4.

Order Entry

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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.

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

2.10, "Message construction rules." The examples included in this chapter were constructed according to the HL7 Encoding Rules.

4.1.1 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, "OVERVIEW," and 4.2, "ORDER MESSAGE DEFINTIONS," present the overall structure and rationale for these messages. Section 4.3, "SEGMENTS COMMON TO ALL ORDERS," presents the message segments that are common to all of the order entry messages. Section 4.4, "QUANTITY/TIMING (TQ) DEFINITION," describes the quantity/timing (TQ) data type. Sections 4.5, "OBSERVATION AND DIAGNOSTIC STUDY ORDERS," to 4.8.7.26, "Give indication (CE) 01128," 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 list of allowable 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 (see Section 4.5, "OBSERVATION AND DIAGNOSTIC STUDY ORDERS"). In the development of the treatment order transaction set (see Section 4.8, "PHARMACY/TREATMENT ORDERS"), 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 (see Section 4.6, "DIET ORDERS") include all of the usual diet specifications including snacks and guest trays. Supply orders (Section 4.7, "SUPPLY ORDERS") are different in that they often are not patient-centered (e.g., requests to stock the ward supply room).

4.1.2 Glossary

4.1.2.1 **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.

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

4.1.2.3 **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.

4.1.2.4 **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.

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

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

4.2 ORDER MESSAGE DEFINTIONS

4.2.1 ORM - general order message (event O01)

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
   [PD1]                Additional Demographics                           3
      [{NTE}]           Notes and Comments (for Patient ID)               2
   [PV1                 Patient Visit                                     3
    [PV2]]              Patient Visit- Additional Info                    3
    [{IN1          Insurance                                              6
      [IN2]             Insurance Additional Info                         6
       [IN3]            Insurance Add'l Info - Cert.                      6
    }]
    [GT1]          Guarantor                                              6
    [{AL1}]             Allergy Information                               3
  ]
  {
   ORC                  Common Order                                      4
  [
   Order Detail Segment OBR, etc.                                         4
       [{NTE}]     Notes and Comments (for Detail)                        2
       [{DG1}]     Diagnosis                                              6
       [
        {
         OBX            Observation/Result                               7
              [{NTE}]   Notes and Comments (for Results)                 2
         }
       ]
  ]
  {[CTI]}          Clinical Trial Identification                         7
 [BLG]                  Billing Segment                                   4
 }
```

4.2.1.1 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, "SUPPLY ORDERS," for pharmacy, see Section 4.8, "PHARMACY/TREATMENT ORDERS," and for dietary orders, see Section 4.6, "DIET ORDERS."

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. 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.

j) The insurance segments (IN1, IN2, and GT1) are typically used for external fillers, e.g., reference labs, where formal ADT transactions are overly complex or not needed.

4.2.2 ORR - general order response message response to any ORM (event O02)

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

In ORR the PID and ORC segments are optional, particularly in case of an error response. However, ORC segments are always required in ORR when an order detail segment is present. 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 Acknowledgment Message	Chapter
MSH	Message Header	2
MSA	Message Acknowledgment	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
[{CTI}]	Clinical Trial Identification	7
}		
]		

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, “ORM use notes,” for exact details.

4.2.3 OSQ/OSR- query response for order status (event Q06)

OSQ	Order Status Query	Chapter
MSH	Message Header	2
QRD	Query Definition	2
[QRF]	Query Filter	2
[DSC]	Continuation Pointer	2

OSR	Order Status Response	Chapter
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[{NTE}]	Notes and Comments (for Header)	2
QRD	Query Definition	2
[QRF]	Query Filter	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
[{CTI}]	Clinical Trial Identification	7
}		
]		
[DSC]	Continuation Pointer	2

4.2.3.1 Query usage notes

The QRD and QRF segments are defined in Chapter 2, Section 2.24, “Message Control Segments.”

The subject filters contained in the QRD and QRF segments describe the kind of information that is required to satisfy the request. They are defined by local agreement between the inquiring system and the ancillary system. See the Implementation Guide for detailed examples of the use of query filter fields.

The Set ID fields in the various segments (including PID) are used to count the number of segments of one kind transmitted at one level of the hierarchy.

The Query Result Level field of the QRD determines the amount of data requested. See Chapter 2, Section 2.24.4, “QRD - original style query definition segment.”

The OSQ messages is a record-oriented query that has the structure as the regular QRY message. OSQ is included here for the convenience of implementors.

4.3 SEGMENTS COMMON TO ALL ORDERS

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

4.3.1 ORC - common order segment

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

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	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	2	ID	R		0119	00215	Order Control
2	22	EI	C			00216	Placer Order Number
3	22	EI	C			00217	Filler Order Number
4	22	EI	O			00218	Placer Group Number
5	2	ID	O		0038	00219	Order Status
6	1	ID	O		0121	00220	Response Flag
7	200	TQ	O			00221	Quantity/Timing
8	200	CM	O			00222	Parent
9	26	TS	O			00223	Date/Time of Transaction
10	120	XCN	O			00224	Entered By
11	120	XCN	O			00225	Verified By
12	120	XCN	O			00226	Ordering Provider
13	80	PL	O			00227	Enterer's Location
14	40	XTN	O	Y/2		00228	Call Back Phone Number
15	26	TS	O			00229	Order Effective Date/Time
16	200	CE	O			00230	Order Control Code Reason
17	60	CE	O			00231	Entering Organization
18	60	CE	O			00232	Entering Device
19	120	XCN	O			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 has already been 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

4.3.1.1 Order control (ID) 00215

Definition: Determines the function of the order segment. Refer to *HL7 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
UA	Unable to Accept Order	F	n
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	
OE	Order released	F	
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	l
CH	Child order	F,P	l
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,P	
SN	Send order number	F	l
NA	Number assigned	P	l
CN	Combined result	F	m
RF	Refill order request	F, P	o
AF	Order refill request approval	P	p
DF	Order refill request denied	P	q
FU	Order refilled, unsolicited	F	r
OF	Order refilled as requested	F	s

Value[1]	Description	Originator[2]	Field Note[3]
UF	Unable to refill	F	t
LI	Link order to patient care message		u
UN	Unlink order from patient care message		u

Notes:

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.

4.3.1.1.1 Table notes for order control codes of ORC

a) CA

A 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
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, RQ

The order replace request code permits the order filler to replace one or more new 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, RQ

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

h) RP, RQ, RU, RO

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

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, CH

The parent (PA) and child (CH) order control codes allow the spawning of "child" 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 susceptibility 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 order numbers in the parent-child paradigm depends on whether the placer or 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 order numbers according to its usual procedures. If the filler creates the child orders there are two possibilities: each child will inherit the placer order number of its parent, or the filler will use the SN/NA transaction to request that the

placer assign a placer order number. In either case, the filler application creates the filler order 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 order number (if originating from the filler) and with the parent's placer order 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) RE

The observations-to-follow code is used to transmit patient-specific information with an order. An 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 backward compatibility. In the current version it is equivalent to an accept acknowledgment. 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) SN, NA, NW

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

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

1) The filler application needs a centralized filler order number

SN The 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

2) The filler application needs a placer order number

SN The 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

3) 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) CN

The 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|...
```

n) UA

An unable-to-accept code is used when a new order cannot be accepted by the filler. Possible reasons include requesting a prescription for a drug which the patient is allergic to or for an order which requires certain equipment resources which are not available such that the order cannot be filled. Note that this is different from the communication level acceptance as defined within the MSA segment.

o) RF

RF accommodates requests by both the filler or the placer. The filler may be requesting refill authorization from the placer. A placer system may be requesting a refill to be done by the filler system.

p) AF

AF is a response back from the placer authorizing a refill or quantity of refills.

q) DF

DF indicates that the placer will not authorize refills for the order. The order control code reason may be used to indicate the reason for the request denial. Some suggested values include:

AA	Patient unknown to the provider
AB	Patient never under provider care
AC	Patient no longer under provider care
AD	Patient has requested refill too soon
AE	Medication never prescribed for the patient
AF	Patient should contact provider first
AG	Refill not appropriate

Note that these values originate from the NCPDP SCRIPT Response Segment Code List Qualifiers.

r) FU

FU notifies the placer that the filler issued a refill for the order at the patient's request.

s) OF

OF directly responds to the placer system's request for a refill

t) UF

UF indicates an application level denial by the filler system to an authorized refill request.

u) LI, UN

Use only with Patient Care messages, Chapter 12.

4.3.1.2 Placer order number (EI) 00216

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

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

This field is a case of the Entity Identifier data type (See Section 2.8.13, "EI - Entity Identifier"). The first component is a string that identifies an individual order (e.g., OBR). A limit of fifteen (15) characters is suggested but not required. It is assigned by the placer (ordering application). It identifies an order uniquely among all orders from a particular ordering application. The second through fourth components contain the application ID of the placing application in the same form as the HD data type (Section 2.8.18, "HD - Hierarchic designator"). The second component, namespace ID, is a user-defined coded value that will be uniquely associated with an application. A limit of six (6) characters is suggested but not required. 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 IDs. The components are separated by component delimiters.

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 is documented in Chapter 8. Since third-party applications (those other than the placer and filler of an order) can send and receive ORM and ORR messages, the 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).

4.3.1.3 Filler order number (EI) 00217

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

Definition: This field is the order number associated with the filling application. It is a case of the Entity Identifier data type (Section 2.8.13). Its first component is a string that identifies an order detail segment (e.g., OBR). A limit of fifteen (15) characters is suggested but not required. 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 through fourth components contain the filler application ID, in the form of the HD data type (see Section 2.8.18, "HD - hierarchic designator"). The second component is a user-defined coded value that uniquely defines the application from other applications on the network. A limit of six (6) characters is suggested but not required. 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 is documented in Chapter 8. Since third-party applications (those other than the placer and filler of an order) can send and receive ORM and ORR messages, the filler application ID in this field may not be the same as any 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.

4.3.1.4 Placer group number (EI) 00218

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

Definition: This field allows an order placing application to group sets of orders together and subsequently identify them. It is a case of an Entity Identifier data type (2.8.13).

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

The second through fourth components constitute a placer application ID identical to the analogous components of *ORC-2-placer order number*. Order groups and how to use them are described in detail in Section 4.3.1, "PRC - common order segment."

4.3.1.5 Order status (ID) 00219

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

Although *HL7 table 0038 - Order status* contains many of the same values contained in *HL7 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
A	Some, but not all, results available
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

4.3.1.6 Response flag (ID) 00220

Definition: This field allows the placer (sending) application to determine the amount of information to be returned from the filler. Sometimes the requested level of response may not be possible immediately, but when it is possible, the filler (receiving) application must send the information. When the field is null, D is the default value of the field. Refer to *HL7 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

4.3.1.7 Quantity/timing (TQ) 00221

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

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

For example, if an OBR segment describes a unit of blood, this field might request that three (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*.

4.3.1.8 Parent (CM) 00222

```
Components:  <parent's placer order number (EI)> ^ <parent's filler order number (EI)>

Subomponents of parent's placer order number:  <entity identifier (ST)> & <namespace ID (IS) & <universal ID
             (ST)> & <universal ID type (IS)>

Subcomponents of parent's filler order number:  <entity identifier (ST)> & <namespace ID (IS)> & <universal ID
             (ST)> & <universal ID type (IS)>
```

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

The first component has the same format as *ORC-2-placer order number* (Section 4.3.1.2, "Placer order number (EI) 00216)." The second component has the same format as *ORC-3-filler order number* (Section 4.3.1.3, "Filler order number (EI) 00217)" . The components of the placer order number and the filler order number are transmitted in sub-components of the two components of this field. *ORC-8-parent* is the same as *OBR-29-parent*.

4.3.1.9 Date/time of transaction (TS) 00223

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

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-enterers location* of this segment relate to the current transaction, not the original order.

4.3.1.10 Entered by (XCN) 00224

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

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

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

Definition: This field is the 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.

4.3.1.11 Verified by (XCN) 00225

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

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

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

Definition: This field is the 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.

4.3.1.12 Ordering provider (XCN) 00226

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

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

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

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

4.3.1.13 Enterer's location (PL) 00227

```
Components:  <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status  (IS)> ^
              <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility:  <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)
```

Definition: This field is the location (e.g., nurse station, ancillary service location, clinic, floor) where the person who entered the request was physically located when the order was entered. Only those subcomponents relevant to enterer's location should be valued (commonly nursing unit; facility; building; floor). The person who entered the request is defined in *ORC-10-entered by*.

4.3.1.14 Call back phone number (XTN) 00228

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

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

4.3.1.15 Order effective date/time (TS) 00229

Definition: This field is the 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.

4.3.1.16 Order control code reason (CE) 00230

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

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

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

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

4.3.1.17 Entering organization (CE) 00231

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

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

4.3.1.18 Entering device (CE) 00232

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

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

4.3.1.19 Action by (XCN) 00233

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

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

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

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

4.3.2 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	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	40	CM	O		0100	00234	When to Charge
2	50	ID	O		0122	00235	Charge Type
3	100	CK	O			00236	Account ID

4.3.2.0 BLG field definitions

4.3.2.1 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 *HL7 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

4.3.2.2 Charge type (ID) 00235

Definition: This field identifies someone or something other than the patient to be billed for this service. It is used in conjunction with *BLG-3-account ID*. Refer to *HL7 table 0122 - Charge type* for valid values.

Table 0122 - Charge type

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

4.3.2.3 Account ID (CK) 00236

```
Components:  <ID number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^
              < assigning authority  (HD)>

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

Definition: This field identifies the account to be billed. It is used in conjunction with *BLG-2-charge type*. Refer to *HL7 table 0061 - Check digit scheme* in Chapter 2.

4.4 QUANTITY/TIMING (TQ) DEFINITION

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

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 2.8.41, "TQ - timing quantity"). The components of a single quantity/timing specification are described in the Sections: 4.4.1, "Quantity component (CQ)," through 4.4.10, "Order sequencing component (CM)."

4.4.1 Quantity component (CQ)

```
Subcomponents:  <quantity (NM) & units (CE)>
```

Definition: This field is the quantity of the service that should be provided at each service interval. For example., if two blood cultures are to be obtained every 4 hours, the quantity would be 2. 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.

4.4.2 Interval component (CM)

```
Subcomponents:  <repeat pattern (IS)> ^ <explicit time interval (ST)>
```

Definition: This field 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.

4.4.2.1 Repeat pattern

Definition: The repeating frequency with which the treatment is to be administered. It is similar to the frequency and SIG code tables used in order entry systems. The following is preferred syntax for repeat patterns:

User-defined table 4001 - Repeat pattern

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)
xID	"X" times per day at institution-specified times, where X is a numeral 5 or greater. E.g., 5ID=five times per day; 8ID=8 times per day

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.

The first subcomponent may repeat, with repeat values separated by a space. The repeats are interpreted as connected by logical ANDs. E.g.,

Twice per day, every other day: BID QOD

Three times per day, Monday Wednesday and Friday: TID QJ135

Because of this syntax, repeat values should never contain blanks. If a free text frequency, such as "Twice a day, every other day" is to be sent, use the text component (component 8).

4.4.2.2 Explicit time interval subcomponent

Definition: This field 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^...
```

4.4.3 Duration component (ST)

Definition: This field 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

4.4.4 Start date/time component (TS)

Definition: This field 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.

4.4.5 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.

4.4.6 Priority component (ST)

Definition: This field 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	
C	=	Callback	
T	=	Timing critical	A request implying that it is critical to come as close as possible to the requested time, e.g., for a trough antimicrobial level.
PRN	=	As needed	

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.

The priority component may repeat; separate repeating values with the repeat delimiter separated by a space.

4.4.7 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.

4.4.8 Text component (TX)

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

4.4.9 Conjunction component (ST)

Definition: This 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.

4.4.10 Order sequencing component (CM)

Definition: There are many situations, such as the creation of an order for a group of intravenous (IV) solutions, where the sequence of the individual intravenous solutions (each a service in itself) needs to be specified, e.g., hyperalimentation with multi-vitamins in every third bottle.

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 predecessor service.

