Section 4.8; and for dietary orders, see Section 4.7.

b)The segment named "Order Detail Segment" represents whichever of these order detail segment(s) is appropriate to the message, currently OBR, RQD, RQ1, RXO, ODS, ODT.

c)The NTE segment(s) can be included in the ORM message in four places; in each place the NTE refers to the segment which it follows. In particular, the NTEs following the MSH refer only to the message

header, the NTEs following the order detail segment apply to the service defined by that ORC and order detail segment.

d)The PID segment is required if and only if new orders are being entered and they are related to a particular patient. However, it may sometimes be sent for convenience at local discretion, and for nonpatient-related orders the PID segment is never included.

e)The optional PV1 segment is present mainly to permit transmission of patient visit information such as current location with an order.

f)The order detail segments are not required when a simple control message is being sent. For example, a hold message (*ORC-1-order control* = HD) does not require that an order segment follow it.

g)*ORC-1-order control* is critical to the operation of both ORM and ORR messages. For example, to request cancellation of an order, one would transmit a CA in *ORC-1-order control* of the appropriate ORC. (See the definition of *ORC-1-order control*.)

h)A method to inquire for order status in the display format is provided in Chapter 2, and uses the record format provided in Chapter 7.

i)Each order message that defines any type of new order (*ORC-1-order control* = NW, CH, RO or SN) requires an ORC/OBR pair to define each order to the receiving application. This also applies to any other types of orders, with the OBR being replaced by the appropriate order detail segment, as defined below. Thus two consecutive ORCs could occur if a cancel order request (needing only the order numbers) were followed by a second cancel order request. Many other examples are possible.

### 4.4.3 ORR - general order response message (response to any ORM)

The function of this message is to respond to an ORM message. An ORR message is the application acknowledgement to an ORM message. See Chapter 2 for a description of the acknowledgement paradigm.

ORC segments are always required in ORM and ORR when a order detail segment is present, but otherwise not. For example, a response ORR might include only the MSH and MSA, but if an RQ1 is present, it must be preceded by an ORC.

The function (e.g., cancel, new order) of both ORM and ORR messages is determined by the value in *ORC-1-order control*. (See the table of order control values for a complete list.)

| ORR | General Order Acknowledgement Message | Chapter |
|---|---|---|
| MSH | Message Header | 2 |
| MSA | Message Acknowledgement | 2 |
| [ERR] | Error | 2 |
| [{NTE}] | Notes and Comments (for Header) | 2 |
| [ | | |
| [PID | Patient Identification | 3 |
| [{NTE}]] | Notes and Comments (for Patient ID) | 2 |
| { | | |
| ORC | Common Order | 4 |
| [Order Detail Segment] OBR, etc. | | 4 |
| [{NTE}] | Notes and Comments (for Detail) | 2 |
| } | | |
| ] | | |

**Note:** ORRs for supply, pharmacy, and dietary orders all have slightly different message syntax; refer to the appropriate sections as detailed in Section 4.2.1.1 for exact details.

# 4.5 SEGMENTS COMMON TO ALL ORDERS

The following segments (ORC and BLG) are common to many order messages.

## 4.6.1 ORC - common order segment

The Common Order segment (ORC) is used to transmit data elements that are common to all orders (all types of services that are requested). The ORC segment is required in both the Order (ORM) and Order Acknowledgement (ORR) messages.

If details are needed for a particular type of order segment (e.g., Pharmacy, Dietary), the ORC must precede any order detail segment (e.g., RXO, ODS). In some cases, the ORC may be as simple as the string ORC|OK|<placer order number>|<filler order number>|<CR>.

If details are not needed for the order, the order detail segment may be omitted. For example, to place an order on hold, one would transmit an ORC with the following fields completed: *ORC-1-order control* with a value of HD, *ORC-2-placer order number*, and *ORC-3-filler order number*.

There is some overlap between fields of the ORC and those in the order detail segments. These are described in the succeeding sections.

Figure 4-1 ORC attributes

| SEQ | LEN | DT | R/O | RP/# | TBL# | ITEM# | ELEMENT NAME |
|---|---|---|---|---|---|---|---|
| 1 | 2 | ID | R | | 0119 | 00215 | Order Control |
| 2 | 75 | CM | C | | | 00216 | Placer Order Number |
| 3 | 75 | CM | C | | | 00217 | Filler Order Number |
| 4 | 75 | CM | | | | 00218 | Placer Group Number |
| 5 | 2 | ID | | | 0038 | 00219 | Order Status |
| 6 | 1 | ID | | | 0121 | 00220 | Response Flag |
| 7 | 200 | TQ | | | | 00221 | Quantity/Timing |
| 8 | 200 | CM | | | | 00222 | Parent |
| 9 | 26 | TS | | | | 00223 | Date/Time of Transaction |
| 10 | 80 | CN | | | | 00224 | Entered By |
| 11 | 80 | CN | | | | 00225 | Verified By |
| 12 | 80 | CN | | | | 00226 | Ordering Provider |
| 13 | 80 | CM | | | | 00227 | Enterer's Location |
| 14 | 40 | TN | | Y/2 | | 00228 | Call Back Phone Number |
| 15 | 26 | TS | | | | 00229 | Order Effective Date/Time |
| 16 | 200 | CE | | | | 00230 | Order Control Code Reason |
| 17 | 60 | CE | | | | 00231 | Entering Organization |
| 18 | 60 | CE | | | | 00232 | Entering Device |
| 19 | 80 | CN | | | | 00233 | Action By |

### ORC use notes

a)placer order groups

The Standard supports a mechanism to collect several orders together in a group. Most often this is used to represent an "ordering session" for a single patient.

An order group is a list of orders (ORCs) associated with a *ORC-4-placer group number*. A group is established when the placer supplies a placer group number with the original order. The order group consists of all the ORCs and order detail segments that have the same placer group number. Orders can be removed from the group using cancel, or added using the replacement or parent-child mechanisms. New orders cannot otherwise be added to the group.

b)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 some order detail segments (e.g., OBR, RXO). For example, *ORC-2-placer order number* has the same meaning and purpose as *OBR-2-placer order number* field. This promotes upward compatibility with past versions and ASTM.

The rule for using these fields is that the value must appear in the order detail segment if it does not appear in the ORC. However, it is recommended to transmit the field value in both places to avoid confusion.

c) parent/child - cancel, hold, discontinue

During transmission of a request to cancel, hold, or discontinue a parent order, the request is intended to apply recursively to the parent order and all associated child orders.

For example:

1) An EKG application receives an order for three EKGs on successive mornings.

2) The EKG application creates three child orders, one for each requested EKG.

3)The first daily EKG is performed when a request is received to cancel the original parent order. (The parent is beyond the point of cancellation.)

4)The remaining, unperformed, children are canceled as a result of the request.

4.3.1.0 ORC field definitions

4.6.2.1 Order control (ID) 00215

Definition: determines the function of the order segment. Refer to *table 0119 - order control* for valid entries. Very detailed explanatory notes are given at the end of this section.

This field may be considered the "trigger event" identifier for orders. The codes fall roughly into the following three categories:

a)event request

Codes like "NW" (new order) and "CA" (cancel order request) are used to initiate an event.

b)event acknowledgment

Codes like "OK" (order accepted) and "CR" (canceled as requested) are used to reply to the event request.

c)event notification

Codes like "OC" (order canceled) and "OD" (order discontinued) are used to notify other applications that an event has occurred. No application reply is necessary.

Event request codes are intended to initiate an event. Event acknowledgment codes are intended to reply to an application that requested an event. Event notification codes are intended to notify another application that, e.g., the filler has performed some action on an order that the other application, e.g., the placer needs to know.

Fillers, placers, and other applications can use event requests, event acknowledgments, and event - notification-type trigger events interchangeably. However, certain order control codes can originate only from the filler (e.g., CR) and others can only originate from the placer (e.g., CA).

Table 0119 Order control codes and their meaning

| Value[1] | Description | Originator[2] | Field Note[3] |
|---|---|---|---|
| NW | New Order | P | l |
| OK | Order accepted & OK | F | l |
| | | | |
| CA | Cancel order request | P | a |
| OC | Order canceled | F | |
| CR | Canceled as requested | F | |
| UC | Unable to cancel | F | b |
| | | | |
| DC | Discontinue order request | P | c |
| OD | Order discontinued | F | |
| DR | Discontinued as requested | F | |
| UD | Unable to discontinue | F | |
| | | | |
| HD | Hold order request | P | |
| OH | Order held | F | |
| UH | Unable to put on hold | F | |
| HR | On hold as requested | F | |
| | | | |
| RL | Release previous hold | P | |
| OR | Released as requested | F | |
| UR | Unable to release | F | |
| | | | |
| RP | Order replace request | P | e,d,h |
| RU | Replaced unsolicited | F | f,d,h |
| RO | Replacement order | P,F | g,d,h,l |
| RQ | Replaced as requested | F | d,e,g,h |
| UM | Unable to replace | F | |
| | | | |
| PA | Parent order | F | i |
| CH | Child order | F | i |
| | | | |
| XO | Change order request | P | |
| XX | Order changed, unsol. | F | |
| UX | Unable to change | F | |
| XR | Changed as requested | F | |
| | | | |
| DE | Data errors | P,F | |
| RE | Observations to follow | P,F | j |
| RR | Request received | P,F | k |
| SR | Response to send order status request | F | |
| SS | Send order status request | P | |
| SC | Status changed | F | |
| SN | Send order number | F | l |
| NA | Number assigned Combined result | P | l |
| CN | Combined result | F | m |

1 The order control value field

2"F": Values originate from the filler and are not restricted to be sent only to the placer.

"P": Values originate from the placer or other application with placer privileges (as agreed in interface negotiation.

3 See table notes below for explanation of codes.

#### 4.6.2.1.1 Table notes for order control codes of ORC

a) CAA cancellation is a request not to do a previously ordered service. Confirmation of the cancellation request is provided by the filler, e.g., a message with an *ORC-1-order control* value of CR.

b) UC An unable-to-cancel code is used when the ordered service is at a point that it cannot be canceled by the filler or when local rules prevent cancellation by the filler. The use of this code is dependent on the value of *ORC-6-response flag*.

c) DC A discontinue request code is used to stop an ongoing ordered service. It is not the same as a cancellation request, which is used in an attempt to prevent an order from happening.

d) RP
RQ
RU
RO A replacement is the substitution of one or more orders for one or more previously ordered services. The replaced orders are treated as though they were canceled. If and when an ordered service can be replaced are local site-specific determinations.

Use the parent/child order control codes if the site specifies that the original order must remain intact. Do not use the replacement codes under this circumstance.

For each order to be replaced, use an *ORC-1-order control* value of RP (request for a replacement going to a filler) or RU (an unsolicited replacement created by the filler) used by the filler to notify the placer and/or other systems). By local agreement, the ORC segment (with RP or RU) may be followed by its original order detail segment. The ORC segments (with RP or RU) must be followed by an ORC segment with an *ORC-1-order control* value of RO (indicating the replacement order). By local agreement, the ORC with the RO value may be followed by an order detail segment.

For example, suppose that an ancillary application were replacing two OBR orders with three different orders. The sequence of segments would be as follows:

Figure 4-2 RU and RO usage (example)

| Segment | Order Control | Comment |
|---|---|---|
| ORC | RU | 1st replaced ORC |
| OBR | | 1st replaced order's detail segment |
| ORC | RU | 2nd replaced ORC |
| OBR | | 2nd replaced order's detail segment |

| Segment | Order Control | Comment |
|---|---|---|
| ORC | RO | 1st replacement ORC |
| OBR | | 1st replacement order's detail segment |
| ORC | RO | 2nd replacement ORC |
| OBR | | 2nd replacement order's detail segment |
| ORC | RO | 3rd replacement ORC |
| OBR | | 3rd replacement order's detail segment |

Whether the OBR segments must be present is determined by the value of *ORC-6-response flag*.

The described replacement method will handle all possible cases of replacement: one-into-one, many-into-one, one-into-many, and many-into-many. If the placer sent this request to the filler with two RPs, and this was a response back from the filler to the placer, the two RUs (replaced unsolicited) would be two RQs (replaced as requested).

Figure 4-3 RQ and RO usage (example)

| Segment | Order Control | Comment |
|---|---|---|
| ORC | RQ | 1st replaced ORC |
| OBR | | 1st replaced order's detail segment |
| ORC | RQ | 2nd replaced ORC |
| OBR | | 2nd replaced order's detail segment |
| ORC | RO | 1st replacement ORC |
| OBR | | 1st replacement order's detail segment |
| ORC | RO | 2nd replacement ORC |
| OBR | | 2nd replacement order's detail segment |
| ORC | RO | 3rd replacement ORC |
| OBR | | 3rd replacement order's detail segment |

e) RP The order replace request code permits the order filler to replace one or more new
RQ orders with one or more new orders, at the request of the placer application.

f) RU The unsolicited replacement code permits the filler application to notify another application without being requested from the placer application.

g) RO The replacement order code is sent by the filler application to another application indicating
RQ the exact replacement ordered service. It is used with the RP and RU order control codes as described above.

h) RP The rules for the order numbers in ORC segments with an order control value of RO
RQ are determined by the replacement type (RP or RU).
RU

RO In the case of the RU type (i.e., unsolicited replacement by the filler), the filler order number is generated as usual by the filler application. The placer order number is identical to the placer order number of the first transmitted ORC with an order control value of RU.

In the case of the RP type (i.e., a replacement request from another application to the filler), the placer order number is generated by the placer application using the procedure for new orders. The filler order number is generated by the filler application using the procedure identical for new orders.

If a replacement sequence is used in an ORU message (i.e., during results reporting), the following are the recommended segments to be used for the replacement orders:

1)ORC with an order control value of RO

2)Any OBR segments (can be replaced by any order detail segments)

3)Optionally followed by observation result segments (OBX)

4)NTE segments can appear after the OBR (or any order detail segment) or after an OBX segment as in a regular ORU message

i) PA The parent (PA) and child (CH) order control codes allow the spawning of "child"
CH orders from a "parent" order without changing the parent (original order). One or more ORC segments with an *ORC-1-order control* value of PA are followed by one or more ORC segments with an *ORC-1-order control* value of CH. Whether OBR segments must be present is determined by the value of *ORC-6-response flag*.

For example, suppose that a microbiology culture produced two organisms and corresponding sensitivity reports. Then the sequence of segments would be as follows:

Figure 4-4 Example of two child orders

| Segment | Order Control | Comment |
|---|---|---|
| ORC | PA | 1st parent ORC |
| ORC | CH | 1st child ORC |
| OBR | | 1st child order |
| ORC | CH | 2nd child ORC |
| OBR | | 2nd child order |

The assignment of placer numbers in the parent-child paradigm depends on whether the placer of filler creates the child order and in the latter case, on whether the placer supports the SN/NA transaction. If the placer creates the child orders it will assign their placer numbers according to its usual procedures. If the filler creates the child orders there are two possibilities: each child will inherit the placer number of its parent, or the filler will use the SN/NA transaction to request that the placer assign a placer number. In either case, the filler application creates the filler numbers of the children according to its usual procedures.

Whenever a child order is transmitted in a message the ORC segment's ORC-8-parent is valued with the parent's filler number (if originating from the filler) and with the parent's placer number (if originating from the filler or if originating from the placer).

The parent-child mechanism can be used to "expand" a parent order (e.g., an order for three EKGs on successive mornings).

j) RThe observations-to-follow code is used to transmit patient-specific information with an order. A order detail segment (e.g., OBR) can be followed by one or more observation segments (OBX). Any observation that can be transmitted in an ORU message can be transmitted with this mechanism. When results are transmitted with an order, the results should immediately follow the order or orders that they support.

The following example shows the sequence of segments for three Pharmacy orders. It illustrates the use of the RE code:

Figure 4-5 RE usage (example)

| Segment | Order Control | Comment |
|---|---|---|
| MSH | | |
| PID | | |
| ORC | NW | First new order |
| RXO | | First order segment |
| | | |
| ORC | NW | 2nd new order |
| RXO | | 2nd order segment |
| [ORC | RE | Patient-specific observation, optional in V 2.2 |
| OBR] | | Observation OBR, optional in V 2.2 |
| OBX | | An observation segment |
| OBX | | Another observation segment |
| OBX | | Another observation segment |
| OBX | | Another observation segment |
| | | |
| ORC | NW | 3rd order |
| RXO | | 3rd order segment |

In this version of HL7, results can be transmitted with an order as one or more OBX segments without the necessity of including the ORC and OBR segments.

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

The order control value of RE is required only in ORM messages to indicate that an order is followed by observation results (OBX). The RE code is not necessary in the ORU message because it is expected that the OBR segments can be followed by observation results (OBX).

k) RR Left in for backwards compatibility. In the current version it is equivalent to an accept acknowledgement. The request-received code indicates that an order message has been received

and will be processed later. The order has not yet undergone the processing that would permit a more exact response.

l) SNThere are three circumstances that involve requesting an order number (*ORC-2-placer*
NA *order number* or *ORC-3-filler order number*):
NW

1)When the filler application needs to request an *ORC-3-filler order number* from a centralized application (e.g., HIS)

2)When the filler application needs to request an *ORC-2-placer order number* from some other application (e.g., Order Entry)

3)When an application (not the filler application) wants to assign an *ORC-3-filler order number* for a new order

**The filler application needs a centralized filler order number**

SNThe send order number code provides a mechanism for the filler to request an *ORC-3-filler order number* from some centralized application (called "other" in the table below), such as a central HIS, by sending an ORM message containing an *ORC-1-order control* value of SN. This ORC has a null *ORC-3-filler order number* and an *ORC-2-placer order number* created by the filler application when the filler originates the order.

The ORM (SN type) message can be acknowledged by two methods:

i)By an ORR message containing an *ORC-1-order control* value of OK. An unsolicited ORM message can be sent at a future time, containing an ORC with *ORC-1-order control* value of NA.

ii)By an ORR message containing an *ORC-1-order control* value of NA as described below.

NA The number assigned code allows the "other" application to notify the filler application of the newly assigned filler order number. *ORC-1-order control* contains value of NA, *ORC-2-placer order number* (from the ORC with the SN value), and the newly assigned filler order number.

**Note:**Both the placer order number and the filler order number have the filler's application ID.

| Code | From | ORC-2-Placer Order Number | ORC-3-Filler Order Number |
|---|---|---|---|
| SN | filler application | placer order number^filler application ID | null |
| NA | other application | placer order number^filler application ID | filler order number^filler application ID |

**The filler application needs a placer order number**

SNThe send order number code provides a mechanism for the filler application to request an *ORC-2-placer order number* from another application (called "other" in the table below) by sending an ORM message containing an *ORC-1-order control* value of SN. This ORC has a null *ORC-2-*

*placer order number* and an *ORC-3-filler order number* created by the filler application when the filler originates the order.

The ORM (SN type) message can be acknowledged by two methods:

i)By an ORR message containing an *ORC-1-order control* value of OK. An unsolicited ORM message can be sent at a future time, containing an *ORC-1-order control* value of NA.

ii)By an ORR message containing an *ORC-1-order control* value of NA as described below.

NA The number assigned code allows the "other" application to notify the filler application of the newly assigned *ORC-2-placer order number*. The ORC contains an *ORC-1-order control* value of NA, the newly assigned *ORC-2-placer order number*, and the *ORC-3-filler order number* (from the ORC with the SN value).

**Note:**The new *ORC-2-placer order number* has the placer's application ID.

| Code | From | ORC-2-Placer Order Number | ORC-3-Filler Order Number |
|---|---|---|---|
| SN | filler application | null | filler order number^filler application ID |
| NA | other application | placer order number^placer application ID | filler order number^filler application ID |

**An application wants to assign a filler order number**

NW When the application creating an order (not the filler application) wants to assign a filler order number for a new order

or

RO (RO following an RP). In this case, the "other" application completes *ORC-3-filler order number*, using the filler application ID as the second component of the filler order number.

| Code | From | ORC-2-Placer Order Number | ORC-3-Filler Order Number |
|---|---|---|---|
| NW or RO | other application to the filler | placer order number^placer application ID | filler order number^filler application ID |

m) CNThe combined result code provides a mechanism to transmit results that are associated with two or more orders. This situation occurs commonly in radiology reports when the radiologist dictates a single report for two or more exams represented as two or more orders. For example, knee and hand films for a rheumatoid arthritis patient might generate a single dictation on the part of the radiologist.

When such results are reported the CN code replaces the RE code in all but the last ORC, and the results follow the last ORC and its OBR. An example follows of a single report following three ORCs:

```
MSH|...
PID|...
ORC|CN|...
OBR||A4461XA^HIS|81641^RAD|73666^Bilateral Feet|...
ORC|CN|...
OBR||A4461XB^HIS|81642^RAD|73642^Bilateral Hand PA|...
ORC|RE|...
OBR||A4461XC^HIS|81643^RAD|73916^Bilateral Knees|...
OBX||CE|73916&IMP||Radiologist's Impression|...
OBX||CE|73642&IMP||Radiologist's Impression|...
OBX||FT|73642&GDT||Description|...
```

#### 4.6.2.2 Placer order number (CM) 00216

Components: <unique placer ID> ^<placer application ID>

Definition: placer application's order number.

This is a composite field. The first component is a string of up to 15 characters that identifies an individual order (e.g., OBR). It is assigned by the placer (ordering application). It identifies an order uniquely among all orders from a particular ordering application. The second component contains the application ID of the placing application. The application ID is a string of up to six (6) characters that will be uniquely associated with an application. A given institution or group of intercommunicating institutions should establish a unique list of applications that may be potential placers and fillers and assign unique application ID's. The two components are separated by a component delimiter.

