8.

Master Files

Chapter Chair/Editor:	Mark Shafarman Oacis Healthcare Systems, Inc.
Editor: Staff and Practitioner, Location, and Charge Description	Francine Kitchen, PhD Software Technologies Corporation
Editor: Test/Observation	Clement J. McDonald, MD Regenstrief Institute and Indiana University School of Medicine
Editor: Clinical Trials	Susan Rea Welch M.D. Anderson Cancer Center

8.1 PURPOSE

In an open-architecture healthcare environment there often exists a set of common reference files used by one or more application systems. Such files are called master files. Some common examples of master files in the healthcare environment include:

a) doctor master file

b) system user (and password) master file

c) location (census and clinic) master file

d) device type and location (e.g., workstations, terminals, printers, etc.)

e) lab test definition file

f) exam code (radiology) definition file

g) charge master file

h) patient status master

i) patient type master

These common reference files need to be synchronized across the various applications at a given site. The Master Files Notification message provides a way of maintaining this synchronization by specifying a standard for the transmission of this data between applications.

In many implementations, one application system will "own" a particular master file such as the doctor master file. The changes (e.g., adds, deletes, updates) to this file are made available to various other applications on a routine basis. The Master Files Notification message supports this common case, but also supports the situation where an application not "owning" a particular master file, transmits update information to other systems (usually to the "owning" system), for review and possible inclusion.

The Master Files Notification message supports the distribution of changes to various master files between systems in either online or batch modes, and allows the use of either original or enhanced acknowledgment modes, as well as providing for a delayed application acknowledgment mode. These messages use the MSH segment to pass the basic event code (master files notification or acknowledgment). The MFI (master file identification) segment identifies the master file being updated as well as the initial and requested dates for "file-level" events (such as "replace file"). For each record being changed, the MFE (Master File Entry) segment carries the record-level event code (such as add, update, etc.), the initial and requested dates for the event, and the record-level key identifying the entry in the master file. The MFA (master file acknowledgment) segment returns record-specific acknowledgment information.

> **Note:** The MFE segment is not the master file record, but only specifies its identifier, event, and event dates. The master file record so identified is contained in either Z-segments or HL7-defined segments immediately following the MFE segment. This record may be either a flat record contained in a single segment, or a complex record needing more than a single segment to carry its data and (usually hierarchical) structure.

The master file segments commonly needed across HL7 applications as well as those specific to the various application chapters, are defined in Sections 8.6, "STAFF AND PRACTITIONER MASTER FILES," through 8.10, "Clinical Trials MASTER FILES," of this chapter.

A given master files message concerns only a single master file. However, the location of a record-level event code (and requested activation date) on the MFE and the MFA segments allows a single message to contain several types of changes (events) to that file.

The Master Files Notification events do not specify whether the receiving system must support an automated change of the master file in question, nor do they specify whether the receiving system must create a file in the same form as that maintained on the sending system.

In general, the way in which the receiving system processes the change notification message will depend on both the design of the receiving system and the requirements negotiated at the site. Some systems and/or sites may specify a manual review of all changes to a particular master file. Some may specify a totally automated process. Not every system at every site will need all the fields contained in the master file segment(s) following the MFE segment for a particular master file entry.

This also means that an application acknowledgment (or a deferred application acknowledgment) from a receiving system that it changed a particular record in its version of the master file does not imply that the receiving system now has an exact copy of the information and state that is on the sending system: it means only that whatever subset of that master file's data (and state) that has been negotiated at the site is kept on the receiving system in such a manner that a new Master Files Notification transaction with the same primary key can be applied unambiguously (in the manner negotiated at the site) to that subset of information.

8.2 TRIGGER EVENTS

The Master Files Change Notification message can be used for the following message-level trigger events:

Mnn: A message containing notifications of changes to a single master file.

nn defines a particular HL7 master file. Currently-defined values are (see *HL7 table 0003 - Event type*): M01 - master file not otherwise specified (***for backward compatibility only***); M02 - staff/practitioner master file; M03 - test/observation master file; M04 - charge description master file; M05 - location master file; M06 - clinical study master file; M12 - M99 - reserved for future HL7-defined master files. Site-specific master files should use a code of the form Znn. (See also Section 8.4.1.1, "Master file identifier (CE) 00658," HL7 *table 0175 - Master file identifier codes*.)

An MFN message may contain the following "file-level" events, as specified in the MFI segment:

REP: Replace current version of this master file with the version contained in this message.

UPD: Change file records as defined in the record-level event codes for each record that follows.

These are the only file-level events currently defined. REP means that every MFE segment that follows will use the MAD event code.

The replace option allows the sending system to replace a file without sending delete record-level events for each record in that file. UPD means that the events are defined according to the record-level event code contained in each MFE segment in that message.

An MFN message may contain the following "record-level" events, as specified in the MFE segments.

MAD: Add record to master file.

MDL: Delete record from master file.

MUP: Update record for master file.

MDC: Deactivate: discontinue using record in master file, but do not delete from database.

MAC: Reactivate deactivated record.

The MFD transaction is used for the following trigger event:

MFA: Master Files Delayed Application Acknowledgment.

8.3 MESSAGES

The following messages are defined for master files transactions: MFN, master files notification; MFK, master files application acknowledgment; MFD, master files delayed application acknowledgment; and MFQ, master files query.

8.3.1 MFN/MFK - master files notification

The MFN transaction is defined as follows:

MFN	Master File Notification	Chapter
MSH	Message Header	2
MFI	Master File Identification	8
{MFE	Master File Entry	8
[Z..] }	One or more HL7 and/or Z-segments carrying the data for the entry identified in the MFE segment	(varies)

MFK	Master File Application Acknowledgment	Chapter
MSH	Message Header	2
MSA	Acknowledgment	2
[ERR]	Error	2
MFI	Master File Identification	8
{ [MFA] }	Master file ACK segment	8

The master file record identified by the MFE segment is contained in either Z-segments and/or HL7-defined segments immediately following the MFE segment, and is denoted by "Z..." in the MFN abstract message definition given above. This record may be either a flat record contained in a single segment, or a complex record needing more than a single segment to carry its data and (usually hierarchical) structure.

The master file record "[Z..]" identified by the MFE segment is optional (indicated by square brackets) in the single case where the master file is a simple one which contains only a key and the text value of that key. For this case only, both values may be carried in M*FE-4-primary key value*.

Note: If the file-level event code is "REP" (replace file), then each MFA segment must have a record-level event code of "MAD" (add record to master file).

Note: The MFK message is used for an application acknowledgment in either the original or enhanced acknowledgment modes.

The MFA segment carries acknowledgment information for the corresponding MFE segment (identified by *MFA-5-primary key value*).

8.3.2 MFD/ACK - master files delayed application acknowledgment

The MFD transaction is the delayed application acknowledgment. It can be used to return "deferred" application-level acknowledgment statuses at the MFE level, without reference to the original MFN message. It is defined as follows:

MFD	Master File Delayed Acknowledgment	Chapter
MSH	Message Header	2
MFI	Master File Identification	8
{ [MFA] }	Master file ACK segment	8

ACK	General Acknowledgment	Chapter
MSH	Message Header	2
MSA	Acknowledgment	2
[ERR]	Error	2

8.3.3 MFQ/MFR - master files query

The MFQ transaction allows a system to query for a particular record or group records (defined by the primary key) in a particular master file.

The Master files query is defined as follows:

MFQ	Query for Master File Record	Chapter
MSH	Message Header	2
QRD	Query Definition	2
[QRF]	Query Filter	2
[DSC]	Continuation	2

MFR	Master Files Response	Chapter
MSH	Message Header	2
MSA	Acknowledgment	2
[ERR]	Error	2
QRD	Query Definition	2
[QRF]	Query Filter	2
MFI	Master File Name	8
{MFE	Master File Entry	8
[Z..] }	One or more HL7 and/or Z-segments carrying the data for the entry identified in the MFE segment.	(varies)
[DSC]	Continuation	2

8.3.3.1 MFQ use notes

The value "MFQ" of the *QRD-what subject filter* of the QRD segment identifies a master files query. The *QRD-what department data code* of the QRD segment identifies the name of the master file in question. The *QRD-what data code value qual* of the QRD segment identifies the primary key (or keys, or range of keys) defining the master file MFE segments (and associated master file records, denoted by "Z") to be returned with the response. The QRF segment may be used to define time ranges, particular MFN record-level event codes etc. Unless otherwise specified, the response returns only active current record(s).

8.4 GENERAL MASTER FILE SEGMENTS

The following segments are defined for the master files messages.

8.4.1 MFI - master file identification segment

The fields in the MFI segment are defined in *Figure 8-1 - MFI attributes*.

Figure 8-1. MFI attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	60	CE	R		0175	00658	Master File Identifier
2	180	HD	O			00659	Master File Application Identifier
3	3	ID	R		0178	00660	File-Level Event Code
4	26	TS	O			00661	Entered Date/Time
5	26	TS	O			00662	Effective Date/Time
6	2	ID	R		0179	00663	Response Level Code

8.4.1.0 MFI field definitions

8.4.1.1 Master file identifier (CE) 00658

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 a CE data type that identifies a standard HL7 master file. This table may be extended by local agreement during implementation to cover site-specific master files (z-master files). Refer to *HL7 table 0175 - Master file identifier code* for valid values.

Table 0175 - Master file identifier code

Value	Description
CDM	Charge description master file
CMA	Clinical study with phases and scheduled master file
CMB	Clinical study without phases but with scheduled master file
LOC	Location master file
OMA	Numerical observation master file
OMB	Categorical observation master file
OMC	Observation batteries master file
OMD	Calculated observations master file
PRA	Practitioner master file
STF	Staff master file

8.4.1.2 Master files application identifier (HD) 00659

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

Definition: This field contains an optional code of up to 180 characters which (if applicable) uniquely identifies the application responsible for maintaining this file at a particular site. A group of intercommunicating applications may use more than a single instance of a master file of certain type (e.g., charge master or physician master). The particular instance of the file is identified by this field.

8.4.1.3 File-level event code (ID) 00660

Definition: This field defines the file-level event code. Refer to *HL7 table 0178 - File level event code* for valid values.

Table 0178 - File level event code

Value	Description
REP	Replace current version of this master file with the version contained in this message
UPD	Change file records as defined in the record-level event codes for each record that follows

8.4.1.4 Entered date/time (TS) 00661

Definition: This field contains the time stamp for file-level event on originating system.

8.4.1.5 Effective date/time (TS) 00662

Definition: This optional field contains the effective date/time, which can be included for file-level action specified. It is the date/time the originating system expects that the event is to have been completed on the receiving system. If this field is not present, the action date/time should default to the current date/time (when the message is received).

8.4.1.6 Response level code (ID) 00663

Definition: These codes specify the application response level defined for a given Master File Message at the MFE segment level as defined in *HL7 table 0179 - Response level*. Required for MFN-Master File Notification message. Specifies additional detail (beyond *MSH-15-accept acknowledgment type* and *MSH-*

16-application acknowledgment type) for application-level acknowledgment paradigms for Master Files transactions. *MSH-15-accept acknowledgment* and *MSH-16-application acknowledgment type* operate as defined in Chapter 2.

Table 0179 - Response level

Value	Description
NE	Never. No application-level response needed
ER	Error/Reject conditions only. Only MFA segments denoting errors must be returned via the application-level acknowledgment for this message
AL	Always. All MFA segments (whether denoting errors or not) must be returned via the application-level acknowledgment message
SU	Success. Only MFA segments denoting success must be returned via the application-level acknowledgment for this message

8.4.2 MFE - master file entry segment

Figure 8-2. MFE attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	3	ID	R		0180	00664	Record-Level Event Code
2	20	ST	C			00665	MFN Control ID
3	26	TS	O			00662	Effective Date/Time
4	200	Varies	R	Y		00667	Primary Key Value - MFE

8.4.2.0 MFE field definitions

8.4.2.1 Record-level event code (ID) 00664

Definition: This field defines the record-level event for the master file record identified by the MFI segment and the primary key field in this segment. Refer to *HL7 table 0180 - Record level event code* for valid values.