4.4.10.1 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; C for cyclical; R is reserved for possible future use. The C will be used for indicating a repeating cycle of orders; for example, individual intravenous solutions used in a cyclical sequence (a.k.a. "Alternating IVs"). This value would be compatible with linking separate orders or with having all cyclical order components in a single order. Likewise, the value would be compatible with either Parent-Child messages or a single order message to communicate the orders' sequencing
2, 3	Placer Order Number, first two components	Required/Optional: Contains the first two components of the placer order number: *entity identifier* (ST) and *namespace ID* (IS) (respectively). Uses two subcomponents since the placer order number is an EI data type. We have not defined sub-subcomponents in HL7.
4, 5	Filler Order Number, first two components	Required/Optional: Contains the first two components of the filler order number: *entity identifier* (ST) and *namespace ID* (IS) (respectively). Uses two subcomponents since the filler order number is an EI data type. 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: <one of "SS", "EE", "SE", or "ES"> +/- <time> 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. 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. The time specifies the interval between the predecessor and successor starts or ends (see following examples). Where <time> is defined as: S<integer> do for <integer> seconds M<integer> do for <integer> minutes H<integer> do for <integer> hours D<integer> do for <integer> days W<integer> do for <integer> weeks 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.
8, 9	Placer Order Number, last two components	Required/Optional: Contains the last two components of the placer order number: *universal ID* (ST) and *universal ID type* (ID) (respectively). Uses two subcomponents since the placer order number is an EI data type. We have not defined sub-subcomponents in HL7.
10, 11	Filler Order Number, last two components	Required/Optional: Contains the last two components of the filler order number: *universal ID* (ST) and *universal ID type* (ID) (respectively). Uses two subcomponents since the filler order number is an EI data type. We have not defined sub-subcomponents in HL7.

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 + 10M — The 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 - 10M — The 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.

4.4.10.2 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 must be an asterisk (*). The last order to be executed may have a "sequence condition value" whose first character must be a pound sign (#).

Example:

*FS+10M — translates 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, "Custom IV example."

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.

4.4.10.3 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).

4.4.11 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
```

The first repeat instructs to draw a blood specimen exactly at 8:00 a.m. on 12/12/1988. The second repeat specifies to report results routinely.

4.5 OBSERVATION AND DIAGNOSTIC STUDY ORDERS

4.5.1 OBR - observation request segment

General (taken from ASTM E1238)

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 X-ray, 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	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	SI	C			00237	Set ID - OBR
2	75	EI	C			00216	Placer Order Number
3	75	EI	C			00217	Filler Order Number +
4	200	CE	R			00238	Universal Service ID
5	2	ID	B			00239	Priority
6	26	TS	B			00240	Requested Date/time
7	26	TS	C			00241	Observation Date/Time #
8	26	TS	O			00242	Observation End Date/Time #
9	20	CQ	O			00243	Collection Volume *
10	60	XCN	O	Y		00244	Collector Identifier *
11	1	ID	O		0065	00245	Specimen Action Code *
12	60	CE	O			00246	Danger Code
13	300	ST	O			00247	Relevant Clinical Info.
14	26	TS	C			00248	Specimen Received Date/Time *
15	300	CM	O		0070	00249	Specimen Source *
16	80	XCN	O	Y		00226	Ordering Provider
17	40	XTN	O	Y/2		00250	Order Callback Phone Number
18	60	ST	O			00251	Placer field 1
19	60	ST	O			00252	Placer field 2
20	60	ST	O			00253	Filler Field 1 +
21	60	ST	O			00254	Filler Field 2 +
22	26	TS	C			00255	Results Rpt/Status Chng - Date/Time +
23	40	CM	O			00256	Charge to Practice +
24	10	ID	O		0074	00257	Diagnostic Serv Sect ID
25	1	ID	C		0123	00258	Result Status +
26	400	CM	O			00259	Parent Result +
27	200	TQ	O	Y		00221	Quantity/Timing
28	150	XCN	O	Y/5		00260	Result Copies To
29	150	CM	O			00261	Parent
30	20	ID	O		0124	00262	Transportation Mode
31	300	CE	O	Y		00263	Reason for Study
32	200	CM	O			00264	Principal Result Interpreter +
33	200	CM	O	Y		00265	Assistant Result Interpreter +
34	200	CM	O	Y		00266	Technician +
35	200	CM	O	Y		00267	Transcriptionist +
36	26	TS	O			00268	Scheduled Date/Time +
37	4	NM	O			01028	Number of Sample Containers *
38	60	CE	O	Y		01029	Transport Logistics of Collected Sample *
39	200	CE	O	Y		01030	Collector's Comment *
40	60	CE	O			01031	Transport Arrangement Responsibility
41	30	ID	O		0224	01032	Transport Arranged
42	1	ID	O		0225	01033	Escort Required
43	200	CE	O	Y		01034	Planned Patient Transport Comment

4.5.1.0 OBR field definitions

The daggered (+) items in this segment are known to the filler, not the placer. They are valued by the filler as needed when the OBR segment is returned as part of a report.

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

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 (e.g., BP, Chest X-ray), they represent the start and end time of the observation.

4.5.1.1 Set ID - OBR (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.

4.5.1.2 Placer order number (EI) 00216

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

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

This field is a special case of the Entity Identifier data type (Section 2.8.13). The first component is a string that identifies an individual order (e.g., OBR). A limit of fifteen (15) characters is suggested but not required. It is assigned by the placer (ordering application). It identifies an order uniquely among all orders from a particular ordering application. The second through fourth components contain the application ID of the placing application in the same form as the HD data type (Section 2.8.18, "HD - Hierarchic designator"). The second component, namespace ID, is a user-defined coded value that will be uniquely associated with an application. A limit of six (6) characters is suggested but not required. 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 IDs. The comp onents are separated by component delimiters.

See *ORC-2-placer order number* (Section 4.3.1.2) for information on when this field must be valued.

4.5.1.3 Filler order number (EI) 00217

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

Definition: This is a permanent identifier for an order and its associated observations. It is a special case of the Entity Identifier data type (see Chapter 2, Section 2.8.15, "EI - entity identifier").

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). A limit of fifteen (15) characters is suggested but not required.

The second through fourth components contain the filler application ID, in the form of the HD data type (see Section 2.8.18, "HD - hierarchic designator"). The second component is a user-defined coded value that uniquely defines the application from other applications on the network. A limit of six (6) characters is suggested but not required. The second component of the filler order number always identifies the actual filler of an order.

See *ORC-3-filler order number* for information on when this field must be valued.

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

4.5.1.4 Universal service ID (CE) 00238

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

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

4.5.1.5 Priority (ID) 00239

Definition: ***This field has been retained for backward compatibility only***. It is not used. Previously priority (e.g., STAT, ASAP), but this information is carried as the sixth component of *OBR-27-quantity/timing*.

4.5.1.6 Requested date/time (TS) 00240

Definition: ***This field has been retained for backward compatibility only***. It is not used. Previously requested date/time. This information is now carried in the fourth component of the *OBR-27-quantity/timing*.

4.5.1.7 Observation date/time (TS) 00241

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

4.5.1.8 Observation end date/time (TS) 00242

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

4.5.1.9 Collection volume (CQ) 00243

```
Components:  <quantity (NM)> ^ <units (CE)>

Subcomponents of units: <identifier (ID)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier
             (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>
```

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

4.5.1.10 Collector identifier (XCN) 00244

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

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

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

Definition: 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.

4.5.1.11 Specimen action code (ID) 00245

Definition: This field is the action to be taken with respect to the specimens that accompany or precede this order. The purpose of this field is to further qualify (when appropriate) the general action indicated by the order control code contained in the accompanying ORC segment. For example, when a new order (ORC - "NW") is sent to the lab, this field would be used to tell the lab whether or not to collect the specimen ("L" or "O"). Refer to *HL7 table 0065 - Specimen action code* for valid values.

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

4.5.1.12 Danger code (CE) 00535

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

Definition: This field is the 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.

4.5.1.13 Relevant clinical information (ST) 00247

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

4.5.1.14 Specimen received date/time (TS) 00248

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

4.5.1.15 Specimen source (CM) 00249

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

Subcomponents of specimen source name or code:  <identifier (ST)> & <test (ST)> & <name of coding system (ST)>
              & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of body site:  <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate
              identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>
```

```
Subcomponents of site modifier:  <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate
             identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of name of alternate coding system:  <identifier (ST)> & <test (ST)> & <name of coding system
             (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system
             (ST)>
```

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

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

The second component should include free text 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 fields become subcomponents. Refer to *HL7 table 0163 - Administrative site* for valid entries.

Table 0163 - Administrative site

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

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

Table 0070 - Specimen source codes

Value	Description	Value	Description	Value	Description
ABS	Abscess	FLU	Body fluid, unsp	SER	Serum
AMN	Amniotic fluid	GAS	Gas	SKN	Skin
ASP	Aspirate	GAST	Gastric fluid/contents	SKM	Skeletal muscle
BPH	Basophils	GEN	Genital	SPRM	Spermatozoa
BIFL	Bile fluid	GENC	Genital cervix	SPT	Sputum
BLDA	Blood arterial	GENL	Genital lochia	SPTC	Sputum - coughed
BBL	Blood bag	GENV	Genital vaginal	SPTT	Sputum - tracheal aspirate
BLDC	Blood capillary	HAR	Hair	STON	Stone (use CALC)
BPU	Blood product unit	IHG	Inhaled Gas	STL	Stool = Fecal
BLDV	Blood venous	IT	Intubation tube	SWT	Sweat
BON	Bone	ISLT	Isolate	SNV	Synovial fluid (Joint fluid)
BRTH	Breath (use EXHLD)	LAM	Lamella	TEAR	Tears
BRO	Bronchial	WBC	Leukocytes	THRT	Throat
BRN	Burn	LN	Line	THRB	Thrombocyte (platelet)
CALC	Calculus (=Stone)	LNA	Line arterial	TISS	Tissue
CDM	Cardiac muscle	LNV	Line venous	TISG	Tissue gall bladder
CNL	Cannula	LIQ	Liquid NOS	TLGI	Tissue large intestine
CTP	Catheter tip	LYM	Lymphocytes	TLNG	Tissue lung
CSF	Cerebral spinal fluid	MAC	Macrophages	TISPL	Tissue placenta
CVM	Cervical mucus	MAR	Marrow	TSMI	Tissue small intestine
CVX	Cervix	MEC	Meconium	TISU	Tissue ulcer
COL	Colostrum	MBLD	Menstrual blood	TUB	Tube NOS
CBLD	Cord blood	MLK	Milk	ULC	Ulcer
CNJT	Conjunctiva	MILK	Breast milk	UMB	Umbilical blood
CUR	Curettage	NAIL	Nail	UMED	Unknown medicine
CYST	Cyst	NOS	Nose (nasal passage)	URTH	Urethra
DIAF	Dialysis fluid	ORH	Other	UR	Urine
DOSE	Dose med or substance	PAFL	Pancreatic fluid	URC	Urine clean catch
DRN	Drain	PAT	Patient	URT	Urine catheter
DUFL	Duodenal fluid	PRT	Peritoneal fluid /ascites	URNS	Urine sediment
EAR	Ear	PLC	Placenta	USUB	Unknown substance
EARW	Ear wax (cerumen)	PLAS	Plasma	VOM	Vomitus
ELT	Electrode	PLB	Plasma bag	BLD	Whole blood
ENDC	Endocardium	PLR	Pleural fluid (thoracentesis fld)	BDY	Whole body
ENDM	Endometrium	PMN	Polymorphonuclear neutrophils	WAT	Water
EOS	Eosinophils	PPP	Patelet poor plasma	WICK	Wick
RBC	Erythrocytes	PRP	Platelet rich plasma	WND	Wound
EYE	Eye	PUS	Pus	WNDA	Wound abscess
EXHLD	Exhaled gas (=breath)	RT	Route of medicine	WNDE	Wound exudate
FIB	Fibroblasts	SAL	Saliva	WNDD	Wound drainage
FLT	Filter	SEM	Seminal fluid	XXX	To be specified in another part of the message
FIST	Fistula				

4.5.1.16 Ordering provider (XCN) 00226

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

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

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

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

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

4.5.1.17 Order callback phone number (XTN) 00250

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

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

4.5.1.18 Placer field #1 (ST) 00251

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

4.5.1.19 Placer field #2 (ST) 00252

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

4.5.1.20 Filler field #1 (ST) 00253

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

4.5.1.21 Filler field #2 (ST) 00254

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

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

Definition: This field specifies the date/time when the results were 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 ORC-5 *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.

4.5.1.23 Charge to practice (CM) 00256

```
Components:  <dollar amount (MO)> ^ <charge code (CE)>

Subcomponents of dollar amount:  <quantity (NM)> & <denomination (ID)>

Subcomponents of charge code:  <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate
             identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>
```

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

4.5.1.24 Diagnostic serv sect ID (ID) 00257

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

Table 0074 - Diagnostic service section ID

Value	Description	Value	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.l)
CP	Cytopathology	PF	Pulmonary Function
EC	Electrocardiac (e.g., EKG, EEC, Holter)	RAD	Radiology
EN	Electroneuro (EEG, EMG,EP,PSG)	RX	Radiograph
HM	Hematology	RUS	Radiology Ultrasound
ICU	Bedside ICU Monitoring	RC	Respiratory Care (therapy)
IMM	Immunology	RT	Radiation Therapy
LAB	Laboratory	SR	Serology
MB	Microbiology	SP	Surgical Pathology
MCB	Mycobacteriology	TX	Toxicology
MYC	Mycology	VUS	Vascular Ultrasound
NMS	Nuclear Medicine Scan	VR	Virology
NMR	Nuclear Magnetic Resonance	XRC	Cineradiograph
NRS	Nursing Service Measures		

4.5.1.25 Result status (ID) 00258

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

There are two methods of sending status information. If the status is that of the entire order, use *ORC-15-order effective date/time* and *ORC-5-order status*. If the status pertains to the order detail segment, use *OBR-25-result status* and *OBR-22-results report/status change - date/time*. If both are present, the OBR values override the ORC values.

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. When the individual status of each result is necessary, *OBX-11-observ result status* may be used. Refer to *HL7 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	X	No results available; Order canceled.
A	Some, but not all, results available	Y	No order on record for this test. (Used only on queries)
P	Preliminary: A verified early result is available, final results not yet obtained	Z	No record of this patient. (Used only on queries)
C	Correction to results		

4.5.1.26 Parent result (CM) 00259

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

Subcomponents of OBX-3-observation identifier of parent result:  <identifier (ST)> & <test (ST)> & <name of
              coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate
              coding system (ST)>
```

Definition: This field is 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. For example, if the current battery is an antimicrobial susceptibility, the parent results identified OBX contains a result which identifies the organism on which the susceptibility was 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.

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

This field is present only when the parent result is identified by *OBR-29-parent number* and the parent spawns child orders for each of many results. (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 susceptibility values for a given antimicrobial test on this organism.

4.5.1.27 Quantity/timing (TQ) 00221

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

Definition: This field contains 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, "QUANTITY/TIMING (TQ) DEFINITION."

4.5.1.28 Result copies to (XCN) 00260

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

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

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

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

4.5.1.29 Parent (CM) 00261

```
Components:  <parent's placer order number (EI)> ^ <parent's filler order number (EI)>

Subcomponents of parent's placer order number:  <entity identifier (ST)> & <namespace ID (IS)> & <universal ID
             (ST)> & <universal ID type (IS)>

Subcomponents of parent's filler order number:  <entity identifier (ST)> &  <namespace ID (IS)> & <universal
             ID (ST)> & <universal ID type (IS)>
```

Definition: This field is 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., antimicrobial susceptibilities spawned by blood cultures, need to record the parent (blood culture) filler order number here. The parent-child mechanism is described under the order control field notes (see Section 4.3.1.1.1, "Table notes for order control codes of ORC"). It is required when the order is a child.

Parent is a two-component field. The components of the placer order number and the filler order number are transmitted in subcomponents of the two components of this field.

4.5.1.30 Transportation mode (ID) 00262

Definition: This field identifies how (or whether) to transport a patient, when applicable. Refer to *HL7 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

4.5.1.31 Reason for study (CE) 00263

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

Definition: This field is the 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.

4.5.1.32 Principal result interpreter (CM) 00264

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

```
Subcomponents of name:  <ID number (ST)> & <family name (ST)> & <given name (ST)> & <middle initial or name
             (ST)> & <suffix (e.g., JR or III) (ST)> & <prefix (e.g., DR) (ST)> & <degree (e.g., MD (ST)> &
             <source table (IS)> & <assigning authority (HD)>

Subcomponents of facility:  <namespace ID (IS)> & <universal ID  (ST)> & <universal ID type (ID)>
```

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

4.5.1.33 Assistant result interpreter (CM) 00265

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

Subcomponents of name:  <identifier(ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier
             (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of facility:  <namespace ID (IS)> & <universal ID  (ST)> & <universal ID type (ID)>
```

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

4.5.1.34 Technician (CM) 00266

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

Subcomponents of name:  <identifier(ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier
             (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of facility:  <namespace ID (IS)> & <universal ID  (ST)> & <universal ID type (ID)>
```

Definition: This field identifies the performing technician.

4.5.1.35 Transcriptionist (CM) 00267

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

Subcomponents of name:  <identifier(ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier
             (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of facility:  <namespace ID (IS)> & <universal ID  (ST)> & <universal ID type (ID)>
```

Definition: This field identifies the report transcriber.