There are three situations in which the true placer is somewhat arbitrary (and thus not unique):

a) in *ORC-1-order control* value of RO, following an RU replacement;

b) in *ORC-1-order control* value of CH (child orders); and

c) in *ORC-1-order control* value of SN (send number).

See the Table Notes under *ORC-1-order control* for the details of how the *ORC-2-placer order number* is assigned in these cases.

A given institution or group of intercommunicating institutions should establish a list of applications that may be potential placers and fillers of orders and assign each a unique application ID. The application ID list becomes one of the institution's master dictionary lists that are documented elsewhere in the HL7 2.2 Standard. Since third party applications (those other than the placer and filler of an order) can send and receive ORM and ORR messages, the placer application ID in this field may not be the same as any sending and receiving application on the network (as identified in the MSH segment).

*ORC-2-placer order number* is the same as *OBR-2-placer order number*. If the placer order number is not present in the ORC, it must be present in the associated OBR and vice versa. If both fields, *ORC-2-placer order number* and *OBR-2-placer order number* are valued, they must contain the same value. When results are transmitted in an ORU message, an ORC is not required, and the identifying placer order number must be present in the OBR segments.

These rules apply to the few other fields that are present in both ORC and OBR for upward compatibility (e.g., quantity/timing, parent numbers, ordering provider, and ordering call back numbers).

#### 4.6.2.3 Filler order number (CM) 00217

Components: <unique filler ID> ^ <filler application ID>

Definition: order number associated with the filling application. Its first component is a string of up to 15 characters that identifies an order detail segment (e.g., OBR). It is assigned by the order filler (receiving) application. This string must uniquely identify the order (as specified in the order detail segment) from other orders in a particular filling application (e.g., clinical laboratory). This uniqueness must persist over time.

The second component contains the filler application ID. The filler application ID is a string of up to six characters that uniquely defines the application from other applications on the network. The second component of the filler order number always identifies the actual filler of an order.

A given institution or group of intercommunicating institutions should establish a list of applications that may be potential placers and fillers of orders and assign each a unique application ID. The application ID list becomes one of the institution's master dictionary lists that are documented elsewhere in the HL7 2.2 Standard. Since third-party applications (those other than the placer and filler of an order) can send and receive ORM and ORR messages, the filler application ID in this field may not be the same as any sending and receiving application on the network (as identified in the MSH segment).

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

The *filler order number (OBR-3 or ORC-3)* also uniquely identifies an order and its associated observations. For example, suppose that an institution collects observations from several ancillary applications into a common database and this common database is queried by yet another application for observations. In this case, the filler order number and placer order number transmitted by the common database application would be that of the original filler and placer, respectively, rather than a new one assigned by the common database application.

Similarly, if a third-party application, not the filler or placer, of an order were authorized to modify the status of an order (say, cancel it), the third-party application would send the filler an ORM message containing an ORC segment with *ORC-1-order control* equal to "CA" and containing the original placer order number and filler order number, rather than assign either itself.

#### 4.6.2.4 Placer group number (CM) 00218

Components: <unique group ID> ^ <placer application ID>

Definition: allows an order placing application to group sets of orders together and subsequently identify them.

The first component is a string of up to 15 characters that uniquely identifies all order groups from the given placer application. It is assigned by the placer application and may come from the same series as the placer order number of the ORC, but this is not required.

The second component is a placer application ID identical to the second component of *ORC-2-placer order number*. Order groups and how to use them are described in detail at the end of the ORC section under "Use Notes" and in the Examples.

#### 4.6.2.5 Order status (ID) 00219

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

Although *table 0038 - order status* contains many of the same values contained in *table 0119 - order control*, the purpose is different. Order status may typically be used in a message with an *ORC-1-order control* value of SR or SC to report the status of the order on request or to any interested party at any time.

Table 0038 Order status

| Value | Description |
|---|---|
| CA | Order was canceled |
| CM | Order is completed |
| DC | Order was discontinued |
| ER | Error, order not found |
| HD | Order is on hold |
| IP | In process, unspecified |
| RP | Order has been replaced |
| SC | In process, scheduled |

#### 4.6.2.6 Response flag (ID) 00220

Definition: allows the placer (sending) application to determine the amount of information to be returned from the filler. Sometimes the requested level of response may not be possible immediately, but when it is possible, the filler (receiving) application must send the information. When the field is null, D is the default value of the field. Refer to *table 0121 - response flag* for valid entries.

Table 0121 Response flag

| Value | Description |
|---|---|
| E | Report exceptions only |
| R | Same as E, also Replacement and Parent-Child |
| D | Same as R, also other associated segments |
| F | Same as D, plus confirmations explicitly |
| N | Only the MSA segment is returned |

#### 4.6.2.7 Quantity/timing (TQ) 00221

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

Definition: determines the priority, quantity, frequency, and timing of an atomic service. Order segments should be thought of as describing an atomic service. It is a composite field that is defined in detail in Section 4.4.

For example, if an OBR segment describes a unit of blood, this field might request that 3 such units be given on successive mornings. In this case *ORC-7-quantity/timing* would be "1^XQAM^X3". *ORC-7-quantity/timing* is the same as *OBR-27-quantity/timing*.

#### 4.6.2.8 Parent (CM) 00222

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

Definition: relates a child to its parent when a parent-child relationship exists. The parent-child mechanism is described under *ORC-1-order control* notes. The first component contains the placer order number of the parent order. It is required when the order is a child.

The second component contains the filler order number of the parent order.

The components of the placer order number and the filler order number are transmitted in sub-components of the two components of this field. *ORC-8-parent* is the same as *OBR-29-parent*.

#### 4.6.2.9 Date/time of transaction (TS) 00223

Definition: 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.

For other messages, this is the date and time the current transaction (e.g., cancellation) enters the sending application. This date and time is for the current transaction and is not a "replacement" time for a correction to the original order. Similarly, *ORC-10-entered by*, *ORC-11-verified by*, and *ORC-13-enterer's location* of this segment relate to the current transaction, not the original order.

#### 4.6.2.10 Entered by (CN) 00224

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial or name> ^ <suffix (e.g., JR or III)> ^ <prefix (e.g., DR)> ^ <degree (e.g., MD)> ^ <source table>

Definition: identity of the person who actually keyed the request into the application. It provides an audit trail in case the request is entered incorrectly and the ancillary department needs to clarify the request. By local agreement, either the ID number or name component may be omitted.

#### 4.6.2.11 Verified by (CN) 00225

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial or name> ^ <suffix (e.g., JR or III)> ^ <prefix (e.g., DR)> ^ <degree (e.g., MD)> ^ <source table>

Definition: identity of the person who verified the accuracy of the entered request. It is used in cases where the request is entered by a technician and needs to be verified by a higher authority (e.g., a nurse). By local agreement, either the ID number or name component may be omitted.

#### 4.6.2.12 Ordering provider (CN) 00226

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial or name> ^ <suffix (e.g., JR or III)> ^ <prefix (e.g., DR)> ^ <degree (e.g., MD)> ^ <source table>

Definition: 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*.

#### 4.6.2.13 Enterer's location (CM) 00227

Definition: location (e.g., department, floor) of the person who entered the request. It is a composite field that may be used on a site-specific basis to include some subcategory of department. For example, ICU4 might be the designation for a fourth-floor ICU location.

#### 4.6.2.14 Call back phone number (TN) 00228

Definition: telephone number to call for clarification of a request or other information regarding the order. *ORC-14-call back phone number* is the same as *OBR-17-order call back phone number*.

#### 4.6.2.15 Order effective date/time (TS) 00229

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

If *ORC-9-transaction date/time* is after or equal to *ORC-16-order effective date/time*, the data values in the ORC and its subordinate segments took effect on the order effective date/time.

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

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

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

#### 4.6.2.16 Order control code reason (CE) 00230

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

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

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

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

#### 4.6.2.17 Entering organization (CE) 00231

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

Definition: organization that the enterer represents at the time he/she enters/maintains the order.

#### 4.6.2.18 Entering device (CE) 00232

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

Definition: identifier of the physical device (terminal, PC) used to enter the order.

#### 4.6.2.19 Action By (CN) 00233

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial or name> ^ <suffix (e.g., Jr or III)> ^ <prefix (e.g., Dr)> ^<degree (e.g., MD)> ^ <source table>

Definition: Identity of the person who initiated the event represented by the corresponding order control code. For example, if the order control code is CA (cancel order request), this field represents the person who requested the order cancellation.

### 4.6.3 BLG - Billing Segment

The BLG segment is used to provide billing information, on the ordered service, to the filling application.

Figure 4-6 BLG attributes

| SEQ | LEN | DT | R/O | RP/# | TBL# | ITEM# | ELEMENT NAME |
|---|---|---|---|---|---|---|---|
| 1 | 15 | CM | | | 0100 | 00234 | When to Charge |
| 2 | 50 | ID | | | 0122 | 00235 | Charge Type |
| 3 | 100 | CM | | | | 00236 | Account ID |

#### 4.3.2.0 BLG field definitions

#### 4.6.4.1 When to charge (CM) 00234

Components: <when to charge code (ID)> ^ <date/time (TS)>

Definition: This field determines when to charge for the ordered service. The first component contains a value defined in *table 0100 - when to charge*. The second component is used to express the exact time to charge for the ordered service; it is used only when the *when to charge* value is T. When used, it is expressed as a TS data type.

Table 0100 When to charge

| Value | Description |
|---|---|
| D | On discharge |
| O | On receipt of order |
| R | At time service is completed |
| S | At time service is started |
| T | At a designated date/time |

#### 4.6.4.2 Charge type (ID) 00235

Definition: identifies someone or something other than the patient to be billed for this service. It is used in conjunction with *BLG-3-account ID*.

Table 0122 Charge type

| Value | Description |
|---|---|
| CH | Charge |
| CO | Contract |
| CR | Credit |
| DP | Department |
| GR | Grant |
| NC | No Charge |
| PC | Professional |
| RS | Research |

#### 4.6.4.3 Account ID (CK) 00236

Components: <account number (NM)> ^ <check digit (NM)> ^ <check digit scheme (ID)> ^ <facility ID (ST)>

Definition: identifies the account to be billed. It is used in conjunction with *BLG-2-charge type*. Refer to *table 0061 - check digit scheme* in Chapter 2.

## 4.7 QUANTITY/TIMING (TQ) DEFINITION

Components: <quantity> ^ <interval> ^ <duration> ^ <start date/time> ^ <end date/time> ^ <priority> ^ <condition> ^ <text> ^ <conjunction> ^ <order sequencing>

Definition: *Quantity/timing (ORC-7, OBR-27)* provides a means of specifying when the service described by the order segment is to be performed and how frequently. It is a complex multicomponent field that can have repeats; i.e., more than one quantity/timing specification, separated by repeat delimiters, may appear. It is

a distinct data type (see section 2.4.5.20). The components of a single quantity/timing specification are described in the subsections: 4.4.1 through 4.4.10.

## 4.8.1 Quantity component (CQ)

Subcomponents: <quantity & units>

Definition: quantity of the service that should be provided at each service interval. E.g, if two blood cultures to be obtained every 4 hours, the quantity would be 2. If three units of blood are to be typed and cross-matched, the quantity would be 3. The default value is 1. When units are required, they can be added, specified by a subcomponent delimiter.

**Note:** The component delimiter in this CQ is demoted to a subcomponent delimiter.

## 4.8.3 Interval component (CM)

Subcomponents: <repeat pattern & explicit time interval>

Definition: determines the interval between repeated services.

The default is one time only, the first subcomponent is the repeat pattern, and the second subcomponent is the explicit time at which pattern is to be executed.

### 4.8.4.1 Repeat Pattern

Definition: some suggested codes:

| | |
|---|---|
| Q<integer>S | every <integer> seconds |
| Q<integer>M | every <integer> minutes |
| Q<integer>H | every <integer> hours |
| Q<integer>D | every <integer> days |
| Q<integer>W | every <integer> weeks |
| Q<integer>L | every <integer> months (Lunar cycle) |
| Q<integer>J<day#> | repeats on a particular day of the week, from the French *jour* (day). If <integer> is missing, the repeat rate is assumed to be 1. Day numbers are counted from 1=Monday to 7=Sunday. So Q2J2 means every second Tuesday; Q1J6 means every Saturday. |
| BID | twice a day at institution-specified times (e.g., 9AM-4PM) |
| TID | three times a day at institution-specified times (e.g., 9AM-4PM-9PM) |
| QID | four times a day at institution-specified times (e.g., 9AM- |

11AM-4PM-9PM)

**Note:** None of the above three specifications are equivalent to their Q<integer>H counterpart. QID is not Q6H. The former is unequally spaced; the latter is equally spaced.

| | |
|---|---|
| QAM | in the morning at institution-specified time |
| QSHIFT | during each of three eight-hour shifts at institution-specified times |
| QOD | every other day (same as Q2D) |
| QHS | every day before the hour of sleep |
| QPM | in the evening at institution-specified time |
| C | service is provided continuously between start time and stop time |
| U <spec> | for future use, where <spec> is an interval specification as defined by the UNIX cron specification. |
| PRN | given as needed |
| PRNxxx | where xxx is some frequency code (e.g., PRNQ6H); given as needed over the frequency period. |
| Once | one time only. This is also the default when this component is null. |

#### 4.8.4.2 Explicit time interval subcomponent

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

Ex: 2nd component of quantity/timing field:
...^QID&0230,0830,1430,2030^...

### 4.8.5 Duration component

Definition: Indicates how long the service should continue after it is started. The default is INDEF (do indefinitely). This component is coded as follows:

S<integer> = <integer> seconds
M<integer> = <integer> minutes
H<integer> = <integer> hours
D<integer> = <integer> days
W<integer> = <integer> weeks
L<integer> = <integer> months
X<integer> = <integer> times at interval specified in the order. A request for 2 blood cultures Q2H X3 would imply obtaining 2 blood cultures 3 different times at 2-hour intervals for a total of 6 blood cultures.
T<integer> =at the interval and amount stated until a total of <integer> "DOSAGE" is accumulated. Units would be assumed to be the same as in the QUANTITY field.
INDEF = do indefinitely - also the default

### 4.8.7 Start date/time component (TS)

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

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

### 4.8.9 End date/time component (TS)

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

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

### 4.8.11 Priority component (ID)

Definition: describes the urgency of the request. The following values are suggested (the default for Priority is R):

S = Stat. With highest priority.
A = ASAP. Fill after S orders.
R = Routine. Default.
P = Preop
T =Timing critical. A request implying that it is critical to come as close as possible to the requested time, e.g., for a trough antibiotic level.

If using the value "T" (timing critical), the degree of criticality can be specified thus:

Format:

TS<integer> = timing critical within <integer> seconds
TM<integer> = timing critical within <integer> minutes
TH<integer> = timing critical within <integer> hours
TD<integer> = timing critical within <integer> days
TW<integer> = timing critical within <integer> weeks
TL<integer> = timing critical within <integer> months

For the sequential orders specification, these values specify the time criticality with which the predecessor order must be followed by the given order.

### 4.8.13 Condition component (ST)

Definition: This is a free text field that describes the conditions under which the drug is to be given. For example, **PRN pain**, or **to keep blood pressure below 110**. The presence of text in this field should be taken to mean that human review is needed to determine the how and/or when this drug should be given.

### 4.8.15 Text component (TX)

Definition: full text version of the instruction (optional).

### 4.8.17 Conjunction component (ID)

Definition: non-null component indicates that a second timing specification is to follow using the repeat delimiter. This field can take three values:

a) S = Synchronous

Do the next specification after this one (unless otherwise constrained by the following components: *ORC-4^4-start date/time* and *ORC-4^5-end date/time*).

An "S" specification implies that the second timing sequence follows the first, e.g., when an order is written to measure blood pressure Q15 minutes for the 1st hour, then every 2 hours for the next day.

b) A = Asynchronous

Do the next specification in parallel with this one (unless otherwise constrained by the following components: *ORC-4^4-start date/time* and *ORC-4^5-end date/time*). The conjunction of "A" specifies two parallel instructions, as are sometimes used in medication, e.g., prednisone given at 1 tab on Monday, Wednesday, Friday, and at 1/2 tab on Tuesday, Thursday, Saturday, Sunday.

c) C = This is an actuation time

It will be followed by a completion time for the service. This code allows one to distinguish between the time and priority at which a service should be actuated (e.g., blood should be drawn) and the time and priority at which a service should be completed (e.g., results should be reported).

For continuous or periodic services, the point at which the service is actually stopped is determined by the components *ORC-4^5-end date/time* and *ORC-4^3-duration*, whichever indicates an earlier stopping time. Ordinarily, only one of these components would be present, but if one requested an EKG with the specification

^1^QAM^X3^D10

then the EKG would be done for only three days since the number of repeats (3) defined the earlier stopping time.

## 4.8.19 Order sequencing component (complex)

Definition: there are many situations, such as the creation of an order for a group of intervenous (IV) solutions, where the sequence of the individual intervenous solutions (each an order in itself) needs to be specified. There are other situations, where part of the order's instructions contains a results condition of some type, such as "PRN pain." There is currently a free text "condition" component of *ORC-4-quantity/timing* which allows any condition to be specified. However, to support a fully encoded version of order sequencing, or results condition, we have defined in the following paragraphs a 10th component of *ORC-4-quantity/timing*.

The sequencing conditions supported by this 10th component are based on the completion of a certain order.

Components beyond the 10th are reserved for future use in specifying multiple conditions to be evaluated before the execution of the order. Any such future specifications will be upwardly compatible from the current quantity/timing definitions.

> **Note:** If the 10th component is present, the 7th component (condition) will be considered as a text "note" to be displayed on the order. That is, no attempt will be made to interpret it as part of the machine-readable sequencing specification.

### 4.8.20.1 Subcomponents of Sequences

To define a sequence condition, the 10th component of the quantity/timing field component is divided into the subcomponents described in figure 4-7.

Figure 4-7 Subcomponents of order sequences

| Subcomponent | Contains | Notes |
|---|---|---|
| 1 | Sequence/Results Flag | S for sequence conditions; R is reserved for possible future use. |
| 2, 3 | Placer Order Number | Required/Optional: Uses two subcomponents since the placer order number has two components. *We have not defined sub-subcomponents in HL7.* |
| 4, 5 | Filler Order Number | Required/Optional: Uses two subcomponents since the filler order number has two components. *We have not defined sub-subcomponents in HL7.* |
| 6 | Sequence Condition Value | The acceptable condition values have the form commonly used in project planning methodologies:<br><br><one of "SS", "EE", "SE", or "ES"> +/- <time><br><br>The first letter stands for start (S) or end (E) of predecessor order, where the predecessor is defined by the placer or filler order number in subcomponents 1,2 or subcomponents 3,4.<br><br>The second letter stands for the start (S) or end (E) of the successor order, where the successor order is the order containing this quantity/timing specification.<br><br>The time specifies the interval between the predecessor and successor starts or ends (see following examples).<br><br>Where <time> is defined as:<br>S<integer> do for <integer> seconds<br>M<integer> do for <integer> minutes<br>H<integer> do for <integer> hours<br>D<integer> do for <integer> days<br>W<integer> do for <integer> weeks<br>L<integer> do for <integer> months |
| 7 | Maximum Number of Repeats | The maximum number of repeats to be used only on cyclic groups. The total number of repeats is constrained by the end date/time of the last repeat or the end date/time of the parent, whichever is first. |

Use notes:

Suppose the following:

The predecessor order is defined by the OE1000&OrdEnt as the placer order number, in subcomponents 2 and 3 of component 10 of *ORC-4-quantity/timing*.

The successor order, this order, has the placer order number OE1001^OrdEnt in the ORC segment.

The following sequence condition values have the following meanings:

ES + 10MThe finish time of OE1000&OrdEnt (predecessor) plus 10 minutes defines the start time of the successor, OE1001^OrdEnt (this order); i.e., start this order 10 minutes after the completion of its predecessor.

SS - 10MThe start time of the predecessor minus 10 minutes defines the start time of this order; i.e., start this order 10 minutes before its predecessor.

#### 4.8.20.2 Cyclic placer order groups

For the special case where there is a cycle of orders that must be repeated, the first order to be executed will have a "sequence condition value" whose first character is an asterisk (*).

Example:

*FS+10MTranslates to: execute this order the first time without evaluating the condition specified in the 10th component; but repeat only its execution when the specified external order's start or finish date/time has met this condition. This specification generates a repetition of the order for each iteration of the cycle.

> **Note:** This requires that the ordering application be able to specify the placer order number of the last order in the cycle in the first order's quantity/timing specification.

To implement a cyclic group of four IV orders, using the parent/child paradigm, the parent specifies a custom group of IVs, and the following occurs:

*ORC-4-quantity/timing* of the second child order specifies that it follows the first child order.

*ORC-4-quantity/timing* of the third child order specifies that it follows the second child order.

*ORC-4-quantity/timing* of the fourth child order specifies that it follows the third order.

To repeat the group of four child orders in a cyclic manner, the following occurs:

*ORC-4-quantity/timing* of the first child order specifies that it is to be executed once without any dependence on the completion of other orders.

Its second execution follows the completion of the fourth order. See example in Section 4.8.16.2.

This scheme allows the following to be tracked:

The status of the whole group of orders to be reported back at the level of the parent order.

The status for each individual IV order by following the status of the corresponding child order.