Table 0180 - Record-level event code

Value	Description
MAD	Add record to master file
MDL	Delete record from master file
MUP	Update record for master file
MDC	Deactivate: discontinue using record in master file, but do not delete from database
MAC	Reactivate deactivated record

Note: If the file-level event code is "REP" (replace file), then each MFA segment must have a record-level event code of "MAD" (add record to master file).

8.4.2.2 MFN control ID (ST) 00665

Definition: A number or other identifier that uniquely identifies this change to this record from the point of view of the originating system. When returned to the originating system via the MFA segment, this field allows the target system to precisely identify which change to this record is being acknowledged. It is only required if the MFI response level code requires responses at the record level (any value other than NE).

Note: Note that this segment does not contain a Set ID field. The *MFE-2-MFN control ID* implements a more general concept than the Set ID. It takes the place of the SET ID in the MFE segment.

8.4.2.3 Effective date/time (TS) 00662

Definition: An optional effective date/time can be included for the record-level action specified. It is the date/time the originating system expects that the event is to have been completed on the receiving system. If this field is not present, the effective date/time should default to the current date/time (when the message is received).

8.4.2.4 Primary key value (Varies) 00667

Definition: This field uniquely identifies the record of the master file (identified in the MFI segment) to be changed (as defined by the record-level event code). This field may be either a CE or PL data type. The PL data type is used only on Location master transactions. When the CE data type is used, the first component of this CE data field carries an optional subcomponent, the application ID, that uniquely identifies the application responsible for creating the primary key value. The application ID subcomponent can be used to guarantee uniqueness of the primary key across multiple applications.

The repetition of the primary key permits the identification of an individual component of a complex record as the object of the record-level event code. This feature allows the Master Files protocol to be used for modifications of single components of complex records.

8.4.3 MFA - master file acknowledgment segment

The MFA segment contains the following fields as defined in *Figure 8-3 - MFA attributes*.

Figure 8-3. MFA attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	3	ID	R		0180	00664	Record-Level Event Code
2	20	ST	C			00665	MFN Control ID
3	26	TS	O			00668	Event Completion Date/Time
4	60	CE	R		0181	00669	Error Return Code And/Or Text
5	60	CE	R	Y		01308	Primary Key Value - MFA

8.4.3.0 MFA field definitions

8.4.3.1 Record-level event code (ID) 00664

Definition: This field defines record-level event for the master file record identified by the MFI segment and the primary key in this segment. Refer to *HL7 table 0180 - Record level event code* for valid values.

8.4.3.2 MFN control ID (ST) 00665

Definition: This field contains a number or other identifier that uniquely identifies this change to this record from the point of view of the originating system. This field uniquely identifies the particular record (identified by the MFE segment) being acknowledged by this MFA segment. When returned to the originating system via the MFA segment, this field allows the target system to precisely identify which change to this record is being acknowledged. It is only required if *MFI-6-response level code* requires responses at the record level (any value other than NE).

8.4.3.3 Completion date/time (TS) 00668

Definition: This field may be required or optional depending on the site specifications for the given master file, master file event, and receiving facility.

8.4.3.4 Error return code and/or text (CE) 00669

```
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 status of the requested update. Site-defined table, specific to each master file being updated via this transaction.

Refer to *user-defined table 0181 - MFN record level error return* for suggested values. All such tables will have at least the following two return code values:

User-defined Table 0181 - MFN record-level error return

Value	Description
S	Successful posting of the record defined by the MFE segment
U	Unsuccessful posting of the record defined by the MFE segment

8.4.3.5 Primary key value - MFA (CE) 01308

```
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 uniquely identifies the record of the master file (identified in the MFI segment) to be changed (as defined by the record-level event code). The first component of this CE data field carries an optional subcomponent, the application ID, that uniquely identifies the application responsible for creating the primary key value. The application ID subcomponent can be used to guarantee uniqueness of the primary key across multiple applications.

The repetition of the primary key permits the identification of an individual component of a complex record as the object of the record-level event code. This feature allows the Master Files protocol to be used for modifications of single components of complex records.

8.5 GENERIC MASTER FILE EXAMPLES

This is an example of a proposed generic method of updating a standard HL7 table. This particular example shows two records being added to *HL7 table 0006-Religion*.

> **Note:** A standard HL7 table segment can be constructed by defining two fields: a table entry field (as a CE field) and a display-sort-key field (a numeric field) as follows.

8.5.1 ZL7 segment (proposed example only)

Figure 8-4. ZL7 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	60	CE	R		xxxx	xxxxx	HL7 table entry for table xxxx
2	3	NM	R		xxxx	xxxxx	Display-sort-key

8.5.1.0 ZL7 field definitions

8.5.1.1 HL7 table entry for table xxxx (CE) xxxxx

```
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 HL7 table values for identifier and text encoded as a CE data type.

8.5.1.2 Display-sort-key (NM) xxxxx

Definition: This field is used to specify a non-alphabetic ordering for display or print versions of a standard HL7 table.

8.5.2 MFN message with original acknowledgment mode

```
MSH|^~\&|HL7REG|UH|HL7LAB|CH|19910918060544||MFN^M01|MSGID002|P|2.2
MFI|0006^RELIGION^HL7|UPD|||AL
MFE|MAD|199109051000|199110010000|U^Buddhist^HL7
ZL7|U^Buddhist^HL7|3^^Sortkey
MFE|MAD|199109051015|199110010000|Z^Zen Buddhist^HL7
ZL7|Z^Zen Buddhist^HL7|12^^Sortkey
```

In this case, the primary key contains all the data needed for this simple table, so that the HL7 segment could be constructed with ONLY the single field, “sort-key,” rather than repeating the primary key value as we have done in this example.

MFK, master file application acknowledgment, as original mode acknowledgment of the HL7 message according to MFI Response Level Code of “AL.”

```
MSH|^~\&|HL7LAB|CH|HL7ADT|UH|19910918060546||MFK|MSGID99002|P|2.2
MSA|AA|MSGID002
MFI|0006^RELIGION^HL7|UPD
MFA|MAD|199109051000|19910918060545|S|U^Buddhist^HL7
MFA|MAD|199109051015|19910918060545|S|Z^Zen Buddhist^HL7
```

8.5.3 Enhanced mode application-level acknowledgment to the MFN message

8.5.3.1 Initial message with accept acknowledgment

```
MSH|^~\&|HL7REG|UH|HL7LAB|CH|19910918060544||MFN^M01|MSGID002|P|2.2||AL
|AL
MFI|0006^RELIGION^HL7|UPD|||AL
MFE|MAD|199109051000|199110010000|U^Buddhist^HL7
ZL7|U^Buddhist^HL7|3^^Sortkey
MFE|MAD|199109051015|199110010000|Z^Zen Buddhist^HL7
ZL7|Z^Zen Buddhist^HL7|12^^Sortkey
```

```
MSH|^~\&|HL7LAB|CH|HL7ADT|UH|19910918060545||MSA|MSGID99002|P|2.2
MSA|CA|MSGID002
```

8.5.3.2 Enhanced mode application acknowledgment message

```
MSH|^~\&|HL7LAB|CH|HL7ADT|UH|19911001080504||MFK|MSGID99502|P|2.2||AL|
MSA|AA|MSGID002
MFI|0006^RELIGION^HL7|UPD
MFA|MAD|199109051000|19910918010040|S|U^Buddhist^HL7
MFA|MAD|199109051015|19910918010040|S|Z^Zen Buddhist^HL7

MSH|^~\&|HL7ADT|UH|HL7LAB|CH|19911001080507||ACK|MSGID444|P|2.2
MSA|CA|MSGID5002
```

8.5.4 Delayed application-level acknowledgment

8.5.4.1 Initial message with accept acknowledgment

```
MSH|^~\&|HL7REG|UH|HL7LAB|CH|19910918060544||MFN^M01|MSGID002|P|2.2||AL
|NE
MFI|0006^RELIGION^HL7|UPD|||AL
MFE|MAD|199109051000|199110010000|U^Buddhist^HL7
ZL7|U^Buddhist^HL7|3^^Sortkey
MFE|MAD|199109051015|199110010000|Z^Zen Buddhist^HL7
ZL7|Z^Zen Buddhist^HL7|12^^Sortkey


MSH|^~\&|HL7LAB|CH|HL7ADT|UH|19910918060545||MSA|MSGID99002|P|2.2
MSA|CA|MSGID002
```

8.5.4.2 Deferred application acknowledgment message

```
MSH|^~\&|HL7LAB|CH|HL7ADT|UH|19910919060545||MFD|MSGID99002|P|2.2|||AL
MFI|0006^RELIGION^HL7|UPD
MFA|MAD|199109051000|19910919020040|S|U^Buddhist^HL7
MFA|MAD|199109051015|19910919020040|S|Z^Zen Buddhist^HL7


MSH|^~\&|HL7ADT|UH|HL7LAB|CH|19910919060546||ACK|MSGID444|P|2.2
MSA|CA|MSGID500
```

8.6 STAFF AND PRACTITIONER MASTER FILES

8.6.1 MFN/MFK - staff/practitioner master file message

The staff (STF) and practitioner (PRA) segments can be used to transmit master files information between systems. The STF segment provides general information about personnel; the PRA segment provides detailed information for a staff member who is also a health practitioner. Other segments may be defined to follow the STF segment to provide additional detail information for a particular type of staff member: the PRA segment is the first such segment. When the STF and PRA segments are used in an MFN message, the abstract definition is as follows:

MFN	Master File Notification for Staff/Practitioner	Chapter
MSH	Message Header	2
MFI	Master File Identification	8
{MFE	Master File Entry	8
STF	Staff Identification	8
[PRA]	Practitioner Detail	8
}		

MFK	Master File Acknowledgment	Chapter
MSH	Message Header	2
MSA	Acknowledgment	2
MFI	Master File Identification	8
[{MFA}]	Master File ACK segment	8

When the STF and PRA segments are used in the MFR message, the part of the message represented by:

```
{MFE
[Z..]}
```

is replaced by:

```
{MFE
 STF
[PRA]
}
```

8.6.2 STF - staff identification segment

The STF segment can identify any personnel referenced by information systems. These can be providers, staff, system users, and referring agents. In a network environment, this segment can be used to define personnel to other applications; for example, order entry clerks, insurance verification clerks, admission clerks, as well as provider demographics. *MFE-4-primary key value* is used to link all the segments pertaining to the same master file entry. Therefore, in the MFE segment, *MFE-4-primary key value* must be filled in. Other segments may follow the STF segment to provide data for a particular type of staff member. The PRA segment (practitioner) is one such. It may optionally follow the STF segment in order to add practitioner-specific data. Other segments may be defined as needed.

Figure 8-5. STF attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	60	CE	R			00671	Primary Key Value - STF
2	60	CX	O	Y		00672	Staff ID Code
3	48	XPN	O			00673	Staff Name
4	2	IS	O	Y	0182	00674	Staff Type
5	1	IS	O		0001	00111	Sex
6	26	TS	O			00110	Date/Time Of Birth
7	1	ID	O		0183	00675	Active/Inactive
8	200	CE	O	Y	0184	00676	Department
9	200	CE	O	Y	0069	00677	Service
10	40	XTN	O	Y		00678	Phone
11	106	XAD	O	Y		00679	Office/Home Address
12	26	CM	O	Y		00680	Activation Date
13	26	CM	O	Y		00681	Inactivation Date - STF
14	60	CE	O	Y		00682	Backup Person ID
15	40	ST	O	Y		00683	E-Mail Address
16	1	ID	O		0185	00684	Preferred Method Of Contact
17	1	IS	O		0002	00119	Marital Status
18	20	ST	O			00785	Job Title
19	20	JCC	O			00786	Job Code/Class
20	2	IS	O		0066	01276	Employment Status
21	1	ID	O		0136	01275	Additional Insured on Auto
22	25	DLN	O			01302	Driver's License Number - Staff
23	1	ID	O		0136	01229	Copy Auto Ins
24	8	DT	O			01232	Auto Ins. Expires
25	8	DT	O			01298	Date Last DMV Review
26	8	DT	O			01234	Date Next DMV Review

8.6.2.0 STF field definitions

8.6.2.1 Primary key value - STF (CE) 00671

```
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 must match *MFE-4-primary key value* to identify which entry is being referenced.