4.5.1.36 Scheduled - date/time (TS) 00268

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

4.5.1.37 Number of sample containers (NM) 01028

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

4.5.1.38 Transport logistics of collected sample (CE) 01029

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

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

4.5.1.39 Collector's comment (CE) 01030

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

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

4.5.1.40 Transport arrangement responsibility (CE) 01031

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

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

4.5.1.41 Transport arranged (ID) 01032

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

Table 0224 - Transport arranged

Value	Description
A	Arranged
N	Not Arranged
U	Unknown

4.5.1.42 Escort required (ID) 01033

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

Table 0225 - Escort required

Value	Description
R	Required
N	Not Required
U	Unknown

4.5.1.43 Planned patient transport comment (CE) 01034

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

Definition: This field is the code or free text comments on special requirements for the transport of the patient to the diagnostic service department. If coded, requires a user-defined table.

4.5.2 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.

4.5.2.1 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^ELLINO
RE^""^""^""^MD|||4EAST<cr>
 // EKG order
OBR||||8601-7^EKG
IMPRESSION^LN||||||||||||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|946281^PC<cr>
ORC|CH|A226677^PC|89-551^EKG|946281...         // 1ST child ORC.
ORC|CH|A226677^PC|89-552^EKG|946281...         // 2ND child ORC.
ORC|CH|A226677^PC|89-553^EKG|946281...         // 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 order 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|946281^PC|SC|||A226677&PC^89-458&EKG|
   ... ^^^^198901130500^<cr>                          // 1ST child ORC
OBR|||89-551^EKG|8601-7^EKG IMPRESSION^LN|...
       // 1ST child OBR
ORC|CH|A226677^PC|89-522^EKG|946281^PC|SC|||A226677&PC^89-458&EKG|
   ...  ^^^^198901140500^<cr>                          // 2ND child ORC
OBR|||89-552^EKG|8601-7^EKG IMPRESSION^LN|...
       // 2ND child OBR
ORC|CH|A226677^PC|89-553^EKG|946281^PC|SC|||A226677&PC^89-458&EKG|
      ...^^^^198901150500^<cr>
     // 3RD child ORC
OBR|||89-553^EKG|8601-7^EKG IMPRESSION^LN|...
       // 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.

4.6 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
[PD1]	Additional Demographics	3
[{NTE}]	Notes and Comments (for Patient ID)	2
[PV1	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
[{IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert.	6
}]		
[GT1]	Guarantor	6
[{AL1}]	Allergy 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 Acknowledgment Message	Chapter
MSH	Message Header	2
MSA	Message Acknowledgment	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.

4.6.1 ODS - dietary orders, supplements, and preferences segment

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

4.6.1.0 ODS field definitions

4.6.1.1 Type (ID) 00269

Definition: This field specifies type of diet. Refer to *HL7 table 0159 - Diet type* for valid entries.

Table 0159 - Diet type

Value	Description
D	Diet
S	Supplement
P	Preference

4.6.1.2 Service period (CE) 00270

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

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-morning 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.

4.6.1.3 Diet, supplement, or preference code (CE) 00271

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

Definition: This field is the identifier 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.

4.6.1.4 Text instruction (ST) 00272

Definition: This field defines the 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.

4.6.2 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	OPT	RP/ #	TBL #	ITEM #	ELEMENT NAME
1	60	CE	R		0160	00273	Tray Type
2	60	CE	O	Y/10		00270	Service Period
3	80	ST	O			00272	Text Instruction

4.6.2.0 ODT field definitions

4.6.2.1 Tray type (CE) 00273

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

Definition: This field defines the type of dietary tray. Refer to *HL7 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.*

4.6.2.2 Service period (CE) 00274

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

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, "Service period (CE) 00270," for further details.

4.6.2.3 Text Instruction (ST) 00272

Definition: This field defines instructions associated with the tray. Example:

```
|PLASTIC SILVERWARE|.
```

4.6.3 Example diet messages

4.6.3.1 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>
```

4.6.3.2 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>
```

4.6.3.3 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>
```

4.6.3.4 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>
```

4.7 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
[PD1]	Additional Demographics	3
[{NTE}]	Notes and Comments (for Patient ID)	2
[PV1	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
[{IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert.	6
}]		
[GT1]	Guarantor	6
[{AL1}]	Allergy Information	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 Acknowledgment Message	Chapter
MSH	Message Header	2
MSA	Message Acknowledgment	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
[PD1]	Additional Demographics	3
[{NTE}]	Notes and Comments (for Patient ID)	2
[PV1	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
[{IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert.	6
}]		
[GT1]	Guarantor	6
[{AL1}]	Allergy Information	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 Acknowledgment Message	Chapter
MSH	Message Header	2
MSA	Message Acknowledgment	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
}		
]		

4.7.1 RQD - requisition detail segment

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

Figure 4-11. RQD attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	SI	O			00275	Requisition Line Number
2	60	CE	C			00276	Item Code - Internal
3	60	CE	C			00277	Item Code - External
4	60	CE	C			00278	Hospital Item Code
5	6	NM	O			00279	Requisition Quantity
6	60	CE	O			00280	Requisition Unit of Measure
7	30	IS	O		0319	00281	Dept. Cost Center
8	30	IS	O		0320	00282	Item Natural Account Code
9	60	CE	O			00283	Deliver To ID
10	8	DT	O			00284	Date Needed

4.7.1.0 RQD field definitions

4.7.1.1 Requisition line number (SI) 00275

Definition: This field contains the number that identifies this line in the requisition.

4.7.1.2 Item code - internal (CE) 00276

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

Definition: This field contains the identifier and description that uniquely identify the item on the application sending the requisition. This field is conditional because at least one of the three fields *RQD-2-item code- internal, RQD-3-item code-external,* or *RQD-4-hospital item code* must be valued.

4.7.1.3 Item code - external (CE) 00277

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

Definition: This field contains the identifier and description that uniquely identify the item on the application receiving the requisition. This field is conditional because at least one of the three fields *RQD-2-item code-nternal, RQD-3-item code-external* or *RQD-4-hospital item code* must be valued.

4.7.1.4 Hospital item code (CE) 00278

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

Definition: This field contains the 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. This field is conditional because at least one of the three fields *RQD-2-item code-internal, RQD-3-item code-external* or *RQD-4-hospital item code* must be valued.

> **Note**: At least one of the three fields 4.7.1.2 through 4.7.1.4 must be non-null.

4.7.1.5 Requisition quantity (NM) 00279

Definition: This field contains the quantity requisitioned for this item.

4.7.1.6 Requisition unit of measure (CE) 00280

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

Definition: This field contains the unit of measure for this item.

4.7.1.7 Dept. cost center (IS) 00281

Definition: This field contains the accounting code that identifies this department in order to charge for this item. Refer to *user-defined table 0319 - Dept. cost center* for suggested values.

4.7.1.8 Item natural account code (IS) 00282

Definition: This field contains the accounting code that identifies this item in order to charge for this item. Refer to *user-defined table 0320 - Item natural account code* for suggested values.

4.7.1.9 Deliver to ID (CE) 00283

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

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

4.7.1.10 Date needed (DT) 00284

Definition: This field contains the date this item is required.

Note:	Although none of the fields are required, one of the three identifying codes—*RQD-2-Item Code-Internal*, *RQD-3-Item Code-External*, or *RQD-4-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."

4.7.2 RQ1 - requisition detail-1 segment

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

Figure 4-12. RQ1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	10	ST	O			00285	Anticipated Price
2	60	CE	C			00286	Manufactured ID
3	16	ST	C			00287	Manufacturer's Catalog
4	60	CE	C			00288	Vendor ID
5	16	ST	C			00289	Vendor Catalog
6	1	ID	O		0136	00290	Taxable
7	1	ID	O		0136	00291	Substitute Allowed

4.7.2.0 RQ1 field definitions

4.7.2.1 Anticipated price (ST) 0285

Definition: This field contains the 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.

4.7.2.2 Manufacturer ID (CE) 00286

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

Definition: This field contains the unique code that identifies the manufacturer on the application receiving the requisition. This field is conditional because either *RQ1-2-manufacturer ID* and *RQ1-3-manufacturer's catalog* or *RQ1-4-vendor ID* and *RQ1-5-vendor catalog* must be valued.

Codes may be selected from HIBCC Manufacturers 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 7-3*.

4.7.2.3 Manufacturer's catalog (ST) 00287

Definition: This field is the manufacturer's catalog number or code for this item. This field is conditional because either *RQ1-2-manufacturer ID* and *RQ1-3-manufacturer's catalog* or *RQ1-4-vendor ID* and *RQ1-5-vendor catalog* must be valued.

4.7.2.4 Vendor ID (CE) 00288

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

Definition: This field is the unique code that identifies the vendor on the application receiving the requisition. This field is conditional because either *RQ1-2-manufacturer ID* and *RQ1-3-manufacturer's catalog* or *RQ1-4-vendor ID* and *RQ1-5-vendor catalog* must be valued.

Because of this, it is recommended that each nonstock item have *RQ1-2-manufacturers 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.

4.7.2.5 Vendor catalog (ST) 00289

Definition: This field is the vendor's catalog number, name, or code for this item. This field is conditional because either *RQ1-2-manufacturer ID* and *RQ1-3-manufacturer's catalog* or *RQ1-4-vendor ID* and *RQ1-5-vendor catalog* must be valued.

4.7.2.6 Taxable (ID) 00290

Definition: This field indicates whether this item is 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 *HL7 table 0136 -Yes/no indicator* as defined in Chapter 2.

4.7.2.7 Substitute allowed (ID) 00291

Definition: This field indicates whether the ancillary department may substitute an equivalent version of the item(s) ordered. Refer to *HL7 table 0136 - Yes/no indicator* as defined in Chapter 2.

4.7.3 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^Go
mez^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|2.3||<
cr>
ORC|NW|RQ102^ORSUPPLY||||N|||19911105150100|jjones^Jones^Jean|sgomez^Go
mez^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
```

4.8 PHARMACY/TREATMENT ORDERS

4.8.1 ORM - pharmacy/treatment order message

ORM		Pharmacy/treatment Order Message	Chapter
MSH		Message Header	2
[{NTE}]		Notes and Comments (for Header)	2
[			
PID		Patient Identification	3
[PD1]		Additional Demographics	3
[{NTE}]		Notes and Comments (for Patient ID)	2
[PV1		Patient Visit	3
[PV2]]		Patient Visit - Additional Info	3
[{IN1	Insurance		6
[IN2]		Insurance Additional Info	6
[IN3]		Insurance Add'l Info - Cert.	6
}]			
[GT1]	Guarantor		6
[{AL1}]		Allergy Information	3
]			
{			
ORC		Common Order	4
[			
RXO		Pharmacy/Treatment Order	
[{NTE}]		Notes and Comments (for RXO)	2
{RXR}		Pharmacy/Treatment Route	4
[			
{RXC}		Pharmacy/Treatment 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/treatment:

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/Treatment Order	4
[{NTE}]	Notes and Comments (for RXO)	2
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
[{NTE}]	Notes and Comments (for RXC)	2
]		
}		
]		

4.8.2 RXO - pharmacy/treatment order segment

This is the “master” pharmacy/treatment 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), as well as other nonpharmacy treatments, e.g., respiratory therapy, oxygen, and metabolites.

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	OPT	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/Treatment Instructions
7	200	CE	O	Y		00298	Provider's Administration Instructions
8	200	CM	O			00299	Deliver-To Location
9	1	ID	O		0161	00300	Allow Substitutions
10	100	CE	O			00301	Requested Dispense Code
11	20	NM	O			00302	Requested Dispense Amount
12	60	CE	O			00303	Requested Dispense Units
13	3	NM	O			00304	Number Of Refills
14	60	XCN	C			00305	Ordering Provider's DEA Number
15	60	XCN	C			00306	Pharmacist/Treatment Supplier's Verifier ID
16	1	ID	O		0136	00307	Needs Human Review
17	20	ST	C			00308	Requested Give Per (Time Unit)
18	20	NM	O			01121	Requested Give Strength
19	60	CE	O			01122	Requested Give Strength Units
20	200	CE	O	Y		01123	Indication
21	6	ST	O			01218	Requested Give Rate Amount
22	60	CE	O			01219	Requested Give Rate Units

4.8.2.0 RXO field definitions

4.8.2.1 Requested give code (CE) 00292

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

Definition: This field identifies the medical substance or product 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*.

4.8.2.2 Requested give amount - minimum (NM) 00293

Definition: This field is the 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/treatment orders, that component can be used to specify multiples of an ordered amount.
>
> Another way to say this is that, for pharmacy/treatment 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).

4.8.2.3 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.

4.8.2.4 Requested give units (CE) 00295

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

Definition: This field indicates the 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.

4.8.2.5 Requested dosage form (CE) 00296

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

Definition: This field indicates the manner in which the medication is aggregated for dispensing, e.g., tablets, capsules, suppositories. In some cases, this information is implied by the dispense/give code in *RXO-1-requested give code* or *RXO-10-requested dispense code*. Use when both *RXO-1-requested give code* and *RXO-10-requested dispense code* do not specify the drug/treatment form.

4.8.2.6 Provider's pharmacy/treatment instructions (CE) 00297

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

Definition: This field identifies the ordering provider's instructions to the pharmacy or the non-pharmacy treatment provider (e.g., respiratory therapy). If coded, a user-defined table must be used. If transmitted as a free text field, place a null in the first component and the text in the second, e.g., |^this is a free text treatment instruction|.

4.8.2.7 Provider's administration instructions (CE) 00298

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

Definition: This field identifies the ordering provider's instructions to the patient or to the provider administering the drug or treatment. If coded, a user-defined table must be used. If transmitted as free text, place a null in the first component and the text in the second, e.g., |^this is a free text administration instruction|.

4.8.2.8 Deliver-to location (CM) 00299

```
Components:  <point of care (ST)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (ID)> ^
              <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <address (AD)>

Subcomponents of facility (HD):  <namespace ID (IS)> & <universal ID  (ST)> & <universal ID type (ID)>
```