Separate Orders example:

The same group of orders can be sent as a group of four orders (without a common parent), linked only by the data in their quantity/timing fields. In this case, there is no convenient HL7 method of transmitting the order status of the group as a whole without transmitting the status of each of the four separate orders.

#### 4.8.20.3 Inheritance of order status

Cancellation/discontinuation/hold order control events:

This logic implies the normal execution of the referenced predecessor order. Thus a cancel (or discontinuation or hold) of a predecessor order implies the cancellation (or discontinuation or hold) of all subsequent orders in the chain.

If the referenced order has been canceled (or discontinued or held), the current order inherits that same status.

In the case of hold, the removal of the hold of the predecessor implies a removal of the hold for the given order (which can then be executed according to the specification in the 10th component).

## 4.8.21 Examples of quantity/timing usage

```
3^once
```

Perform the service at one point in time, e.g., order 3 units of blood to be given once.

```
1^QHS^X2
```

Perform the service twice at bedtime, e.g., give a unit of blood at bedtime on two sequential nights.

```
1^C^3D
```

Do a service continuously for 3 days.

```
1^Q1H^X4^^^^PVCs>10/min
```

Perform an EKG every hour up to a maximum of 4 EKGs, if patient is having more than 10 PVCs per minute.

```
1^Q2J^^1432
```

Perform a service every Tuesday at 2:32 p.m.

```
1^^^^198911210800
```

Perform a test before 11/21/89 0800, e.g., some preop laboratory tests.

```
1^Q3600S^X5^198911051030
```

Perform a service every hour for 5 hours starting at 10:30 a.m. 11/5/89, e.g., draw a blood glucose.

```
1^QAM^X3^^^^^S~1^QOD^4D^^^if K+>5.5.
```

Perform a service every morning for 3 days and then do it every other morning for 4 days (i.e., max twice) if the serum potassium is greater than 5.5.

```
^^^198812120800^^T^^Trough specimen for MIC^C~^^^^^R
```

Draw a blood specimen exactly at 8:00 a.m. on 12/12/1988 and report results routinely.

# 4.9 OBSERVATION AND DIAGNOSTIC STUDY ORDERS

## 4.10.1 OBR - observation request segment

General (taken from ASTM 1238-91)

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 Observation Request segment defines the attributes of a particular request for diagnostic services (e.g., laboratory, EKG) or clinical observations, e.g., vital signs or physical exam. When a placer requests a given set of observations, always include an order segment. For lab tests, the information in the order segment usually applies to a single specimen. However, there is not a one-to-one relationship between specimen and tests ordered. Different test batteries will usually 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. For other diagnostic studies, e.g., chest xray, a separate order segment will usually be generated for each diagnostic study.

Though multiple observation batteries can be ordered on a single order segment, the observation filler shall generate a separate order segment for each battery that it processes independently, e.g., electrolyte, CBC, vital signs. 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.

In the event that an ordered battery of observations cannot be performed, e.g., because of hemolysis on a blood sample, an order segment will be returned to the placer with *OBR-25-result status* equal to X (to indicate that the study was not performed). In this case, no observation segments will be transmitted.

When observations are successfully completed, 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 (see Chapter 7). The number of such observation segments will depend upon the number of individual measurements performed in the process.

OBX segments can be sent by the placer along with an order to provide the filling service with clinical data needed to interpret the results. (See Chapter 7 for OBX details.)

Figure 4-8 OBR attributes

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

### 4.5.1.0 OBR field definitions

The daggered (+) items in this segment are not created by the placer. They are created by the filler and valued as needed when the OBR segment is returned as part of a report. Hence on a new order sent to the filler, they are not valued. There is an exception when the filler initiates the order. In that case, the filler order number is valued and the placer order number may be blank.

The starred (*) fields are only relevant when an observation is associated with a specimen. These are completed by the placer when the placer obtains the specimen. They are completed by the filler when the filler obtains the specimen.

*OBR-7-observation date/time* and *OBR-8-observation end date/time* (flagged with #) are the physiologically relevant times. In the case of an observation on a specimen, they represent the start and end of the

specimen collector. In the case of an observation obtained directly from a subject (eg., BP, Chest Xray), they represent the start and end time of the observation.

#### 4.10.2.1 Set ID - observation request (SI) 00237

Definition: for the first order transmitted, the sequence number shall be 1; for the second order, it shall be 2; and so on.

#### 4.10.2.2 Placer order number (CM) 00216

Components: <unique placer ID> ^ <placer application ID>

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

The first component is a string of up to 15 characters that identifies an individual order segment (e.g., OBR). It is assigned by the placer (ordering application). It identifies an order uniquely among all orders from a particular ordering application. The application ID is a string of up to six (6) characters that will be uniquely associated with an application. A given institution or group of intercommunicating institutions should establish a unique list of applications that may be potential placers and fillers and assign unique application ID's.

The second component contains the application ID of the placing application. The two components are separated by a component delimiter.

#### 4.10.2.3 Filler order number (CM) 00217

Components: <unique filler ID> ^ <filler application ID>

Definition: a permanent identifier for an order and its associated observations.

The first component is a string that identifies an individual order segment (e.g., OBR). It is assigned by the order filling (receiving) application. It identifies an order uniquely among all orders from a particular filling application (e.g., clinical laboratory).

The second component is the filler application ID.

*OBR-3-filler order number* is identical to *ORC-3-filler order number*.

#### 4.10.2.4 Universal service ID (CE) 00238

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

Definition: identifier code for the requested observation/test/battery. This can be based on local and/or "universal" codes. We recommend the "universal" procedure identifier. The structure of this CE data type is described in the control section.

#### 4.10.2.5 Priority (ID) 00239

Definition: not used. Previously priority (e.g., STAT, ASAP), but that information is carried as the sixth component of *OBR-27-quantity/timing*.

#### 4.10.2.6 Requested date/time (TS) 00240

Definition: not used. Previously requested date/time. That information is now carried in the 4th component of the *OBR-27-quantity/timing*.

#### 4.10.2.7 Observation date/time (TS) 00241

Definition: clinically relevant date/time of the observation. In the case of observations taken directly from a subject, it is the actual date and time the observation was obtained. In the case of a specimen-associated study, this field shall represent the date and time the specimen was collected or obtained. (This is a results-only field except when the placer or a third-party has already drawn the specimen.)

#### 4.10.2.8 Observation end date/time (TS) 00242

Definition: end date and time of a study or timed specimen collection. If an observation takes place over a substantial period of time, it will indicate when the observation period ended. For observations made at a point in time, it will be null. This is a results field except when the placer or a party other than the filler has already drawn the specimen.

#### 4.10.2.9 Collection volume (CQ) 00243

Components: <quantity> ^ <units>

Definition: for laboratory tests, the volume of a specimen. The default unit is ML. Specifically, units should be expressed in the ISO Standard unit abbreviations (ISO-2955,1977). This is a results-only field except when the placer or a party has already drawn the specimen. (See Chapter 7 for full details about units.)

#### 4.10.2.10 Collector identifier (CN) 00244

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial or name> ^ <suffix (e.g., JR or III)> ^ <prefix (e.g., DR)> ^ <degree (e.g., MD)> ^ <source table>

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

#### 4.10.2.11 Specimen action code (ID) 00245

Definition: action to be taken with respect to the specimens that accompany or precede this order. The purpose of this field is to further qualify (when appropriate) the general action indicated by the order control code contained in the accompanying ORC segment. For example, when a new order (ORC - "NW") is sent to the lab, this field would be used to tell the lab whether or not to collect the specimen ("L" or "O"). Refer to *table 0065 - action code* for valid entries.

Table 0065 Specimen action code

| Value | Description |
|---|---|
| A | Add ordered tests to the existing specimen |
| G | Generated order; reflex order |
| L | Lab to obtain specimen from patient |
| O | Specimen obtained by service other than Lab |
| P | Pending specimen; Order sent prior to delivery |
| R | Revised order |
| S | Schedule the tests specified below |

#### 4.10.2.12 Danger code (CE) 00535

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

Definition: code and/or text indicating any known or suspected patient or specimen hazards, e.g., patient with active tuberculosis or blood from a hepatitis patient. Either code and/or text may be absent. However, the code is always placed in the first component position and any free text in the second component. Thus, free text without a code must be preceded by a component delimiter.

#### 4.10.2.13 Relevant clinical information (ST) 00247

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

#### 4.10.2.14 Specimen received date/time (TS) 00248

Definition: for observations requiring a specimen, the actual login time at the diagnostic service.

#### 4.10.2.15 Specimen source (CM) 00249

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

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

The first component contains the specimen source name or code (as a CE data type component). (Even in the case of observations whose name implies the source, a source may be required, e.g., blood culture-heart blood.)

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

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

The fourth component specifies the body site from which the specimen was obtained, and the fifth is the site modifier. For example, the site could be anticubital foss, and the site modifier "right." The components of the CE data elements become subcomponents. Refer to *table 0070 - source of specimen* for valid entries.

Table 0070 Source of specimen

| Code | Name | Code | Name | Code | Name |
|---|---|---|---|---|---|
| ABS | Abcess | IT | Intubation tube | STON | Stone |
| AMN | Amniotic fluid | LAM | Lamella | STL | Stool = Fecal |
| ASP | Aspirate | WBC | Leucocytes | SWT | Sweat |
| BPH | Basophils | LN | Line | SNV | Synovial fluid = Joint fluid |
| ABLD | Blood arterial | LNA | Line arterial | | |
| BBL | Blood bag | LNV | Line venous | TEAR | Tears |
| BON | Bone | LYM | Lymphocytes | THRT | Throat |
| BRTH | Breath | MAC | Macrophages | THRB | Thrombocyte (platelet) |
| BRO | Bronchial | MAR | Marrow | | |
| BRN | Burn | MEC | Meconium | TISS | Tissue |
| CALC | Calculus | MBLD | Menstrual blood | TISB | Tissue bone marrow |
| CDM | Cardiac muscle | MLK | Milk | | Tissue gall bladder |
| CNL | Cannula | MILK | Breast milk | TISG | Tissue lung |
| CTP | Catheter tip | NAIL | Nail | TISL | Tissue peritoneum |
| CSF | Cerebral spinal fluid | NOS | Nose (nasal passage) | TISP | Tissue ulcer |
| CVM | Cervical mucus | ORH | Other | TISU | Tissue curettage |
| CVX | Cervix | PRT | Peritoneal fluid ascites | TISC | Tissue placenta |
| COL | Colostrum | PER | Peritoneum | TISPL | Ulcer |
| CBLD | Cord blood | PLC | Placenta | ULC | Umbilical blood |
| CNJT | Conjunctiva | PLAS | Plasma | UMB | Urethra |
| CUR | Curettageputum | PLB | Plasma bag | URTH | Urine |
| CYST | Cyst | PLR | Pleural fluid | UR | Urine clean catch |
| DRN | Drain | | (thoracentesis fld) | URC | Urine catheter |
| EAR | Ear | PMN | Polymorphonuclear | URT | Vomitus |
| ELT | Electrode | | neutrophils | VOM | Whole blood |
| ENDC | Endocardium | PUS | Pus | BLD | Whole body |
| ENDM | Endometrium | SAL | Saliva | BDY | Wick |
| EOS | Eosinophils | SEM | Seminal fluid | WICK | Wound |
| RBC | Erythrocytes | SER | Serum | WND | Wound abscess |
| FIB | Fibroblasts | SKN | Skin | WNDA | Wound exudate |
| FLT | Filter | SKM | Skeletal muscle | WNDE | Wound drainage |
| FIST | Fistula | SPRM | Spermatozoa | WNDD | |
| FLU | Body fluid, unsp | SPT | Sputum | | |
| GAST | Gastric fluid | SPTC | Sputum coughed | | |
| GEN | Genital | SPTT | Sputum tracheal aspirate | | |
| GENC | Genital, cervix | | | | |
| GENL | Genital lochia | | | | |
| GENV | Genital vaginal | | | | |
| HAR | Hair | | | | |

### 4.10.2.16 Ordering provider (CN) 00226

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial or name> ^ <suffix (e.g., JR or III)> ^ <prefix (e.g., DR)> ^ <degree (e.g., MD)> ^ <source table>

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

#### 4.10.2.17 Order callback phone number (TN) 00250

Definition: telephone number for reporting a status or a result using the Standard format with extension and/or beeper number when applicable.

#### 4.10.2.18 Placer field #1 (ST) 00251

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

#### 4.10.2.19 Placer field #2 (ST) 00252

Definition: similar to placer field #1.

#### 4.10.2.20 Filler field #1 (ST) 00253

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

#### 4.10.2.21 Filler field #2 (ST) 00254

Definition: similar to filler field #1.

#### 4.10.2.22 Results rpt/status chng - date/time (TS) 00255

Definition: 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. (This is a results field only.) When other applications (such as office or clinical database applications) query the laboratory application for untransmitted results, the information in this field may be used to control processing on the communications link. Usually, the ordering service would want only those results for which the reporting date/time is greater than the date/time the inquiring application last received results.

#### 4.10.2.23 Charge to practice (CM) 00256

Components: <dollar amount> ^ <charge code>

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

#### 4.10.2.24 Diagnostic serv sect ID (ID) 00257

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

Table 0074 Diagnostic service section ID

| Code | Description | Code | Description |
|---|---|---|---|
| AU | Audiology | OUS | OB Ultrasound |
| BG | Blood gases | OT | Occupational therapy |
| BLB | Blood bank | OTH | Other |
| CUS | Cardiac Ultrasound | OSL | Outside Lab |
| CTH | Cardiac catheterization | PHR | Pharmacy |
| CT | CAT scan | PT | Physical therapy |
| CH | Chemistry | PHY | Physician (Hx, Dx, admission note, etc.) |
| CP | Cytopathology | PF | Pulmonary function |
| EC | Electrocardiac (e.g., EKG, EEC, Holter) | RX | Radiograph |
| EN | Electroneuro (EEG, EMG) | RUS | Radiology ultrasound |
| HM | Hematology | RC | Respiratory Care (therapy) |
| IMM | Immunology | RT | Radiation therapy |
| MB | Microbiology | SR | Serology |
| MCB | Mycobacteriology | SP | Surgical Pathology |
| MYC | Mycology | TX | Toxicology |
| NMS | Nuclear medicine scan | VUS | Vascular Ultrasound |
| NMR | Nuclear magnetic resonance | VR | Virology |
| NRS | Nursing service measures | XRC | Cineradiograph |

#### 4.10.2.25 Result status (ID) 00258

Definition: status of results for this order. The status applies to ALL results associated with the order. This field would typically be used in a response to an order status query where the level of detail requested does not include the OBX segments. This field can only be valued by the filler.

When the individual status of each result is necessary, *OBX-11-observ result status* may be used. Refer to *table 0123 - result status* for valid entries.

Table 0123 Result status

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

#### 4.10.2.26 Parent result (CM) 00259

Components: <*OBX-3-observation identifier* of parent result> ^ <*OBX-4-sub-ID* of parent result> ^ <*OBX-5-observation results* from parent (CE)>

Definition: defined to make it available for other types of linkages (e.g., toxicology). This important information, together with the information in *OBR-29-parent number* uniquely identifies the parent result's OBX segment related to this order. The value of this OBX segment in the parent result is the organism or chemical species about which this battery reports. E.g., if the current battery is an antimicrobial sensitivity, the parent result's identified OBX contains a result which identifies the organism on which the sensitivities were run. This indirect linkage is preferred because the name of the organism in the parent result may undergo several preliminary values prior to finalization.

The third component may be used to record the name of the microorganism identified by the parent result directly. The organism in this case should be identified exactly as it is in the parent culture.

This field is present only when the parent result is identified by *OBR-29-parent number*. (See Chapter 7 for more details about this linkage.)

A second mode of conveying this information is to use a standard observation result segment (OBX). If more than one organism is present, *OBX-4-subID* is used to distinguish them. In this case, the first OBX with subID N will contain a value identifying the Nth microorganism, and each additional OBX with subID N will contain sensitivity values for a given antibiotic test on this organism.

#### 4.10.2.27 Quantity/timing (TQ) 00221

Components: <quantity> ^ <interval> ^ <duration> ^ <start date/time> ^ <end date/time> ^ <priority> ^ <condition> ^ <text> ^ <conjunction> ^ <order sequencing>

Definition: information about how many services to perform at one service time and how often the service times are repeated, and to fix duration of the request. See Section 4.4.

#### 4.10.2.28 Result copies to (CN) 00260

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial or name> ^ <suffix (e.g., JR or III)> ^ <prefix (e.g., DR)> ^ <degree (e.g., MD)> ^ <source table>

Definition: people who are to receive copies of the results. By local convention, either the ID number or the name may be absent.

#### 4.10.2.29 Parent number (CM) 00261

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

Definition: identical to *ORC-8-parent*. This field relates a child to its parent when a parent-child relationship exists. For example, observations that are spawned by previous observations, e.g., antibiotic susceptibilities spawned by blood cultures, need to record the parent (blood culture) filler order number here. The parent-child mechanism is described under the order control field notes (see Segment ORC field notes in section 4.3.1.2.1). It is required when the order is a child.

Parent is a two-component field. The first component contains the parent's placer order number. The second component is optional and contains the parent's filler order number. The components of the placer order number and the filler order number are transmitted in subcomponents of the two components of this field.

#### 4.10.2.30 Transportation mode (ID) 00262

Definition: how (or whether) to transport a patient, when applicable. Refer to *table 0124 - transportation mode* for valid codes.

Table 0124 Transportation mode

| Value | Description |
|---|---|
| CART | Cart - patient travels on cart or gurney |
| PORT | The examining device goes to patient's location |
| WALK | Patient walks to diagnostic service |
| WHLC | Wheelchair |

#### 4.10.2.31 Reason for study (CE) 00263

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

Definition: code or text using the conventions for coded fields given in the Control/Query Chapter (Chapter 2). This is required for some studies to obtain proper reimbursement.

#### 4.10.2.32 Principal result interpreter (CM) 00264

Components: <result interpreter (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <location (CM)>

The first component is the result interpreter (CN): <ID number & family name & given name & middle initial or name & suffix (e.g., JR or III) & prefix (e.g., DR) & degree (e.g., MD) & source table>

Definition: identity of the physician or other clinician who interpreted the observation and is responsible for the report content.

#### 4.10.2.33 Assistant result interpreter (CM) 00265

Components: <assistant result interpreter (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <location (CM)>

The first component is the assistant result interpreter (CN): <ID number & family name & given name & middle initial or name & suffix (e.g., JR or III) & prefix (e.g., DR) & degree (e.g., MD) & source table>

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

#### 4.10.2.34 Technician (CM) 00266

Components: <technician (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <location (CM)>

The first component is the technician (CN): <ID number & family name & given name & middle initial or name & suffix (e.g., JR or III) & prefix (e.g., DR) & degree (e.g., MD) & source table>

Definition: performing technician.

#### 4.10.2.35 Transcriptionist (CM) 00267

Components: <transcriptionist (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <location (CM)>

The first component is the transcriptionist (CN): <ID number & family name & given name & middle initial or name & suffix (e.g., JR or III) & prefix (e.g., DR) & degree (e.g., MD) & source table>

Definition: report transcriber.

#### 4.10.2.36 Scheduled - date/time (TS) 00268

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

### 4.10.3 Examples of use

The purpose of this section is to show how certain specific situations would be handled using the order entry protocol. The ellipses represent uncompleted details. The symbol // precedes comments for clarification.

#### 4.10.4.1 An order replaced by three orders

Suppose that an application called "PC" is sending an order to the EKG application for three EKGs to be done on successive days.

The order might be placed as follows:

ORM message:

```
MSH|...
PID|...
ORC|NW|A226677^PC||946281^PC|||N|3^QAM||198801121132|P123^AQITANE^ELLINORE^""^""^""^MD|||4EAST<CR>
      // EKG order
OBR||||93000^EKG REPORT||||||||||P030^SMITH^MARTIN^""^""^""^MD||||||||||3^QAM<CR>
BLG|...
ORC||...          // Another order yet others may follow
```

There is a group number first component indicating that an order group is being created.

Responses: Because the EKG application must turn the single order above into three orders for three separate EKGs (services), the results of each will be reported under its own OBR segment. Several response levels are possible depending on the Response Flag:

a)If the Response Flag is N (as it is), then the filler EKG application only responds "I got the order."

```
MSH|...
MSA|...
```

The only implication of this response is that the order was received.

If the Response Flag had been E, then the response would have been the same, but its implication would have been that the EKG application had processed all the orders and they were acceptable.

b)If the Response Flag were R, then the filler EKG application must communicate to the PC the fact of the creation of child orders, but with no details:

```
MSH|...
MSA|...
ORC|PA|A226677^PC|89-458^EKG|94628^PC<CR>
ORC|CH|A226677^PC|89-551^EKG|94628...        // 1ST child ORC.
ORC|CH|A226677^PC|89-552^EKG|94628...        // 2ND child ORC.
ORC|CH|A226677^PC|89-553^EKG|94628...        // 3RD child ORC.
...                                  // Other parts of response might follow.
```

What has been said here is "Your A226767 has spun out three children named 89-551, 89-552, and 89-553." Notice that the placer Numbers are identical in the children's ORCs.

c)If the Response Flag were D, then the filler EKG application must communicate to the PC application the fact of the replacement and also the exact replacement order segments:

```
MSH|...
MSA|...
ORC|PA|A226677^PC|89-458^EKG<CR>
ORC|CH|A226677^PC|89-551^EKG|946282^PC|SC|A226677&PC^89-458&EKG|
     ... ^^^^198901130500^<CR>                  // 1ST child ORC
OBR|||89-551^EKG|93000^EKG REPORT|...                        // 1ST child OBR
ORC|CH|A226677^PC|89-522^EKG|946282^PC|SC|A226677&PC^89-458&EKG|
     ...  ^^^^198901140500^<CR>                 // 2ND child ORC
OBR|||89-552^EKG|93000^EKG REPORT|...                        // 2ND child OBR
ORC|CH|A226677^PC|89-553^EKG|946282^PC|SC|A226677&PC^89-458&EKG|
     ...^^^^198901150500^<CR>                                // 3RD child ORC
OBR|||89-553^EKG|93000^EKG REPORT|...                        // 3RD child OBR
                                  // Other parts might follow
```

Here the actual OBR segments have been added.