8.6.2.2 Staff ID code (CX) 00672

```
Components:  <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^
              <assigning authority (HD)> ^ <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 a personnel identification code or institution user number, used by the institution to identify this person. Repeating field allows multiple ID codes per person, with the type of ID code indicated in the third component of the coded entry data type.

8.6.2.3 Staff name (XPN) 00673

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

Definition: This field contains the staff person's name.

8.6.2.4 Staff type (IS) 00674

Definition: This field contains a code identifying what type of staff. Refer to *user-defined table 0182 - Staff type* for suggested values. Values may include codes for staff, practitioner (physician, nurse, therapist, etc.), referral agent or agency, etc.

8.6.2.5 Sex (IS) 00111

Definition: This field contains the staff person's sex. Refer to *user-defined table 0001 - Sex* for suggested values.

8.6.2.6 Date/Time of birth (TS) 00110

Definition: This field contains a staff member's date and time of birth.

8.6.2.7 Active/inactive (ID) 00675

Definition: This field indicates whether person is currently a valid staff member. Refer *to HL7 table 0183 - Active/inactive* for valid values.

Table 0183 - Active/inactive

Value	Description
A	Active Staff
I	Inactive Staff

8.6.2.8 Department (CE) 00676

```
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 institution department to which this person reports or belongs. Refer to *user-defined table 0184 - Department* for suggested values.

8.6.2.9 Service (CE) 00677

```
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 hospital or ancillary service with which this staff person is associated. Refer to *user-defined table 0069 - Hospital service* for suggested values.

8.6.2.10 Phone (XTN) 00678

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

Definition: This field contains the staff person's phone number. This is a repeating field with a component for indicating which phone number is which. It is recommended that the last part of the XTN, [C any text], start with a code from the table associated below with *STF-16-preferred method of contact*, in order to indicate the type of each phone number in this repeating field.

8.6.2.11 Office/home address (XAD) 00679

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

Definition: This field contains the office address and home address of the staff person. This is a repeating field.

8.6.2.12 Activation date (CM) 00680

```
Components:  <date (TS)> ^ <institution name (CE)>

Subcomponents for institution name:  <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 date when staff became active for an institution. Repeats.

8.6.2.13 Inactivation date - STF (CM) 00681

```
Components: <date (TS)> ^ <institution name (CE)>

Subcomponents for institution name:  <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 date when staff became active for an institution. Repeats.

8.6.2.14 Backup person ID (CE) 00682

```
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 *MFE-4-primary key value* of the master file entry which corresponds to the designated backup person for this staff person.

8.6.2.15 E-mail address (ST) 00683

Definition: ***This field has been retained for backward compatibility.*** (It is now present in the fourth component of *STF-10-phone*).

8.6.2.16 Preferred method of contact (ID) 00684

Definition: This field contains a one-letter code that indicates which of multiple phone numbers is the preferred method of contact for this person. Note that all values of this code refer to this segment's phone field, except for the value "E," which refers to the E-mail address field. If more than one phone number of the preferred type exists in *STF-10-phone*, this field refers to the first such instance. Refer *to HL7 table 0185 - Preferred method of contact* for valid values.

Table 0185 - Preferred method of contact

Value	Description
H	Home Phone Number
O	Office Phone Number
F	FAX Number
C	Cellular Phone Number
B	Beeper Number
E	E-Mail Address (for backward compatibility)

8.6.2.17 Marital status (IS) 00119

Definition: This field contains the staff member's marital status. Refer *to user-defined table 0002 - Marital status* for suggested values. Same values as those for *PID-16-marital status.*

8.6.2.18 Job title (ST) 00785

Definition: This field contains a descriptive name of the staff member's occupation (e.g., Sr. Systems Analyst, Sr. Accountant).

8.6.2.19 Job code/class (JCC) 00786

```
Components:  <job code (IS)> ^ <job class (IS)>
```

Definition: This field contains the staff member's job code and employee classification. Refer to *user-defined table 0327 - Job code* and *user-defined table 0329 - Job class*.

8.6.2.20 Employment status (IS) 01276

Definition: This field contains the code that indicates the staff member's employment status, e.g., full-time, part-time, self-employed, etc. Refer to *user-defined table 0066 - Employment status* for suggested values.

8.6.2.21 Additional insured on auto (ID) 01275

Definition: This field contains an indicator for whether the present institution is named as an additional insured on the staff member's auto insurance, especially for use when staff is a driver for the institution. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y indicates that the institution is named as an additional insured

N indicates that the institution is not named as an additional insured

8.6.2.22 Driver's license number - Staff (DLN) 01302

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

Definition: This field contains the driver's license information of staff, especially for use when staff is a driver for the institution. For state or province refer to official postal codes for that country; for country refer to ISO 3166 for codes.

8.6.2.23 Copy auto ins (ID) 01229

Definition: This field contains an indicator for whether the institution has on file a copy of the staff member's auto insurance, especially for use when staff is a driver for the institution. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y indicates that the institution has a copy on file

N indicates that the institution does not have a copy on file

8.6.2.24 Auto ins. expires (DT) 01232

Definition: This field contains the date on which the staff member's driver's license expires, especially for use when staff is a driver for the institution.

8.6.2.25 Date last DMV review (DT) 01298

Definition: This field contains the date of the staff member's most recent Department of Motor Vehicles review, especially for use when staff is a driver for the institution.

8.6.2.26 Date next DMV review (DT) 01234

Definition: This field contains the date of the staff member's next Department of Motor Vehicles review, especially for use when staff is a driver for the institution.

8.6.3 PRA - practitioner detail segment

The PRA segment adds detailed medical practitioner information to the personnel identified by the STF segment. A PRA segment may optionally follow an STF segment. A PRA segment must always have been preceded by a corresponding STF segment. The PRA segment may also be used for staff who work in healthcare who are not practitioners, but need to be certified, e.g., "medical records staff."

Figure 8-6. PRA attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	20	ST	R			00685	Primary Key Value - PRA
2	60	CE	O	Y		00686	Practitioner Group
3	3	IS	O	Y	0186	00687	Practitioner Category
4	1	ID	O		0187	00688	Provider Billing
5	100	CM	O	Y	0337	00689	Specialty
6	100	CM	O	Y	0338	00690	Practitioner ID Numbers
7	200	CM	O	Y		00691	Privileges
8	8	DT	O			01296	Date Entered Practice

8.6.3.0 PRA field definitions

8.6.3.1 Primary key value - PRA (ST) 00685

Definition: This field must match *MFE-4-primary key value*, to identify which entry is being referenced.

8.6.3.2 Practitioner group (CE) 00686

```
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 name and/or code of a group of practitioners to which this practitioner belongs.

8.6.3.3 Practitioner category (IS) 00687

Definition: This field contains the category of practitioner. Refer to *user-defined table 0186 - Practitioner category* whose values may include codes for staff physician, courtesy physician, resident, physician assistant, physical therapist, psychiatrist, psychologist, pharmacist, registered nurse, licensed practical nurse, licensed vocational nurse, nurse practitioner, etc.

8.6.3.4 Provider billing (ID) 00688

Definition: This field indicates how provider services are billed. Refer to *HL7 table 0187 - Provider billing* for valid values.

Table 0187 - Provider billing

Value	Description
P	Provider does own billing
I	Institution bills for provider

8.6.3.5 Specialty (CM) 00689

```
Components:  <specialty name (ST)> ^ <governing board (ST)> ^ <eligible or certified (IS)> ^ <date of
              certification (DT)>
```

Definition: This repeating field is made up of multiple components to record the practitioner's specialties. The multiple components of each specialty are: (1) specialty name or abbreviation, identifies provider's specialty, (2) name of specialty governing board, (3) Certification Status, (4) certified date contains the date of certification, if certified.

Table - 0337 - Certification Status

Value	Description
E	Eligible
C	Certified

8.6.3.6 Practitioner ID numbers (CM) 00690

```
Components:  <ID number (ST)> ^ <type of ID number (IS)> ^ <state/other qualifying info (ST)> ^ <expiration
              date>
```

Definition: This repeating field contains this practitioner's license numbers and other ID numbers. This is a field made up of the following components: (1) the ID number, and (2) the type of number, and optionally (3) the state or province in which it is valid, if relevant, or other qualifying information. It is recommended that state qualifications use the abbreviations from the postal service of the country. The practitioner ID number type (component 2) is a user-defined table (table 0338).

User-defined Table 0338 - Practitioner ID number type

Value	Description
UPIN	Unique Physician ID. No.
SL	State License Number
MCD	Medicaid Number
GL	General Ledger Number

CY	County Number
TAX	Tax ID Number
DEA	Drug Enforcement Agency No.
MCR	Medicare Number
L&I	Labor and Industries Number
QA	QA Number
TRL	Training License Number

8.6.3.7 Privileges (CM) 00691

```
Components:  <privilege (CE)> ^ <privilege class (CE)> ^ <expiration date (DT)> ^ <activation date (DT)>

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

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

Definition: This field contains the institutional privileges which this provider may exercise. Depends upon institutional needs. For example, admit, transfer, discharge, place orders, verify orders, review results, etc. Can also be used for privileges other than patient services. This is a repeating field, with each privilege made up of the following components: (1) privilege; (2) privilege class; (3) privilege expiration date, if any; and (4) privilege activation date, if any. Note that the privilege and privilege class components are CE data types, and thus they are encoded with the subcomponent delimiter (&) rather than the component delimiter (^).

8.6.3.8 Date entered practice (DT) 01296

Definition: This field contains the date the practitioner began practicing at the present institution (e.g., at hospital, at physician organization, at managed care network).

8.6.4 Example: doctor master file MFN message

```
MSH|^~\&|HL7REG|UH|HL7LAB|CH|19910918060544||MFN^M02|MSGID002|P|2.3|||A
   L|NE
MFI|0004^DOCTOR^HL7|UPD|||AL
MFE|MAD|U2246|199110011230|PMF98123789182^^PLW
STF|PMF98123789182^^PLW|U2246^^PLW~111223333^^SSN|KILDARE^RICHARD^J^JR^
   DR^M.D.|P|M| 19511004|A|^ICU|^MED|(206)689-1999X345CO~(206)283-
   3334CH(206)689-1345X789CB|214 JOHNSON ST^SUITE 200^SEATTLE^
   WA^98199^H~3029 24TH AVE W^^SEATTLE, WA^98198^O
   |19890125^UMC&University Medical
   Center&L01||PMF88123453334|74160.2326 @COMPUSERV.COM|B
PRA|PMF98123789182^^PLW|^KILDARE FAMILY PRACTICE|ST|I|OB/GYN^STATE
   BOARD OF OBSTETRICS AND GYNECOLOGY^C^19790123|1234887609
   ^UPIN~1234987^CTY^MECOSTA~223987654^
   TAX~1234987757^DEA~12394433879^MDD^CA|ADMIT&&ADT^MED&&L2^19941231~D
   ISCH&&ADT^MED&&L2^19941231|
```

8.7 TEST/OBSERVATIONS MASTER FILES

8.7.1 General approach of test/observation master files

These segments define the format for the general information about the observations that a clinical or diagnostic service produces and sends to its "clients." This format can be used to send the producer's entire test/observation definition or a few of the producer's observations, such as those with procedure, technique, or interpretation changes.