```
Subcomponents of address (AD):  <street address (ST)> & < other designation (ST)> & <city (ST)> & <state or
              province (ST)> & <zip or postal code (ST)> & <country (ID)> & <address type (ID)> & <other
              geographic designation (ST)>
```

Definition: The first components, modeled after the PL data type, contain the inpatient or outpatient location to which the pharmacy provider or treatment supplier is to deliver the drug or treatment device (if applicable). The default (null) value is the current census location for the patient. This component has the same form as *PV1-3-assigned patient location*. The last 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.

4.8.2.9 Allow substitution (ID) 00300

Definition: Following are the values:

Table 0161 - Allow substitution

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

4.8.2.10 Requested dispense code (CE) 00301

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

Definition: This field indicates 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*.

Note on request-to-dispense fields:

Sometimes an order will be written in which the total amount of the drug or treatment requested to be dispensed has no direct relationship with the give amounts and schedule. For example, an outpatient pharmacy/treatment 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.

4.8.2.11 Requested dispense amount (NM) 00302

Definition: This field is the amount to be dispensed.

4.8.2.12 Requested dispense units (CE) 00303

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

Definition: This field identifies the 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.

4.8.2.13 Number of refills (NM) 00304

Definition: This field defines the number of times the requested dispense amount can be given to the patient, subject to local regulation. Refers to outpatient only.

4.8.2.14 Ordering provider's DEA number (XCN) 00305

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

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

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

Definition: This field identifies the providers controlled substance number, if required by site. It is defined as conditional because it is required when the substance being requested is a controlled substance (e.g., a narcotic).

4.8.2.15 Pharmacist/treatment supplier's verifier ID (XCN) 00306

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

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

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

Definition: This field is the provider ID of the pharmacist/treatment substance supplier verifier. Use if required by the pharmacy or treatment 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/treatment supplier" on the order. In this case the first field, *ORC-11-verified by*, is already present; but the second field, *RXO-15-pharmacist/treatment provider verifier ID*, is needed.

4.8.2.16 Needs human review (ID) 00307

Definition: This field uses *HL7 table 0136 - Yes/no indicator.* The values have the following meaning for this field:

Table 0136 - Yes/no indicator

Value	Description
Y	Yes - Indicates that the pharmacist or non-pharmacist treatment supplier filling the order needs to pay special attention to the text in the *RXO-6-provider's pharmacy/treatment 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 or treatment interaction on a certain order, but the provider issuing the order wants to override the condition. In this case, the pharmacy or treatment application receiving the order will want to have a staff pharmacist or non-pharmacist treatment supplier review the interaction and contact the ordering physician.

4.8.2.17 Requested give per (time unit) (ST) 00308

Definition: This field identifies the 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 defined as conditional because it is required when the ordered substance is to be administered continuously at a prescribed rate (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*.

4.8.2.18 Requested strength (NM) 01121

Definition: Use this field when *RXO-1-requested give code* does not specify the strength. This is the numeric part of the strength, used in combination with Requested Strength Unit.

The need for strength and strength unit fields in addition to the amount and amount units fields included in various RX_ segments requires explanation. Physicians can write a prescription for a drug such as Ampicillin in two ways. One way would be: "Ampicillin 250 mg tabs, 2 tabs four times a day." In this case the give amount would be 2, the give units would be tabs, the strength would be 250 and the strength units would milligrams. However, the provider could also write the prescription as "Ampicillin 500 mg four times a day." In this case the give amount would be 500 and the give units would be milligrams. The strength would not be reported in the RXO segment because it is not specified; the drug could be given in two 250 mg caps or one 500 mg cap. But the pharmacist would dispense a specific pill size and would record the strength in the RXE segment as 250 or 500, depending upon which pill size was dispensed.

Some coding systems imply the strength, units, route of administration, and manufacturer of substances within a single instructional code. NDC codes, for example, usually imply not only the medical substance, but the strength, the units, and the form, e.g., 0047-0402-30^Ampicillin 250 MG TABS^NDC. So all of this information can also be completely specified in *RXO-1-requested give code* and in the analogous CE fields in other pharmacy/treatment segments. In this case, it is not necessary to use the strength and strength units fields to specify this information.

4.8.2.19 Requested strength unit (CE) 01122

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

Definition: Use when both *RXO-1-requested give* code and *RXO-10-requested dispense code* do not specify the strength. This is the unit of the strength, used in combination with *RXO-18-requested strength*.

Note: These units can be a "compound quantity;" i.e., the units may express a quantity per unit of time. For example, micrograms per hour (❍g/h) is an acceptable value. These compound units are contained in the ISO+ table. See Chapter 7 for full definition of ISO+ units.

4.8.2.20 Indication (CE) 01123

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

Definition: This field identifies the condition or problem for which the drug/treatment was prescribed. May repeat if multiple indications are relevant.

4.8.2.21 Requested give rate amount (ST) 01218

Definition: This field contains the rate at which to administer treatment.

4.8.2.22 Requested give rate units (CE) 01219

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

Definition: This field contains the units in which *RXO-21-requested give rate amount* is denominated.

4.8.3 RXR - pharmacy/treatment route segment

The Pharmacy/Treatment Route segment contains the alternative combination of route, site, administration device, and administration method that are prescribed. The pharmacy, treatment staff 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	OPT	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

4.8.3.1 Route (CE) 00309

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

Definition: This field is the 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 *HL7 table 0162 - Route of administration* for valid values.

Table 0162 - Route of administration

Value	Description	Value	Description
AP	Apply Externally	MM	Mucous Membrane
B	Buccal	NS	Nasal
DT	Dental	NG	Nasogastric
EP	Epidural	NP	Nasal Prongs*
ET	Endotrachial Tube*	NT	Nasotrachial Tube
GTT	Gastrostomy Tube	OP	Ophthalmic
GU	GU Irrigant	OT	Otic
IMR	Immerse (Soak) Body Part	OTH	Other/Miscellaneous
IA	Intra-arterial	PF	Perfusion
IB	Intrabursal	PO	Oral
IC	Intracardiac	PR	Rectal
ICV	Intracervical (uterus)	RM	Rebreather Mask*
ID	Intradermal	SD	Soaked Dressing
IH	Inhalation	SC	Subcutaneous
IHA	Intrahepatic Artery	SL	Sublingual
IM	Intramuscular	TP	Topical
IN	Intranasal	TRA	Tracheostomy*
IO	Intraocular	TD	Transdermal
IP	Intraperitoneal	TL	Translingual
IS	Intrasynovial	UR	Urethral
IT	Intrathecal	VG	Vaginal
IU	Intrauterine	VM	Ventimask
IV	Intravenous	WND	Wound
MTH	Mouth/Throat		
*used primarily for respiratory therapy and anesthesia delivery			

4.8.3.2 Administrative site (CE) 00310

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

Definition: This field contains the site of the administration route. Refer to *HL7 table 0163 - Administrative site* for valid values.

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).

4.8.3.3 Administrative device (CE) 00311

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

Definition: This field contains the mechanical device used to aid in the administration of the drug or other treatment. Common examples are IV-sets of different types. Refer to *HL7 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		

4.8.3.4 Administration method (CE) 00312

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

Definition: administration method identifies the specific method requested for the administration of the drug or treatment to the patient. Refer to *HL7 table 0165 - Administration method* for valid values.

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		

4.8.4 RXC - pharmacy/treatment component order segment

If the drug or treatment 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 or treatment application on substitutions at the RXC level is identical to that for the RXO level.

Figure 4-15. RXC attributes

SEQ	LEN	DT	OPT	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	60	CE	R			00316	Component Units
5	20	NM	O			01124	Component Strength
6	60	CE	O			01125	Component Strength Units

4.8.4.0 RXC field definitions

4.8.4.1 RX component type (ID) 00313

Definition: Following are the values for this field:

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 antimicrobial, 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.

4.8.4.2 Component code (CE) 00314

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

Definition: This field is 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 or treatment application must include a manual review or reentering of the component drug or treatment.

4.8.4.3 Component amount (NM) 00315

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

4.8.4.4 Component units (CE) 00316

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

Definition: This field identifies the 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.

4.8.4.5 Component strength (NM) 01124

Definition: Use when *RXC-2-component code* does not specify the strength. This is the numeric part of the strength, used in combination with *RXC-6-component strength unit.*

4.8.4.6 Component strength unit (CE) 01125

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

Definition: Use when *RXC-2-component code* does not specify the strength. This is the unit of the strength, used in combination with *RXC-5-component strength*.

> **Note:** These units can be a "compound quantity;" i.e., the units may express a quantity per unit of time. For example, micrograms per hour (ug/h) is an acceptable value. These compound units are contained in the ISO+ table. See Chapter 7 for full definition of ISO+ units.

4.8.5 IV solution groups

An 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.

4.8.6 RDE/RRE - pharmacy/treatment encoded order message (event O01/O02)

This message communicates the pharmacy or treatment application's encoding of the pharmacy/treatment 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/treatment 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/Treatment Encoded Order Message	Chapter
MSH	Message Header	2
[{NTE}]	Notes and Comments (for Header)	2
[		
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NTE}]	Notes and Comments (for Patient ID)	2
[PV1	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
[{IN1	Insurance	
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert.	6
}]		
[GT1]	Guarantor	6
[{AL1}]	Allergy Information	3
]		
{		
ORC	Common Order	4
[		
RXO	Pharmacy/Treatment Prescription Order	4
[{NTE}]	Notes and Comments (for RXO)	2
{RXR}	Pharmacy/Treatment Route	4
[		
{RXC}	Pharmacy/Treatment Component (for RXO)	4
[{NTE}]	Notes and Comments (for RXC)	2
]		
]		
RXE	Pharmacy/Treatment Encoded Order	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component (for RXE)	4
{		
[OBX]	Results	7
[{NTE}]	Notes and Comments (for OBX)	2
}		
{[CTI]}	Clinical Trial Identification	7
}		

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/Treatment Encoded Order Acknowledgment Message		Chapter
MSH	Message Header	2
MSA	Message Acknowledgment	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/Treatment Encoded Order	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
]		
}		
]		

4.8.7 RXE - pharmacy/treatment encoded order segment

The RXE segment details the pharmacy or treatment 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 or treatment department has the "authority" (and/or necessity) to schedule dispense/give events. Hence, the pharmacy or treatment 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	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	200	TQ	R			00221	Quantity/Timing
2	100	CE	R		0292	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	200	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	XCN	C			00305	Ordering Provider's DEA Number
14	60	XCN	O			00306	Pharmacist/Treatment Supplier's Verifier ID
15	20	ST	C			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		0136	00307	Needs Human Review
21	200	CE	O	Y		00330	Pharmacy/Treatment Supplier's 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
25	20	NM	O			01126	Give Strength
26	60	CE	O			01127	Give Strength Units
27	200	CE	O	Y		01128	Give Indication
28	20	NM	O			01220	Dispense Package Size
29	60	CE	O			01221	Dispense Package Size Unit
30	2	ID	O		0321	01222	Dispense Package Method

4.8.7.0 RXE field definitions

4.8.7.1 Quantity/timing (TQ) 00221

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

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

4.8.7.2 Give code (CE) 00317

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

Definition: This field identifies the medical substance ordered to be given to the patient, as encoded by the pharmacy or treatment supplier; 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*. Refer to *HL7 Table 0292 - Vaccines administered* for valid values.

4.8.7.3 Give amount - minimum (NM) 00318

Definition: This field contains the ordered amount as encoded by the pharmacy or treatment supplier. 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/treatment orders, that component can be used to specify multiples of an ordered amount.
>
> Another way to say this is that, for pharmacy/treatment 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).

4.8.7.4 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.

4.8.7.5 Give units (CE) 00320

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

Definition: This field contains the units for the give amount as encoded by the pharmacy or treatment (e.g., respiratory therapy) 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.

4.8.7.6 Give dosage form (CE) 00321

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

Definition: The dosage form indicates the manner in which the medication is aggregated for dispensing, e.g., tablets, capsules, suppositories. In some cases, this information is implied by the give code *in RXE-2-give code*. Use the *RXE-6-give dosage form* when the give code does not specify the dosage form.

4.8.7.7 Provider's administration instructions (CE) 00298

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

Definition: This field contains the ordering provider's instructions to the patient or the provider administering the drug or treatment. If coded, a user-defined table must be used; if free text (describing a custom IV, mixture, or salve, for example), place the text in the second component, e.g., `|^this is a free text administration instruction|`.

4.8.7.8 Deliver-to location (CM) 00299

```
Components:  <point of care (ST)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (ID)> ^
              <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <street address (ST)> ^ <other
              designation (ST)> ^ <city  (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^
              <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)>

Subcomponents of facility:  <namespace ID (IS)> & <universal ID  (ST)> & <universal ID type (ID)>
```

Definition: The first component contains the inpatient or outpatient location to which the pharmacy or treatment supplier is to deliver the drug or treatment (if applicable). The default (null) value is the current census location for the patient. Site-specific table. The first eight components have the same form as the first eight comonents of *PV1-3-assigned patient location.* The final eight components replace the ninth component of *PV1-3-assigned patient location* and represent the full address specification.

4.8.7.9 Substitution status (ID) 00322

Definition: Refer to *HL7 table 0167 - Substitution status* for valid values. If a substitution has been made, and a record of the original requested give code (*RXO-1-requested give code*) 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.
0	No product selection indicated
1	Substitution not allowed by prescriber
2	Substitution allowed - patient requested product dispensed
3	Substitution allowed - pharmacist selected product dispensed
4	Substitution allowed - generic drug not in stock
5	Substitution allowed - brand drug dispensed as a generic
7	Substitution not allowed - brand drug mandated by law
8	Substitution allowed - generic drug not available in marketplace

4.8.7.10 Dispense amount (NM) 00323

Definition: This field contains the amount dispensed as encoded by the pharmacy or treatment supplier.

4.8.7.11 Dispense units (CE) 00324

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

Definition: This field contains the units for the dispense amount as encoded by the pharmacy or treatment supplier. This field is required if the units are not 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.

4.8.7.12 Number of refills (NM) 00304

Definition: This field contains the total original number of refills. Outpatient only.

4.8.7.13 Ordering provider's DEA number (XCN) 00305

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

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

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

Definition: This field is defined as conditional because it is required when the substance requested is a controlled substance (e.g., a narcotic).

4.8.7.14 Pharmacist/treatment supplier's verifier ID (XCN) 00306

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

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

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

Definition: This field contains the provider ID of Pharmacist/treatment supplier's verifier. Use if required by the pharmacy or treatment application or site on orders (or some subgroup of orders).

4.8.7.15 Prescription number (ST) 00325

Definition: This field contains the prescription number as assigned by the pharmacy or treatment application. Equivalent in uniqueness to the pharmacy/treatment filler order number. At some sites, this may be the pharmacy or treatment system (internal) sequential form. At other sites, this may be an external form. This is a required field in RXE when used in pharmacy/treatment messages, but it is not required when used in product experience messages (see Chapter 7).

4.8.7.16 Number of refills remaining (NM) 00326

Definition: Number of refills remaining. This field is conditional because it is required when a prescription is dispensed to an outpatient. It is not relevant to inpatient treatment orders.

4.8.7.17 Number of refills/doses dispensed (NM) 00327

Definition: Number of refills remaining. This field is conditional because it is required when a prescription is dispensed to an outpatient. It is not relevant to inpatient treatment orders.

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

Definition: Date/time of the most recent refill or dose dispensed.

4.8.7.19 Total daily dose (CQ) 00329