The status of the child orders is being reported as SC (scheduled).

ORC-4-quantity/timing shows that the EKGs are requested after 0500 on successive days.

## 4.11 DIET ORDERS

A diet office needs to receive specific information, the most important being the diet order itself. Diet restrictions (often called diet codes) are the basic building blocks of a diet order.

| ORM | Dietary Order | Chapter |
|---|---|---|
| MSH | Message Header | 2 |
| [{NTE}] | Notes and Comments (for Header) 2 | |
| [ | | |
| PID | Patient Identification 3 | |
| [{NTE}] | Notes and Comments (for Patient ID) 2 | |
| [{AL1}] | Allergy 3 | |
| [PV1] | Patient Visit Information 3 | |
| ] | | |
| { | | |
| ORC | Common Order Segment | 4 |
| [ | | |
| {ODS} | Dietary Orders, Suppl., Prefer. 4 | |
| [{NTE}] | Notes and Comments (for ODS) 2 | |
| {OBX | Results | 7 |
| [{NTE}]} | Notes and Comments (for OBX) 2 | |
| ] | | |
| } | | |
| { | | |
| [ | | |
| ORC | Common Order Segment | 4 |
| {ODT} | Diet Tray Instructions 4 | |
| [{NTE}] | Notes and Comments (for ODT) 2 | |
| ] | | |
| } | | |

| ORR | General Order Acknowledgement Message | Chapter |
|---|---|---|
| MSH | Message Header | 2 |
| MSA | Message Acknowledgement 2 | |
| [ERR] | Error | 2 |
| [{NTE}] | Notes and Comments (for MSA) 2 | |
| [ | | |
| [PID | Patient Identification 3 | |
| [{NTE}]] | Notes and Comments (for Patient ID) 2 | |
| { | | |
| ORC | Common Order | 4 |
| [{ODS}] | Dietary orders, supplements, and preferences 4 | |
| [{NTE}] | Notes and Comments (for ODS) 2 | |
| } | | |
| [ | | |
| { | | |
| ORC | Common Order | 4 |
| [{ODT}] | Diet tray instructions 4 | |
| [{NTE}] | Notes and Comments (for ODT) 2 | |
| } | | |
| ] | | |
| ] | | |

The ODS segment is intended to cover the basic diet definition of one diet code. A diet can be ordered as a combination of one or more diet specifications, followed by any number of supplements and/or preferences. Many diets are common to all institutions, such as an ADA 1500 calorie diet, and may exist in a table. Each diet code is limited to a six-character abbreviation.

A dietary message never specifies more than one diet. However, a single diet order may be used to discontinue one diet and specify its replacement. In this instance, the dietary message will contain two ORCs. The first ORC will not contain an ODT. A tray specification order may follow the second ORC.

Often a complete diet order consists of a single diet code. The diet code defines which foods a patient may receive. In cases where a patient cannot make food selections, a diet code often causes service of a predefined set of foods. A patient must have at least one diet code to receive food.

Supplements provide a mechanism for giving any additional desired foods to a patient. Supplements are foods given to a patient regardless of their diet codes. These foods are part of the patient's diet without being restricted by any other part of the order. Therefore, supplement assignment needs to be a controlled and supervised process to ensure that a patient does not receive improper or potentially harmful foods.

Preferences consist of likes, dislikes, substitutions, and complementary foods. Preferences are diet orders, effectively from the patient, but transmitted from the ward. They are subject to change. A mechanism is included for defining patient preferences with this proposal. Preferences are independent of the diet order and do not change when the order changes. However, if a preference violates the conditions of the diet order, then that preference is not allowed.

There is additional information that the dietary service requires for proper operation, including tray delivery times, extra trays, and messages regarding tray delivery and handling.

A patient can have only one effective diet order at a time. A diet order consists of the diet codes, supplements, and preferences effective at a given time. These three specifications govern which foods a patient will receive. Diets generally do not have a stated ending time to ensure that the patient always receives food (unless an NPO order is received).

Diet codes govern foods in two ways. First, there are foods which are simply not allowed on a specified diet. Second, some diets imply a nutrient exchange pattern which controls the amounts of certain foods that a patient can receive. Some diet codes can combine to make a single diet order. An ADA 1500 and a 2 gram sodium (NA2GM) diet can coexist since they do not address the same exchanges. The patterns for these diets can combine without conflicting or overlapping. Certain kinds of diet codes cannot be combined, such as ADA 1500 and ADA 2000. It is impossible to feed a patient at two different calorie levels. These constraints are not defined in the table, but rather are implied by the semantics of the codes.

An order specifies the complete foods a patient can or should receive at a given meal. (Depending on the institution and diet order, a patient may or may not have a choice of foods. For example, a clear liquid diet often gives no choices since there are few clear liquid foods.) A modification to a diet, by adding a diet code or supplement, may have a drastic effect on foods the patient may eat. Due to this, any modification to the diet codes or supplements will be a new order. Therefore, one must send any information for diet codes or supplements from the previous order which is still applicable for the next order. For example, a patient has an ADA 1500 calorie diet and an evening snack of Skim Milk. If you wanted to add a 2 gram sodium

restriction, you need to send both the ADA 1500 calorie and the 2 gram sodium diet codes along with the Skim Milk supplement. If you do not do this, the dietary application must presume the new order is merely for 2 grams of sodium. This method allows for a comprehensive audit trail of orders and prevents ambiguities in interpretation.

## 4.12.1 ODS - dietary orders, supplements, and preferences

The ORC sequence items of interest to ODS are *ORC-1-order control,ORC-2-placer order number, ORC-3-filler order number, ORC-7-quantity/timing, ORC-9-date/time of transaction, ORC-10-entered by, and ORC-11-verified by*. For *ORC-1-order control*, the values may be New (NW), Cancel (CA), Discontinue Order Request (DC), Change (XO), Hold Order Request (HD), and Release Previous Hold (RL). The HD and RL codes could stop service for a specified length of time. *ORC-4-quantity/timing* should be used to specify whether an order is continuous or for one service period only. It is also useful for supplements which are part of a diet but only delivered, say, every day at night. Example:

|1^QPM^^19910415|.

Figure 4-9 ODS attributes

| SEQ | LEN | DT | R/O | RP/ # | TBL # | ITEM # | ELEMENT NAME |
|---|---|---|---|---|---|---|---|
| 1 | 1 | ID | R | | 0159 | 00269 | Type |
| 2 | 60 | CE | | Y/10 | | 00270 | Service Period |
| 3 | 60 | CE | R | Y/20 | | 00271 | Diet, Supplement, or Preference Code |
| 4 | 80 | ST | | Y/2 | | 00272 | Text Instruction |

### 4.6.1.0 ODS field definitions

#### 4.12.2.1 Type (ID) 00269

Definition: specifies type of diet. Refer to *table 0159-diet type* for valid entries.

Table 0159 Diet type

| Value | Description |
|---|---|
| D | Diet |
| S | Supplement |
| P | Preference |

#### 4.12.2.2 Service period (CE) 00270

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

Definition: when blank, the modifier applies to all service periods. Diet orders, for example, typically apply to all service periods. This field usually specifies supplements. This field allows you to designate a modification for one or more of the service periods during a day by combining service specifications as needed. The service periods will be local CEs, normally numbers. Suggested are:
service 1 is breakfast
service 2 is mid-a.m. snack

service 3 is lunch
service 4 is mid-afternoon snack
service 5 is dinner
service 6 is bedtime snack

Ex: |1~5| means service 1 and service 5, whatever these are locally defined to be.

#### 4.12.2.3 Diet, supplement, or preference code (CE) 00271

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

Definition: identifier of the ordered item for a patient; it is equivalent to *OBR-4-universal service ID* in function. Since ODS is a repeating segment, multiple entities get multiple segments. Example:

|^REG^L&FD7|, |023^^L&FD6|, |^NOLACT^L&FD5|, |^TUBEFD^L&FD4|, and |011^HIPRO100^L&FD1~123^LOFAT20^L&FD1|

In the case where this segment requests a diet supplement, i.e., *ODS-1-type* = S, this attribute specifies a particular item or class of items. If institutional codes for patient food preferences (P) have been codified, they are also expressed as coded segments; otherwise, the information is passed as a text string in the fourth component of the ODS segment, described below.

#### 4.12.2.4 Text instruction (ST) 00272

Definition: specific instructions for dietary. These instructions may address specific patient needs, such as isolation. This field provides the ordering provider's dietary instructions as free text. It can represent the full dietary instruction or indicate supplemental information.

### 4.12.3 ODT - diet tray instructions segment

This segment addresses tray instructions. These are independent of diet codes, supplements, and preferences and therefore get separate order numbers.

Figure 4-10 ODT attributes

| SEQ | LEN | DT | R/O | RP/ # | TBL # | ITEM # | ELEMENT NAME |
|---|---|---|---|---|---|---|---|
| 1 | 60 | CE | R | | 0160 | 00273 | Tray Type |
| 2 | 30 | CE | | Y/10 | | 00270 | Service Period |
| 3 | 80 | ST | | | | 00272 | Text Instruction |

#### 4.6.2.0 ODT field definitions

#### 4.12.4.1 Tray type (CE) 00273

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

Definition: defines the type of dietary tray. Refer to *table 0160 - tray type* for valid entries.

Table 0160 Tray type

| Value | Description |
|---|---|
| EARLY | Early tray |
| LATE | Late tray |
| GUEST | Guest tray |
| NO | No tray |
| MSG | Tray message only |

Tray specifications are useful for early and late tray delivery in cases where a patient undergoes a procedure during normal feeding times. Tray specifications can also be used for guest trays, no trays, and messages. The value MSG means the ODT segment does not specify the type of tray but provides additional information about an existing tray. This information is found in *ODT-3-text instructions.*

#### 4.12.4.2 Service period (CE) 00274

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

Definition: when blank, the modifier applies to all service periods. This field allows you to designate one or more of the feeding periods during a day by combining the codes as needed. It can also combine with quantity/timing to give such information as which service period the order belongs with. This field is identical in meaning with *ODS-2-service period*. See section 4.6.1.2 for further details.

#### 4.12.4.3 Text Instruction (ST) 00272

Definition: instructions associated with the tray. Example:
|PLASTIC SILVERWARE|.

### 4.12.5 Example diet messages

#### 4.12.6.1 Typical progression of orders for a surgery patient

First order:

MSH|...<cr>
PID|...<cr>
ORC|NW|1235^NURS|||||^^^199108021700||199108021200|^HRF|^MFW|<cr>
ODS|D||^DB15^L&DO3|<cr>
ODS|D||^NA2GM^L&DO3|<cr>

Hold first order:

MSH|...<cr>
PID|...<cr>
ORC|HL|1235^NURS|||||^^^199108031700||199108031200|^HRF|^MFW|<cr>

NPO order with guest tray:

MSH|...<cr>
PID|...<cr>
ORC|NW|1236^NURS|||||^^^199108031700||199108031200|^HRF|^MFW|<cr>
ODS|D||^NPO^L&DO3|<cr>
ORC|NW|1244^NURS|||||^^^199108031700||199108031200|^HRF|^MFW|<cr>
ODT|GUEST|5^^L&CBD|<cr>

Clear liquid with guest tray:

MSH|...<cr>
PID|...<cr>
ORC|DC|1236^NURS|||||^^^199108041700||199108041200|^HRF|^MFW|<cr>
ORC|NW|1237^NURS|||||^^^199108041700||199108041200|^HRF|^MFW|<cr>
ODS|D||^DB15^L&DO3|<cr>
ODS|D||^NA2GM^L&DO3|<cr>
ODS|D||^CLRLIQ^L&DO3|<cr>
ORC|NW|1245^NURS|||||^^^199108041700||199108041200|^HRF|^MFW|<cr>
ODT|GUEST|5^^L&CBD|<cr>

Full liquid with guest tray:

MSH|...<cr>
PID|...<cr>
ORC|DC|1237^NURS|||||^^^199108051700||199108051200|^HRF|^MFW|<cr>
ORC|NW|1238^NURS|||||^^^199108051700||199108051200|^HRF|^MFW|<cr>
ODS|D||^DB15^L&DO3|<cr>
ODS|D||^NA2GM^L&DO3|<cr>
ODS|D||^FULLIQ^L&DO3|<cr>
ORC|NW|1246^NURS|||||^^^199108051700||199108051200|^HRF|^MFW|<cr>
ODT|GUEST|3^^L&CBD|<cr>

Release hold on previous order and give discharge message:

MSH|...<cr>
PID|...<cr>
ORC|DC|1238^NURS|||||^^^199108061700||199108061200|^HRF|^MFW|<cr>
ORC|RL|1235^NURS|||||^^^199108061700||199108061200|^HRF|^MFW|<cr>
ORC|NW|1247^NURS|||||^^^199108061700||199108061200|^HRF|^MFW|<cr>
ODT|MSG|5^^L&CBD|You Will Be Leaving Tomorrow|<cr>

#### 4.12.6.2 Complex order

Basic diet: high protein, low fat. Supplements are ice cream at service period 4 and a half ham sandwich at service period 6. There are also tray orders for early service period 1, late service period 3, and guest tray at dinner.

MSH|...<cr>
PID|...<cr>
ORC|NW|1234^NURS|||||^^^199108021700||199108021200|^HRF|^MFW|<cr>
ODS|D||011^HIPRO100^L&FD1|<cr>
ODS|D||123^LOFAT20^L&FD1|<cr>
ODS|S|4|119^ICE CREAM^L&FD8|<cr>
ODS|S|6|320^1/2 HAM SANDWICH^L&FD8|<cr>
ORC|NW|1244^NURS|||||^^^199108031700||199108031200|^HRF|^MFW|<cr>
ODT|EARLY|1^^L&CBD|<cr>
ORC|NW|1245^NURS|||||^^^199108031700||199108031200|^HRF|^MFW|<cr>
ODT|LATE|3^^L&CBD|<cr>
ORC|NW|1246^NURS|||||^^^199108031700||199108031200|^HRF|^MFW|<cr>
ODT|GUEST|^DINNER^L&CBD|<cr>

#### 4.12.6.3 Tube feeding

This order specifies Similac with MCT oil and polycose additives.

MSH|...<cr>
PID|...<cr>
ORC|NW|1232^NURS|||||60^Q3H^^199108021700||199108021200|^HRF|^MFW|<cr>
ODS|D||010^SIMILAC^L&DO1|<cr>
ODS|D||011^MCT^L&DO1|<cr>
ODS|D||012^POLYCOSE^L&DO1|<cr>

#### 4.12.6.4 Patient preference

This order specifies that the patient is a vegetarian.

MSH|...<cr>
PID|...<cr>
ORC|NW|1232^NURS|||||60^Q3H^^199108021700||199108021200|^HRF|^MFW|<cr>
ODS|D||123^LOFAT20^L&FD1|<cr>
ODS|S|4|119^ICE CREAM^L&FD8|<cr>
ODS|P||^^^VEGETARIAN|<cr>

## 4.13 SUPPLY ORDERS

The Requisition Detail segment (RQD) is used for ordering medical, surgical , and patient care supplies. It is assumed that these supplies are managed by a materials management application, which contains a Master List of all items the hospital uses.

There are basically two types of supplies, commonly referred to as stock and nonstock.

Stock supplies are, as the name suggests, stocked in the hospital in designated areas, such as the warehouse, Central Supply, Nursing floors, or Operating Room.

When requisitioning stock supplies, the requesting application need only specify the information in the RQD segment. It is assumed that this is enough information for the application receiving to identify the item. If the sending application is not aware whether the supply is stock, it may optionally send an RQ1 along with the RQD. Typically in that case, the item is requested with a free text description.

Nonstock supplies are not stocked anywhere in the hospital and must be ordered from an industry distributor or manufacturer.

When the requesting application knows that it is requisitioning nonstock supplies, it may also send an RQ1 segment with the RQD if at least one field in RQ1 is known to the sending application. This may be necessary in order for the receiving application to properly determine where to get these supplies. This depends on the sophistication of the database of the receiving application, which may contain a history of requisitions from the sending application.

Stock requisition orders use the ORM. RQD replaces the Order Detail Segment of the ORM message as follows:

| ORM | Stock Requisition Order Message | Chapter |
|---|---|---|
| MSH | Message Header | 2 |
| [{NTE}] | Notes and Comments (for Header) | 2 |
| [ | | |
| PID | Patient Identification | 3 |
| [{NTE}] | Notes and Comments (for Patient ID) | 2 |
| [{AL1}] | Allergy | 3 |
| [PV1] | Patient Visit | 3 |
| ] | | |
| { | | |
| ORC | Common Order | 4 |
| [ | | |
| RQD | Requisition Detail | 4 |
| [{NTE}] | Notes and Comments (for RQD) | 2 |
| [ | | |
| { | | |
| OBX | Observation/Result | 7 |
| [{NTE}] | Notes and Comments (for OBX) | 2 |
| } | | |
| ] | | |
| ] | | |
| [BLG] | Billing segment | 4 |
| } | | |

| ORR | General Order Acknowledgement Message | Chapter |
|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| MSH | Message Header | | | | 2 |
| MSA | Message Acknowledgement | | | 2 | |
| [ERR] | Error | | | | 2 |
| [{NTE}] | Notes and Comments (for Header) | 2 | | | |
| [ | | | | | |
| [PID | Patient Identification | | 3 | | |
| [{NTE}]] | Notes and Comments (for Patient ID) | | 2 | | |
| { | | | | | |
| ORC | Common Order | | | | 4 |
| RQD | Requisition Detail | | | 4 | |
| [{NTE}] | Notes and Comments (for RQD) | | 2 | | |
| } | | | | | |
| ] | | | | | |

Nonstock requisitions use the ORM. RQD followed by RQ1 replaces the Order Detail Segment of the ORM message as follows:

| ORM | Nonstock Requisition Order Message | | Chapter | | |
|---|---|---|---|---|---|
| MSH | Message Header | | | | 2 |
| [{NTE}] | Notes and Comments (for Header) | 2 | | | |
| [ | | | | | |
| PID | Patient Identification | | 3 | | |
| [{NTE}] | Notes and Comments (for Patient ID) | | 2 | | |
| [{AL1}] | Allergy | | | 3 | |
| [PV1] | Patient Visit | | | | 3 |
| ] | | | | | |
| { | | | | | |
| ORC | Common Order | | | | 4 |
| [ | | | | | |
| RQD | Requisition Detail | | | | 4 |
| [RQ1] | Requisition Detail-1 | | | 4 | |
| [{NTE}] | Notes and Comments (for RQD) | | 2 | | |
| [ | | | | | |
| { | | | | | |
| OBX | Observation/Result | | | | 7 |
| [{NTE}] | Notes and Comments (for OBX) | | 2 | | |
| } | | | | | |
| ] | | | | | |
| ] | | | | | |
| [BLG] | Billing segment | | | 4 | |

| ORR | General Order Acknowledgement Message | | Chapter | | |
|---|---|---|---|---|---|
| MSH | Message Header | | | | 2 |
| MSA | Message Acknowledgement | | | 2 | |
| [ERR] | Error | | | | 2 |
| [{NTE}] | Notes and Comments (for Header) | 2 | | | |
| [ | | | | | |
| [PID | Patient Identification | | 3 | | |
| [{NTE}] | Notes and Comments (for Patient ID) | | 2 | | |
| ] | | | | | |
| { | | | | | |

| | | |
|---|---|---|
| ORC | Common Order | 4 |
| RQD | Requisition Detail | 4 |
| [RQ1] | Requisition Detail-1 | 4 |
| [{NTE}] | Notes and Comments (for RQD) | 2 |
| } | | |
| ] | | |

## 4.14.1 RQD - requisition detail

RQD contains the detail for each requisitioned item. See assumptions above.

Figure 4-11 RQD attributes

| SEQ | LEN | DT | R/O | RP/# | TBL# | ITEM# | ELEMENT NAME |
|---|---|---|---|---|---|---|---|
| 1 | 4 | SI | | | | 00275 | Requisition Line Number |
| 2 | 60 | CE | | | | 00276 | Item Code - Internal |
| 3 | 60 | CE | | | | 00277 | Item Code - External |
| 4 | 60 | CE | | | | 00278 | Hospital Item Code |
| 5 | 6 | NM | | | | 00279 | Requisition Quantity |
| 6 | 60 | CE | | | | 00280 | Requisition Unit of Measure |
| 7 | 30 | ID | | | | 00281 | Dept. Cost Center |
| 8 | 30 | ID | | | | 00282 | Item Natural Account Code |
| 9 | 60 | CE | | | | 00283 | Deliver To ID |
| 10 | 8 | DT | | | | 00284 | Date Needed |

4.7.1.0 RQD field definitions

4.14.2.1 Requisition line number (SI) 00275

Definition: number that identifies this line in the requisition.