In anticipation of an object-oriented organization of segments in future releases of this Standard, the attributes of observations/batteries have been grouped into six different segments:

OM1	contains the attributes that apply to all observations
OM2	applies to numerically-valued observations
OM3	applies to text or code-valued observations
OM4	applies to observations or batteries that require specimens
OM5	contains the attributes of batteries, or sets of observations or other batteries
OM6	contains the quantities (observations in a most general sense) that are calculated from one or more other observations

Thus, the full definition of a numerically-valued laboratory observation would require the transmission of OM1, OM2, and OM4.

In the following discussion, we use OMx to refer to any of the six observation-defining segments. Each instance of an OMx segment contains the information about one observation or observation battery. These OMx segments are designed to be "inclusive" and accommodate the attributes of many kinds of observations. Thus, the fact that a field is listed in a particular segment should not be construed as meaning that a producer must include information about that item in its definition transmission. Many fields will apply to some terms; others will not. One observation producer may choose to populate one set of fields; another may choose to populate a different set of fields, according to the requirements of that producer's "client."

Most of the fields of data type TX in those segments are intended to include information typically contained in a diagnostic service's user manual. Such fields should describe how the data is to be interpreted or used, and are not intended for computer interpretation.

Remember that the magnitude of a treatment can also be regarded as an observation and, as such, can be represented as an observation within these segments. Many examples exist. When a blood gas is transmitted, the requesting service usually transmits the amount of inspired O2 (a treatment) on requisition. (In an electronic transmission, the service would send this as an OBX segment, along with the electronic order for the test.) When blood levels are drawn, the amount and time of the last dose are routinely included as observations on the request for service. A pharmacy system could routinely send to a medical record system the average daily dose of each outpatient medication it dispenses. In such cases, the treatment amounts would be observations to the receiving system and would be transmitted as OBX segments. When received, they would be treated like any other observation. A medical record system could then create, for example, a flowchart of lab results, or lab results mixed with relevant treatments.

8.7.2 MFN/MFR - test/observation master file

The usage of the OMx segments in the Master Files MFN and MFR messages is described in Sections 8.3.1, "MFN/MFK - master files notification," and 8.3.3, "MFQ/MFR - master files query," above. Basically the segment groupings described below follow the MFI and MFE segments in those messages (replacing the [Z...] section as follows:

```
MFN                     Master File Notification                    Chapter
MSH                     Message Header                                  2
MFI                     Master File Identification                      8
 {MFE                   Master File Entry                               8
   OM1                  General Segment (Fields That Apply              8
                            to Most Observations)
[other segments(s)]
 }
```

where *other segments* can be any of the following combinations:

MFI-1-master file identifier code = OMA, for numeric observations (second component *of MSH-9-event type* = M08).

```
[
    [OM2]    Numeric Observation Segment
    [OM3]    Categorical Test/Observation Segment
    [OM4]    Observations that Require Specimens
]
```

or

MFI-1-master file identifier code = OMB, for categorical observations (second component *of MSH-9-event type* - M09).

```
[OM3     Categorical Test/Observation Segment
  [{OM4}] Observations that Require Specimens
]
```

or

MFI-1-master file identifier code = OMC, for observation batteries (second component *of MSH-9-event type* - M10).

```
[OM5     Observation Batteries
  [{OM4}] Observations that Require Specimens
]
```

or

MFI-1-master file identifier code = OMD, calculated observations (second component *of MSH-9-event type* - M11).

```
[OM6     Observations Calculated from Other Observations
 OM2]         Numeric Observation Segment
```

Note:	A test/observation definition may have both an OM2 (numeric) and OM3 (categorical) segment included in case the value may be either numeric and/or categorical.

8.7.3 OM1 - general segment (fields that apply to most observations)

The OM1 segment contains the attributes that apply to the definition of most observations. This segment also contains the field attributes that specify what additional segments might also be defined for this observation.

Figure 8-7. OM1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	NM	R			00586	Sequence Number
2	200	CE	R			00587	Producer's Test/Observation ID
3	12	ID	O	Y	0125	00588	Permitted Data Types
4	1	ID	R		0136	00589	Specimen Required
5	200	CE	R			00590	Producer ID
6	200	TX	O			00591	Observation Description
7	200	CE	O			00592	Other Test/Observation IDs for the Observation
8	200	ST	R	Y		00593	Other Names
9	30	ST	O			00594	Preferred Report Name for the Observation
10	8	ST	O			00595	Preferred Short Name or Mnemonic for Observation
11	200	ST	O			00596	Preferred Long Name for the Observation
12	1	ID	O		0136	00597	Orderability
13	60	CE	O	Y		00598	Identity of Instrument Used to Perform this Study
14	200	CE	O	Y		00599	Coded Representation of Method
15	1	ID	O		0136	00600	Portable
16	1	CE	O	Y		00601	Observation Producing Department/Section
17	40	XTN	O			00602	Telephone Number of Section
18	1	IS	R		0174	00603	Nature of Test/Observation
19	200	CE	O			00604	Report Subheader
20	20	ST	O			00605	Report Display Order
21	26	TS	O			00606	Date/Time Stamp for any change in Def Attri for Obs
22	26	TS	O			00607	Effective Date/Time of Change
23	20	NM	O			00608	Typical Turn-Around Time
24	20	NM	O			00609	Processing Time
25	40	ID	O	Y	0168	00610	Processing Priority
26	5	ID	O		0169	00611	Reporting Priority
27	200	CE	O	Y		00612	Outside Site(s) Where Observation may be Performed
28	1000	XAD	O			00613	Address of Outside Site(s)
29	400	XTN	O			00614	Phone Number of Outside Site
30	1	IS	O		0177	00615	Confidentiality Code
31	200	CE	O			00616	Observations Required to Interpret the Obs
32	64K	TX	O			00617	Interpretation of Observations
33	64K	CE	O			00618	Contraindications to Observations
34	200	CE	O	Y		00619	Reflex Tests/Observations
35	80	TX	O			00620	Rules that Trigger Reflex Testing
36	64K	CE	O			00621	Fixed Canned Message
37	200	TX	O			00622	Patient Preparation
38	200	CE	O			00623	Procedure Medication
39	200	TX	O			00624	Factors that may Effect the Observation
40	60	ST	O	Y		00625	Test/Observation Performance Schedule
41	64K	TX	O			00626	Description of Test Methods
42	60	CE	O		0254	00937	Kind of Quantity Observed
43	60	CE	O		0255	00938	Point Versus Interval
44	200	TX	O			00939	Challenge Information
45	200	CE	O		0258	00940	Relationship Modifier
46	200	CE	O			00941	Target Anatomic Site Of Test
47	200	CE	O		0259	00942	Modality Of Imaging Measurement

8.7.3.0 OM1 field definitions

8.7.3.1 Sequence number (NM) 00586

Definition: This field contains the first OM1 segment in a message and is described as 1, the second as 2, and so on.

8.7.3.2 Producer's test/observation ID (CE) 00587

```
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 producer's usual or preferred identification of the test or observation. Only three components should be included: <ID code>^<service text name/description>^<source list of code>. All components should be non-null. The source list may be any of those included in ASTM Tables 3 and 5, or a local code.

8.7.3.3 Permitted data types (ID) 00588

Definition: This field contains the allowed data type(s) for this observation. The codes are the same as those listed for OBX (a given observation may, under different circumstances, take on different data types). Indeed, under limited circumstances, an observation can consist of one or more fragments of different data types. When an observation may have more than one data type, e.g., coded (CE) and numeric (NM) the allowable data types should be separated by repeat delimiters. Refer to *HL7 table 0125 - Value type* for valid values.

8.7.3.4 Specimen required (ID) 00589

Definition: This field contains a flag indicating whether or not at least one specimen is required for the test/observation. Refer to *HL7 table 0136 - Yes/no indicator* as defined in Chapter 2.

Y one or more specimens are required to obtain this observation

N a specimen is not required

When a specimen is required, segment OM4 will usually be included (one per specimen is required).

8.7.3.5 Producer ID (CE) 00590

```
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 uniquely identifies the service producing the observation described in this segment. Three components should be included: an identifying code, the name of the producer, and the identity of the coding system (e.g., 323-5678^Acme Special Lab^MC). The identity of the coding system will usually be MC (Medicare provider number or HIBCC site codes) in the United States. Each country may want to specify its preferred coding system and define a coding system ID to identify it.

Remember that the magnitude of a treatment or the setting on a machine, such as a ventilator, can be regarded as an observation. Thus, pharmacy, respiratory care, and nursing may be producers of such observations.

8.7.3.6 Observation description (TX) 00591

Definition: This field contains a text description of this observation.

8.7.3.7 Other test/observation IDs for the observation (CE) 00592

```
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 all alias codes/identifiers for this observation. If more than one alias code needs to be specified, multiple three-component, CE-format entries (<code 1>^<name 1>^<code system 1>) may be given, separated by repeat delimiters. An observation may have as many names/codes as are applicable (e.g., ICD9, ACR-NEMA, SNOMED, and READ). We encourage the inclusion of as many different codes as may apply to assist cross-system mapping of terminology. All components of each triplet should be non-null (that is, names and coding system IDs within the CE data type are required in addition to codes). The source list may be any of those included in ASTM Tables 3 and 5.

Because the size (dose) of a treatment can also be an observation, codes that identify treatments (e.g., NDC, ICCS) may also be included in this field.

Note:	In this field, the names within the CE data type are required.

8.7.3.8 Other names (recognized by the producer for the observation) (ST) 00593

Definition: This field contains any test aliases or synonyms for the name in the context of the ordering service. These are alternative names, not associated with a particular coding system, by which the battery, test, or observation (e.g., measurement, test, diagnostic study, treatment) is known to users of the system. Multiple names in this list are separated by repeat delimiters.

8.7.3.9 Preferred report name for the observation (ST) 00594

Definition: This field contains the preferred name for reporting the observation or battery. The name can contain up to 30 characters (including blanks). It is the preferred name for columnar reports that require a maximum name size.

8.7.3.10 Preferred short name or mnemonic for the observation (ST) 00595

Definition: This field contains the name that can be used in space-limited reports (e.g., specimen labels) to identify the observation for the convenience of human readers. The name can contain up to eight characters.

8.7.3.11 Preferred long name for the observation (ST) 00596

Definition: This field contains the fully-specified name for the observation or battery. It may include the full (unabbreviated) multiple-word names and contain up to 200 characters. It should be as scientifically precise as possible.

8.7.3.12 Orderability (ID) 00597

Definition: This field indicates whether or not a test/observation is an orderable code. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y the test/observation is an orderable code

N the test/observation is not orderable

For example, blood differential count is usually an orderable "test," MCV, contained within the differential count, is usually not independently orderable.

8.7.3.13 Identity of Instrument used to perform this study (CE) 00598

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

Definition: When applicable, this field identifies the instrument or device that is used to generate this observation or battery. Examples are the automated instrument in the laboratory, the imaging device and model number in radiology, and the automatic blood pressure machine on the ward. The instrument is specified as a coded entry in anticipation that these identifiers could be specified as codes. Initially, we expect that most of the information about devices will be transmitted as text in the second component of the CE identifier. If more than one kind of instrument is used, all of them can be listed, separated by repeat delimiters.

8.7.3.14 Coded representation of method (CE) 00599

```
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 method(s) used to produce the observation and should be recorded in a computer-understandable (coded) form here. This field should report the same method(s) reported in narrative in the following field. More than one method may be listed, but only if they produce results that are clinically indistinguishable. Multiple methods must be separated by repeat delimiters.