```
Components:  <quantity (NM)> ^ <units (CE)>

Subcomponents of units: <identifier (ID)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier
             (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>
```

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

4.8.7.20 Needs human review (ID) 00307

Definition: This field uses *HL7 table 0136 - Yes/no indicator.* The values have the following meaning for this field:

Table 0136 - Yes/no 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 or treatment to pay attention to the text in *RXE-22-pharmacy/treatment special dispensing instructions*.
N	No - Indicates no warning is present. This is the equivalent default (null) value.

4.8.7.21 Pharmacy/treatment special dispensing instructions (CE) 00330

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

Definition: This field contains the pharmacy or treatment supplier's provider-generated special instructions to the provider dispensing/administering the order.

4.8.7.22 Give per (time unit) as encoded by the pharmacy/treatment supplier (ST) 00331

Definition: This field contains the 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
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

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

This field is defined as conditional because it is required when the ordered substance is to be adminstered continuously at a prescribed rate (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.

4.8.7.23 Give rate amount (ST) 00332

Definition: This field contains the rate at which the substance should be administered.

4.8.7.24 Give rate units (CE) 00333

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

Definition: This field contains the 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. (See ISO+ *Figure 7-13* in Chapter 7 for possible compound units codes.)

4.8.7.25 Give strength (NM) 01126

Definition: Use when *RXE-2-give code* does not specify the strength. This is the numeric part of the strength, used in combination with *RXE-26-give strength unit*.

4.8.7.26 Give strength unit (CE) 01127

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

Definition: Use when *RXE-2-give code* does not specify the strength. This is the unit of the strength, used in combination with *RXE-25-give strength*.

> **Note:** These units can be a "compound quantity"; i.e., the units may express a quantity per unit of time. For example, micrograms per hour (ug/h) is an acceptable value. These compound units are contained in the ISO+ table. See Chapter 7 for full definition of ISO+ units.

4.8.7.27 Give indication (CE) 01128

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

Definition: This field identifies the condition or problem for which the drug/treatment was prescribed. May repeat if multiple indications are relevant.

4.8.7.28 Dispense package size (NM) 01220

Definition: This field contains the size of package to be dispensed. Units are transmitted in *RXE-29-dispense package size unit*.

4.8.7.29 Dispense package size unit (CE) 01221

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

Definition: This field contains the units in which *RXE-28-dispense package size* is denominated.

4.8.7.30 Dispense package method (ID) 01222

Definition: This field contains the method by which treatment is dispensed. Refer to *HL7 table 0321 - Dispense method* for valid values.

Table 0321 - Dispense method

Value	Description
TR	Traditional
UD	Unit Dose
F	Floor Stock
AD	Automatic Dispensing

4.8.8 Usage notes for pharmacy/treatment messages

For the RDS (pharmacy/treatment dispense), RGV (pharmacy/treatment give) and RAS (pharmacy/treatment administration) messages, the placer and filler order numbers are those of the parent RDE (pharmacy/treatment encoded order) message. In these messages, the filler order number does not provide a unique identification of the instance of the pharmacy/treatment 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 order number (including its application ID component) and the appropriate sub-ID counter uniquely identifies the instance of the pharmacy/treatment 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 or treatment system and the receiving system must communicate changes in state. Depending on whether the pharmacy or treatment supplier’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 or treatment system.

For example, suppose that a pharmacy or treatment system is sending RGV messages to a nursing system which will administer the medication and that the pharmacy or treatment 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 or treatment supplier 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.

4.8.9 RDS/RRD - pharmacy/treatment dispense message (events O01/O02)

The RDS message may be created by the pharmacy/treatment application for each instance of dispensing a drug or treatment 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 or treatments given. As a site-specific variant, the original order segments (RXO, RXE and their associated RXR/RXCs) may be sent optionally (for comparison).

RDS	Pharmacy/Treatment Dispense Message	Chapter
MSH	Message Header	2
[{NTE}]	Notes and Comments (for Header)	2
[		
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NTE}]	Notes and Comments (for PID)	2
[{AL1}]	Allergy Information	2
[PV1	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
]		
{		
ORC	Common Order	4
[		
RXO	Pharmacy /Treatment Order	4
[		
{NTE}	Notes and Comments (for RXO)	2
{RXR}	Pharmacy/Treatment Route	4
[		
{RXC}	Pharmacy/Treatment Component	4
[{NTE}]	Notes and Comments (for RXC)	2
]		
]		
]		
[		
RXE	Pharmacy/Treatment Encoded Order	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
]		
RXD	Pharmacy/Treatment Dispense	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
{		
OBX	Results	7
[{NTE}]	Notes and Comments (for OBX)	2
}		
}		

(acknowledged by)

RRD	Pharmacy/Treatment Dispense Acknowledgment Message	Chapter
MSH	Message Header	2
MSA	Message Acknowledgment	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/Treatment Dispense	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment 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 or treatment supplier to the Nursing application (or other) with drug/treatment dispense and administration instructions.

4.8.10 RXD - pharmacy/treatment dispense segment

Figure 4-17. RXD attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	NM	R			00334	Dispense Sub-ID Counter
2	100	CE	R		0292	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	ST	R			00325	Prescription Number
8	20	NM	C			00326	Number of Refills Remaining
9	200	ST	O	Y		00340	Dispense Notes
10	200	XCN	O			00341	Dispensing Provider
11	1	ID	O		0167	00322	Substitution Status
12	10	NM	O			00329	Total Daily Dose
13	200	CM	C			01303	Dispense-to Location
14	1	ID	O		0136	00307	Needs Human Review
15	200	CE	O	Y		00330	Pharmacy/Treatment Supplier's Special Dispensing Instructions
16	20	NM	O			01132	Actual Strength
17	60	CE	O			01133	Actual Strength Unit
18	20	ST	O	Y		01129	Substance Lot Number
19	26	TS	O	Y		01130	Substance Expiration Date
20	60	CE	O	Y		01131	Substance Manufacturer Name
21	200	CE	O	Y		01123	Indication
22	20	NM	O			01220	Dispense Package Size
23	60	CE	O			01221	Dispense Package Size Unit
24	2	ID	O		0321	01222	Dispense Package Method

4.8.10.0 RXD field definitions

4.8.10.1 Dispense sub-ID counter (NM) 00334

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

4.8.10.2 Dispense/give code (CE) 00335

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

Definition: This field identifies 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*. If the substance dispensed is a vaccine, CVX codes may be used to code this field (see *HL7 table 0292 - Vaccines administered*).

> **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 or treatment by the pharmacy or treatment supplier.

4.8.10.3 Date/time dispensed (TS) 00336

Definition: This field indicates when the pharmaceutical is dispensed from the pharmacy or treatment supplier. Use the time stamp format.

4.8.10.4 Actual dispense amount (NM) 00337

Definition: This field contains the amount dispensed.

4.8.10.5 Actual dispense units (CE) 00338

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

Definition: This field contains the units dispensed. Site-defined table. This field is required if the units are not implied by the actual dispense code. 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.

4.8.10.6 Actual dosage form (CE) 00339

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

Definition: The dosage form indicates the manner in which the medication is aggregated for dispensing, e.g., tablets, capsules, suppositories. In some cases, this information is implied by the dispense/give code in *RXD-2-dispense/give code*. Use this field when the give code and the dispense code do not specify the dosage form.

4.8.10.7 Prescription number (ST) 00325

Definition: This field is equivalent in uniqueness to the pharmacy/treatment supplier filler order number. At some sites, this may be the pharmacy/treatment supplier (internal) sequential form. At other sites, this may be an external number.

4.8.10.8 Number of refills remaining (NM) 00326

Definition: This field is conditional because it is required when a prescription is dispensed to an outpatient. It is not relevant to inpatient treatment orders.

4.8.10.9 Dispense notes (ST) 00340

Definition: This field contains 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 or treatment supplier). This may contain free text describing a custom IV, mixture, or salve.

4.8.10.10 Dispensing provider (XCN) 00341

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

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

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

Definition: This field contains the provider ID of the person dispensing the pharmaceutical.

4.8.10.11 Substitution status (ID) 00322

Definition: Refer to HL7 *table 0167 - Substitution status* for suggested values.

4.8.10.12 Total daily dose (NM) 00329

Definition: This field contains the 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.

4.8.10.13 Dispense-to location (CM) 01303

```
Components:  <point of care (ST)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (ID)> ^
              <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <street address (ST)> ^ <other
              designation (ST)> ^ <city  (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^
              <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)>

Subcomponents of facility(HD):  <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>
```

Definition: The first component (which is of PL data type with the component delimiters demoted to subcomponents) contains the inpatient or outpatient location where the drug or treatment was dispensed (if applicable). The default (null) value is the current census location for the patient. Site-specific table. The first eight components have the same form as the first eight comonents of *PV1-3-assigned patient location.* The final eight components replace the ninth component of *PV1-3-assigned patient location* and represent the full address specification.

4.8.10.14 Needs human review (ID) 00307

Definition: Refer to *HL7 table 0136 - Yes/no indicator* for valid values. The values have the following meaning for this field:

Table 0136 - Yes/no 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 or treatment to pay attention to the text in *RXD-15-pharmacy/treatment supplier special dispensing instructions*.
N	No - Indicates no warning is present. This is the equivalent default (null) value.

4.8.10.15 Pharmacy/treatment supplier's special dispensing instructions (CE) 00330

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

Definition: This field contains pharmacy or treatment supplier-generated special instructions to the provider dispensing/administering the order.

4.8.10.16 Actual strength (NM) 01132

Definition: Use when *RXD-2-dispense/give code* does not specify the strength. This is the numeric part of the strength, used in combination with *RXD-17-actual strength unit*.

4.8.10.17 Actual strength unit (CE) 01133

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

Definition: Use when *RXD-2-dispense/give code* does not specify the strength. This is the unit of the strength, used in combination with *RXD-16-actual strength*.

Note:	These units can be a "compound quantity;" i.e., the units may express a quantity per unit of time. For example, micrograms per hour (ug/h) is an acceptable value. These compound units are contained in the ISO+ table. See Chapter 7 for full definition of ISO+ units.

4.8.10.18 Substance lot number (ST) 01129

Definition: This field contains the lot number of the medical substance administered.

Note:	The lot number is the number printed on the label attached to the container holding the substance and on the packaging which houses the container. If the substance is a vaccine, for example, and a diluent is required, a lot number may appear on the vial containing the diluent; however, any such identifier associated with a diluent is not the identifier of interest. The substance lot number should be reported, not that of the diluent.

4.8.10.19 Substance expiration date (TS) 01130

Definition: This field contains the expiration date of the medical substance administered.

Note:	Vaccine expiration date does not always have a "day" component; therefore, such a date may be transmitted as YYYYMM^L.

4.8.10.20 Substance manufacturer (CE) 01131

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

Definition: This field contains the manufacturer of the medical substance administered.

Note:	For vaccines, code system MVX may be used to code this field (see Section 4.10, "VACCINE ADMINISTRATION DATA"). This field may be used if the manufacturer of the substance is not identified by the code used in *RXA-5-administered code*.

4.8.10.21 Indication (CE) 01123

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

Definition: This field contains the identifier of the condition or problem for which the drug/treatment was prescribed. May repeat if multiple indications are relevant.

4.8.10.22 Dispense package size (NM) 01220

Definition: This field contains the size of package to be dispensed. Units are transmitted *in RXE-29-dispense package size unit.*

4.8.10.23 Dispense package size unit (CE) 01221

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

Definition: This field contains the units in which *RXE-28-dispense package size* is denominated.

4.8.10.24 Dispense method (ID) 01222

Definition: This field contains the method by which treatment is dispensed. Refer to *HL7 table 0321 - Dispense method* for valid values.

Table 0321 - Dispense method

Value	Description
TR	Traditional
UD	Unit Dose
F	Floor Stock
AD	Automatic Dispensing

4.8.11 RGV/RRG - pharmacy/treatment give message (events O01/O02)

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 or treatment application to another application, it is done with the RGV message.

The RGV message uses the RXG segment to record drug or treatment administration instructions. It may carry information about a single scheduled administration on a drug or treatment, or it may carry information about multiple administrations. If the pharmacy or treatment application (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/treatment 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 or treatment application to the Nursing application (or other) with drug/treatment administration instructions.

RGV	Pharmacy/Treatment 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 Information	2
[PV1	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
]		
{		
ORC	Common Order	4
[		
RXO	Pharmacy /Treatment Order	4
[		
{NTE}	Notes and Comments (for RXO)	2
{RXR}	Pharmacy/Treatment Route	4
[		
{RXC}	Pharmacy/Treatment Component	4
[{NTE}]	Notes and Comments (for RXC)	2
]		
]		
]		
[		
RXE	Pharmacy/Treatment Encoded Order	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
]		
{		
RXG	Pharmacy/Treatment Give	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
{		
[OBX]	Observation/Results	7
[{NTE}]	Notes and Comments (for OBX)	2
}		
}		
}		

(acknowledged by)

```
RRG       Pharmacy/Treatment Give Acknowledgment Message                Chapter

MSH                     Message Header                                      2
MSA                     Message Acknowledgment                              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/Treatment Give                             4
     {RXR}              Pharmacy/Treatment Route                            4
     [{RXC}]            Pharmacy/Treatment Component                        4
   ]
  }
]
```

4.8.12 RXG - pharmacy/treatment give segment

Figure 4-18. RXG attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	NM	R			00342	Give Sub-ID Counter
2	4	NM	O			00334	Dispense Sub-ID Counter
3	200	TQ	R			00221	Quantity/Timing
4	100	CE	R		0292	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	O	Y		00351	Administration Notes
10	1	ID	O		0167	00322	Substitution Status
11	200	CM	O			01303	Dispense-To Location
12	1	ID	O		0136	00307	Needs Human Review
13	200	CE	O	Y		00343	Pharmacy/Treatment Supplier 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
17	20	NM	O			01126	Give Strength
18	60	CE	O			01127	Give Strength Units
19	20	ST	O	Y		01129	Substance Lot Number
20	26	TS	O	Y		01130	Substance Expiration Date
21	60	CE	O	Y		01131	Substance Manufacturer Name
22	200	CE	O	Y		01123	Indication

4.8.12.0 RXG fields definitions

4.8.12.1 Give sub-ID counter (NM) 00342

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

If the RXG segment carries information about multiple administrations, this field's value is zero (0), since in this case a one-to-one matching with the RAS segment is ambiguous.

4.8.12.2 Dispense sub-ID Counter (NM) 00334

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

4.8.12.3 Quantity/timing (TQ) 00221

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

Definition: This field contains the 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).

4.8.12.4 Give code (CE) 00317

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

Definition: This field is the identifier 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*. If the substance given is a vaccine, CVX codes may be used to code this field (see *HL7 table 0292 - Vaccines administered*).

4.8.12.5 Give amount - minimum (NM) 00318

Definition: This field contains the ordered amount as encoded by the pharmacy/treatment supplier. 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/treatment orders, that component can be used to specify multiples of an ordered amount.
>
> Another way to say this is that, for pharmacy/treatment 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).

4.8.12.6 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.

4.8.12.7 Give units (CE) 00320

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

Definition: This field contains the 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.

4.8.12.8 Give dosage form (CE) 00321

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

Definition: The dosage form indicates the manner in which the medication is aggregated for dispensing, e.g., tablets, capsules, suppositories. In some cases, this information is implied by the give code in *RXG-4-give code*. Use this field when the give code does not specify the dosage form.

4.8.12.9 Administration notes (CE) 00351

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

Definition: This field contains 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 or treatment supplier). If coded, a user-defined table must be used. If free text, place a null in the first component and the text in the second, e.g., |^this is a free text administration note|.

4.8.12.10 Substitution status (ID) 00322

Definition: Refer to *HL7 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.

4.8.12.11 Dispense-to location (CM) 01303

```
Components:  <point of care (ST)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (ID)> ^
              <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <street address (ST)> ^ <other
              designation (ST)> ^ <city  (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^
              <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)>

Subcomponents of facility(HD):  <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>
```

Definition: The first component contains the inpatient or outpatient location where the drug or treatment was dispensed (if applicable). The default (null) value is the current census location for the patient. Site-specific table. The first eight components have the same form as the first eight comonents of *PV1-3-assigned patient location.* The final eight components replace the ninth component of *PV1-3-assigned patient location* and represent the full address specification.

4.8.12.12 Needs human review (ID) 00307

Definition: Refer to *HL7 table 0136 - Yes/no indicator* for valid values. The values have the following meaning for this field:

Table 0136 - Yes/no 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 or treatment to pay attention to the text in *RXG-13-pharmacy/treatment supplier special administration instructions*.
N	No - Indicates no warning is present. This is the equivalent default (null) value.

4.8.12.13 Pharmacy/treatment special administration instructions (CE) 00343

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

Definition: This field contains pharmacy/treatment supplier-generated special instructions to the provider administering the order.

4.8.12.14 Give per (time unit) (ST) 00331

Definition: This field contains the 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
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

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.

4.8.12.15 Give rate amount (ST) 00332

Definition: This field contains the amount (number) of substance to be administered.

4.8.12.16 Give rate units (CE) 00333

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

Definition: This field contains the units for *RXG-15-give rate amount*. May be composite. The ratio of the *RXG-15-give rate amount* and *RXG-16-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.

4.8.12.17 Give strength (NM) 01126

Definition: Use when *RXG-4-give code* does not specify the strength. This is the numeric part of the strength, used in combination with *RXG-18-give strength unit*.

4.8.12.18 Give strength unit (CE) 01127

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

Definition: Use when *RXG-4-give code* does not specify the strength. This is the unit of the strength, used in combination with *RXG-17-give strength*.

> **Note:** These units can be a "compound quantity"; i.e., the units may express a quantity per unit of time. For example, micrograms per hour (ug/h) is an acceptable value. These compound units are contained in the ISO+ table. See Chapter 7 for full definition of ISO+ units.

4.8.12.19 Substance lot number (ST) 01129

Definition: This field contains the lot number of the medical substance administered.

> **Note:** The lot number is the number printed on the label attached to the container holding the substance and on the packaging which houses the container. If the substance is a vaccine, for example, and a diluent is required, a lot number may appear on the vial containing the diluent; however, any such identifier associated with a diluent is not the identifier of interest. The substance lot number should be reported, not that of the diluent.

4.8.12.20 Substance expiration date (TS) 01130

Definition: This field contains the expiration date of the medical substance administered.

> **Note**: Vaccine expiration date does not always have a "day" component; therefore, such a date may be transmitted as YYYYMM.

.

4.8.12.21 Substance manufacturer name (CE) 01131

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

Definition: This field contains the manufacturer of the medical substance administered.

> **Note:** For vaccines, code system MVX may be used to code this field (see Section 4.10, "VACCINE ADMINISTRATION DATA"). This field may be used if the manufacturer of the substance is not identified by the code used in *RXA-5-administered code*.

4.8.12.22 Indication (CE) 01123

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

Definition: This field contains the identifier of the condition or problem for which the drug/treatment was prescribed. May repeat if multiple indications are relevant.

4.8.13 RAS/RRA - pharmacy/treatment administration message (events O02/O02)

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 or treatment 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/Treatment Administration	Chapter
MSH	Message Header	2
[{NTE}]	Notes and Comments (for Header)	2
[		
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NTE}]	Notes and Comments (for PID)	2
[{AL1}]	Allergy Information	2
[PV1	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
]		
{		
ORC	Common Order	4
[		
RXO	Pharmacy /Treatment Order	4
[		
{NTE}	Notes and Comments (for RXO)	2
{RXR}	Pharmacy/Treatment Route	4
[		
{RXC}	Pharmacy/Treatment Component	4
[{NTE}]	Notes and Comments (for RXC)	2
]		
]		
]		
[		
RXE	Pharmacy/Treatment Encoded Order	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
]		
{RXA}	Pharmacy/Treatment Administration	4
RXR	Pharmacy/Treatment Route	4
{[OBX	Observation/Result	7
{[NTE]}	Notes and Comments (for OBX)	2
]}		
{[CTI]}	Clinical Trial Identification	7
}		

(acknowledged by)