4.14.2.2 Item code - internal (CE) 00276

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

Definition: identifier and description that uniquely identify the item on the application sending the requisition.

4.14.2.3 Item code - external (CE) 00277

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

Definition: identifier and description that uniquely identify the item on the application receiving the requisition.

4.14.2.4 Hospital item code (CE) 00278

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

Definition: identifier and description that uniquely identify the item on all applications in the hospital. The identifier is usually controlled by the hospital Financial application in the Charge Description Master file.

Note: at least one of the three fields 4.7.1.2 thru 4.7.1.4 must be non-null.

#### 4.14.2.5 Requisition quantity (NM) 00279

Definition: quantity requisitioned for this item.

#### 4.14.2.6 Requisition unit of measure (CE) 00280

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

Definition: unit of measure for this item.

#### 4.14.2.7 Dept. cost center (ID) 00281

Definition: accounting code that identifies this department in order to charge for this item.

#### 4.14.2.8 Item natural account code (ID) 00282

Definition: accounting code that identifies this item in order to charge for this item.

#### 4.14.2.9 Deliver to ID (CE) 00283

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

Definition: unique identifier and descriptive name of the department/location where the item should be delivered.

#### 4.14.2.10 Date needed (DT) 00284

Definition: date this item is required.

**Note:** Although none of the fields are required, one of the three identifying codes--Item Code - Internal, Item Code - External, or Hospital Item Code--must be specified in order for the receiving application to process the request.

It is left to the vendors to determine which will be used as the common link between the two applications. HL7 recommends using the *RQD-4-hospital item code*.

Hospital accounting requires an identifier to charge a particular cost center or patient for a requisitioned supply. If the supply is for a patient, then this identifier comes from the PID segment; otherwise, from *RQD-7-dept. cost center* and *RQD-8-item natural account code* must be used. It is recommended that the "final" cost center responsible for providing the supply to the patient be included, even when the patient ID is provided.

Hospital accounting applications use *RQD-7-dept. cost center* concatenated with *RQD-8-item natural account code* in order to post this transaction to the General Ledger. This concatenated value should correspond to a valid entry in the accounting applications "Chart of Accounts."

## 4.14.3
## 4.7.2 RQ1 - requisition detail-1 segment

RQ1 contains additional detail for each nonstock requisitioned item. This segment definition is paired with a preceeding RQD segment.

Figure 4-12 RQ1 attributes

| SEQ | LEN | DT | R/O | RP/# | TBL# | ITEM# | ELEMENT NAME |
|---|---|---|---|---|---|---|---|
| 1 | 10 | ST | | | | 00285 | Anticipated Price |
| 2 | 60 | CE | | | | 00286 | Manufactured ID |
| 3 | 16 | ST | | | | 00287 | Manufacturer's Catalog |
| 4 | 60 | CE | | | | 00288 | Vendor ID |
| 5 | 16 | ST | | | | 00289 | Vendor Catalog |
| 6 | 1 | ID | | | | 00290 | Taxable |
| 7 | 1 | ID | | | | 00291 | Substitute Allowed |

### 4.7.2.0 RQ1 field definitions

#### 4.14.4.1 Anticipated price (SI) 00285

Definition: reference price for the requisition unit of measure that is known to the Requisition application. It may or may not be the actual cost of acquiring the item from a supplier. It is also not the price charged to the patient.

#### 4.14.4.2 Manufacturer ID (CE) 00286

Components: <identifier> ^ <manufacturer's name (text)> ^ <name of coding system> ^ <alternate identifier> ^ <alternate text> ^ <name of alternate coding system>

Definition: unique code that identifies the manufacturer on the application receiving the requisition.
Codes may be selected from HIBCC Manufacturer's Labeler ID Code (LIC), the UPC or the NDC. These code sets may be obtained from the appropriate organization whose addresses are included in Figure 2-3 (Section 2.4.5.17).

#### 4.14.4.3 Manufacturer's catalog (ST) 00287

Definition: manufacturer's catalog number or code for this item.

#### 4.14.4.4 Vendor ID (CE) 00288

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

Definition: unique code that identifies the vendor on the application receiving the requisition.

Because of this, it is recommended that each nonstock item have *RQ1-2-manufacturer's ID* and *RQ1-3-manufacturer's catalog*, or *RQ1-4-vendor ID* and *RQ1-5-vendor catalog*. It is also possible that the requisitioning application will not know the identifier, as listed in the Manufacturer's or Vendor's catalog. In this case, it is important to include the name portion of this coded element field.

#### 4.14.4.5 Vendor catalog (ST)00289

Definition: vendor's catalog number, name, or code for this item.

#### 4.14.4.6 Taxable (ID) 00290

Definition: is this item subject to tax?

In general, nonstock requisitioned items will be printed by the receiving application and then processed by a human. In other words, the human will use the information to call the vendor or manufacturer to get pricing and other related purchasing information before placing the order with an outside vendor. *Refer to table 0136 - Y/N indicator* as defined in Chapter 2.

#### 4.14.4.7 Substitute allowed (ID) 00291

Definition: indicates whether the ancillary department may substitute an equivalent version of the item(s) ordered. Refer to *table 0136 - Y/N indicator* as defined in Chapter 2.

### 4.14.5 Examples of the use of RQD and RQ1 segments

a)The first example is a requisition from the ORSUPPLY application to the MMSUPPLY application for two items for patient John J. Smith. One item is a stock item for an IV Solution and the second item is a nonstock implant manufactured by Detter. The requisition number used by the ORSUPPLY application is RQ101.

```
MSH|^~\&|ORSUPPLY|ORSYS|MMSUPPLY|MMSYS|19911105131523||ORM|100|P|2.2||<cr>
PID|||100928782^9^MOD11|3781928|Smith^John^J||19690424|M||||||||A|
    ...100928782^4^MOD11||<cr>
ORC|NW|RQ101^ORSUPPLY||||N|||19911105130000|jjones^Jones^Jean|sgomez^Gomez^Susan|
    ...|MAINOR^2W|X2304<cr>
RQD|1|1234^Solution, 2.25% Saline||S1786^Saline Solution|1|BT^Bottle|1234-5678|
    ...ORSUP^Main OR Supply Room|19901123<cr>
RQD|2|23455^Implant, Special Hip||I45323^Implant|1|EA^ Each|1234-5678|
    ...ORSUP^Main OR Supply Room|19901123<cr>
RQ1|123.45|DET^Detter, Inc.|444456|DST^Local Distributors, Inc.|333-456|N<cr>
```

b)The second example is a requisition from the ORSUPPLY application to the MMSUPPLY application for five stock items to replenish a supply closet. The requisition number used by the ORSUPPLY application is RQ102.

MSH|^~\&|ORSUPPLY|ORSYS|MMSUPPLY|MMSYS|19911105152034||ORM|100|P|2.2||<cr>

ORC|NW|RQ102^ORSUPPLY||||N|||19911105150100|jjones^Jones^Jean|sgomez^Gomez^Susan|

...|MAINOR^2W|X2304<cr>

RQD|1|1232^Solution, 1% Saline||S1784^Saline Solution|5|BT^Bottle|1234-5678|

...ORSUP^Main OR Supply Room|19901105<cr>

RQD|2|1231^Solution, 0.2% Saline||S1781^Saline Solution|2|BT^Bottle|1234-5678|

...ORSUP^Main OR Supply Room|19901105<cr>

RQD|3|2342^Suture, Black Silk||SU123^Suture|2|DZ^Dozen|1234-5678|

...ORSUP^Main OR Supply Room|19901105<cr>

RQD|4|2344^Suture, Black Silk 3-0||SU124^Suture|1|DZ^Dozen|1234-5678|

...ORSUP^Main OR Supply Room|19901105<cr>

RQD|5|4565^Bandage Pad, 4x4||B6345^Bandage Pad|3|BX^Box|1234-5678|

...ORSUP^Main

# 4.15 PHARMACY ORDERS

## 4.16.1 ORM - pharmacy prescription message

| ORM | Pharmacy Prescription Message | | Chapter |
|---|---|---|---|
| MSH | Message Header | | 2 |
| [{NTE}] | Notes and Comments (for Header) | 2 | |
| [ | | | |
| PID | Patient Identification | 3 | |
| [{NTE}] | Notes and Comments (for Patient ID) | 2 | |
| [{AL1}] | Allergy | | 2 |
| [PV1] | Patient Visit | | 3 |
| ] | | | |
| { | | | |
| ORC | Common Order | | 4 |
| [ | | | |
| RXO | Pharmacy Prescription | 4 | |
| [{NTE}] | Notes and Comments (for RXO) | 2 | |
| {RXR} | Pharmacy Route | | 4 |
| [ | | | |
| {RXC} | Pharmacy Component | | 4 |
| [{NTE}] | Notes and Comments (for RXC) | 2 | |
| ] | | | |
| [ | | | |
| { | | | |
| OBX | Observation/Result | | 7 |
| [{NTE}] | Notes and Comments (for OBX) | 2 | |
| } | | | |
| ] | | | |
| ] | | | |
| [BLG] | Billing Segment | | 6 |
| } | | | |

ORR message for pharmacy:

| ORR | Description | | Chapter |
|---|---|---|---|
| MSH | Message Header | | 2 |
| MSA | Message Acknowledgment | | 2 |
| [ERR] | Error | | 2 |
| [{NTE}] | Notes and Comments (for Response Header) | 2 | |
| [ | | | |
| [PID | Patient Identification | 3 | |
| [{NTE}]] | Notes and Comments (for Patient ID) | 2 | |
| { | | | |
| ORC | Common Order | | 4 |
| [ | | | |
| RXO | Pharmacy Prescription | 4 | |
| [{NTE}] | Notes and Comments (for RXO) | 2 | |
| {RXR} | Pharmacy Route | | 4 |
| [{RXC}] | Pharmacy Component | | 4 |
| [{NTE}] | Notes and Comments (for RXC) | 2 | |

```
    ]
  }
]
```

## 4.16.3 RXO - pharmacy prescription order segment

This is the "master" pharmacy order segment. It contains order data not specific to components or additives. Unlike the OBR, it does not contain status fields or other data that are results-only.

It can be used for any type of pharmacy order, including inpatient (unit dose and compound unit dose), outpatient, IVs, and hyperalimentation IVs (nutritional IVs).

In addition to the pharmaceutical information, this segment contains additional data such as provider and text comments.

A quantity/timing field is not needed in the RXO segment. The ORC segment contains the requested *ORC-7-quantity/timing* of the original order which does not change as the order is encoded, dispensed, or administered.

Figure 4-13 RXO attributes

| SEQ | LEN | DT | R/O | RP/# | TBL# | ITEM# | ELEMENT NAME |
|---|---|---|---|---|---|---|---|
| 1 | 100 | CE | R | | | 00292 | Requested Give Code |
| 2 | 20 | NM | R | | | 00293 | Requested Give Amount - Minimum |
| 3 | 20 | NM | O | | | 00294 | Requested Give Amount - Maximum |
| 4 | 60 | CE | R | | | 00295 | Requested Give Units |
| 5 | 60 | CE | O | | | 00296 | Requested Dosage Form |
| 6 | 200 | CE | O | Y | | 00297 | Provider's Pharmacy Instructions |
| 7 | 200 | CE | O | Y | | 00298 | Provider's Administration Instructions |
| 8 | 12 | CM | C | | | 00299 | Deliver-to Location |
| 9 | 1 | ID | O | | 0161 | 00300 | Allow Substitutions |
| 10 | 100 | CE | C | | | 00301 | Requested Dispense Code |
| 11 | 20 | NM | C | | | 00302 | Requested Dispense Amount |
| 12 | 60 | CE | C | | | 00303 | Requested Dispense Units |
| 13 | 3 | NM | O | | | 00304 | Number of Refills |
| 14 | 60 | CN | C | | | 00305 | Ordering Provider's DEA Number |
| 15 | 60 | CN | C | | | 00306 | Pharmacist Verifier ID |
| 16 | 1 | ID | O | | | 00307 | Needs Human Review |
| 17 | 20 | ST | C | | | 00308 | Requested Give Per (Time Unit) |

### 4.8.2.0 RXO field definitions

#### 4.16.4.1 Requested give code (CE) 00292

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

Definition: identifier of the medical substance ordered to be given to the patient; it is equivalent to *OBR-4-universal service ID code* in function. The request-to-dispense fields, which define the type and amount of what is to be issued to the patient (see *RXO-10 requested dispense code*, *RXO-11-requested dispense amount*, and *RXO-12-requested dispense units*) do not necessarily correlate with the instructions of what amount is to be

"given" or administered with each dose, and may or may not be specified with the order. For example, the "give" part of the order may convey the field-representation of *give 15 mg of librium every 6 hours*, while the request to dispense part of the order may convey *issue 30 tablets of 10 MG generic equivalent for this outpatient prescription*. When the give code does not include the dosage form, use *RXO-5-requested dosage form*.

#### 4.16.4.2 Requested give amount - minimum (NM) 00293

Definition: ordered amount. In a variable dose order, this is the minimum ordered amount. In a nonvarying dose order, this is the exact amount of the order.

> **Note:** This field is not a duplication of the first component of the quantity/timing field, since in non-Pharmacy orders, that component can be used to specify multiples of an ordered amount.
>
> Another way to say this is that, for pharmacy orders, the quantity component of the quantity/timing field refers to what is to be given out at each service interval; thus, in terms of the RX order, that first component always defaults to 1. Hence, in the actual execution of the order, the value of 1 in the first component of the quantity/timing field always refers to one administration of the amount specified in this field (the Requested Give Amount field).

#### 4.16.4.3 Requested give amount - maximum (NM) 00294

Definition: in a variable dose order, this is the maximum ordered amount. In a nonvarying dose order, this field is not used.

#### 4.16.4.4 Requested give units (CE) 00295

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

Definition: units for the give amount.

> **Note:** These units can be a "compound quantity"; i.e., the units may contain the word "per." For example, micrograms per KG (micg/kg) is an acceptable value, which means that the units are micrograms per KG (of body weight). See Chapter 7 for full definition of ISO+ units.

A table of standard units is needed to define standard abbreviations for compound units. Until such a table is agreed on, a user-defined table is needed for each site. If the interpretation of a compound unit requires knowledge of some observation results (such as body weight or height), these results can be sent in the same order message using the optional OBX segments.

#### 4.16.4.5 Requested dosage form (CE) 00296

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

Definition: use when both *RXO-1-requested give code* and *RXO-10-requested dispense code* do not specify the drug form.

#### 4.16.4.6 Provider's pharmacy instructions (CE) 00297

Definition: ordering provider's instructions to the pharmacy as a free text field.

#### 4.16.4.7 Provider's administration instructions (CE) 00298

Definition: ordering provider's instructions to the patient or to the provider administering the drug as a free text field.

#### 4.16.4.8 Deliver-to location (CM) 00299

Components: <nurse unit & room & bed & facility ID & bed status> ^ <street address & other designation & city & state or province & zip or postal code & country & type & other geographic designation>

Definition: the first component contains the inpatient or outpatient location to which the pharmacy is to deliver the drug (if applicable). The default (null) value is the current census location for the patient. Site specific table. This component has the same form as *PV1-3-assigned patient location*.

The second component can be used to specify an address. This could be used to fill mail orders to a patient or provider, or to account for home health care.

#### 4.16.4.9 Allow Substitution (ID) 00300

Definition: values are the following:

Table 0161 Allow substitution

| Value | Description |
|---|---|
| N | Substitutions are NOT authorized. (This is the default - null.) |
| G | Allow generic substitutions. |
| T | Allow therapeutic substitutions. |

Note on request-to-dispense fields:

Sometimes an order will be written in which the total amount of the drug requested to be dispensed has no direct relationship with the give amounts and schedule. For example, an outpatient pharmacy order might be *take four pills a day of <drug name, value>, Q6H (every 6 hours) -- dispense 30 tablets*. An inpatient order might be *NS/D5W (normal saline with 5% dextrose) at 1000cc/hour -- dispense 3 1-liter bottles of NSD5W solution*. The request-to-dispense fields support this common style of ordering.

#### 4.16.4.10 Requested dispense code (CE) 00301

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

Definition: what is to be/was dispensed; it is equivalent to *OBR-4-universal service ID* in function. It may be present in the order or not, depending on the application. If not present, and values are given for *RXO-11-requested dispense amount* and *RXO-12-requested dispense units*, the *RXO-1-requested give code* is assumed. If the requested dispense code does not include the dosage form, use *RXO-5-requested dosage form*.

#### 4.16.4.11 Requested dispense amount (NM) 00302

Definition: amount to be dispensed.

#### 4.16.4.12 Requested dispense units (CE) 00303

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

Definition: units for the dispense amount. This must be in simple units that reflect the actual quantity of the substance to be dispensed. It does not include compound units.

#### 4.16.4.13 Number of refills (NM) 00304

Definition: outpatient only.

#### 4.16.4.14 Ordering Provider's DEA number (CN) 00305

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial or name> ^ <suffix (e.g., JR or III)> ^ <prefix (e.g., DR)> ^ <degree (e.g., MD)> ^ <source table>

Definition: if required by site.

#### 4.16.4.15 Pharmacist verifier ID (CN) 00306

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial or name> ^ <suffix (e.g., JR or III)> ^ <prefix (e.g., DR)> ^ <degree (e.g., MD)> ^ <source table>

Definition: provider ID of pharmacist verifier. Use if required by the Pharmacy application or site on orders (or some subgroup of orders), in addition to *ORC-11-verified by*.

Example:

The site requires a "verified by" provider (such as a nurse) and a "verifying pharmacist" on the order. In this case the first field, *ORC-11-verified by*, is already present; but the second field, *RXO-15-pharmacist verifier ID*, is needed.

#### 4.16.4.16 Needs human review (ID) 00307

Definition: uses *table 0136 - Y/N indicator*. The values have the following meaning for this field:

Table 0136 Y/N indicator

| Value | Description |
|---|---|
| Y | Yes - Indicates that the pharmacist filling the order needs to pay special attention to the text in the *RXO-6-provider's pharmacy instructions*. A warning is present. |
| N | No - No warning is present. This is the equivalent default (null) value. |

An example of the use of this field is given by the following case:

A *smart* Order Entry application knows of a possible drug interaction on a certain order, but the provider issuing the order wants to override the condition. In this case, the Pharmacy application receiving the order will want to have a staff pharmacist review the interaction and contact the ordering physician.

#### 4.16.4.17 Requested give per (time unit) (ST) 00308

Definition: time unit to use to calculate the rate at which the pharmaceutical is to be administered.

Format:

S<integer> = <integer> seconds
M<integer> = <integer> minutes
H<integer> = <integer> hours
D<integer> = <integer> days
W<integer> = <integer> weeks
L<integer> = <integer> months

**Note:** This is the same as the format specified for the DURATION component of the quantity/timing field, excluding the "X" specification.

This field is required when relevant (e.g., certain IVs). For example, if the "give amount/units" are 300 ml and the "give per" time unit is H1, the rate is 300ml/hr and the duration of this dose is 1 hour. Thus the give amount and give per time unit define the duration of the service.

This field is distinct from the "interval" component of the quantity/timing field, but it could be used in conjunction with it, as in *give 300ml of NS per hr for 1 hour, repeat twice a day*.

## 4.16.5 RXR - pharmacy route segment

The Pharmacy Route segment contains the alternative combination of route, site, administration device, and administration method that are prescribed. The pharmacy and/or nursing staff has a choice between the routes based on either their professional judgment or administration instructions provided by the physician.

Figure 4-14 RXR attributes

| SEQ | LEN | DT | R/O | RP/# | TBL# | ITEM# | ELEMENT NAME |
|---|---|---|---|---|---|---|---|
| 1 | 60 | CE | R | | 0162 | 00309 | Route |
| 2 | 60 | CE | O | | 0163 | 00310 | Site |
| 3 | 60 | CE | O | | 0164 | 00311 | Administration Device |
| 4 | 60 | CE | O | | 0165 | 00312 | Administration Method |

#### 4.8.3.0 RXR field definitions

#### 4.16.6.1 Route (CE) 00309

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

Definition: route of administration.

Some current "route codes," such as some of the NDC-derived codes include the site already. In such cases, the entire code can be included in this field as a "locally defined code" for the CE data type. Refer to *table 0162 - route of administration* for valid entries.

Table 0162 Route of administration

| Value | Description | Value | Description |
|---|---|---|---|
| AP | Apply Externally | NS | Nasal |
| B | Buccal | NG | Nasogastric |
| DT | Dental | OP | Ophthalmic |
| GTT | Gastronomy Tube | OT | Otic |
| GU | GU Irrigant | PO | Oral |
| IA | Intra-arterial | PR | Rectal |
| IC | Intracardiac | SC | Subcutaneous |
| ID | Intradermal | SL | Sublingual |
| IH | Inhalation | TP | Topical |
| IM | Intramuscular | TD | Transdermal |
| IN | Intranasal | TL | Translingual |
| IO | Intraocular | UR | Urethral |
| IP | Intraperitoneal | VG | Vaginal |
| IS | Intrasynovial | | |
| IT | Intrathecal | | |
| IV | Intravenous | | |

### 4.16.6.2 Administrative site (CE) 00310

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

Definition: site of the administration route. Refer to *table 0163 - administrative site* for valid entries.