8.7.3.15 Portable (ID) 00600

Definition: This field indicates whether or not a portable device may be used for the test/observation. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y the observation can be obtained with a portable device brought to the patient

N the patient or specimen must be transported to the device

8.7.3.16 Observation producing department/section (CE) 00601

```
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 permits the sorting of observation orders and values by the providing service's department/section. It provides "source oriented" reporting when required. The codes for this field should be taken from ASTM Table 15 (Diagnostic Service Codes). Free text may be used instead of these codes, but in that case, they should be recorded as the second "component" of the field to distinguish them from the standard codes. Multiple codes in this field are separated by repeat delimiters.

8.7.3.17 Telephone number of section (XTN) 00602

Definition: This field contains the telephone number for calling responsible parties in this section to ask results or advice about the use of this test.

8.7.3.18 Nature of test/observation (IS) 00603

Definition: This field indicates whether the definition entry identifies a test battery, an entire functional procedure or study, a single test value (observation), multiple test batteries or functional procedures as an orderable unit (profile), or a single test value (observation) calculated from other independent observations. Refer to *user-defined table 0174 - Nature of test/observation* for suggested values.

User-defined Table 0174 - Nature of test/observation

Value	Description
P	Profile or battery consisting of many independent atomic observations (e.g., SMA12, electrolytes), usually done at one instrument on one specimen
F	Functional procedure that may consist of one or more interrelated measures (e.g., glucose tolerance test, creatine clearance), usually done at different times and/or on different specimens
A	Atomic test/observation (test code or treatment code)
S	Superset--a set of batteries or procedures ordered under a single code unit but processed as separate batteries (e.g., routines = CBC, UA, electrolytes) This set indicates that the code being described is used to order multiple test/observation batteries. For example, a client who routinely orders a CBC, a differential, and a thyroxine as an outpatient profile might use a single, special code to order all three test batteries, instead of having to submit three separate order codes.
C	Single observation calculated via a rule or formula from other independent observations (e.g., Alveolar--arterial ratio, cardiac output)

Codes P, F, and S identify sets (batteries) and should be associated with an OM5 segment that defines the list of elements. The definitions for the contained elements would have to be sent in other independent OMx segments, one for each contained element. In the ASTM context, most text reports--such as discharge summaries, admission H&Ps, and chest X-ray reports--are considered as sets, in which each section of the report (e.g., description, impression, and recommendation of an X-ray report) is considered a separate observation.

Code A identifies a single direct observation and would usually be associated with an OM2 and/or OM3 segments.

Code C identifies a derived quantity and would usually be associated with an OM6 segment.

All of these codes can be associated with one or more OM4 (specimen) segments.

8.7.3.19 Report subheader (CE) 00604

```
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 an optional string that defines the preferred header under which this observation should be listed on a standard display. For example, if the test is hemoglobin, this string might be “Complete blood count.” It is represented as a coded data type so that a battery can be a header. Only the description part of the string may be included in case the subheader does not have an associated code. When a series of observations is displayed according to the sort order given below, the subheader that groups those observations is presented whenever the subheader changes.

8.7.3.20 Report display order (ST) 00605

Definition: This field contains an optional string that defines the sort order in which this observation is presented in a standard report or display that contains the many observations.

8.7.3.21 Date/time stamp for any change in definition for the observation (TS) 00606

Definition: This field contains the date and time that the last of any field change was made and in the host's record corresponding to the OM1 segment.

8.7.3.22 Effective date/time of change in test procedure that make results non-comparable (TS) 00607

Definition: This field contains the date and time of the last change in the test procedure that would make previous results incompatible with new results, e.g., the last time that normal reference range or units changed for a numeric test/observation.

We strongly suggest that observation producers never use the same observation ID when the measurement procedures change in such a way that results produced under the new procedure are clinically different from those produced with the old procedure. Rather, the producer should try to adjust the new procedure so that its values are clinically indistinguishable from the old. Failing that, one should create a new observation ID for the observation produced under the new procedure.

In the rare circumstances when a procedure change occurs and neither of the above two options is viable, this field shall be used to transmit the effective date/time of the new procedure. The receiving system shall assume that any values that come across under this observation ID are under the new procedure after this date and take appropriate steps to distinguish the old from the new observations.

This number is included to provide a means of communicating with the observation producing service when they have questions about particular observations or results.

8.7.3.23 Typical turn-around time from receipt of specimen/subject to result produced (NM) 00608

Definition: This field contains the typical processing time for single test/observation. This field indicates the time from the delivery of a specimen or transport of a patient to a diagnostic service and the completion of the study. It includes the usual waiting time. The units are measured in minutes.

8.7.3.24 Processing time (NM) 00609

Definition: This field contains the usual length of time (in minutes) between the start of a test process and its completion.

8.7.3.25 Processing priority (ID) 00610

Definition: This field contains one or more available priorities for performing the observation or test. This is the priority that can be placed in *OBR-28-quantity/timing*. For tests that require a specimen, this field may contain two components in the format <specimen priority>^<processing priority>. The first component in this case indicates the priority with which the specimen will be collected and is the priority that is specified in an OBR segment when ordering the observation. The second component indicates the corresponding priority with which the producer service will process the specimen, produce the observation, and return results, when this differs from collection priority. Refer to *HL7 table 0168 - Processing priority* for valid values.

Table 0168 - Processing priority

Value	Description
S	Stat (do immediately)
A	As soon as possible (a priority lower than stat)
R	Routine
P	Preoperative (to be done prior to surgery)
T	Timing critical (do as near as possible to requested time)
C	Measure continuously (e.g., arterial line blood pressure)
B	Do at bedside or portable (may be used with other codes)

The priority for obtaining the specimen is included in OM4. Multiple priorities may be given, separated by repeat delimiters. For example, S~A~R~P~T indicates that the test may be ordered using codes S, A, R, P, or T.

8.7.3.26 Reporting priority (ID) 00611

Definition: This field contains the available priorities reporting the test results when the user is asked to specify the reporting priority independent of the processing priority. Refer *to HL7 table 0169 - Reporting priority* for valid values.

Table 0169 - Reporting priority

Value	Description
C	Call back results
R	Rush reporting

8.7.3.27 Outside site(s) where observation may be performed (CE) 00612

```
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 identification(s) of the outside service(s) that produce(s) the observation. The format of this CE field uses the producer ID (as defined in *OM1-6-producer ID)* and the name of the service separated by component delimiters. An example is 39221^ACME lab^MC. If multiple services are used, they should be separated by repeat delimiter(s).

8.7.3.28 Address of outside site(s) (XAD) 00613

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

Definition: This field contains the address of the outside services listed in *OM1-28-outside site(s)* where observation may be performed. If multiple services are recorded in that field, their addresses should be separated by repeat delimiters, and the addresses should appear in the same order in which the services appear in the preceding field.

8.7.3.29 Phone number of outside site (XTN) 00614

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

Definition: This field contains the telephone number of the outside site.

8.7.3.30 Confidentiality code (IS) 00615

Definition: This field contains the degree to which special confidentiality protection should be applied to the observation. For example, a tighter control may be applied to an HIV test than to a CBC. Refer to *user-defined table 0177 - Confidentiality code* for suggested values.

User-defined Table 0177 - Confidentiality code

Value	Description
V	Very restricted
R	Restricted
U	Usual control
EMP	Employee
UWM	Unwed mother
VIP	Very important person or celebrity
PSY	Psychiatric patient
AID	AIDS patient
HIV	HIV(+) patient
ETH	Alcohol/drug treatment patient

8.7.3.31 Observations required to interpret this observation (CE) 00616

```
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 list of variables that the diagnostic service needs to interpret the results of an ordered study. The observations specified here should be sent to the diagnostic service as OBX segments along with the order (OBR) segment.

Example for cervical pap smear:

```
2000.32^date last menstrual period^AS4~2000.33^menstrual state^AS4
```

Example for arterial blood gas:

```
94700^inspired 02^AS4
```

These examples use AS4 codes in code/text format to identify the variables. Separate multiple items by repeat delimiters.

8.7.3.32 Interpretation of observations (TX) 00617

Definition: This field contains the clinical information about interpreting test results. Examples are the conditions (drugs) that may cause false abnormals, and the information about the sensitivity and specificity of the test for diagnoses.

8.7.3.33 Contraindications to observations (CE) 00618

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

Definition: This field contains the diagnosis or problem for which the test is a contraindication or of possible danger (e.g., pacemaker, pregnancy, diabetes). For example, if the test identified in OM1 was an

intravenous pyelogram, this field would include warnings about the use of contrast media in diabetes. The contraindication diagnoses should be separated by repeat delimiters.

Most contraindication rules will be transmitted as free text. In such cases, the contents serve only as information for human reading. However, an alternative for machine readable contraindication rules also exists. The rule may be defined formally in the Arden Syntax (ASTM 1460-1992) which has syntax for defining algebraic and transcendental equations, as well as temporal and logical selection criteria based on patient information stored in the computer record. Reflex rules that are written in Arden Syntax should begin and end with a double semi-colon (;;), the Arden slot delimiter.

8.7.3.34 Reflex tests/observations (CE) 00619

```
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 test names as type CE (i.e., <code>^<text name>^<coding system>) that may be ordered automatically by the diagnostic service, depending on the results obtained from the ordered battery. A screening CBC might trigger a reticulocyte count if the Hgb is less than 12. Multiple reflex tests are separated by repeat delimiters.

8.7.3.35 Rules that trigger reflex testing (TX) 00620

Definition: This field contains the rules that trigger the reflex tests listed above. If multiple reflex tests are listed in *OM1-34-reflex tests/observations* separated by repeat delimiters, a set of corresponding rules will be included in this section. The first rule will apply to the first test, the second to the second test, and so on.

Most reflex rules will usually be transmitted as free text. In such cases, the contents serve only as information for human reading. However, an alternative for machine readable rules also exists. The rule may be defined formally in the Arden Syntax (ASTM 1460-1992) which has syntax for defining algebraic and transcendental equations, as well as temporal and logical selection criteria based on patient information stored in the computer record. Reflex rules that are written in Arden Syntax should begin and end with a double semi-colon (;;), the Arden slot delimiter.

8.7.3.36 Fixed canned message (CE) 00621

```
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 codes and a fixed text message that is always associated with an abbreviation. The field may include multiple messages separated by repeat delimiters.

Most rules about patient testing will be transmitted as free text. In such cases, the contents serves only as information for human reading. However, an alternative for machine readable rules also exists. The rule may be defined formally in the Arden Syntax (ASTM 1460-1992) which has syntax for defining algebraic and transcendental equations, as well as temporal and logical selection criteria based on patient information stored in the computer record. Rules about patient preparation are written in Arden Syntax should begin and end with a double semi-colon (;;), the Arden slot delimiter.

8.7.3.37 Patient preparation (TX) 00622

Definition: This field contains the tests or observations that require special patient preparation, diet, or medications. For GI contrast studies, this field would contain the pretest diet, e.g., low residue for two days, NPO before study, and the preferred purgatives. Each separate med, diet, or preparation should be delimited

by a repeat delimiter. Separate each requirement by a repeat delimiter. Example for a sigmoidectomy: clear liquid diet full day before procedure~take 8 oz mag citrate 6pm day before procedure~take 2 ducat tabs (5m) at 4pm day before procedure~NPO past midnight.