```
RRA  Pharmacy/Treatment Administration Acknowledgment Message          Chapter

MSH                    Message Header                                    2
MSA                    Message Acknowledgment                            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/Treatment Administration                     4
      RXR          Pharmacy/Treatment Route                              4
   ]
  }
]
```

4.8.14 RXA - pharmacy/treatment 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	OPT	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		0292	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	O	Y		00351	Administration Notes
10	200	XCN	O			00352	Administering Provider
11	200	CM	C			00353	Administered-at Location
12	20	ST	C			00354	Administered Per (Time Unit)
13	20	NM	O			01134	Administered Strength
14	60	CE	O			01135	Administered Strength Units
15	20	ST	O	Y		01129	Substance Lot Number
16	26	TS	O	Y		01130	Substance Expiration Date
17	60	CE	O	Y	0227	01131	Substance Manufacturer Name
18	200	CE	O	Y		01136	Substance Refusal Reason
19	200	CE	O	Y		01123	Indication
20	2	ID	O		0322	01223	Completion Status
21	2	ID	O		0323	01224	Action Code
22	26	TS	O			01225	System Entry Date/Time

4.8.14.0 RXA field definitions

4.8.14.1 Give sub-ID counter (NM) 00342

Definition: Use this field 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 (0).

4.8.14.2 Administration sub-ID counter (NM) 00344

Definition: This field 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 administration of an IV solution.

4.8.14.3 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 RXA-12-administered per (time unit)* of the same message.

4.8.14.4 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.

4.8.14.5 Administered code (CE) 00347

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

Definition: This field contains the identifier of the medical substance administered. It is equivalent to *OBR-4-universal service ID code* in function. If the substance administered is a vaccine, CVX codes may be used to code this field (see *HL7 table 0292 - Vaccines administered*).

4.8.14.6 Administered amount (NM) 00348

Definition: This field contains the amount administered.

4.8.14.7 Administered units (CE) 00349

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

Definition: This field is conditional because it is required if the administered amount code does not imply units. This field must be in simple units that reflect the actual quantity of the substance administered. It does not include compound units.

4.8.14.8 Administered dosage form (CE) 00350

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

Definition: The dosage form indicates the manner in which the medication is aggregated for dispensing, e.g., tablets, capsules, suppositories. In some cases, this information is implied by the dispense/give code in *RXA-5-administered code*. Use this field when the administered code does not specify the dosage form.

4.8.14.9 Administration notes (CE) 00351

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

Definition: This field contains notes from the provider administering the medication. If coded, requires a user-defined table. If free text (describing a custom IV, mixture, or salve, for example) place a null in the first component and the text in the second, e.g., `|^this is a free text administration note|`.

4.8.14.10 Administering provider (XCN) 00352

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

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

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

Definition: This field contains the provider ID of the person administering the pharmaceutical.

4.8.14.11 Administered at location (CM) 00353

```
Components:  <point of care (IS)> ^ <room (IS) ^ <bed (IS)> ^ <facility (HD) ^ <location status (IS) ^
             <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ < street address (ST)> ^ <other
             designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^
             <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)>

Subcomponents of facility (HD):  <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>
```

Definition: The first component contains the inpatient or outpatient location at which the drug or treatment was administered (if applicable). The default (null) value is the current census location for the patient. Site-specific table. The first eight components have the same form as the first eight comonents of *PV1-3-assigned patient location.* The final eight components replace the ninth component of *PV1-3-assigned patient location* and represent the full address specification.

4.8.14.12 Administered per (time unit) (ST) 00354

Definition: This field contains the rate at which this medication was administered as calculated by using *RXA-6-administered amount* and *RXA-7-administered units*. This field is conditional because it is required when a treatment is administered continuously at a prescribed rate, e.g., certain IV solutions.

4.8.14.13 Administered strength (NM) 01134

Definition: Use when *RXA-5-administered code* does not specify the strength. This is the numeric part of the strength, used in combination with *RXA-14-administered strength unit*.

4.8.14.14 Administered strength unit (CE) 01135

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

Definition: Use when *RXA-5-administered code* does not specify the strength. This is the unit of the strength, used in combination with *RXA-13-administered strength*.

> **Note**: These units can be a "compound quantity;" i.e., the units may express a quantity per unit of time. For example, micrograms per hour (ug/h) is an acceptable value. These compound units are contained in the ISO+ table. See Chapter 7 for full definition of ISO+ units.

4.8.14.15 Substance lot number (ST) 01129

Definition: This field contains the lot number of the medical substance administered.

> **Note:** The lot number is the number printed on the label attached to the container holding the substance and on the

packaging which houses the container. If the substance is a vaccine, for example, and a diluent is required, a lot number may appear on the vial containing the diluent; however, any such identifier associated with a diluent is not the identifier of interest. The substance lot number should be reported, not that of the diluent.

4.8.14.16 Substance expiration date (TS) 01130

Definition: This field contains the expiration date of the medical substance administered.

Note: Vaccine expiration date does not always have a "day" component; therefore, such a date may be transmitted as YYYYMM.

4.8.14.17 Substance manufacturer (CE) 01131

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

Definition: This field contains the manufacturer of the medical substance administered.

Note: For vaccines, code system MVX may be used to code this field (see Section 4.10, "VACCINE ADMINISTRATION DATA"). This field may be used if the manufacturer of the substance is not identified by the code used in *RXA-5- administered code*.

4.8.14.18 Substance refusal reason (CE) 01136

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

Definition: This field contains the reason the patient refused the medical substance. Any entry in the field indicates that the patient did not take the substance.

4.8.14.19 Indication (CE) 01123

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

Definition: This field contains the identifier of the condition or problem for which the drug/treatment was prescribed. May repeat if multiple indications are relevant.

4.8.14.20 Completion status (ID) 01223

Definition: Status of treatment administration event. Refer to *HL7 table 0322 - Completion status* for valid values.

Table 0322 - Completion status

Value	Description
CP	Complete
RE	Refused
NA	Not Administered
PA	Partially Administered

4.8.14.21 Action code (ID) 01224

Definition: Status of record. The information in this field enables the use of the RXA in the vaccine messages (see Section 4.13, "RXA SEGMENT USAGE IN VACCINE MESSAGES"), where a method of correcting vaccination information transmitted with incorrect patient identifying information is needed. Refer to *HL7 table 0323 - Action code* for valid values.

Table 0323 - Action code

Value	Description
A	Add
D	Delete
U	Update

4.8.14.22 System entry date/time (TS) 01225

Definition: Date/time the administration information was entered into the source system. This field is used to detect instances where treatment administration information is inadvertently entered multiple times by providing a unique identification field. Under usual circumstances, this field would be provided automatically by the computer system rather than being entered by a person.

4.8.15 Pharmacy/treatment 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/treatment queries returning the current profile of pharmacy or treatment 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, "Alternating IV Order Messages."

4.8.16 Examples of use

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

4.8.16.1 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/treatment instructions* or *RXO-7-provider's administration instructions* only); fully encoded version must be re-entered or verified manually by the pharmacy or treatment 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 override 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<cr>
RXO|||||500 mg Polycillin Q6H for 10 days, dispense 40 Tablets<cr>
```

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<cr>
RXO|^Polycillin 500 mg TAB^|500||MG|||||Y||40<cr>
RXR|PO<cr>
```

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<cr>
RXO|RX1001^Polycillin^L|500||MG|||||Y||40<cr>
RXR|PO<cr>
```

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<cr>
RXO|RX1001^Polycillin 500 mg TAB^L|500||MG|||||G||40<cr>
RXR|PO<cr>
```

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

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

f) Pharmacy or treatment supplier's dispense results (RDS message).

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

g) Pharmacy or treatment supplier's give results (RGV message).

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

h) Nursing application Medications Administration results to pharmacy, treatment, or Order Entry application.

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

4.8.16.2 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 or treatment 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 or treatment 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<Cr>
RXO|||3|L|IV|D5W WITH 1/2 NS WITH 20 MEQ KCL EVERY THIRD BOTTLE
STARTING WITH
   FIRST||W8&825&A^|N|||||||H30<cr>
RXR|IV|LA|IV-SET01^^L<cr>
```

b) Pharmacy/treatment's encoded version sent to Nursing Unit West 8 Room 825 Bed A

The pharmacy or treatment supplier 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 or treatment supplier's interpretation of the order.

```
MSH|...
PID|...

ORC|PA|2045^OE|123^PH||||E|^C^199312100800^199312120800^^TM30<cr>
```

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<cr>
RXE|^C^H10^199312100800^199312120800^TM30^^^^S&&&125&PH&*ES+0M&2|RXCUSI
V^Custom
   IV^L||1|L|IV||W8&825&A|N|||||||RX#1256|||||||H10|100|CC/HR<cr>
RXR|IV|LA|IV-SET01^^L<cr>
RXC|B|IVDEX05^D5W WITH 1/2 NS^L|1|L<cr>
RXC|A|CHEM_KCL^KCL^L|20|MEQ<cr>
```

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<cr>
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<cr>
RXR|IV|LA|IV-SET01^^L<cr>
```

c) Pharmacy/treatment'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 or treatment supplier'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 or treatment supplier is requesting that the drug or treatment 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<cr>
RXG|1||^C^H10^199312100800^199312101800^^TM30|RXCUSIV^Custom IV^L|1||L|
   IV|||W8&825&A|||H10|100|CC/HR<cr>
RXR|IV|LA|IV-SET01^^L<cr>
RXC|B|IVDEX05^D5W WITH 1/2 NS^L|1|L<cr>
RXC|A|CHEM_KCL^KCL^L|20|MEQ<cr>
```

d) Nursing application Medication Administration results to the pharmacy or treatment supplier 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<cr>RXA|1|1
|199312100800|199312101800|RXCUSIV^Custom
IV^L|1|L|IV|||W8&825&A|H10<cr>
RXR|IV|LA|IV-SET01^^L<cr>
```

This completes the first series of messages for this drug/treatment administration.

4.8.16.3 Alternating IV Order Messages

HL7 Delimiters: <cr> = segment terminator; | = field separator; ^ = component separator; & = subcomponent separator; ~ = repetition indicator; \ = escape character

Encoding Note: For readability, these examples do not show encoding of the subcomponents of the Give Codes (CE data type) in the RXC and RXO segments. In practice, the subcomponents should be encoded as described in the HL7 specification.

a) Example #1

D5/0.45NaCl 1000mL with 20mEq KCl in every 3rd bottle. Start the KCl in the 3rd bottle of this order. Run in at a rate of 100mL/hr.

(Other message data: placer order #123, placer application ID=SMS, interval=continuous, start date/time=11/28/94 0900, no stop date/time, priority=Routine, order sequencing= Cyclical)

This order may be expressed using a parent/child relationship. The parent order consists of an ORC (and an RXO, incompletely elaborated in this example) that contains order level information. The repeating bottle cycle of D5/0.45NaCl 1000mL followed by D5/0.45NaCl 1000mL followed by D5/0.45NaCl + 20mEq KCL 1000mL is represented by three child segments. The placer system may be treating this as a single order with two bottles, A (D5/0.45NaCl 1000mL @ 100mL/hr) and B (D5/0.45NaCl + 20mEq KCL 1000mL @ 100mL/hr), repeating in the cycle of A-A-B.

The parent:

```
ORC|NW|123^SMS|||||1^C^^199411280900^^R^^^^C|...
RXO|Cyclic IV|...
```

The first child:

```
ORC|CH|123A1^SMS|||||1^C^^^^^^^^C&123B&SMS&&&*ES+0M|123|...
RXO Segment, Requested Give Amount-Minimum: ...|100||ML|...
      Requested Give Per (Time Unit):  ...|H1|...
RXR|IV|<cr>
RXC|B|D5/.45NACL|1000|ML|<cr>
```

The second child:

```
ORC|CH|123A2^SMS|||||1^C^^^^^^^^C&123A1&SMS&&&ES+0M|123|...
RXO Segment, Requested Give Amount-Minimum: ...|100||ML|...
      Requested Give Per (Time Unit):  ...|H1|...
RXR|IV<cr>
RXC|B|D5/.45NACL|1000|ML<cr>
```

The third child:

```
ORC|CH|123B^SMS|||||1^C^^^^^^^^C&123A2&SMS&&&#ES+0M|123|...
RXO Segment, Requested Give Amount-Minimum: ...|100||ML|...
      Requested Give Per (Time Unit):  ...|H1|...
RXR|IV<cr>
RXC|B|D5/.45NACL|1000|ML<cr>
RXC|A|KCL|20|MEQ<cr>
```

Discussion points:

Placer Order Number - Three alternatives must be discussed for placer order number.

1. Each child could have its own placer order number.

2. Each child could have the order number of the parent plus some appended identifier (for examples, 123A or 123.A or 123.1 etc.) that labels each child or each unique combination of ingredients. (It is noteworthy that this alternative obviates the need for the previously-proposed subcomponent *ORC-7-quantity/timing* through *ORC-8-placer sequence ID*.)

3. In addition to the appended identifier discussed in 'B' above, a further suffix could be attached to uniquely identify each repetition of a particular member of the sequence. The example (a cycle of bottles 'A' and 'B' in the sequence A-A-B) identified the order numbers of the children as 123A1, 123A2, and 123B, thereby enabling the quantity/timing to be completely unambiguous. This could be expressed many other ways, such as 123A.1 or 123.A.1 or 123.A#1 etc. HL7 does not specify a format for the expression of order number suffixes, nor does it specify a delimiter to use for such a purpose.

Sequence Condition Value - In this example, the first child contains an asterisk (*) as the first character of the Sequence Condition Value and the third (last) child contains a pound sign (#).

The asterisk and pound sign are important for designating the first and last bottles especially when children are sent in separate messages, although this example is not constructed that way.

Note that computing the duration of the bottle is dependent upon the presence of <u>all</u> of the following fields:

- *RXO-2-requested give amount-minimum*

- *RXO-4-requested give units*
- *RXC-3-component amount*
- *RXC-4-component units*

For cyclic IV orders, these fields are all required in order to determine how long each occurrence of a child will last.

While HL7 allows either sending the parent and children in one message or sending the parent and children in separate messages, it appears simpler and therefore recommended to have the parent and all children included in a single message. The example is constructed that way.

b) Example #2

D5W + 40mEq KCl 1000mL alternating with D5/LR + 20mEq KCl 1000mL at 125mL/hr

(Other message data: placer order #124, placer application ID=SMS, interval=continuous, start date/time=11/28/94 0900, no stop date/time, priority=Routine, order sequencing= Cyclical)

This example is a variation on the first example where two different base solutions are used. In this example, the placer system deals with this as one order with two alternating bottles, A (D5W + 40mEq KCl 1000mL @ 125mL/hr) and B (D5/LR + 20mEq KCl 1000mL @ 125mL/hr) in the cycle A-B. The principles discussed in Example #1 apply equally to this example.

The parent:

```
ORC|NW|124^SMS|||||1^C^^199411280900^^R^^^^C|...
RXO|Cyclic IV|...
```

The first child:

```
ORC|CH|124A^SMS|||||1^C^^^^^^^^C&124B&SMS&&&*ES+0M|124|...
RXO Segment, Requested Give Amount-Minimum: ...|125||ML|...
      Requested Give Per (Time Unit):  ...|H1|...
RXR|IV<cr>
RXC|B|D5W|1000|ML<cr>
RXC|A|KCL|40|MEQ<cr>
```

The second child:

```
ORC|CH|124B^SMS|||||1^C^^^^^^^^C&124A&SMS&&&#ES+0M|124|...
RXO Segment, Requested Give Amount-Minimum: ...|125||ML|...
      Requested Give Per (Time Unit):  ...|H1|...
RXR|IV<cr>
RXC|B|D5/LR|1000|ML<cr>
RXC|A|KCL|20|MEQ<cr>
```

c) Example #3

D5/0.45NaCl 1000mL with 20mEq KCl in every 3rd bottle. Start the KCl in the 3rd bottle of this order. Add 10mL of multi-vitamins to the one bag daily. Run in at a rate of 100mL/hr.