Table 0163 Administrative site

| Value | Description | Value | Description |
|---|---|---|---|
| BE | Bilateral Ears | NB | Nebulized |
| OU | Bilateral Eyes | PA | Perianal |
| BN | Bilateral Nares | PERIN | Perineal |
| BU | Buttock | RA | Right arm |
| CT | Chest Tube | RAC | Right Anterior Chest |
| LA | Left arm | RACF | Right Antecubital Fossa |
| LAC | Left Anterior Chest | RD | Right Deltoid |
| LACF | Left Antecubital Fossa | RE | Right Ear |
| LD | Left Deltoid | REJ | Right External Jugular |
| LE | Left Ear | OD | Right Eye |
| LEJ | Left External Jugular | RF | Right Foot |
| OS | Left Eye | RG | Right Gluteus Medius |
| LF | Left Foot | RH | Right Hand |
| LG | Left Gluteus Medius | RIJ | Right Internal Jugular |
| LH | Left Hand | RLAQ | Rt Lower Abd Quadrant |
| LIJ | Left Internal Jugular | RLFA | Right Lower Forearm |
| LLAQ | Left Lower Abd Quadrant | RMFA | Right Mid Forearm |
| LLFA | Left Lower Forearm | RN | Right Naris |
| LMFA | Left Mid Forearm | RPC | Right Posterior Chest |
| LN | Left Naris | RSC | Right Subclavian |
| LPC | Left Posterior Chest | RT | Right Thigh |
| LSC | Left Subclavian | RUA | Right Upper Arm |
| LT | Left Thigh | RUAQ | Right Upper Abd Quadrant |
| LUA | Left Upper Arm | RUFA | Right Upper Forearm |
| LUAQ | Left Upper Abd Quadrant | RVL | Right Vastus Lateralis |
| LUFA | Left Upper Forearm | RVG | Right Ventragluteal |
| LVG | Left Ventragluteal | | |
| LVL | Left Vastus Lateralis | | |

As a CE data type, this field may be extended to cover a wide variety of body site codes (e.g., when SNOMED is used as the table source).

### 4.16.6.3 Administration device (CE) 00311

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

Definition: mechanical device used to aid in the administration of the drug. Common examples are IV-sets of different types. Refer to *table 0164 - administration device* for valid entries.

Table 0164 Administration device

| Value | Description | Value | Description |
|---|---|---|---|
| AP | Applicator | IVS | IV Soluset |
| BT | Buretrol | MI | Metered Inhaler |
| HL | Heparin Lock | NEB | Nebulizer |
| IPPB | IPPB | PCA | PCA Pump |
| IVP | IV Pump | | |

4.16.6.4 Administration method (CE) 00312

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

Definition: administration method identifies the specific method requested for the administration of the drug to the patient. Refer to *table 0165 - administration method* for valid entries.

Table 0165 Administration method

| Value | Description | Value | Description |
|---|---|---|---|
| CH | Chew | NB | Nebulized |
| DI | Dissolve | PT | Pain |
| DU | Dust | PF | Perfuse |
| IF | Infiltrate | SH | Shampoo |
| IS | Insert | SO | Soak |
| IR | Irrigate | WA | Wash |
| IVPB | IV Piggyback | WI | Wipe |
| IVP | IV Push | | |

## 4.16.7 RXC - Pharmacy component order segment

If the drug ordered with the RXO segment is a compound drug OR an IV solution, AND there is not a coded value for the Universal Service ID which specifies the components (base and all additives), then the components (the base and additives) are specified by two or more RXC segments. The policy of the Pharmacy application on substitutions at the RXC level is identical to that for the RXO level.

Figure 4-15 RXC attributes

| SEQ | LEN | DT | R/O | RP/# | TBL# | ITEM# | ELEMENT NAME |
|---|---|---|---|---|---|---|---|
| 1 | 1 | ID | R | | 0166 | 00313 | RX Component Type |
| 2 | 100 | CE | R | | | 00314 | Component Code |
| 3 | 20 | NM | R | | | 00315 | Component Amount |
| 4 | 20 | CE | R | | | 00316 | Component Units |

4.8.4.0 RXC field definitions

#### 4.16.7.1 RX component type (ID)00313

Definition: values are the following:

Table 0166 - RX component type

| Value | Description |
|---|---|
| B | Base |
| A | Additive |

For the non-IV case, the "B" value may still apply. For example, if a custom dermatologic salve is being prepared, the "B" item might be a standard base ointment into which other components are mixed.

The amount of the "base" specified in the "B" segment(s) is defined to be the quantity into which amounts specified in the "A" components are mixed. Thus the RXC segments as a group define the "recipe" for a particular amount (defined by the base segment(s)). The give amount, as defined in the RXO, does not need to correspond to this base amount. For example, the RXC segments may specify a recipe for a liter of a standard type of saline with 1 gram of a particular antibiotic, while the give amount (from the RXO) may specify the administration of 2 liters of this IV-solution every 24 hours.

The amount specified in each "A" segment is defined to be the quantity to be added to the amount of the base as specified in its RXC segment.

If any "base" components are present then these should be transmitted first. The first "base" component in the transmission should be considered the "primary base" if such a distinction is necessary. Similarly, the first "additive" in the transmission should be considered the "primary additive" if such a distinction is necessary.

#### 4.16.7.2 Component code (CE) 00314

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

Definition: equivalent to *OBR-4-universal service ID*. It defines the base or component in the same manner as the give and dispense codes. As with the give and dispense codes, it may contain text only, code only, text + code, or text + code + units (implied or explicit). As with the give and dispense codes, if *RXC-4-component units* is present, this overrides the units implied by the code. If only text is present, the Pharmacy application must include a manual review or reentering of the component drug.

#### 4.16.7.3 Component amount (NM) 00315

Definition: amount of this component to be added to the specified amount of the base.

#### 4.16.7.4 Component units (CE) 00316

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

Definition: units for the component amount. If present, this overrides the units implied by *RXC-2-component code*. This must be in simple units that reflect the actual quantity of the component being added. It does not include compound units.

### 4.16.8 IV solution groups

In order for a group of IV solutions to be given sequentially can be supported in two similar ways: Parent/Child and Separate Orders. This HL7 standard supports both methods of ordering. The method used at a particular site must be negotiated between the site institution and the various application vendors. See section 4.4.10.2, cyclic placer order groups for further details.

### 4.16.10 RDE message: pharmacy encoded order

This message communicates the Pharmacy application's encoding of the pharmacy order (ORM message with RXO segment, see above). It may be sent as an unsolicited message to report on either a single order or multiple pharmacy orders for a patient.

As a site-specific variant, the original order segments (RXO, RXRs, associated RXCs, and any NTEs) may be sent optionally (for comparison).

| RDE | Pharmacy Encoded Order Message | Chapter |
|---|---|---|
| MSH | Message Header | 2 |
| [{NTE}] | Notes and Comments (for Header) | 2 |
| [ PID | Patient Identification | 3 |
| [{NTE}] | Notes and Comments (for PID) | 2 |
| [{AL1}] | Allergy | 2 |
| [PV1] | Patient Visit | 3 |
| ] | | |
| { | | |
| ORC | Common Order | 4 |
| [ | | |
| RXO | Pharmacy Prescription | 4 |
| [{NTE}] | Notes and Comments (for RXO) | 2 |
| {RXR} | Pharmacy Route | 4 |
| [ | | |
| {RXC} | Pharmacy Component (for RXO) | 4 |
| [{NTE}] | Notes and Comments (for RXC) | 2 |
| ] | | |
| ] | | |
| RXE | Pharmacy Encoded Order | 4 |
| {RXR} | Pharmacy Route | 4 |
| [{RXC}] | Pharmacy Component (for RXE) | 4 |
| { | | |
| [OBX] | Results | 7 |
| [{NTE}] | Notes and Comments (for OBX) | 2 |
| } | | |
| } | | |

**Note:** The RXCs which follow the RXO may not be fully encoded, but those that follow the RXE must be fully

| encoded. |
|---|

(acknowledged by)

| RRE | Pharmacy Encoded Order Acknowledgement Message | Chapter |
|---|---|---|
| MSH | Message Header | 2 |
| MSA | Message Acknowledgement | 2 |
| [ERR] | Error | 2 |
| [{NTE}] | Notes and Comments (for Header) | 2 |
| [ | | |
| [PID | Patient Identification | 3 |
| [{NTE}]] | Notes and Comments (for PID) | 2 |
| { | | |
| ORC | Common Order | 4 |
| [ | | |
| RXE | Pharmacy Encoded Order | 4 |
| {RXR} | Pharmacy Route | 4 |
| [{RXC}] | Pharmacy Component | 4 |
| ] | | |
| } | | |
| ] | | |

## 4.16.12 RXE - Pharmacy encoded order segment

The RXE segment details the pharmacy application's encoding of the order. It also contains several pharmacy-specific order status fields, such as *RXE-16-number of refills remaining*, *RXE-17-number of refills/doses dispensed*, *RXE-18-date/time of most recent refill/dose*, and *RXE-19-total daily dose*.

Note that *ORC-7-quantity/timing* has a different meaning from *RXE-1-quantity/timing* and *RXG-3-quantity/timing*. The pharmacy department has the "authority" (and/or necessity) to schedule dispense/give events. Hence, the pharmacy department has the responsibility to encode this scheduling information in *RXE-1-quantity/timing* and *RXG-3-quantity/timing*. *ORC-7-quantity/timing* does not change: it always specifies the requested give/dispense schedule of the original order.

Figure 4-16 RXE attributes

| SEQ | LEN | DT | R/O | RP/# | TBL# | ITEM# | ELEMENT NAME |
|---|---|---|---|---|---|---|---|
| 1 | 200 | TQ | R | | | 00221 | Quantity/Timing |
| 2 | 100 | CE | R | | | 00317 | Give Code |
| 3 | 20 | NM | R | | | 00318 | Give Amount - Minimum |
| 4 | 20 | NM | O | | | 00319 | Give Amount - Maximum |
| 5 | 60 | CE | R | | | 00320 | Give Units |
| 6 | 60 | CE | O | | | 00321 | Give Dosage Form |
| 7 | 200 | CE | O | Y | | 00298 | Provider's Administration Instructions |
| 8 | 12 | CM | C | | | 00299 | Deliver-to Location |
| 9 | 1 | ID | O | | 0167 | 00322 | Substitution Status |
| 10 | 20 | NM | C | | | 00323 | Dispense Amount |
| 11 | 60 | CE | C | | | 00324 | Dispense Units |
| 12 | 3 | NM | O | | | 00304 | Number of Refills |
| 13 | 60 | CN | C | | | 00305 | Ordering Provider's DEA Number |
| 14 | 60 | CN | C | | | 00306 | Pharmacist Verifier ID |
| 15 | 20 | ST | R | | | 00325 | Prescription Number |
| 16 | 20 | NM | C | | | 00326 | Number of Refills Remaining |
| 17 | 20 | NM | C | | | 00327 | Number of Refills/Doses Dispensed |
| 18 | 26 | TS | C | | | 00328 | D/T of Most Recent Refill or Dose Dispensed |
| 19 | 10 | CQ | C | | | 00329 | Total Daily Dose |
| 20 | 1 | ID | O | | | 00307 | Needs Human Review |
| 21 | 200 | CE | O | Y | | 00330 | Pharmacy Special Dispensing Instructions |
| 22 | 20 | ST | C | | | 00331 | Give Per (Time Unit) |
| 23 | 6 | ST | O | | | 00332 | Give Rate Amount |
| 24 | 60 | CE | O | | | 00333 | Give Rate Units |

### 4.8.7.0 RXE field definitions

#### 4.16.13.1 Quantity/timing (TQ) 00221

Components: <quantity> ^ <interval> ^ <duration> ^ <start date/time> ^ <end date/time> ^ <priority> ^ <condition> ^ <text> ^ <conjunction> ^ <order sequencing>

Definition: see Section 4.8.7 for necessary modification for this field's definition to cover interorder dependencies needed by pharmacy orders. This field is used by the Pharmacy to express the fully coded version of the drug timing. It may differ from *ORC-7-quantity/timing*, which contains the requested quantity/timing of the original order.

#### 4.16.13.2 Give code (CE) 00317

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

Definition: identifier of the medical substance ordered to be given to the patient, as encoded by the Pharmacy; it is equivalent to *OBR-4-universal service ID* in function. In the RXE segment, this give code must be fully encoded. The dispense fields, which define the units and amount of what is to be issued to the patient (see *RXE-10-dispense amount* and *RXE-11-dispense units* below) do not necessarily correlate with the instructions of what amount is to be "given" or administered with each dose, and may or may not be specified with the order. For example, the "give" part of the order may convey the field-representation of

*give 250 mg of ampicillin*, while the request to dispense part of the order may convey *issue 30 tablets of generic equivalent for this outpatient prescription*.

#### 4.16.13.3 Give amount - minimum (NM) 00318

Definition: ordered amount as encoded by the Pharmacy. In a variable dose order, this is the minimum ordered amount. In a nonvarying dose order, this is the exact amount of the order.

> **Note:** This field is not a duplication of the first component of the quantity/timing field, since in non-Pharmacy orders, that component can be used to specify multiples of an ordered amount.
>
> Another way to say this is that, for pharmacy orders, the quantity component of the quantity/timing field refers to what is to be given out at each service interval; thus, in terms of the RX order, that first component always defaults to 1. Hence, in the actual execution of the order, the value of 1 in the first component of the quantity/timing field always refers to one administration of the amount specified in this field (the requested Give Amount field).

#### 4.16.13.4 Give amount - maximum (NM) 00319

Definition: in a variable dose order, this is the maximum ordered amount. In a nonvarying dose, this field is not used.

#### 4.16.13.5 Give units (CE) 00320

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

Definition: units for the give amount as encoded by the pharmacy application.

> **Note:** These units can be a "compound quantity"; i.e., the units may contain the word "per." For example, micrograms per KG (micg/kg) is an acceptable value, which means that the units are micrograms per KG (of body weight).

A table of standard units that contains compound units is needed. Until such a table is agreed on, a user-defined table is needed for each site.

#### 4.16.13.6 Give dosage form (CE) 00321

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

Definition: use the Give Dosage Form field when the give code does not specifiy the dosage form.

#### 4.16.13.7 Provider's administration instructions (CE) 00298

Definition: ordering provider's instructions to the patient or the provider administering the drug. This is a free text field; it may contain free text describing a custom IV, mixture, or salve.

#### 4.16.13.8 Deliver-to location (CM) 00299

Components: <nurse unit & room & bed & facility ID & bed status> ^ <street address & other designation & city & state or province & zip or postal code & country & type & other geographic designation>

Definition: the first component contains the inpatient or outpatient location to which the pharmacy is to deliver the drug (if applicable). The default (null) value is the current census location for the patient. Site specific table. This component has the same form as *PV1-3-assigned patient location*.

The second component can be used to specify an address. This could be used to fill mail orders to a patient or provider, or to account for home health care.

#### 4.16.13.9 Substitution Status (ID) 00322

Definition: refer to *table 0167 - substitution status* for valid values. If a substitution has been made, and a record of the original requested give code (*RXO-1*) is needed, the optional RXO segment can be included in the RDE message.

Table 0167 Substitution status

| Value | Description |
|---|---|
| N | No substitute was dispensed. This is equivalent to the default (null) value. |
| G | A generic substitution was dispensed. |
| T | A therapeutic substitution was dispensed. |

#### 4.16.13.10 Dispense amount (NM) 00323

Definition: amount dispensed as encoded by the pharmacy.

#### 4.16.13.11 Dispense units (CE) 00324

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

Definition: units for the dispense amount as encoded by the pharmacy. This must be in simple units that reflect the actual quantity of the substance dispensed. It does not include compound units.

#### 4.16.13.12 Number of refills (NM) 00304

Definition: total original number of refills. Outpatient only.

#### 4.16.13.13 Ordering Provider's DEA number (CN) 00305

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial or name> ^ <suffix (e.g., JR or III)> ^ <prefix (e.g., DR)> ^ <degree (e.g., MD)> ^ <source table>

Definition: if required by the site.

#### 4.16.13.14 Pharmacist verifier ID (CN) 00306

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial or name> ^ <suffix (e.g., JR or III)> ^ <prefix (e.g., DR)> ^ <degree (e.g., MD)> ^ <source table>

Definition: provider ID of pharmacist verifier. Use if required by the Pharmacy application or site on orders (or some subgroup of orders).

#### 4.16.13.15 Prescription number (ST) 00325

Definition: as assigned by the pharmacy application. Equivalent in uniqueness to the Pharmacy filler order number. At some sites, this may be the Pharmacy (internal) sequential form. At other sites, this may be an external form.

#### 4.16.13.16 Number of refills remaining (NM) 00326

Definition: outpatient only.

#### 4.16.13.17 Number of refills/doses dispensed (NM) 00327

Definition: outpatient only.

#### 4.16.13.18 D/T of most recent refill or dose dispensed (TS) 00328

Definition: date/time of the most recent refill or dose dispensed, use Time Stamp format.

#### 4.16.13.19 Total daily dose (CQ) 00329

Components: <quantity> ^ <units>

Definition: total daily dose for this particular pharmaceutical as expressed in terms of actual dispense units.

#### 4.16.13.20 Needs human review (ID) 00307

Definition: uses *table 0136 - Y/N indicator*. The values have the following meaning for this field:

Table 0136 Y/N indicator

| Value | Description |
|---|---|
| Y | Yes - Indicates that a warning is present. The application receiving the encoded order needs to warn the person administering the drug to pay attention to the text in *RXE-22-pharmacy special dispensing instructions*. |
| N | No - Indicates no warning is present. This is the equivalent default (null) value. |

#### 4.16.13.21 Pharmacy special dispensing instructions (CE) 00330

Definition: pharmacy-generated special instructions to the provider dispensing/administering the order.

#### 4.16.13.22 Give per (time unit) as encoded by the pharmacy (ST) 00331

Definition: time unit to use to calculate the rate at which the pharmaceutical is to be administered.

Format:

S<integer> = <integer> seconds
M<integer> = <integer> minutes
H<integer> = <integer> hours
D<integer> = <integer> days
W<integer> = <integer> weeks
L<integer> = <integer> months

This is the same as the format specified for the DURATION component of the quantity/timing field, excluding the "X" specification.

Required when relevant (e.g., certain IVs). For example, if the "give amount/units" were 300 ml and the "give per" time unit were H1 (equivalent to one hour), the rate is 300ml/hr.

#### 4.16.13.23 Give rate amount (CE) 00332

Definition: amount (number) of substance to be administered.

#### 4.16.13.24 Give rate units (ST) 00333

Definition: units for Give Rate Amount. May be composite. The ratio of the Give Rate Amount and Give Rate Units fields define the actual rate of administration. Thus, if Give Rate Amount = 100 and Give Rate Units = ml/hr, the requested rate of administration is 100 ml/hr.

### 4.16.14 Usage notes for Pharmacy messages

For the RDS (pharmacy dispense), RGV (pharmacy give) and RAS (pharmacy administration) messages, the placer and filler numbers are those of the parent RDE (pharmacy encoded order) message. In these messages, the filler number does not provide a unique identification of the instance of the pharmacy action (dispense, give or administer). To correct this problem, each of the defining segments (RXD, RXG, and RXA) has an appropriately named sub-ID field (dispense sub-ID counter, give sub-ID counter, and administration sub-ID counter). The combination of the filler number (including its application ID component) and the appropriate sub-ID counter uniquely identifies the instance of the pharmacy action(s) present in these messages.

Although the default order control code for the RDE, RDS, RGV and RAS messages is "RE", there are cases in which the pharmacy system and the receiving system must communicate changes in state (see appendix A of this chapter). Depending on whether the pharmacy's relationship to the receiving system is that of placer or filler, the appropriate order control code may be substituted for the default value of "RE". The receiving system can also use an appropriate order control code to report status back to the pharmacy system.

For example, suppose that a pharmacy system is sending RGV messages to a nursing system which will administer the medication and that the pharmacy system needs to request that several instances of a give order be discontinued. To implement this request, the RGV message may be sent with a "DC" order control code (discontinue request), and the appropriate RXG segments whose give sub-ID fields identify the instances to be discontinued. If a notification back to the pharmacy is needed, the nursing system can initiate an RGV message with a "DR" order control code (discontinue as requested), and containing RXG segments whose give sub-ID fields identify the discontinued instances.

## 4.16.15 RDS - Pharmacy dispense message

The RDS message may be created by the Pharmacy application for each instance of dispensing drugs to fill an existing order or orders. In the most common case, the RDS messages would be routed to a Nursing application or to some clinical application, which needs the data about drugs dispensed. As a site-specific variant, the original order segments (RXO, RXE and their associated RXR/RXCs) may be sent optionally (for comparison).

| RDS | Pharmacy Dispense Message | Chapter |
|---|---|---|
| MSH | Message Header | 2 |
| [{NTE}] | Notes and Comments (for Header) | 2 |
| [ | | |
| PID | Patient Identification | 3 |
| [{NTE}] | Notes and Comments (for PID) | 2 |
| [{AL1}] | Allergy | 2 |
| [PV1] | Patient Visit | 3 |
| ] | | |
| { | | |
| ORC | Common Order | 4 |
| [ | | |
| RXO | Pharmacy Prescription | 4 |
| [ | | |
| {NTE} | Notes and Comments (for RXO) | 2 |
| {RXR} | Pharmacy Route | 4 |
| [ | | |
| {RXC} | Pharmacy Component | 4 |
| [{NTE}] | Notes and Comments (for RXC) | 2 |
| ] | | |
| ] | | |
| ] | | |
| [ | | |
| RXE | Pharmacy Encoded Order | 4 |
| {RXR} | Pharmacy Route | 4 |
| [{RXC}] | Pharmacy Component | 4 |
| ] | | |
| RXD | Pharmacy Dispense | 4 |
| {RXR} | Pharmacy Route | 4 |
| [{RXC}] | Pharmacy Component | 4 |
| { | | |
| OBX | Results | 7 |
| [{NTE}] | Notes and Comments (for OBX) | 2 |
| } | | |
| } | | |

(acknowledged by)

| RRD | Pharmacy Dispense Acknowledgement Message | Chapter |
|---|---|---|
| MSH | Message Header | 2 |
| MSA | Message Acknowledgement | 2 |
| [ERR] | Error | 2 |
| [{NTE}] | Notes and Comments (for Header) | 2 |
| [ | | |
| [PID | Patient Identification | 3 |
| [{NTE}]] | Notes and Comments (for Patient ID) | 2 |
| { | | |
| ORC | Common Order | 4 |
| [ | | |
| RXD | Pharmacy Dispense | 4 |
| {RXR} | Pharmacy Route | 4 |
| [{RXC}] | Pharmacy Component | 4 |
| ] | | |
| } | | |
| ] | | |

The ORC must have the filler order number and the order control code RE. The RXE and associated RXCs may be present if the receiving application needs any of their data. The RXD carries the dispense data for a given issuance of medication: thus it may describe a single dose, a half-day dose, a daily dose, a refill of a prescription, etc. The RXD is not a complete record of an order. Use the RXO and RXE segments if a complete order is needed. It is a record from the Pharmacy to the Nursing application (or other) with drug dispense and administration instructions.