8.7.3.38 Procedure medication (CE) 00623

```
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 treatments that may be needed as part of the procedure. Examples are radioactive iodine for a thyroid screen, and methacholine for a methacholine spirometry challenge. This field should be identified as a CE data type.

8.7.3.39 Factors that may effect the observation (TX) 00624

Definition: This field contains the text description of the foods, diagnoses, drugs, or other conditions that may influence the interpretation of the observation. Information about the direction of the effect, and any recommendation about altering the diet, conditions, or drug before initiating the test observation.

Most rules about factors that effect the test interpretation will be transmitted as free text. In such cases, the contents serves only as information for human reading. However, an alternative for machine readable rules also exists. The rule may be defined formally in the Arden Syntax (ASTM 1460-1992) which has syntax for defining algebraic and transcendental equations, as well as temporal and logical selection criteria based on patient information stored in the computer record. Rules about patient preparation are written in Arden Syntax and should begin and end with a double semi-colon (;;), the Arden slot delimiter.

8.7.3.40 Test/observation performance schedule (ST) 00625

Definition: This field contains the diagnostic studies/tests that are performed only at certain times during the course of a work day or work week. This field indicates the maximum interval between successive test performances (the test may actually be performed more frequently). The format given in Chapter 4, Section 4.4.2.1, “Repeat Pattern,” should be used. If necessary, multiple codes may be given, separated by repeat delimiters. The use of multiple codes indicates that the test is performed at multiple concurrent intervals. For example, Q6H indicates that the test is performed at least once every 6 hours around the clock. QJ1 indicates that the test is performed at least every week on Mondays. QAM~QPM indicates that the test is performed at least once every morning and every evening. QJ1~QJ3~QJ5 indicates that the test is performed at least every week on Mondays, Wednesdays, and Fridays. C indicates that the test is performed continuously, 7 days per week.

8.7.3.41 Description of test methods (may include bibliographic citations) (TX) 00626

Definition: This field contains the text description of the methods used to perform the text and generate the observations. Bibliographic citations may be included.

8.7.3.42 Kind of quantity observed (CE) 00937

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

Definitions: This optional attribute describes the underlying kind of property represented by this observation. This attribute distinguishes concentrations from total amounts, molar concentrations from mass concentrations, partial pressures from colors, and so forth. These are discussed more fully in the LOINC Users’ Manual.[1] They are derived from the approach described in 1995 edition of the IUPAC Silver

Book.[1] These distinctions are used in IUPAC and LOINC standard codes. Defined categories are listed in *HL7 table 0254 - Kind of quantity*.

The distinctions of true quantities in this table are based primarily on dimensional analyses. The table contains a number of "families," those related to simple counts (number, number concentration, etc.), to mass (mass, mass concentration, etc.), to enzyme activity (catalytic content, catalytic concentration, etc.), and molar or equivalents (substance content, substance concentration).

By this classification, a glucose (in the US) would be classed as a mass concentration. A sodium would be classed as a substance concentration. Within the family, a total amount should be described as the unadorned variant; e.g., the property of measure for a patient's weight would be mass, not mass content. Most chemical measures produce concentrations, as exemplified by sodium and glucose. However, a 24-hour urine protein is not a mass concentration, but a mass rate (mass per unit time). The content variants (e.g., mass content, substance content) are used to reflect an amount per mass (usually) of tissue.

This attribute would be valued in a master file only if the service sending the master file classified observations by their principle of measurement.

[1] International Union of Pure and Applied Chemistry/International Federation of Clinical Chemistry. The Silver Book: Compendium of terminology and nomenclature of properties in clinical laboratory sciences. Oxford: Blackwell Scientific Publishers, 1995.

Table 0254 - Kind of quantity

Enzymatic Activity	
CACT	*Catalytic Activity
CNC	*Catalytic Concentration
CCRTO	Catalytic Concentration Ratio
CCNT	*Catalytic Content
CFR	*Catalytic Fraction
CRAT	*Catalytic Rate
CRTO	Catalytic Ratio
Entitic	
ENT	*Entitic
ENTSUB	*Entitic Substance of Amount
ENTCAT	*Entitic Catalytic Activity
ENTNUM	*Entitic Number
ENTVOL	*Entitic Volume
Mass	
MASS	*Mass
MCNC	*Mass Concentration
MCRTO	*Mass Concentration Ratio
MCNT	Mass Content
MFR	*Mass Fraction
MINC	*Mass Increment
MRAT	*Mass Rate
MRTO	*Mass Ratio
Counts	
NUM	*Number
NCNC	*Number Concentration
NCNT	*Number Content
NFR	*Number Fraction
NRTO	*Number Ratio
Substance Amount (Moles/Millequivalents)	
SUB	*Substance Amount
SCNC	*Substance Concentration
SCRTO	*Substance Concentration Ratio
SCNT	*Substance Content
SCNTR	*Substance Content Rate
SFR	*Substance Fraction
SCNCIN	*Substance Concentration Increment
SRAT	*Substance Rate
SRTO	*Substance Ratio
Volumes	
VOL	*Volume
VCNT	*Volume Content
VFR	*Volume Fraction
VRAT	*Volume Rate
VRTO	*Volume Ratio
Miscellaneous Unit Measures	
ACNC	Concentration, Arbitrary Substance
RLMCNC	*Relative Mass Concentration
RLSCNC	*Relative Substance Concentration
THRMCNC	*Threshold Mass Concentration

Other Properties	
ABS	Absorbance
ACT	*Activity
APER	Appearance
ARB	*Arbitrary
AREA	Area
ASPECT	Aspect
CLAS	Class
CNST	*Constant
COEF	*Coefficient
COLOR	Color
CONS	Consistency
DEN	Density
DEV	Device
DIFF	*Difference
ELAS	Elasticity
ELPOT	Electrical Potential (Voltage)
ELRAT	Electrical current (amperage)
ELRES	Electrical Resistance
ENGR	Energy
EQL	Equilibrium
FORCE	Mechanical force
FREQ	Frequency
IMP	Impression/ interpretation of study
KINV	*Kinematic Viscosity
LEN	Length
LINC	*Length Increment
LIQ	*Liquifaction
MGFLUX	Magnetic flux
MORPH	Morphology
MOTIL	Motility
OD	Optical density
OSMOL	*Osmolality
PRID	Presence/Identity/Existence
PRES	*Pressure (Partial)
PWR	Power (wattage)
RANGE	*Ranges
RATIO	*Ratios
RDEN	*Relative Density
REL	*Relative
SATFR	*Saturation Fraction
SHAPE	Shape
SMELL	Smell
SUSC	*Susceptibility
TASTE	Taste
TEMP	*Temperature
TEMPDF	*Temperature Difference
TEMPIN	*Temperature Increment
TITR	*Dilution Factor (Titer)
TYPE	*Type

THRSCNC	*Threshold Substance Concentration	VEL	*Velocity
	Time	VELRT	*Velocity Ratio
TIME	*Time (e.g. seconds)	VISC	*Viscosity
TMDF	*Time Difference		
TMSTP	*Time Stamp -- Date and Time		
TRTO	*Time Ratio		
RCRLTM	*Reciprocal Relative Time		
RLTM	*Relative Time		

*Starred items are adopted from the IUPAC Silver Book,[2] non-starred items are extensions.

8.7.3.43 Point versus interval (CE) 00938

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

Definition: This optional attribute allows master files to classify observations as measuring the patient's state at a point in time (e.g., spot urines, random urines, serum potassium), or averaged over a interval of time (e.g., concentration, total amount, or clearance over a 24-hour collection). Interval measures most often apply to urine and stool specimens (e.g., 24-hour urines, 3-day stool fats). They also apply to clinical measurements such as urine outputs, which are reported as shift totals and 24-hour totals, and event counts on physiologic monitors such as the number of PVCs on a 24-hour Holter monitor.

This field would only be valued in a transaction if the service sending this master file message classified its observation by point versus time interval. This field is **not** used to record the time collection interval for a particular sample. It is used to specify a characteristic of an observation which has a defined normal range and to distinguish observations of the same kind but observed over varying periods of time. A spot urine sodium would have PT stored in this field. A 24-hour urine sodium and a 24-hour Holter monitor would have 24H stored here. This attribute would only be valued if the filling service classified its observations by timing. Refer to *user-defined table 0255 - Duration categories* for suggested values.

User-defined Table 0255 - Duration categories

PT	To identify measures at a point in time. This is a synonym for "spot" or "random" as applied to urine measurements.				
* (star)	Life of the "unit." Used for blood products.				
30M	30 minutes	7H	7 hours	6D	6 days
1H	1 hour	8H	8 hours	1W	1 week
2H	2 hours	12H	12 hours	2W	2 weeks
2.5H	2½ hours	24H	24 hours	3W	3 weeks
3H	3 hours	2D	2 days	4W	4 weeks
4H	4 hours	3D	3 days	1L	1 months (30 days)
5H	5 hours	4D	4 days	2L	2 months
6H	6 hours	5D	5 days	3L	3 months

8.7.3.44 Challenge information (TX) 00939

Definition: This optional attribute provides information for classifying observations by the challenge component of the test, if a challenge does speciate the observation. For example, distinguishing tests that

have a challenge component in database. There co-ascribes the physiologic or drug challenge that is intrinsic to the measurement. To identify, for example, tests that include a glucose challenge.

To construct this text string, use the following template. (Note: This field is not constructed of formally defined components; it is a free text field. Component delimiters are not used and it is not necessary to supply placeholders if some "components" are not used.)

The time delay follows the syntax: n<S|M|H|D|W> where n is a number (possibly a decimal); S denotes seconds; M denotes minutes; H denotes hours; D denotes days; and W denotes weeks. The time delay can be preceded by a 'greater than' (>) sign, e.g. >4H.

HL7 table 0256 - Time delay post challenge lists possible values for time delay.

Examples