(Other message data: placer order #134, placer application ID=SMS, interval=continuous, start date/time=11/28/94 0900, no stop date/time, priority=Routine, order sequencing= Cyclical. Note that the encoding of the multi-vitamins statement in the above order, adding multi-vitamins to one IV bag each day, may vary by institution to put it into the first or last bottle of the day.)

This order may be expressed using a parent/child relationship. The parent order consists of an ORC (and an RXO, although I did not completely elaborate one in this example) that contains order level information. The repeating bottle cycle of D5/0.45NaCl 1000mL followed by D5/0.45NaCl 1000mL followed by D5/0.45NaCl + 20mEq KCL 1000mL is represented by three child segments. This order is complicated by the request to add one component into any one of the three repeating bottles, depending upon which of the bottles will occur first on any particular day. Further complicating this order is a rate of infusion (10 hours for a 1000mL bottle) which results in a fractional number of daily administrations. Most legacy systems have a great deal of trouble accommodating orders like this within their existing database structures; however there a few vendors who now are able to handle the situation. The placer system may be treating this as a single order with two bottles, A (D5/0.45NaCl 1000mL @ 100mL/hr) and B (D5/0.45NaCl + 20mEq KCL 1000mL @ 100mL/hr), repeating in the cycle of A-A-B with a cyclical component (multi-vitamins).

The parent:

```
ORC|NW|134^SMS|||||1^C^^199411280900^^R^^^^C|...
RXO|Cyclic IV|...
```

The first child:

```
ORC|CH|134A1^SMS|||||1^C^^^^^^^^C&134B&SMS&&&*ES+0M|134|...
RXO Segment, Requested Give Amount-Minimum: ...|100||ML|...
      Requested Give Per (Time Unit):  ...|H1|...
RXR|IV<cr>
RXC|B|D5/.45NACL|1000|ML<cr>
```

The second child:

```
ORC|CH|134A2^SMS|||||1^C^^^^^^^^C&134A1&SMS&&&ES+0M|134|...
RXO Segment, Requested Give Amount-Minimum: ...|100||ML|...
      Requested Give Per (Time Unit):  ...|H1|...
RXR|IV<cr>
RXC|B|D5/.45NACL|1000|ML<cr>
```

The third child:

```
ORC|CH|134B^SMS|||||1^C^^^^^^^^C&134A2&SMS&&&#ES+0M|134|...
RXO Segment, Requested Give Amount-Minimum: ...|100||ML|...
      Requested Give Per (Time Unit):  ...|H1|...
RXR|IV<cr>
RXC|B|D5/.45NACL|1000|ML<cr>
RXC|A|KCL|20|MEQ<cr>
```

The fourth child:

```
ORC|CH|134X^SMS|||||1^Q1D^^^^^^^^|134|...
RXO|MULTIVITAMINS|10||ML|INJECTABLE|...
```

Discussion points:

This method for accommodating the Multi-vitamins Daily scenario does not pretend to be the best or only way to express the message, but simply demonstrates adapting the current specification to a highly complex order without adding new components.

The Multi-vitamins component may be sent as a fourth child.

In this example, its *ORC-7-quantity/timing* includes an interval of "Q1D" (every 1 days).

Its order number consists of the placer's parent order number plus an appended identifier ('X' in the above example) that labels this child as a special case. This convention would need to be agreed upon by sending and receiving applications.

d) Example #4

D5W + 40mEq KCl 1000mL alternating with D5/LR + 20mEq KCl 1000mL alternating with D5/0.45NaCl 1000mL. Infuse the D5W and D5/0.45 at 125mL/hr, and the D5/LR at 100mL/hr.

(Other message data: placer order #177, placer application ID=SMS, interval=continuous, start date/time=11/28/94 0900, no stop date/time, priority=Routine, order sequencing= Cyclical)

This example is another variation of Example 1 where the rate for each bottle is different, and this can be expressed within the RX segments of the children using current components. In this example, the placer system deals with this as one order with three alternating bottles, A (D5W + 40mEq KCl 1000mL @ 125mL/hr) , B (D5/LR + 20mEq KCl 1000mL @ 100mL/hr) , and C (D5/0.45NaCl 1000mL @ 125mL/hr) in the cycle A-B-C. The principles discussed in Example #1 apply equally to this example.

The parent:

```
ORC|NW|177^SMS|||||1^C^^199411280900^^R^^^^C|...
RXO|Cyclic IV|...
```

The first child:

```
ORC|CH|177A^SMS|||||1^C^^^^^^^^C&177C&SMS&&&*ES+0M|177|...
    RXO Segment, Requested Give Amount-Minimum: ...|125||ML|...
    Requested Give Per (Time Unit):  ...|H1|...
RXR|IV<cr>
RXC|B|D5W|1000|ML<cr>
RXC|A|KCL|40|MEQ<cr>
```

The second child:

```
ORC|CH|177B^SMS|||||1^C^^^^^^^^C&177A&SMS&&&ES+0M|177|...
RXO Segment, Requested Give Amount-Minimum: ...|100||ML|...
      Requested Give Per (Time Unit):  ...|H1|...
RXR|IV<cr>
RXC|B|D5/LR|1000|ML<cr>
RXC|A|KCL|20|MEQ<cr>
```

The third child:

```
ORC|CH|177C^SMS|||||1^C^^^^^^^^C&177B&SMS&&&#ES+0M|177|...
RXO Segment, Requested Give Amount-Minimum: ...|125||ML|...
      Requested Give Per (Time Unit):  ...|H1|...
RXR|IV<cr>
RXC|B|D5/0.45NACL|1000|ML<cr>
```

4.8.17 R0R - pharmacy/treatment order response (event R0R)

R0R	Pharmacy /Treatment 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/treatment Order
{RXR}	Pharmacy/treatment Route
{[RXC]}	Pharmacy/treatment Component
}	
}	
[DSC]	Continuation Pointer

4.8.18 RAR - pharmacy/treatment administration information (event RAR)

RAR	Pharmacy/treatment 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/treatment Encoded Order
{RXR}	Pharmacy/treatment Route
{[RXC]}	Pharmacy/treatment Component
]	
{RXA}	Pharmacy/treatment Administration
RXR	Pharmacy/treatment Route
}	
}	
[DSC]	Continuation Pointer

4.8.19 RDR - pharmacy/treatment dispense information (event RDR)

RDR	Pharmacy/treatment 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/treatment Encoded Order
       {RXR}            Pharmacy/treatment Route
      {[RXC]}           Pharmacy/treatment Component
    ]
    {RXD                Pharmacy/treatment Dispense
       {RXR}            Pharmacy/treatment Route
      [{RXC}]           Pharmacy/Treatment Component
    }
  }
}
[DSC]                   Continuation Pointer
```

4.8.20 RER - pharmacy/treatment encoded order information (event RER)

```
RER                     Pharmacy/treatment 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/treatment Encoded Order
    {RXR}           Pharmacy/treatment Route
    {[RXC]}             Pharmacy/treatment Component
  }
}
[DSC]                   Continuation Pointer
```

4.8.21 RGR - pharmacy/treatment dose information (event RGR)

```
RGR                     Pharmacy/treatment 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/treatment Encoded Order
       {RXR}            Pharmacy/treatment Route
      {[RXC]}           Pharmacy/treatment Component
    ]
    {RXG}           Pharmacy/treatment Give
       {RXR}            Pharmacy/treatment Route
       {[RXC]}      Pharmacy/Treatment Component
  }
}
[DSC]                   Continuation Pointer
```

The lab application requests pharmacy/treatment 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/treatment 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>
```

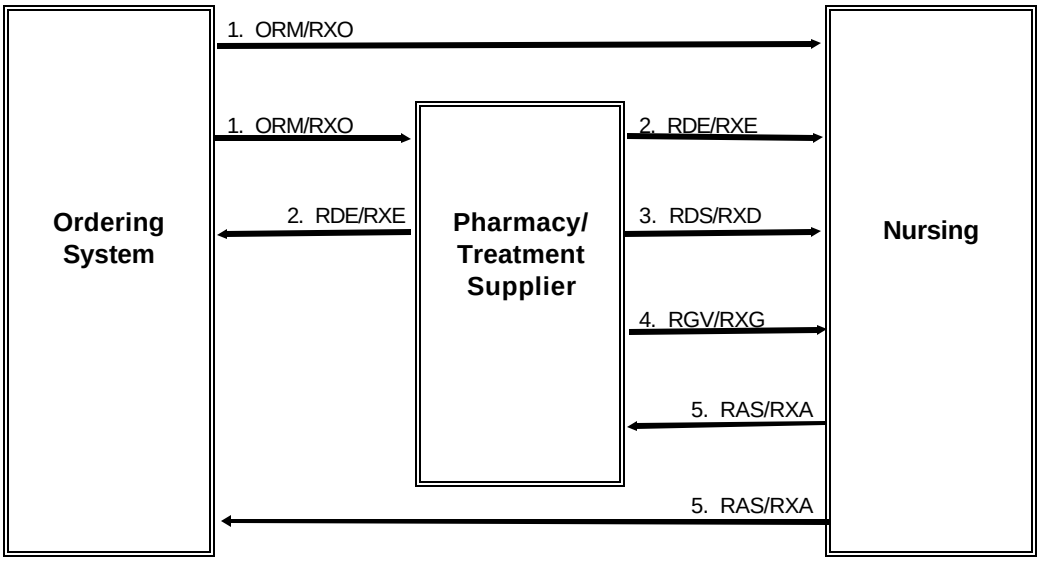
The order entry application requests pharmacy/treatment order information for patient 12345, from 8/12/92 through 8/13/92.

```
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>
```

4.9 PHARMACY/TREATMENT ORDERS AND RESULTS TRANSACTION FLOW DIAGRAM

The following are possible routes at a generic site.



1. ORM/RXO:

The Ordering application generates a pharmacy/treatment order (ORM with RXO and possibly additional RXC segments) and sends it to the pharmacy or treatment application, Nursing application, and/or other applications as appropriate at the site.

2. RDE/RXE:

The pharmacy/treatment application may send the RDE, the Pharmacy/treatment Encoded Order message, a fully encoded order to the Nursing application, Ordering application, and/or other system applications as appropriate at the site.

3. RDS/RXD:

The pharmacy/treatment application may send the RDS, the pharmacy/treatment 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/treatment 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/treatment Administration Results message, whenever a medication is given to the patient. This message may occur multiple times for each order.

Note:	Sites having a long term clinical data repository may wish to route data to the data repository from copies of all or any of the five messages.

4.10 VACCINE ADMINISTRATION DATA

State systems that maintain vaccination records need to be able to transmit patient-specific records of vaccines administered to other state systems in order to allow providers to have access to the record at the time healthcare is given and to allow states to track progress in reaching age-appropriate immunization coverage. The transmissions will occur as the result of four activities: (1) a query from one system for a patient's vaccination record that is held in another system, (2) a response to a query containing multiple patient matches to the query, (3) a response to a query containing the vaccination record, and (4) an unsolicited update to a vaccination database.

These messages permit the transmission of immunization records from care providers to state and other immunization databases, queries of these databases for immunization records, and the return of these immunization records to care providers. Messages containing patient immunization information carry patient identifying information in the PID segment. They may also carry parent or guardian information in the NK1 segments. Parent information is often important for proper identification of a child. The RXA segment is used to report the details of the immunization itself: the nature of the immunization (e.g., DPT, polio, MMR), the date administered, the sequence (1st, 2nd, etc.), the amount (e.g., 0.5 ml), and location and provider of the immunization. In addition, the RXA provides a place to record the lot number, manufacturer and date of expiration of the immunization. The RXA can also be used to report the fact that a specified immunization was refused. This section includes two tables (0292 and 0227) maintained by the U.S. Centers for Disease Control and Prevention (CDC). These tables are recommended in the U.S. for identifying the immunization in field *RXA-5-administered code* and the vaccine manufacturer in field *RXA-17-substance manufacturer name*.

4.11 QUERIES FOR IMMUNIZATION RECORDS (QRF SEGMENTS)

The VXQ, VXX, and VXR messages defined below incorporate the QRF segment defined at 2.24.5, "QRF - original style query filter segment." *QRF-5-other query subject filter* is a locally defined filter for use between two systems which mutually agree on a definition. For transferring vaccination administration data, *QRF-5-other query subject filter* should be structured as shown in *Figure 4-20* to transmit up to ten separate search "keys." These search keys are only used to identify one patient's immunization record. The message provides for a wide variety of "identifying" keys including mother's and/or father's name and other identifiers; in some cases such information will be needed to identify a specific patient in the immunization database.

The format of each of the possible "search keys" is given below, and listed in a more structured form in *Figure 4-20*. These keys are transmitted as strings separated by repeat delimiters. The position of the components within *QRF-5-other QRY subject filter* is significant. The requester sends values for all the components that are known.

```
Components:  <patient social security number> ~ <patient birth date> ~ <patient birth state> ~ <patient birth
             registration number> ~ <patient medicaid number> ~ <mother's name last^first^middle> ~ <mother's
             maiden name> ~ <mother's Social Security number> ~ <father's name last^first^middle> ~ <father's
             Social Security number>
```

Figure 4-20. QRF-5 usage in vaccination messages

Pos	Component	Data Type	Description/Examples
1	Patient Social Security Number~	ST	In U.S.,use SSN, without hyphens between 3rd and 4th digits and 5th and 6th digits, e.g., 123456789. In other countries, universal patient ID such as National Health Service number may be used.
2	Patient Birth Date~	DT	July 4, 1976 = 19760704
3	Patient Birth State~	ID	In U.S., use 2-letter postal code, e.g., IN, NY, CA. In other countries, locally applicable postal table may be used.
4	Patient Birth Registration Number~	ST	State birth certificate number
5	Patient Medicaid Number~	ST	When relevant
6	Mother's Name Last^First^Middle~	PN	<family name> ^ <given name> ^ <middle name or initial> ^ <suffix> ^ <prefix> ^ <degree>. E.g., Smith^Mary^Elizabeth
7	Mother's Maiden Name~	ST	Family name of mother before marriage. E.g., Jones
8	Mother's Social Security Number~	ST	In U.S.,use SSN, without hyphens between 3rd and 4th digits and 5th and 6th digits, e.g., 123456789. In other countries, universal patient ID such as National Health Service number may be used.
9	Father's Name Last^First^Middle~	PN	<family name> ^ <given name> ^ <middle name or initial> ^ <suffix> ^ <prefix> ^ <degree>. E.g.,Smith^Thomas^A^Jr
10	Father's Social Security Number	ST	In U.S.,use SSN, without hyphens between 3rd and 4th digits and 5th and 6th digits, e.g., 123456789. In other countries, universal patient ID such as National Health Service number may be used.

For instance, if the requestor knew only the patient's Social Security number and birthdate, this *QRF-5-other query subject filter* would be sent:

```
|908723461~19941005|
```

If, in addition, the patient's birth state and mother's current and maiden name were known, this *QRF-5-other query subject filter* would be sent:

```
|908723461~19941005~IN~~~HUTCHINS^KATHY^ANN~HARKNESS|
```

4.12 VACCINE TRIGGER EVENTS AND MESSAGE DEFINITIONS

The message header segment will carry one of four event types at *MSH-9-message type*:

Event	Description
V01	Query for Vaccination Record
V02	Response to Vaccination Query (V01) Returning Multiple PID Matches
V03	Response to Query (V01) Returning Vaccination Record
V04	Unsolicited Update to Vaccination Record

4.12.1 VXQ -query for vaccination record (event V01)

Definition: When a state system does not already have the complete patient vaccination record, it will send a query (with a V01 event) for the definitive (last updated) record. Within the definitions for QRD and QRF, certain components are defined according to position in the field, as detailed in Section 4.11, "QUERIES FOR IMMUNIZATION RECORDS (QRF SEGMENTS)." The three-letter code in the leftmost column indicates the segment that is included; the column on the right specifies the chapter in which that segment is fully defined.

The query will follow this format:

VXQ	Vaccination Query	Chapter
MSH	Message Header Segment	2
QRD	Query Definition Segment	2
[QRF]	Query Filter Segment	2

4.12.2 VXX - response to vaccination query returning multiple PID matches (event V02)

Definition: In response to a query for the definitive patient vaccination record, the system holding the record will return it to the system originating the query.