## 4.16.17 RXD - Pharmacy dispense segment

Figure 4-17 RXD attributes

| SEQ | LEN | DT | R/O | RP/# | TBL# | ITEM# | ELEMENT NAME |
|---|---|---|---|---|---|---|---|
| 1 | 4 | NM | R | | | 00334 | Dispense Sub-ID Counter |
| 2 | 100 | CE | R | | | 00335 | Dispense/Give Code |
| 3 | 26 | TS | R | | | 00336 | Date/Time Dispensed |
| 4 | 20 | NM | R | | | 00337 | Actual Dispense Amount |
| 5 | 60 | CE | C | | | 00338 | Actual Dispense Units |
| 6 | 60 | CE | O | | | 00339 | Actual Dosage Form |
| 7 | 20 | NM | C | | | 00325 | Prescription Number |
| 8 | 20 | NM | C | | | 00326 | Number of Refills Remaining |
| 9 | 200 | CE | C | Y | | 00340 | Dispense Notes |
| 10 | 200 | CN | O | | | 00341 | Dispensing Provider |
| 11 | 1 | ID | O | | 0167 | 00342 | Substitution Status |
| 12 | 10 | NM | O | | | 00328 | Total Daily Dose |
| 13 | 12 | ID | C | | | 00299 | Dispense-to Location |
| 14 | 1 | ID | O | | | 00307 | Needs Human Review |
| 15 | 200 | CE | O | Y | | 00330 | Pharmacy Special Dispensing Instructions |

4.8.10.0 RXD field definitions

4.16.18.1 Dispense sub-ID counter (NM) 00334

Definition: starts with 1 the first time that medication is dispensed for this order. Increments by one with each additional issuance of medication.

#### 4.16.18.2 Dispense/give code (CE) 00335

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

Definition: identifier of the medical substance ordered to be given to the patient; it is equivalent to *OBR-4-universal service ID code*. See the RXE segment for a complete definition of the *RXE-2-give code*.

> **Note:** The contents of *RXD-2-dispense/give code* should be identical to the comparable field in the RXE (*RXE-2-give code*). The RDS message refers ONLY to the dispensing of the drug by the Pharmacy.

#### 4.16.18.3 Date/time dispensed (TS) 00336

Definition: when the pharmaceutical is dispensed from the Pharmacy. Use the time-stamp format.

#### 4.16.18.4 Actual dispense amount (NM) 00337

Definition: amount dispensed.

#### 4.16.18.5 Actual dispense units (CE) 00338

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

Definition: units dispensed. Site-defined table. As with Give units, if the units are part of the actual dispense code this field is optional, but if present, it overrides units implied by the actual dispense code. This must be in simple units that reflect the actual quantity of the substance dispensed. It does not include compound units.

#### 4.16.18.6 Actual dosage form (CE) 00339

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

Definition: use this field when the give code and the dispense code do not specify the dosage form.

#### 4.16.18.7 Prescription number (NM) 00325

Definition: equivalent in uniqueness to the Pharmacy filler order number. At some sites, this may be the Pharmacy (internal) sequential form. At other sites, this may be an external form.

#### 4.16.18.8 Number of refills remaining (NM) 00326

Definition: outpatient only.

#### 4.16.18.9 Dispense notes (ST) 00340

Definition: free text notes to the person dispensing the medication (may include the ordering provider's original notes, as well as any notes from the formulary or the pharmacy). This may contain free text describing a custom IV, mixture, or salve.

#### 4.16.18.10 Dispensing provider (CN) 00341

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial or name> ^ <suffix (e.g., JR or III)> ^ <prefix (e.g., DR)> ^ <degree (e.g., MD)> ^ <source table>

Definition: provider ID of the person dispensing the pharmaceutical.

#### 4.16.18.11 Substitution status (ID) 00342

Definition: refer to *table 0167 - substitution status* for suggested values.

#### 4.16.18.12 Total daily dose (NM) 00328

Definition: total daily dose being dispensed as expressed in terms of the actual dispense units.

> **Note:** The next two fields are equivalent to the corresponding fields of the RXE segment. They are included (optionally) in the RXD so that it may "stand alone" as a dispense result instruction segment.

#### 4.16.18.13 Dispense-to location (CM) 00299

Components: <nurse unit & room & bed & facility ID & bed status> ^ <street address & other designation & city & state or province & zip or postal code & country & type & other geographic designation>

Definition: the first component contains the inpatient or outpatient location where the drug was dispensed (if applicable). The default (null) value is the current census location for the patient. Site specific table. This component has the same form as *PV1-3-assigned patient location*.

The second component can be used to specify an address. This could be used to fill mail orders to a patient or provider.

#### 4.16.18.14 Needs human review (ID) 00307

Definition: refer to *table 0136 - Y/N indicator* for valid values. The values have the following meaning for this field:

Table 0136 Y/N indicator

| Value | Description |
|---|---|
| Y | Yes - Indicates that a warning is present. The application receiving the dispense order needs to warn the person dispensing/administering the drug to pay attention to the text in *RXD-15-pharmacy special dispensing instructions*. |
| N | No - Indicates no warning is present. This is the equivalent default (null) value. |

4.16.18.15 Pharmacy special dispensing instructions (CE) 00330

Definition: pharmacy-generated special instructions to the provider dispensing/administering the order.

## 4.16.19
## 4.8.11 RGV - pharmacy give message

The RDS message's RXD segment carries the dispense data for a given issuance of medication: thus it may describe a single dose, an half-day dose, a daily dose, a refill of a prescription, etc. It does not contain the given instructions or scheduling information. When this "give" (i.e., administration) information needs to be transmitted from the Pharmacy application to another application, it is done with the RGV message.

The RGV message uses the RXG segment to record drug administration instructions. It may carry information about a single scheduled administration on a drug, or it may carry information about multiple administrations of a drug. If the pharmacy (or some other application) needs to create a nonambiguous MAR report where each administration is matched to a particular give date/time instruction, it may use the RGV message as described in the following way:

For each scheduled administration of the medication, the pharmacy issues either a single RGV message or a single RGV message with multiple RXG segments, one for each scheduled administration. The actual administrations (transmitted by one or more RAS messages) are matched against the scheduled ones by recording in each RXA segment the Give Sub-ID of the corresponding RXG segment. If more than one administration needs to be matched (as in the case of recording a change or rate of an IV solution) the administering application issues additional RXA segment(s) (corresponding to the same RXG segment). If no matching is needed, the Give Sub-ID of the RXA segments has the value zero (0).

The ORC must have the filler order number and the order control code RE. The RXE and associated RXCs may be present if the receiving application needs any of their data. The RXG carries the scheduled administration data for either a single "give instruction" (single dose) of medication or for multiple "give instructions." The RXG is not a complete record of an order. Use the RXO and RXE segments if a complete order is needed. It is a record from the Pharmacy to the Nursing application (or other) with drug administration instructions.

| RGV | Pharmacy Give | Chapter |
|---|---|---|
| MSH | Message Header | 2 |
| [{NTE}] | Notes and Comments (for Header) | 2 |
| [ | | |
| PID | Patient Identification | 3 |
| [{NTE}] | Notes and Comments (for PID) | 2 |
| [{AL1}] | Allergy | 2 |
| [ PV1 ] | Patient Visit | 3 |
| ] | | |
| { | | |
| ORC | Common Order | 4 |
| [ | | |
| RXO | Pharmacy Prescription | 4 |
| [ | | |
| {NTE} | Notes and Comments (for RXO) | 2 |
| {RXR} | Pharmacy Route | 4 |
| [ | | |
| {RXC} | Pharmacy Component | 4 |
| [{NTE}] | Notes and Comments (for RXC) | 2 |
| ] | | |
| ] | | |
| ] | | |
| [ | | |
| RXE | Pharmacy Encoded Order | 4 |
| {RXR} | Pharmacy Route | 4 |
| [{RXC}] | Pharmacy Component | 4 |
| ] | | |
| { | | |
| RXG | Pharmacy Give | 4 |
| {RXR} | Pharmacy Route | 4 |
| [{RXC}] | Pharmacy Component | 4 |
| { | | |
| [OBX] | Observation/Results | 7 |
| [{NTE}] | Notes and Comments (for OBX) | 2 |
| } | | |
| } | | |
| } | | |

(acknowledged by)

| RRG | Pharmacy Give Acknowledgement Message | Chapter |
|---|---|---|
| MSH | Message Header | 2 |
| MSA | Message Acknowledgement | 2 |
| [ERR] | Error | 2 |
| [{NTE}] | Notes and Comments (for Header) | 2 |
| [ | | |
| [PID | Patient Identification | 3 |
| [{NTE}]] | Notes and Comments (for PID) | 2 |
| { | | |
| ORC | Common Order | 4 |
| [ | | |
| RXG | Pharmacy Give | 4 |
| {RXR} | Pharmacy Route | 4 |
| [{RXC}] | Pharmacy Component | 4 |

]
}
]

## 4.16.21 RXG - pharmacy give segment

Figure 4-18 RXG attributes

| SEQ | LEN | DT | R/O | RP/# | TBL# | ITEM# | ELEMENT NAME |
|---|---|---|---|---|---|---|---|
| 1 | 4 | NM | R | | | 00342 | Give Sub-ID Counter |
| 2 | 4 | NM | O | | | 00333 | Dispense Sub-ID |
| 3 | 200 | TQ | R | | | 00221 | Quantity/Timing |
| 4 | 100 | CE | R | | | 00317 | Give Code |
| 5 | 20 | NM | R | | | 00318 | Give Amount - Minimum |
| 6 | 20 | NM | O | | | 00319 | Give Amount - Maximum |
| 7 | 60 | CE | R | | | 00320 | Give Units |
| 8 | 60 | CE | O | | | 00321 | Give Dosage Form |
| 9 | 200 | CE | C | Y | | 00343 | Administration Notes |
| 10 | 20 | ID | O | | 0167 | 00322 | Substitution Status |
| 11 | 12 | ID | O | | | 00299 | Dispense-to Location |
| 12 | 1 | ID | O | | | 00307 | Needs Human Review |
| 13 | 200 | CE | O | Y | | 00344 | Pharmacy Special Administration Instructions |
| 14 | 20 | ST | C | | | 00331 | Give Per (Time Unit) |
| 15 | 6 | ST | O | | | 00332 | Give Rate Amount |
| 16 | 60 | CE | O | | | 00333 | Give Rate Units |

4.8.12.0 RXG field definitions

4.16.22.1 Give sub-ID counter (NM) 00342

Definition: use if this RXG segment carries information about a single adminstration. Starts with 1 for the first scheduled give date/time transmitted by the pharmacy for this order. Increments by one with each additional scheduled give date/time for this order.

If the RXG segment carries information about multiple adminstrations, this field's value is zero, since in this case a one-to-one matching with the RAS segment is ambiguous.

4.16.22.2 Dispense sub-ID (NM) 00334

Definition: dispense sub-ID to which this give message is related.

4.16.22.3 Quantity/timing (TQ) 00221

Components: <quantity> ^ <interval> ^ <duration> ^ <start date/time> ^ <end date/time> ^ <priority> ^ <condition> ^ <text> ^ <conjunction> ^ <order sequencing>

Definition: quantity/timing specification that refers to either a single scheduled give instruction only or to multiple give instructions. In the former case, *RXG-1-give sub-ID counter* is a positive integer greater than or equal to one (1). In the latter case, *RXG-1-give sub-ID counter* is zero (0). The quantity will always be 1. This

quantity/timing field may differ from the ORC quantity/timing field, which contains the requested quantity/timing of the original order.

> **Note:** The contents of fields 3-8 should be identical to the comparable fields in the RXE (RXE-2 thru 5).

#### 4.16.22.4 Give code (CE) 00317

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

Definition: identifier of the medical substance ordered to be given to the patient; it is equivalent to *OBR-4-universal service ID code* in function. See the RXE segment for a complete definition of the *RXE-2-give code*.

#### 4.16.22.5 Give amount - minimum (NM) 00318

Definition: ordered amount as encoded by the Pharmacy. In a variable dose order, this is the minimum ordered amount. In a nonvarying dose order, this is the exact amount of the order.

> **Note:** This field is not a duplication of the first component of the quantity/timing field, since in non-Pharmacy orders, that component can be used to specify multiples of an ordered amount.
>
> Another way to say this is that, for pharmacy orders, the quantity component of the quantity/timing field refers to what is to be given out at each service interval; and thus, in terms of the RX order, that first component always defaults to 1. Hence, in the actual execution of the order, the value of 1 in the first component of the quantity/timing field always refers to one administration of the amount specified in this field (the requested Give Amount field).

#### 4.16.22.6 Give amount - maximum (NM) 00319

Definition: in a variable dose order, this is the maximum ordered amount. In a nonvarying dose order, this field is not used.

#### 4.16.22.7 Give units (CE) 00320

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

Definition: units for the give amount.

> **Note:** These units can be a "compound quantity"; i.e., the units may contain the word "per." For example, micrograms per KG (micg/kg) is an acceptable value, which means that the units are micrograms per KG (of body weight).

A table of standard units that contains compound units is needed. Until such a table is agreed on, a user-defined table is needed for each site.

#### 4.16.22.8 Give dosage form (CE) 00321

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

Definition: use this field when the give code does not specify the dosage form.

#### 4.16.22.9 Administration notes (CE) 00343

Definition: free text notes to the person administering the medication (may include the ordering provider's original notes, as well as any notes from the formulary or the pharmacy).

#### 4.16.22.10 Substitution status (ID) 00322

Definition: refer to *table 0167 - substitution status* for valid values.

> **Note:** The next two fields are equivalent to the corresponding fields of the RXE segment. They are included (optionally) in the RXG so that it may "stand alone" as a "give" instruction segment.

#### 4.16.22.11 Dispense-to location (CM) 00299

Components: <nurse unit & room & bed & facility ID & bed status> ^ <street address & other designation & city & state or province & zip or postal code & country & type & other geographic designation>

Definition: the first component contains the inpatient or outpatient location where the drug was dispensed (if applicable). The default (null) value is the current census location for the patient. Site specific table. This component has the same form as *PV1-3-assigned patient location*.

The second component can be used to specify an address. This could be used to fill mail orders to a patient or provider.

#### 4.16.22.12 Needs human review (ID) 00307

Definition: refer to *table 0136 - Y/N indicator* for valid values. The values have the following meaning for this field:

Table 0136 Y/N indicator

| Value | Description |
|---|---|
| Y | Yes - Indicates that a warning is present. The application receiving the dispense order needs to warn the person dispensing/administering the drug to pay attention to the text in *RXG-13-pharmacy special administration instructions*. |
| N | No - Indicates no warning is present. This is the equivalent default (null) |

| | |
|---|---|
| | value. |

#### 4.16.22.13 Pharmacy special administration instructions (CE) 00344

Definition: pharmacy-generated special instructions to the provider administering the order.

#### 4.16.22.14 Give per (time unit) (ST) 00331

Definition: time unit to use to calculate the rate at which the pharmaceutical is to be administered.

Format:

S<integer> = <integer> seconds
M<integer> = <integer> minutes
H<integer> = <integer> hours
D<integer> = <integer> days
W<integer> = <integer> weeks
L<integer> = <integer> months

This is the same as the format specified for the DURATION component of the quantity/timing field, excluding the "X" specification.

Required when relevant (e.g., certain IVs). For example, if the "give amount/units" were 300 ml and the "give per" time unit were H1 (equivalent to one hour), the rate is 300ml/hr.

#### 4.16.22.15 Give rate amount (ST) 00332

Definition: amount (number) of substance to be administered.

#### 4.16.22.16 Give rate units (CE) 00333

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

Definition: units for Give Rate Amount. May be composite. The ratio of the Give Rate Amount and Give Rate Units fields define the actual rate of administration. Thus, if Give Rate Amount = 100 and Give Rate Units = ml/hr, the requested rate of administration is 100 ml/hr.

## 4.16.23
## 4.8.13 RAS - pharmacy administration message

The RAS message may be created by the administering application (e.g., nursing application) for each instance of administration for an existing order. If the administering application wants to report several administrations of medication for a given order with a single RAS message, each instance is reported by a separate (repeating) RXA segment. In addition, the administration records for a group of orders may be sent in a single message by creating repeating groups of segments at the ORC level.

In the most common case, the RAS messages would be sent from a nursing application to the pharmacy application (or to the ordering application or another clinical application), which could use the data to generate the medication administration reports. Multiple RXA segments, each corresponding to a separate administration instance for a given order, may be sent with a single ORC.

| RAS | Pharmacy Administration | Chapter |
|---|---|---|
| MSH | Message Header | 2 |
| [{NTE}] | Notes and Comments (for Header) | 2 |
| [ | | |
| PID | Patient Identification | 3 |
| [{NTE}] | Notes and Comments (for PID) | 2 |
| [{AL1}] | Allergy | 2 |
| [ PV1 ] | Patient Visit | 3 |
| ] | | |
| { | | |
| ORC | Common Order | 4 |
| [ | | |
| RXO | Pharmacy Prescription | 4 |
| [ | | |
| {NTE} | Notes and Comments (for RXO) | 2 |
| {RXR} | Pharmacy Route | 4 |
| [ | | |
| {RXC} | Pharmacy Component | 4 |
| [{NTE}] | Notes and Comments (for RXC) | 2 |
| ] | | |
| ] | | |
| ] | | |
| [ | | |
| RXE | Pharmacy Encoded Order | 4 |
| {RXR} | Pharmacy Route | 4 |
| [{RXC}] | Pharmacy Component | 4 |
| ] | | |
| {RXA} | Pharmacy Administration | 4 |
| RXR | Pharmacy Route | 4 |
| {[OBX | Observation/Result | 7 |
| {[NTE]} | Notes and Comments (for OBX) | 2 |
| ]} | | |
| } | | |

(acknowledged by)

RRA Pharmacy Administration Acknowledgement Message Chapter

MSH Message Header 2
MSA Message Acknowledgement 2
[ERR] Error 2
[{NTE}] Notes and Comments (for Header) 2
[
[PID Patient Identification 3
[{NTE}]] Notes and Comments (for PID) 2
{
ORC Common Order 4
[
{RXA} Pharmacy Administration 4
RXR Pharmacy Route 4
]
}
]

## 4.16.25 RXA - pharmacy administration segment

The ORC must have the filler order number and the order control code RE. As a site-specific variant, the RXO and associated RXCs and/or the RXE (and associated RXCs) may be present if the receiving application needs any of their data. The RXA carries the administration data.

Figure 4-19 RXA attributes

| SEQ | LEN | DT | R/O | RP/# | TBL# | ITEM# | ELEMENT NAME |
|---|---|---|---|---|---|---|---|
| 1 | 4 | NM | R | | | 00342 | Give Sub-ID Counter |
| 2 | 4 | NM | R | | | 00344 | Administration Sub-ID Counter |
| 3 | 26 | TS | R | | | 00345 | Date/Time Start of Administration |
| 4 | 26 | TS | R | | | 00346 | Date/Time End of Administration |
| 5 | 100 | CE | R | | | 00347 | Administered Code |
| 6 | 20 | NM | R | | | 00348 | Administered Amount |
| 7 | 60 | CE | C | | | 00349 | Administered Units |
| 8 | 60 | CE | O | | | 00350 | Administered Dosage Form |
| 9 | 200 | CE | C | Y | | 00351 | Administration Notes |
| 10 | 200 | CN | O | | | 00352 | Administering Provider |
| 11 | 12 | ID | C | | | 00353 | Administered-at Location |
| 12 | 20 | ST | C | | | 00354 | Administered Per (Time Unit) |

4.8.14.0 RXA field definitions

4.16.26.1 Give sub-ID counter (NM) 00342

Definition: use if matching this RXA segment to its corresponding RXG segment. If the two applications are not matching RXG and RXA segments, this field's value is zero.

4.16.26.2 Administration sub-ID counter (NM) 00344

Definition: starts with 1 the first time that medication is administered for this order. Increments by one with each additional administration of medication.

> **Note:** More than one RXA segment can be "matched" to a single RXG segment, as is the case when recording a change of the rate of adminstration of an IV solution.