```
PRE 100 GM GLUCOSE PO
PRE 100 GM GLUCOSE PO
30M POST 100 GM GLUCOSE PO
2H POST 100 GM GLUCOSE PO
TROUGH
```

For drug peak and trough measures the nature of the substance challenged is the same as the analyte name, and need not be included.

We denote the route of the challenge via abbreviations for medication routes (see Chapter 4, Section 4.8.3.1, "Route," *HL7 table 0162 - Route of administration*). An oral route of administration would be denoted by "PO," an intravenous route by "IV."

Details of the drug dose, time the dose was given, route of administration, etc., would be noted in separate OBX, and would have corresponding master observation definitions stored in the observation master file map to different records stored in the master file segments contained in the drug level message.

Table 0256 - Time delay post challenge

BS	Baseline (time just before the challenge)		
PEAK	The time post drug dose at which the highest drug level is reached (differs by drug)		
TROUGH	The time post drug dose at which the lowest drug level is reached (varies with drug)		
RANDOM	Time from the challenge, or dose not specified. (random)		
n minutes/hours/days/weeks/months/etc. after challenge begun:			
1M	1 minute post challenge	6H	6 hours post challenge
2M	2 minutes post challenge	7H	7 hours post challenge
3M	3 minutes post challenge	8H	8 hours post challenge
4M	4 minutes post challenge	8H SHIFT	8 hours aligned on nursing shifts
5M	5 minutes post challenge	12H	12 hours post challenge
6M	6 minutes post challenge	24H	24 hours post challenge
7M	7 minutes post challenge	2D	2 days
8M	8 minutes post challenge	3D	3 days
9M	9 minutes post challenge	4D	4 days
10M	10 minutes post challenge	5D	5 days
15M	15 minutes post challenge	6D	6 days
20M	20 minutes post challenge	7D	7 days
25M	25 minutes post challenge	1W	1 week
20M	30 minutes post challenge	10D	10 days
1H	1 hour post challenge	2W	2 weeks
2H	2 hours post challenge	3W	3 weeks
2.5H	2 1/2 hours post challenge	4W	4 weeks
3H	3 hours post challenge	1L	1 month (30 days) post challenge
4H	4 hours post challenge	2L	2 months (60 days) post challenge
5H	5 hours post challenge	3L	3 months (90 days) post challenge

The nature of a physiologic (non-drug) challenge may also be specified, using the terms in *HL7 table 0257 - Nature of challenge.*

Table 0257 - Nature of challenge

Value	Description
CFST	Fasting (no calorie intake) for the period specified in the time component of the term, e.g., 1H POST CFST
EXCZ	Exercise undertaken as challenge (can be quantified)
FFST	No fluid intake for the period specified in the time component of the term

8.7.3.45 Relation modifier (CE) 00940

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

Definition: This optional attribute provides a mechanism for classifying observations according to the subject, in relation to the patient whose results might be stored with as “patient” data. It is standard practice, for example, to report values for controls, donors, and blood product units as well as the patient’s own values, and store them in the patient’s record. (This may not be the best way to model such information, but it is the way it is usually reported.) This should be valued when two values (e.g., one for patient and one for a blood product unit) could otherwise be confused.

The default value is “Patient,” and if not specified, this value is assumed. The persons sub-component can refer to *HL7 table 0258 - Relationship modifier* for valid values.

Table 0258 - Relationship modifier

Value	Description
CONTROL	Control
PATIENT	Patient
DONOR	Donor
BPU	Blood product unit

8.7.3.46 Target anatomic site of test (CE) 00941

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

Definition: This optional attribute formally indicates the site of the observation (to make it easy for a system to find all tests related to one anatomic site). It can be used to classify the observation by target site of the examination. For example, "heart" might be recorded as the target of the electrocardiogram, cardiac echo, and thallium exercise test. This attribute would be applicable to most imaging and electro-physiologic examinations. The SNOMED topology axis is an example of a coding system for anatomic sites. User-defined tables may also apply here.

8.7.3.47 Modality of imaging measurement (CE) 00942

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

Definition: This optional attribute describes the modality used to classify the observations, e.g., radiograph, ultrasound, CT scan, NMR, etc.. This attribute is especially important for imaging studies. Refer to *user-defined table 0259 - Modality* for suggested values; it is adopted from DICOM C.7.3.1.1.1 Modality. If these are used, the code source ID would be DCM.

User-defined Table 0259 - Modality

Value	Description	Value	Description
AS	Angioscopy	FS	Fundoscopy
BS	Biomagnetic Imaging	LP	Laparoscopy
CD	Color Flow Doppler	LS	Laser Surface Scan
CP	Colposcopy	MA	Magnetic Resonance Angiography
CR	Computed Radiography	MS	Magnetic Resonance Spectroscopy
CS	Cystoscopy	NM	Nuclear Medicine (radioisotope study)
CT	Computed Tomography	OT	Other
DD	Duplex Doppler	PT	Positron Emission Tomography (PET)
DG	Diapanography	RF	Radio Fluoroscopy
DM	Digital Microscopy	ST	Single Photon Emission Computed Tomography (SPECT)
EC	Echocardiography	TG	Thermography
ES	Endoscopy	US	Ultrasound
FA	Fluorescein Angiography	XA	X-ray Angiography

8.7.4 OM2 - numeric observation segment

This segment contains the attributes of observations with continuous values (including those with data types of numeric, date, or time stamp). It can be applied to observation batteries of type A and C (see *OM1-19-nature of test/observation*).

Figure 8-8. OM2 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	NM	O			00586	Sequence Number
2	60	CE	O			00627	Units of Measure
3	10	NM	O	Y		00628	Range of Decimal Precision
4	60	CE	O			00629	Corresponding SI Units of Measure
5	60	TX	O			00630	SI Conversion Factor
6	200	CM	O			00631	Reference (Normal) Range - Ordinal & Continuous Obs
7	200	CM	O			00632	Critical Range for Ordinal & Continuous Obs
8	200	CM	O			00633	Absolute Range for Ordinal & Continuous Obs
9	200	CM	O	Y		00634	Delta Check Criteria
10	20	NM	O			00635	Minimum Meaningful Increments

8.7.4.0 OM2 field definitions

8.7.4.1 Sequence number (NM) 00586

Definition: This field contains the same value as the sequence number of the associated OM1 segment.

8.7.4.2 Units of measure (CE) 00627

```
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 single tests/observations (those with a nature code of A or C, as described in *OM1-18-nature of test/observation*) that have numeric values. This field contains their customary units of measure.

8.7.4.3 Range and decimal precision (NM) 00628

Definition: This field contains the numerically valued single observations (code A or C as described in *OM1-18-nature of test/observation*), specifies the total length in characters of the field needed to display the observation, and the number of digits displayed to the right of the decimal point. This is coded as a single number in the format <length>.<decimal-digits>. For example, a value of 6.2 implies 6 characters total (including the sign and decimal point) with 2 digits after the decimal point. For integer values, the period and <decimal-digits> portion may be omitted (that is, 5.0 and 5 are equivalent). More than one such mask may be transmitted (separated by repeat delimiters) when it is necessary to define multiple display formats that are possible.

8.7.4.4 Corresponding SI units of measure (CE) 00629

```
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 single tests/observations - the corresponding SI units of measure in the format, when these differ from the customary units of measure given in the previous field.

8.7.4.5 SI conversion factor (TX) 00630

Definition: This field contains the continuous, numerically valued tests/observations, with a nature code of A or C (see *OM1-18-nature of test/observation*). This is a factor for converting the customary units to SI units.

In the case that the observation units are not SI units, this field provides the formula needed to convert from the reported units to SI units, this shall include the equation needed to convert from the reporting to the SI units.

In the case that the relation is simply multiplicative, this field shall include only the conversion factor. For example., if (results SI units) = c * (results reporting units),then only c would be stored in this field. In the case of any other functional relationship, the entire equation would be stored as a test.

8.7.4.6 Reference (normal) range for ordinal and continuous observations (CM) 00631

Definition: This field contains the reference (normal) ranges for "numeric" observations/tests with a nature code of A or C (see *OM1-18-nature of test/observation*). It can identify different reference (normal) ranges for different categories of patients according to age, sex, race, and other conditions.

The general format is

<ref. (normal) range$_1$>^<sex $_1$>^<age range$_1$>^<age gestation$_1$>^<species $_1$>^<race/subspecies $_1$>^<text condition$_1$>~

<ref. (normal) range$_2$>^<sex $_2$>^<age range$_2$>^<age gestation$_2$>^<species $_2$>^<race/subspecies $_2$>^<text condition$_2$>~

.

.

.

<ref. (normal) range$_n$>^<sex $_n$>^<age range$_n$>^<age gestation$_n$>^<species $_n$>^<race/subspecies $_n$>^<text condition$_n$>

The components are defined in the following sections.

8.7.4.6.1 The reference (normal) range (CM)

Components: <low value & high value>

Definition: This subcomponent contains the reference (:normal) range. The format of this field is where the range is taken to be inclusive (i.e., the range includes the end points). In this specification, the units are assumed to be identical to the reporting units given in *OM2-3-units of measure*).

8.7.4.6.2 Sex (IS)

Definition: This subcomponent contains the sex of the patient. Refer to *user-defined table 0001 - Sex* for suggested values.

8.7.4.6.3 Age range (CM)

Subcomponents: <low value & high value>

Definition: This component contains the age range (in years or fractions thereof) specified as two values separated by a subcomponent delimiter (in order to allow a simple and consistent machine interpretation of this component). Ages of less than one year should be specified as a fraction (e.g., 1 month = 0.0830, 1 week = 0.01920, 1 day = 0.0027300). However, for most purposes involving infants, the gestational age (measured in weeks) is preferred. The lower end of the range is not indicated; the upper end is, assuring that series of ranges do not overlap.

8.7.4.6.4 Gestational age range (CM)

```
Subcomponents:  <low value & high value>
```

Definition: This component contains the gestational age and is relevant only when the reference range is influenced by the stage of pregnancy. A range of values is required. The gestational age is measured in weeks from conception. For example, <1&10> implies that the normals apply to gestational ages from 1 week to 4 weeks inclusive (1&4). The lower end of the range is not included; the upper end is, assuring that series of age ranges do not overlap.

8.7.4.6.5 Species (TX)

Definition: This component is assumed to be human unless otherwise stated. The species should be represented as text (e.g., rabbit, mouse, rat).

8.7.4.6.6 Race/subspecies (ST)

Definition: In the case of humans (the default), the race is specified when race influences the reference range. When normal ranges for animals are being described, this component can be used to describe subspecies or special breeds of animals.

8.7.4.6.7 Conditions (TX)

Definition: This component contains the condition as simply free text. This component allows for definition of normal ranges based on any arbitrary condition, e.g., phase of menstrual cycle or dose of a particular drug. It is provided as a way to communicate the normal ranges for special conditions. It does not allow automatic checking of these text conditions.

8.7.4.6.8 Examples

A range that applies unconditionally, such as albumin, is transmitted as:

```
3.0 & 5.5
```

A normal range that depends on sex, such as Hgb, is transmitted as:

```
13.5 & 18^M~
12.0 & 16^F
```

A normal range that depends on age, sex, and race (a concocted example) is:

```
10 & 13   ^M^0  &  2 ^^^B
11 & 13.5 ^M^2  & 20 ^^^B~
12 & 14.5 ^M^20 & 70 ^^^B~
13 & 16.0 ^M^70 &    ^^^B
```

When no value is specified for a particular component, the range given applies to all categories of that component. For example, when nothing is specified for race/species, the range should be taken as the human range without regard to race. If no age range is specified, the normal range given is assumed to apply to all ages. If the upper or lower end of a range is left out, it is assumed to be +infinity or -infinity, respectively.

When two different methods result in two different reference ranges, two different observations and corresponding OMx segments should be defined.

8.7.4.7 Critical range for ordinal and continuous observations (CM) 00632

Components: <low value ^ high value>

Definition: This field applies only to single tests/observations (i.e., a nature code of A or C, as described in *OM1-19-nature of test/observations*) with numeric results. When a critical range is defined for such observations, it should be recorded here in the same format as the normal range (see *OM2-7-reference (normal) range-ordinal and continuous obs*).

8.7.4.8 Absolute range for ordinal and continuous observations (CM) 00633

Components: <range> ^ <numeric change> ^ <%/a change> ^ <days>

Definition: This field applies only to single tests/observations with a nature code of A or C (see *OM1-19-nature of test/observation*). It defines the range of possible results. Results outside this range are not possible. The field should be recorded in the same format as the normal and critical ranges.

8.7.4.9 Delta check criteria (CM) 00634

Components: <low & high (CM)> ^ <numeric threshold (NM)> ^ <change (ST)> ^ <length of time-days (NM)>

Definition: This field applies to numeric tests/observations with a nature code of A or C (see *OM1-18-nature of test/observation*). The field describes the information that controls delta check warnings and includes four components.

1) The range to which the following applies: <low & high>.

   All the ranges are defined in terms of the customary reporting units given in *OM2-3-units of measure*. If no value range is given, the check applies to all values.

2) The numeric threshold of the change that is detected, e.g., 10.

3) Whether the change is computed as a percent change or an absolute change. This component can have two possible values:

   % Indicates a percent change

   a Absolute change

4) The length of time that the service retains a value for computing delta checks. This is recorded in number of days.

More than one delta check rule can apply. 13&16^10^%^100~16.1&20^2^a^100 implies that the delta check will trigger on a 10% change when the value of the observation is between 13 and 16. The check will trigger on an absolute change of 2 when the value is between 16.1 and 20. In both cases, the system will keep the last result for 100 days. In this example, beyond 100 days, the computer will not compute a delta check because it will not have a comparison value.

8.7.4.10 Minimum meaningful increments (NM) 00635

Definition: This field contains the numerically valued single observations (a nature code of A or C, as described in *OM1-19-nature of test/observation*) and specifies the smallest meaningful difference between reported values (the effective resolution of the measuring instrument or technique for continuous data, or the smallest discrete interval that can occur for discrete data).

8.7.5 OM3 - categorical test/observation segment

This segment applies to free text and other non-numeric data types.

Figure 8-9. OM3 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	NM	O			00586	Sequence Number
2	60	CE	O			00636	Preferred Coding System
3	60	CE	O			00637	Valid Coded “Answers”
4	200	CE	O	Y		00638	Normal Text/Codes for Categorical Observations
5	200	CE	O			00639	Abnormal Text/Codes for Categorical Observations
6	200	CE	O			00640	Critical Text Codes for Categorical Observations
7	3	ID	O		0125	00570	Value Type

8.7.5.0 OM3 field definitions

8.7.5.1 Sequence number (NM) 00586

Definition: This field contains the same value as the sequence number of the associated OM1 segment.

8.7.5.2 Preferred coding system (CE) 00636

```
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 observations whose categorical responses are taken from a specified table of codes (e.g., CE data types). Record the preferred coding system for this observation (e.g., ICD9, SNOMED III). Take the codes from ASTM Table 3 or 5, or specify a local code.