If the query results in multiple "matches," i.e., more than one patient record matches the identifiers in the query so that there is no unique identification, the response to the query (with a V02 event) will follow this format. Within the definitions for QRD and QRF, certain components are defined according to position in the field, as detailed in Section 4.11, "QUERIES FOR IMMUNIZATION RECORDS (QRF SEGMENTS)." The three-letter code in the leftmost column indicates the segment that is included; the column on the right specifies the chapter in which that segment is fully defined.

VXX	Returning Multiple PID Matches	Chapter
MSH	Message Header	2
MSA	Message Acknowledgment	2
QRD	Query Definition	2
[QRF]	Query Filter	2
{ PID	Patient Identification	3
[{NK1}]	Next of Kin/Associated Parties	3
}		

4.12.3 VXR - vaccination record response (event V03)

Definition: When the patient has been uniquely identified (there is only one "match" to the query), the response to the query (with a V03 event) will follow this format. Within the definitions for QRD and QRF, certain components are defined according to position in the field, as detailed in Section 4.11, "QUERIES FOR IMMUNIZATION RECORDS (QRF SEGMENTS)." The three-letter code in the leftmost column indicates the segment that is included; the column on the right specifies the chapter in which that segment is fully defined.

VXR	Vaccination Response	Chapter
MSH	Message Header	2
MSA	Message Acknowledgment	2
QRD	Query Definition	2
[QRF]	Query Filter	2
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NK1}]	Next of Kin/Associated Parties	3
[PV1	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
[{IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert.	6
}]		
[{ [ORC]	Common Order	4
RXA	Pharmacy Administration	4
[RXR]	Pharmacy Route	4
[{ OBX	Observation/Result	7
[{NTE}]	Notes (Regarding Immunization)	2
}]		
}]		

4.12.4 VXU - unsolicited vaccination record update (event V04)

Definition: When a provider using one system wishes to update the patient's vaccination record being held in another system, he will transmit an unsolicited update of the record (with a V04 event).

An unsolicited update will follow this format. The three-letter code in the leftmost column indicates the segment that is included; the column on the right specifies the chapter in which that segment is fully defined.

```
VXU                    Unsolicited Vaccination Update                Chapter

MSH                    Message Header Segment                          2
PID                    Patient Identification Segment                  3
[PD1]                  Additional Demographics                         3
[{NK1}]                Next of Kin/Associated Parties                  3
[PV1                   Patient Visit                                   3
   [PV2]]          Patient Visit - Additional Info                     3
[{IN1                  Insurance                                       6
   [IN2]               Insurance Additional Info                       6
   [IN3]               Insurance Add'l Info - Cert.                    6
}]
[{ [ORC]               Common Order Segment                            4
   RXA                 Pharmacy Administration Segment                 4
   [RXR]               Pharmacy Route                                  4
   {[  OBX             Observation/Result                              7
      [{NTE}]          Notes (Regarding Immunization)                  2
   ]}
}]
```

4.13 RXA SEGMENT USAGE IN VACCINE MESSAGES

Figure 4-21. RXA attributes usage

SEQ	LEN	DT	OPT	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		0292	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	O	Y		00351	Administration Notes
10	200	XCN	O			00352	Administering Provider
11	200	CM	C			00353	Administered-at Location
12	20	ST	C			00354	Administered Per (Time Unit)
13	20	NM	O			01134	Administered Strength
14	60	CE	O			01135	Administered Strength Units
15	20	ST	O	Y		01129	Substance Lot Number
16	26	TS	O	Y		01130	Substance Expiration Date
17	60	CE	O	Y	0227	01131	Substance Manufacturer Name
18	200	CE	O	Y		01136	Substance Refusal Reason
19	200	CE	O	Y		01123	Indication
20	2	ID	O		0322	01223	Completion Status
21	2	ID	O		0323	01224	Action Code
22	26	TS	O			01225	System Entry Date/Time

4.13.1 Vaccines administered

Use in *RXA-5-administered code* to identify the particular vaccine administered. The codes listed are used by state health departments in the U.S. Entries will be added as needed to accommodate international requirements.

Table 0292 - Vaccines administered (code = CVX)(parenteral, unless oral is noted)

Code	Description	Vaccine Name/Description
24	Anthrax	Anthrax
19	BCG	Bacillus of Calmette & Guerin
27	Botulinum antitoxin	Botulinum antitoxin
26	Cholera	Cholera
29	CMVIG	Cytomegalovirus immune globulin, intravenous
12	Diphtheria antitoxin	Diphtheria antitoxin
28	DT(pediatric)	Diphtheria & tetanus toxoids (pediatric)
20	DTaP	Diphtheria-tetanus-acellular pertussis
50	Dtap-Hib	DTaP - Haemophilus influenzae type b conjugate
01	DTP	Diphtheria-tetanus-pertussis
22	DTP-Hib	DTP-Haemophilus influenzae type b conjugate
30	HBIG	Hepatitis B immune globulin
31	Hep A - pediatric	Hepatitis A
52	Hep A - adult	Hepatitis A
08	Hep B - adolescent or pediatric	Hepatitis B—adolescent or pediatric
42	Hep B- adolescent/high risk infant	Hepatitis B—adolescent/high risk infant
43	Hep B-adult	Hepatitis B—adult
44	Hep B-dialysis	Hepatitis B—dialysis
45	Hep B-other or unspecified	Hepatitis B—other or unspecified
17	Hib-unspecified	Haemophilus influenzae type b conjugate—unspecified
46	Hib-PRP-D	Haemophilus influenzae type b conjugate—PRP-D
47	Hib-HbOC	Haemophilus influenzae type b conjugate—HbOC
48	Hib-PRP-T	Haemophilus influenzae type b conjugate—PRP-T
49	Hib-PRP-OMP	Haemophilus influenzae type b conjugate—PRP-OMP
51	Hib-Hep B	Haemophilus influenzae type b conjugate - Heb-B
14	IG	Immune globulin
15	Influenza—split (incl. purified surface antigen)	Influenza—split (incl. purified surface antigen)
16	Influenza—whole	Influenza—whole
10	IPV	Poliovirus vaccine, inactivated
39	Japanese encephalitis	Japanese encephalitis
03	MMR	Measles-mumps-rubella
04	M/R	Measles & rubella
05	Measles	Measles
32	Meningococcal	Meningococcal
07	Mumps	Mumps
11	Pertussis	Pertussis
23	Plague	Plague
33	Pneumococcal	Pneumococcal
02	OPV	Poliovirus vaccine, oral
18	Rabies—intramuscular injection	Rabies—intramuscular injection
40	Rabies—intradermal injection	Rabies—intradermal injection
34	RIG	Rabies immune globulin
06	Rubella	Rubella
38	Rubella/Mumps	Rubella & Mumps
09	Td (Adult)	Tetanus-diphtheria
35	Tetanus toxoid	Tetanus toxoid
13	TIG	Tetanus immune globulin
25	Typhoid—oral	Typhoid—oral
41	Typhoid—parenteral	Typhoid—parenteral
21	Varicella	Varicella
36	VZIG	Varicella zoster immune globulin
37	Yellow fever	Yellow fever

The codes in *HL7 table 0292* represent the initial content of the external code set CVX. Since immunizations may have to be added to this table more quickly than new versions of HL7 are released, this code system will be maintained by the Centers for Disease Control and Prevention. (Contact the Chief, Systems Development Branch, National Immunization Program, Centers for Disease Control and Prevention, 1600 Clifton Road, MS E-62, Atlanta, GA 30333; (404) 639-8245) http://www.cdc.gov/nip/home.html. When using this code system to identify vaccines, the coding system component of the CE field should be valued as "CVX", not as "HL70292."

4.13.2 Vaccine manufacturer

Use in *RXA-17-substance manufacturer name* to identify the manufacturer of the particular vaccine administered. The codes listed are used by state health departments in the U.S. Entries will be added as needed to accommodate international requirements.

Table 0227 - Manufacturers of vaccines (code=MVX)

Code	Vaccine Manufacturer
AB	Abbott
AD	Adams
ALP	Alpha
AR	Armour
BA	Baxter
BAY	Bayer
BP	Berna
CON	Connaught
EVN	Evans
GRE	Greer
IUS	Immuno-US
KGC	Korea Green Cross
LED	Lederle
MA	Massachusetts Public Health
MSD	Merck
IM	Merieux
MIP	Michigan Dept Public Health
JPN	Microbial Dis/Osaka U
MIL	Miles
NYB	New York Blood Center
NAB	North American Biologicals, Inc.
OTC	Organon Teknika
PD	Parke Davis
PRX	Praxis Biologics
SCL	Sclavo
SKB	SmithKline
SI	Swiss Serum and Vaccine Inst.
WA	Wyeth-Ayerst
OTH	Other
UNK	Unknown manufacturer

The codes in *HL7 table 0227* represent the initial content of the external code set MVX. Since immunization manufacturers may have to be added to this table more quickly than new versions of HL7 are released, this code system will be maintained by the Centers for Disease Control and Prevention. (Contact the CDC, as noted in Section 4.13.1, "Vaccines administered"). When using this code system to identify vaccines, the coding system component of the CE field should be valued as "MVX", not as "HL70227."

4.14 VACCINATION - EXAMPLE TRANSACTIONS

4.14.1 VXQ - query for vaccination record

```
MSH|^~\&||GAVACREC||AZVACREC|199505221605||VXQ^V01|950522GA40|T|2.3|||A
L<cr>
QRD|199505221605|R|I|950522GA40|||1000^RD|JONES^JOHN^RICHARD|VXI|SIIS<c
r>
QRF|AZVACREC||||256946789~19900607~CA~CA99999999~88888888~JONES^MARY^SU
E~SMITH~
    898666725~JONES^MATHEW^LEE~822546618<cr>
```

In this query, Georgia Vaccine Records is sending a request to Arizona Vaccine Records for an immunization record. The request is being sent on May 22, 1995, at 4:05 p.m.. Identifiers other than patient name are defined in the query by giving positional meaning to the repeat delimiters in the *QRF-5-other query subject filter* segment, as specified in 4.11, "QUERIES FOR IMMUNIZATION RECORDS (QRF SEGMENTS)." The responding system is expected to return all query items in their response. The QRD segment, at *QRD-8-who subject filter*, identifies the patient name. *QRD-9-what subject filter* reflects the new VXI category of Vaccination Information. *QRD-10-what department data code* shows SIIS.

In our example, we are sending a query for the record of John Richard Jones. The patient's Social Security number is 256-94-6789; the patient birth date is June 7, 1990; the patient birth state is CA; the patient birth registration number is CA99999999; and the patient Medicaid number is 88888888. The patient's mother is Mary Sue Jones, whose maiden name is Smith. Her Social Security number is 898-66-6725. The patient's father is Mathew Lee Jones, and the father's Social Security number is 822-54-6618.

4.14.2 VXX - response to vaccination query with multiple PID matches

```
MSH|...
MSA|...
QRD|199505221605|R|I|950522GA40|||1000^RD|JONES^RICHARD|VXI|SIIS<cr>
QRF|AZVACREC||||~~~~~JONES^MARY<cr>
PID|1||123456789^^^AZ||JONES^RICHARD^ROBERT||19910607|M^MALE^HL70001<cr
>
NK1||JONES^MARY^SUE|M^MOTHER^HL70063||||||||||||||||||||||||||||||26590
9900^^^^SS<cr>
PID|2||987654321^^^AZ||JONES^JOHN^RICHARD||19900607|M^MALE^HL70001<cr>
NK1|1|JONES^MARY|M^MOTHER^HL70063||||||||||||||||||||||||||||||89866672
5^^^^SS<cr>
NK1|2|JONES^MATHEW^LEE|F^FATHER^HL70063||||||||||||||||||||||||||||||82
2546618^^^^SS     <cr>
PID|3||231453675^^^AZ||JONES^RICHARD^CURTIS||19901225|M^MALE^HL70001<cr
>
NK1|1|JONES^MARY^ANN|M^MOTHER^HL70063||||||||||||||||||||||||||||||2887
63102<cr>
PID|4||908786564^^^AZ||JONES^RICHARD^ALAN||19870205|M^MALE^HL70001<cr>
NK1|1|JONES^MARY^SUE|M^MOTHER^HL70063||||||||||||||||||||||||||||||1909
66725^^^^SS<cr>
NK1|2|JONES^CHRISTOPHER|F^FATHER^HL70063||||||||||||||||||||||||||||||7
86118768^^^^SS  <cr>
```

The example shows the response when multiple PIDs match a query. In the QRD, the sender is querying Arizona Vaccine Records for information on Richard Jones; the only further identifying information supplied in the QRF is that the mother's name is Mary Jones. For each record which matches this information, a PID is returned along with its associated NK1. The system initiating the query may then re-send a more precise query.

4.14.3 VXR - vaccination record response

```
MSH|...
MSA|...
QRD|...
QRF|...
PID|...
NK1|1|JONES^MARY^SUE|M^MOTHER^HL70063|||||||||||||||||||||||||||||8986
66725^^^^SS<cr>
NK1|2|JONES^MATHEW^LEE|F^FATHER^HL70063|||||||||||||||||||||||||||||8225
46618^^^^SS<cr>
ORC|RE||V43^AZVAC<cr>
RXA|0|4|19910607||01^DTP^CVX|.5|MG^^ISO+|||1234567891^GOLDSTEIN^HAROLD^
A^^DR|
    &&&CHILD HEALTHCARE CLINIC^101 MAIN
STREET&&METROPOLIS&AZ||||W46932777|19910813|
    SKB^SMITHKLINE^MVX<cr>
ORC|RE||V44^AZVAC<cr>
RXA|0|1|19910607||03^MMR^CVX|.5|MG^^ISO+|||1234567891^GOLDSTEIN^HAROLD^
A^^DR|
    &&&CHILD HEALTHCARE CLINIC^101 MAIN
STREET&&METROPOLIS&AZ||||W23487909876456|
    19910725|MSD^MERCK^MVX<cr>
ORC|RE||V87^AZVAC<cr>
RXA|0|5|19950520||01^DTP^CVX|.5|MG^^ISO+|||1234567891^GOLDSTEIN^HAROLD^
A^^DR|
    &&&CHILD HEALTHCARE CLINIC^101 MAIN
STREET&&METROPOLIS&AZ||||W22532806|19950705|
    SKB^SMITHKLINE^MVX<cr>
ORC|RE||V88^AZVAC<cr>
RXA|0|2|19950520||03^MMR^CVX|.5|MG^^ISO+|||1234567891^GOLDSTEIN^HAROLD^
A^^DR|
    &&&CHILD HEALTHCARE CLINIC^101 MAIN
STREET&&METROPOLIS&AZ||||W2341234567|19950630|
    MSD^MERCK^MVX<cr>
```

The example reflects a vaccination record return as might be expected by a public health agency reporting from an Immunization Information System in one state to another state system. It shows repeating RXA segments reporting the first and second doses of MMR and the fourth and fifth doses of DTP, including the manufacturer, lot number, and expiration date. If the vaccination had been refused by the patient or guardian, *RXA-18-substance refusal reason* would record the vaccine refusal reason, utilizing a user-defined table.

4.14.4 VXU - unsolicited vaccination record update

```
MSH|...
PID|...
NK1|...
NK1|...
PV1|...
PV2|...
IN2|||||||JONES^ALICE^P|909686637A<cr>
ORC|...
RXA|0|1|19950901115500|19950901115500|03^MMR^CVX|.5|MG^^ISO+|||
    1234567891^GOLDSTEIN^HAROLD^A^^DR|&&&CHILD HEALTHCARE CLINIC^101
MAIN
    STREET&&METROPOLIS&AZ||||W23487909876456|19951125|MSD^MERCK^MVX<cr>
RXR|IM^INTRAMUSCULAR^0162|LG^LEFT GLUTEUS MEDIUS^0163<cr>
OBX|1|CE|1000.3^TEMP.RECTAL^AS4||102.9|DEGF^^ANSI+|||||||1995090115300
```

```
0<cr>
NTE|||PATIENT DEVELOPED HIGH FEVER APPROX 3 HRS AFTER VACCINE
INJECTION. PROBABLE
    ADVERSE REACTION<cr>
```

This message shows an unsolicited update of a vaccination record. The message type is VXU--Unsolicited Vaccination Record Update, with event code V04 (unsolicited vaccination record update). This example was constructed to show possible uses for some of the optional segments in the message.

4.14.5 Query acknowledgment with no records found

```
MSH|^~\&||AZVACREC||GAVACREC|19950522130550^S||ACK|950522GA40|T|2.3<cr>
MSA|AA|950522GA40<cr>
QAK||NF<cr>
```

The example shows the response to a query which was successfully processed, but no qualifying data were found.

4.15 OUTSTANDING ISSUES

None.