#### 4.16.26.3 Date/time start of administration (TS) 00345

Definition: if the order is for a continuous administration (such as an IV), and the rate is changed at a certain time after the start, an RAS message can be issued to record the change. For such an RAS message, this field records the time the rate was changed to the new value recorded in the Administered Per (Time Unit) field of the same message.

#### 4.16.26.4 Date/time end of administration (if applies) (TS) 00346

Definition: If null, the date/time of *RXA-3-date/time start of administration* is assumed.

#### 4.16.26.5 Administered code (CE) 00347

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

Definition: identifier of the medical substance administered. It is equivalent to *OBR-4-universal service ID code* in function.

#### 4.16.26.6 Administered amount (NM) 00348

Definition: amount administered.

#### 4.16.26.7 Administered units (CE) 00349

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

Definition: must be in simple units that reflect the actual quantity of the substance administered. It does not include compound units.

#### 4.16.26.8 Administered dosage form (CE) 00350

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

Definition: use this field when the administered code does not specify the dosage form.

#### 4.16.26.9 Administration notes (CE) 00351

Definition: free text notes from the provider administering the medication. This may contain free text describing a custom IV, mixture, or salve.

#### 4.16.26.10 Administering provider (CN) 00352

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial or name> ^ <suffix (e.g., JR or III)> ^ <prefix (e.g., DR)> ^ <degree (e.g., MD)> ^ <source table>

Definition: provider ID of the person administering the pharmaceutical.

#### 4.16.26.11 Administered at location (CM) 00353

Components: <nurse unit & room & bed & facility ID & bed status> ^ <street address & other designation & city & state or province & zip or postal code & country & type & other geographic designation>

Definition: the first component contains the inpatient or outpatient location at which the drug was administered (if applicable). The default (null) value is the current census location for the patient. Site specific table. This component has the same form as *PV1-3-assigned patient location*.

The second component can be used to specify an address. This could be used to fill mail orders to a patient or provider, or to account for home health care.

#### 4.16.26.12 Administered per (time unit) (ST) 00354

Definition: rate at which this medication was administered as calculated by using the Administered Amount and the Administered Units fields.

## 4.16.27
## 4.8.15 Pharmacy queries

With appropriate definitions in the QRD and/or QRF segments, the RDE, RDS, RGV, and RAS messages can serve as models for result-oriented Pharmacy queries returning the current profile of Pharmacy orders (RDE type), the current dispense history (RDS type), the current dose history (RGV type), or the current administration record (RAS type). Examples are given in Section 4.8.16.3.

## 4.16.29 Examples of use

The purpose of this section is to show how certain specific situations would be handled using the pharmacy protocol. The ellipses represent uncompleted details. The symbol // precedes comments for clarification.

#### 4.16.30.1 Example of various levels of coding in an order

The order *give 500 mg Ampicillin P.O. Q6H for 10 days for a total of 40 tablets* is sent to the RX application from the OE application. This order can be coded with various levels of precision by an ordering application:

a)E-mail only version (uses only free text, *RXO-6-provider's pharmacy instructions* or *RXO-7-provider's administration instructions* only); fully encoded version must be re-entered or verified manually by the pharmacy application.

b)With *RXO-2-requested give amount-minimum*, *RXO-4-requested give units*, and *ORC-7-quantity/timing* coded, and *RXO-1-requested give code* as free text.

c)With *RXO-1-requested give code*, *RXO-2-requested give amount-minimum*, *RXO-4-requested give units*, and *ORC-7-quantity/timing* coded, but where *RXO-1-requested give code* does not include units.

d)With *RXO-1-requested give code*, *RXO-2-requested give amount-minimum*, *RXO-4-requested give units*, and *ORC-7-quantity/timing* coded, and where *RXO-1-requested give code* does include units.

In this case, the units are optional. The rule for this case (on orders, dispense results, give results, and administration results) is as follows: if units are coded, they over-ride or supersede the units value implied by the give code.

a)The E-mail only version of the order: no coded fields exist in the RXO.

```
MSH|...
PID|...
ORC|NW|1000^OE||||E|||||||
RXO|||||500 mg Polycillin Q6H for 10 days, dispense 40 Tablets||
```

b)A partially coded version of the order. This version has the *RXO-2-requested give amount-minimum*, *RXO-4-requested give units*, and *ORC-7-quantity/timing* coded, but the *RXO-1-requested give code* as free text.

```
MSH|...
PID|...
ORC|NW|1000^OE||||E|^Q6H^D10^^^^R|||||||
RXO|^Polycillin 500 mg TAB^|500||MG|||||Y||40|
RXR|PO|
```

c)A more completely coded version of the order, with the *RXO-1-requested give code*, *RXO-2-requested give amount-minimum*, *RXO-4-requested give units*, and *ORC-7-quantity/timing* coded, but where *RXO-1-requested give code* does not imply units.

```
MSH|...
PID|...
ORC|NW|1000^OE||||E|^Q6H^D10^^^^R|||||||
RXO|RX1001^Polycillin^L|500||MG|||||Y||40|
RXR|PO|
```

d)A completely encoded version, with the *RXO-1-requested give code*, *RXO-2-requested give amount-minimum*, *RXO-4-requested give units*, and *ORC-7-quantity/timing* coded, and where *RXO-1-requested give code* does imply units.

```
MSH|...
PID|...
ORC|NW|1000^OE||||E|^Q6H^D10^^^R|||||||
RXO|RX1001^Polycillin 500 mg TAB^L|500||MG|||||G||40|
RXR|PO|
```

e)Pharmacy's encoded version (RDE message) sent to nursing application (a generic substitution).

```
MSH|...
PID|...
ORC|RE|1000^OE|9999999^RX|||E|^Q6H^D10^^^R|||||||
RXE|^^^199012100600^^R|0047-0402-30^Ampicillin 250 MG
     ...TAB^NDC|2||TAB|||||G|80||||123456|rx#1001|
RXR|PO|
```

f)Pharmacy's dispense results (RDS message).

```
MSH|...
PID|...
ORC|RE|1000^OE|9999999^RX|||E|^Q6H^D10^^^R|||||||
RXD|1|0047-0402-30^Ampicillin 250 MG TAB^NDC|199012100400|8|TAB||RX#1001|||123456|G|8
```

g)Pharmacy's give results (RGV message).

```
MSH|...
PID|...
ORC|RE|1000^OE|9999999^RX|||E|^Q6H^D10^^^R|||||||
RXG|1|1|^^199012100600^^R|0047-0402-30^Ampicillin 250 MG TAB^NDC|500||MG|||G|
RXR|PO|
```

h)Nursing application Medications Administration results to Pharmacy or Order Entry application.

```
MSH|...
PID|...
ORC|RE|1000^OE|9999999^RX|||E|^Q6H^D10^^^R|||||||
RXA|1|1|199012100615||0047-0402-30^Ampicillin 250 MG TAB^NDC|2|TAB||
RXR|PO|
```

#### 4.16.30.2 Custom IV example

The RXC segments are used when the RXO-level code does not fully describe the ordered entity, and the description requires more than a single code. Such "customized" orderable entities may use a "generic" code at the RXO level; e.g., <generic code> means "custom IV solution, see RXC segments for details." In general, a given pharmacy application will have CE-type RXO-level codes equivalent to:

RXCUSIV^Custom IV^Local (for nonstandard IVs)
RXCUSMIX^Custom Mixture^Local (for dermatology and other specialties)
RXCUSSLV^Custom Salve^Local (for dermatology and other specialties)

An order is sent from an Order Entry application to a Pharmacy application as follows:

- IV D5W < 1/2 NS 100 cc/hr with an additive of 20 meq KCl in every third liter, starting with the first bottle
- Continuous for 2 days (December 10, 1993 8am to December 12, 1993 at 8am)
- With a timing critical factor of 30 minutes

a)The ORC/RXO for the custom IV mixture and the two liters of NSD5W as entered on the Order Entry application

```
MSH|...
PID|...

ORC|NW|2045^OE||||E|^C^199312100800^199312120800^^TM30^^^^|
RXO|||3|L|IV|D5W WITH 1/2 NS WITH 20 MEQ KCL EVERY THIRD BOTTLE STARTING WITH
    ... FIRST||W8&825&A^|N|||||||H30
RXR|IV|LA|IV-SET01^^L|
```

b)Pharmacy's Encoded Version sent to Nursing Unit West 8 Room 825 Bed A

The Pharmacy sends the order as a parent/child set. This spawns, from the free text order 2045, two child orders with two precisely defined service requests. *ORC-4-quantity/timing* represents the timing request of the time of the order creation; i.e., *ORC-4-quantity/timing* represents the requested time. *RXE-1-quantity/timing* represents the Pharmacy's interpretation of the order.

```
MSH|...
PID|...

ORC|PA|2045^OE|123^PH||||E|^C^199312100800^199312120800^^TM30^^^^
```

The first fully encoded child order is the order for the custom IV. This is a continuous, repeating order, the first of a cyclic group with a maximum number of two repetitions. The first repeat starts at the start date/time of 199312100800. This order can itself be a parent order and spawn individual give orders and/or it can be sent to an administering system (as in this example) which will be responsible for handling the "give" parts of the transactions.

```
ORC|CH|2045^OE|124^PH|||E||2045&OE^123&PH|
RXE|^C^H10^199312100800^199312120800^TM30^^^^S&&&125&PH&*ES+0M&2|RXCUSIV^Custom
    ...IV^L||1|L|IV||W8&825&A|N|||||||RX#1256|||||||H10|100|CC/HR
RXR|IV|LA|IV-SET01^^L|
RXC|B|IVDEX05^D5W WITH 1/2 NS^L|1|L
RXC|A|CHEM_KCL^KCL^L|20|MEQ
```

The second fully encoded child order is for the plain D5W solution. It is the second part of a cyclic order group, and starts as soon as the first repetition of order with filler order number 124^PH is done (end-to-start with no intervening time increment). It has a maximum number of two repetitions. This order can itself be a parent order and spawn individual give orders and/or it can be sent to an administering system (as in this example) which will be responsible for handling the "give" parts of the transactions.

```
ORC|CH|2045^OE|125^PH|||E||2045&OE^123&PH|
RXE|^C^H20^199312101800^199312120800^TM30^^^^S&&&124&PH&ES+0M&2|IVDEX05^D5W WITH 1/2
    ...NS^L||2|L|IV||W8&825&A|N||||||RX#1256|||||||H20|100|CC/HR
RXR|IV|LA|IV-SET01^^L|
```

c)Pharmacy's Give Instructions (for the custom IV order only)

If the nursing system does not decode the RDE messages, but instead required the individual give messages, the following message can be used. It carries the instructions to the Nursing unit for administering the (first child) IV. It is also the Pharmacy's (dispense audit) record. The optional RXC segments are used to give a full description of the custom IV solution. In this example, *RXG-3-quantity/timing* represents the actual time the Pharmacy is requesting that the drug be given. The order sequencing component of quantity/timing is not needed in this message.

```
MSH|...
PID|...

ORC|RE|2045^OE|124^PH|||E|^C^199312100800^199312120800^^TM30^^^^|2045&OE^123&PH|||||||

RXG|1||^C^H10^199312100800^199312101800^^TM30|RXCUSIV^Custom IV^L|1||L|
    ...IV|||W8&825&A|||H10|100|CC/HR
RXR|IV|LA|IV-SET01^^L|
RXC|B|IVDEX05^D5W WITH 1/2 NS^L|1|L
RXC|A|CHEM_KCL^KCL^L|20|MEQ
```

d)Nursing application Medication Administration results to the Pharmacy or Order Entry application

A message is sent from Nursing when the first bottle of Custom Mixture has been administered. A second message would be sent from Nursing when the NS is administered.

```
MSH|...
PID|...

ORC|RE|2045^OE|124^PH|||E|^C^199312100800^199312120800^^TM30^^^^|||||||

RXA|1|1|199312100800|199312101800|RXCUSIV^Custom IV^L|1|L|IV|||W8&825&A|H10
RXR|IV|LA|IV-SET01^^L|
```

This completes the first series of messages for this drug administration.

### 4.16.30.3 Other examples - responses to queries

R0R Pharmacy Prescription Order Response

```
MSH          Message Header
MSA          Message Acknowledgment
[ERR]        Error
{
 QRD         Query Definition
[QRF]        Query Filter
[PID         Patient Identification
   {[NTE]}]  Notes and Comments (for PID)
{
 ORC         Common Order
  RXO        Pharmacy Order
    {RXR}    Pharmacy Route
   {[RXC]}   Pharmacy Component
}
}
DSC          Continuation Pointer
```

RAR Pharmacy Administration Information

```
MSH          Message Header
MSA          Message Acknowledgment
[ERR]        Error
{
 QRD         Query Definition
[QRF]        Query Filter
```

```
[PID          Patient Identification
  {[NTE]}]    Notes and Comments (for PID)
{
 ORC          Common Order
 [
  RXE         Pharmacy Encoded Order
    {RXR}     Pharmacy Route
   {[RXC]}    Pharmacy Component
 ]
 {RXA}        Pharmacy Administration
    RXR       Pharmacy Route
}
}
DSC           Continuation Pointer
```

RDR Pharmacy Dispense Information

```
MSH           Message Header
MSA           Message Acknowledgment
[ERR]         Error
{
  QRD         Query Definition
 [QRF]        Query Filter
 [PID         Patient Identification
   {[NTE]}]   Notes and Comments (for PID)
 {
  ORC         Common Order
  [
   RXE        Pharmacy Encoded Order
     {RXR}    Pharmacy Route
    {[RXC]}   Pharmacy Component
  ]
  {RXD}       Pharmacy Dispense
    {RXR}     Pharmacy Route
 }
}
DSC           Continuation Pointer
```

RER Pharmacy Encoded Order Information

| | |
|---|---|
| MSH | Message Header |
| MSA | Message Acknowledgment |
| [ERR] | Error |
| { | |
| QRD | Query Definition |
| [QRF] | Query Filter |
| [PID | Patient Identification |
| {[NTE]}] | Notes and Comments (for PID) |
| { | |
| ORC | Common Order |
| RXE | Pharmacy Encoded Order |
| RXR | Pharmacy Route |
| {[RXC]} | Pharmacy Component |
| } | |
| } | |
| DSC | Continuation Pointer |

RGR Pharmacy Dose Information

| | |
|---|---|
| MSH | Message Header |
| MSA | Message Acknowledgment |
| [ERR] | Error |
| { | |
| QRD | Query Definition |
| [QRF] | Query Filter |
| [PID | Patient Identification |
| {[NTE]}] | Notes and Comments (for PID) |
| { | |
| ORC | Common Order |
| [ | |
| RXE | Pharmacy Encoded Order |
| {RXR} | Pharmacy Route |
| {[RXC]} | Pharmacy Component |
| ] | |
| {RXG} | Pharmacy Give |
| {RXR} | Pharmacy Route |
| } | |
| } | |
| DSC | Continuation Pointer |

The lab application requests pharmacy administration information for patient 12345, from 8/12/92 through 8/13/92.

MSH|...<CR>
QRD|19920814165645|R|D|9200231|||30^RD|12345|RAS<CR>
QRF|PHM|19920812000000|19920813235959<CR>
DSC<CR>

MSH|...<CR>
MSA|...<CR>
QRD|...<CR>
QRF|...<CR>
ORC|RE||R23<CR>
RXE|^BID^D5^199208120800^199208162000|10986^AMPICILLIN|250||MG<CR>
RXR|PO<CR>
RXA|1|1|199208120800|||250<CR>
RXA|2|2|199208122000|||250<CR>
RXA|3|3|199208130800|||250<CR>
RXA|4|4|199208132000|||250<CR>
ORC|RE||R76<CR>
RXE|^TID^D7^199208120600^199208182200|12796^ASPIRIN|325||MG<CR>
RXR|PO<CR>
RXA|1|1|199208120600|||325<CR>
RXA|2|2|199208121400|||325<CR>
RXA|3|3|199208122200|||325<CR>
RXA|4|4|199208130600|||325<CR>
RXA|5|5|199208131400|||325<CR>
RXA|6|6|199208132200|||325<CR>
DSC<CR>

The nursing sytem requests pharmacy dose information for patient 12345, from 8/12/92 through 8/13/92.

MSH|...<CR>
QRD|19920814172309|R|D|9200543|||100^RD|12345|RXG<CR>
QRF|PHM|19920812000000|19920813235959<CR>
DSC<CR>

MSH|...<CR>
MSA|...<CR>
QRD|...<CR>
QRF|...<CR>
ORC|RE||R23<CR>
RXE|^BID^D5^199208120800^199208162000|10986^AMPICILLIN|250||MG<CR>
RXR|PO<CR>

RXG|1||199208120701||250<CR>
RXG|2||199208121923||250<CR>
RXG|3||199208130702||250<CR>
RXA|4||199208131912||250<CR>
ORC|RE||R76<CR>
RXE|^TID^D7^199208120600^199208182200|12796^ASPIRIN|325||MG<CR>
RXR|PO<CR>
RXG|1||199208120459||325<CR>
RXG|2||199208121328||325<CR>
RXG|3||199208122101||325<CR>
RXG|4||199208130503||325<CR>
RXG|5||199208131311||325<CR>
RXG|6||199208132145||325<CR>
DSC<CR>

The order entry application requests pharmacy order information for patient 12345, from 8/12/92 through 8/13/92.

MSH|...<CR>
QRD|19920814181254|R|D|9200785|||45^RD|12345|RDE<CR>
QRF|PHM|19920812000000|19920813235959<CR>
DSC<CR>

MSH|...<CR>
MSA|...<CR>
QRD|...<CR>
QRF|...<CR>
ORC|RE|3346|R23<CR>
RXE|^BID^D5^199208120800^199208162000|10986^AMPICILLIN|250||MG<CR>
RXR|PO<CR>
ORC|RE|3987|R76<CR>
RXE|^TID^D7^199208120600^199208182200|12796^ASPIRIN|325||MG<CR>
RXR|PO<CR>
DSC<CR>

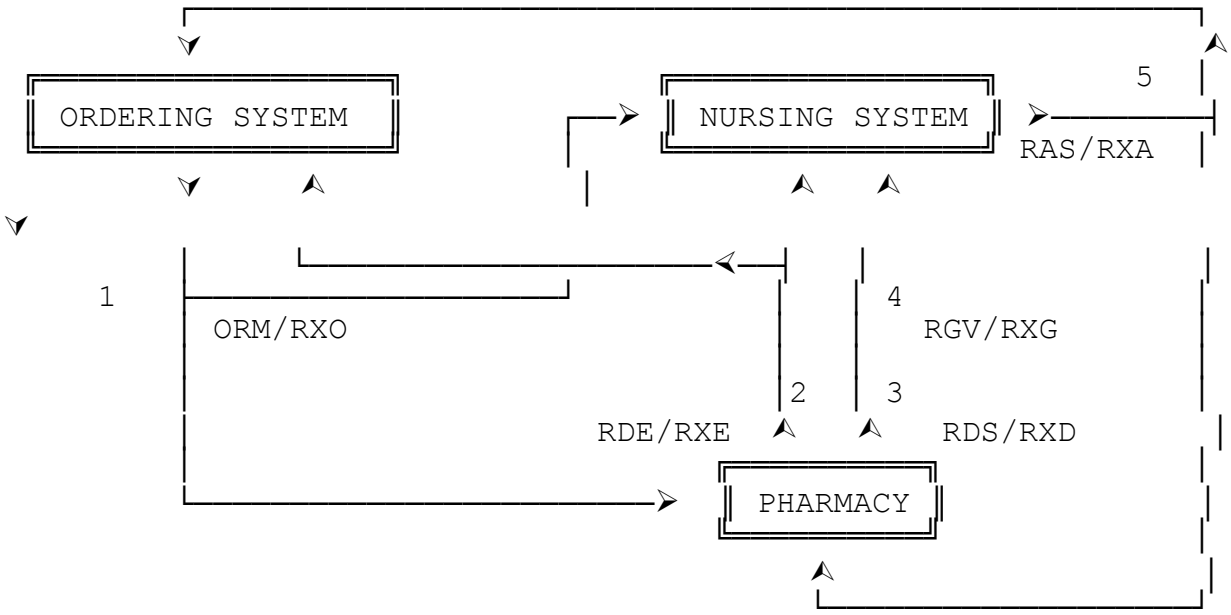
## 4.17 OUTSTANDING ISSUES

None.

# APPENDIX 4.1 HL7 PHARMACY ORDERS AND RESULTS

## 4.2.1 Pharmacy orders and results transaction flow diagram

The following are possible routes at a generic site.




1. ORM/RXO:

The Ordering application generates a pharmacy order (ORM with RXO and possibly additional RXC segments) and sends it to the Pharmacy application, Nursing application, and/or other applications as appropriate at the site.

2. RDE/RXE:

The Pharmacy application may send the RDE, the Pharmacy Encoded Order message, a fully encoded order to the Nursing application, Ordering application, and/or other systemapplications as appropriate at the site.

3. RDS/RXD:

The Pharmacy application may send the RDS, the Pharmacy Dispense message, to the Nursing application or other applications as appropriate at the site, each time a medication is dispensed for this order. This message may occur multiple times for each order.

4. RGV/RXG:

The Pharmacy application may send the RGV, the Pharmacy Give message, to the Nursing application or other applications as appropriate at the site, for each scheduled date/time of administration of a medication for a given order. This message may occur multiple times for each order.

5. RAS/RXA:

The Nursing application (and other applications) can generate the RAS, the Pharmacy Administration Results message, whenever a medication is given to the patient. This message may occur multiple times for each order.