8.7.5.3 Valid coded “answers” (CE) 00637

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

Definition: This field contains a list of valid coded answers. In the case that the list of coded answers is easily enumerated, list the valid coded answers for this observation here using the preferred coding system given in *OM3-2-preferred coding system.* If, for example, the given observation was VDRL, the valid answers might be non-reactive, 86^ intermediate, and 87^ reactive.

8.7.5.4 Normal text/codes for categorical observations (CE) 00638

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

Definition: Certain observations/tests with a nature code of A or C (see *OM1-18-nature of test/observation*) have text (alpha) results (e.g., reactive, nonreactive). Alpha normals for those tests should be entered in this field (e.g., "nonreactive").

The format of this field is:

The first component is a code taken from a standard code source list. The second component is the text associated with the code. The third component is the identification of the code table source. When only a text description of a possible answer is available, it is recorded as ^<text>.

Care should be taken to transmit only those results that are considered normal for that test. A drug screen may have possible results of "negative" and "positive." However, only a result of "negative" is considered to be normal. When an observation has more than one "normal" result, multiple values in this field should be separated with a repeat delimiter.

8.7.5.5 Abnormal text/codes for categorical observations (CE) 00639

```
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 list of the text answers that are abnormal for the test.

8.7.5.6 Critical abnormal text/codes for categorical observations (CE) 00640

```
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 list of coded results that are critically abnormal for this observation.

8.7.5.7 Value type (ID) 00570

Definition: This field contains the allowed data type for a single categorical observation (code A or C in *OM1-18-nature of observation*). Refer to *HL7 table - 0125 - Value type* for valid values.

8.7.6 OM4 - observations that require specimens segment

This segment applies to observations/batteries that require a specimen for their performance. When an observation or battery requires multiple specimens for their performance (e.g., creatinine clearance requires a 24-hour urine specimen and a serum specimen), multiple segments may be included, one for each specimen type.

Figure 8-10. OM4 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	NM	O			00586	Sequence Number
2	1	ID	O		0170	00642	Derived Specimen
3	60	TX	O			00643	Container Description
4	20	NM	O			00644	Container Volume
5	60	CE	O			00645	Container Units
6	60	CE	O			00646	Specimen
7	60	CE	O			00647	Additive
8	10K	TX	O			00648	Preparation
9	10K	TX	O			00649	Special Handling Requirements
10	20	CQ	O			00650	Normal Collection Volume
11	20	CQ	O			00651	Minimum Collection Volume
12	10K	TX	O			00652	Specimen Requirements
13	1	ID	O	Y	0027	00653	Specimen Priorities
14	20	CQ	O			00654	Specimen Retention Time

8.7.6.0 OM4 field definitions

8.7.6.1 Sequence number (NM) 00586

Definition: This field contains the same value as the sequence number of the associated OM1 segment.

8.7.6.2 Derived specimen (ID) 00642

Definition: This field contains the codes that identify the parents and children for diagnostic studies -- especially in microbiology -- where the initial specimen (e.g., blood) is processed to produce results (e.g., the identity of the bacteria grown out of the culture). The process also produces new “specimens” (e.g., pure culture of staphylococcus, and E. Coli), and these are studied by a second order process (bacterial sensitivities). The parents (e.g., blood culture) and children (e.g., penicillin MIC) are identified in such cases. The codes are the following:

Table 0170 - Derived specimen

Value	Description
P	Parent Observation
C	Child Observation
N	Not Applicable

8.7.6.3 Container description (TX) 00643

Definition: This field contains the physical appearance, including color of tube tops, shape, and material composition (e.g., red-top glass tube). Note that the color is not necessarily a unique identifier of the additive and/or use of the tube. This is especially true for black and some blue tube tops, as can be seen above. Color is included here for user convenience.

8.7.6.4 Container volume (NM) 00644

Definition: This field indicates the capacity of the container.

8.7.6.5 Container units (CE) 00645

```
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 of measure of the container volume. If the units are ISO+ units, they should be recorded as single case abbreviations. If the units are ANS+ or L (local), the units and the source code table must be recorded, except that in this case, component delimiters should be replaced by subcomponent delimiters. For example, 1 indicates liters, whereas pt&&ANS+ indicates pints (ANSI units). The default unit is milliliters (ml), which should be assumed if no units are reported.

8.7.6.6 Specimen (CE) 00646

```
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 reports the specimen as one of the specimen codes described in ASTM Table 14 of 1238-91. If multiple kinds of specimen are associated with this observation (as in the case for a creatinine clearance), separate them with repeat delimiters.

8.7.6.7 Additive (CE) 00647

```
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 codes that should be those provided by NCCLS[2]. The following list is not exhaustive; it includes only examples.

NAME	NCCLS Code	NCCLS Color	DESCRIPTION
(1) Lithium Heparin -- anticoagulant	LIH	Green	Dry powder. 10 to 30 USP units per mL of blood
(2) Sodium Heparin -- anticoagulant	NAH	Green	Dried solution. 10 to 30 U.S.P. units per mL of blood
(3) Ethylenediaminetetraacetic acid; dipotassium salt [EDTA(K_2)]	K2E	Lavender	Dry powder. 1.5 to 2.2 mg per mL of blood
(4) Ethylenediaminetetraacetic acid; tripotassium salt [EDTA (K_3)]	K3E	Lavender	Clear solution. 1.5 to 2.2 mg per mL of blood
(5) Ethylenediaminetetraacetic acid; disodium salt [EDTA (Na_2)]	N2E	Lavender	

8.7.6.8 Preparation (TX) 00648

Definition: This field contains the special processing that should be applied to the container, e.g., add acidifying tablets before sending.

8.7.6.9 Special handling requirements (TX) 00649

Definition: This field contains the special handling requirements here (e.g., ice specimen, deliver within two hours of obtaining).

8.7.6.10 Normal collection volume (CQ) 00650

```
Components: <quantity> ^ <units>
```

Definition: This field contains the normal specimen volume required by the lab. This is the amount used by the normal methods and provides enough specimens to repeat the procedure at least once if needed. The default unit is milliliters (ml).

---

[2] NCCLS Document H1-A3: Evacuated tubes for blood specimen collection -- Third Edition, Volume 11, Number 9, Approved standard. July 1991.

8.7.6.11 Minimum collection volume (CQ) 00651

```
Components: <quantity> ^ <units>
```

Definition: This field contains the amount of specimen needed by the most specimen sparing method (e.g., using micro techniques). The minimum amount allows for only one determination. The default unit is milliliters (ml).

8.7.6.12 Specimen requirements (TX) 00652

Definition: This field contains the other requirements for specimen delivery and special handling (e.g., delivery within one hour, iced).

8.7.6.13 Specimen priorities (ID) 00653

Definition: This field contains the allowed priorities for obtaining the specimen. Note that they may be different from the processing priorities given in *OM1-25-processing priority*. When a test is requested, the specimen priority given in *OBR-27-quantity/timing* should be one of the priorities listed here. Multiple priorities are separated by repeat delimiters. Refer to *HL7 table 0027 - Priority* for valid values.

Table 0027 - Priority

Value	Description
S	Stat (do immediately)
A	As soon as possible (a priority lower than stat)
R	Routine
P	Preoperative (to be done prior to surgery)
T	Timing critical (do as near as possible to requested time)

8.7.6.14 Specimen retention time (CQ) 00654

```
Components: <quantity> ^ <units>
```

Definition: This field contains the usual time that a specimen for this observation is retained after the observation is completed, for the purpose of additional testing. The first component is the duration, and the second component is an ISO time unit.

8.7.7 OM5 - observation batteries (sets) segment

This segment contains the information about batteries and supersets (a nature code of F, P or S, as described in *OM1-18-nature of test/observation*).

Figure 8-11. OM5 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	NM	O			00586	Sequence Number
2	200	CE	O	Y		00655	Test/Observations Included w/an Ordered Test Battery
3	200	ST	O			00656	Observation ID Suffixes

8.7.7.0 OM5 field definitions

8.7.7.1 Sequence number (NM) 00586

Definition: This field contains the same value as the sequence number of the associated OM1 segment.

8.7.7.2 Tests/observations included within an ordered test battery (CE) 00655

```
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 codes and names of all tests/observations included within a single battery (nature code P, as described in *OM1-18-nature of test/observation*), a single functional procedure (nature code F), or a given superset (nature code S). When a segment includes a list of component elements, the sending system should be sure that the segments defining all of the components are sent before the segment that references them. An entry in this list can itself be a battery.

The individual test/observation IDs should be recorded as type CE, i.e., in the standard format for coded observation identifiers. Multiple observations should be separated by repeat delimiters.

If the definition segment defined serum electrolytes, this field might look like the following:

```
84132^potassium^AS4~
84295^sodium^AS4~
82435^chloride^AS4~
82374^HCO3^^AS4~
```

For S (superset) parameters, this field contains the batteries that are included within the "super" battery. For example, ROUTINES might be defined as:

```
402^Electrolytes~352^Urinalysis~432^CBC~520^SMA12
```

8.7.7.3 Observation ID suffixes (ST) 00656

Definition: This field contains the tests or procedures that produce a type which uses observation ID suffixes following the test/observation ID code. This field lists the possible options. The applicable three-character mnemonics given in ASTM Table 20 (or others appropriate to the application) are listed, separated by repeat delimiters. For example, a chest X-ray may use the suffixes IMP, REC, DEV, or others. Each of the expected suffixes should be listed here.

8.7.8 OM6 - Observations that are calculated from other observations segment

This segment contains the information about quantities that are derived from one or more other quantities or direct observations by mathematical or logical means.

Figure 8-12. OM6 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	NM	O			00586	Sequence Number
2	10K	TX	O			00657	Derivation Rule

8.7.8..0 OM6 field definitions

8.7.8.1 Sequence number (NM) 00586

Definition: This field contains the same value as the sequence number of the associated OM1 segment.

8.7.8.2 Derivation rule (TX) 00657

Definition: This field is used when there are patient variables that are derived from one or more other patient variables (e.g., creatinine clearance, ideal weight, maximum daily temperature, average glucose, framingham risk). This field contains the rules for deriving the value of this variable (i.e., nature code C, as given in *OM1-18-nature of test/observation*). These can be described in terms of humanly understandable formulas or descriptions.

When possible, however, they should be defined in terms of the Arden Syntax for specifying selection and transcendative functions and algebraic operations, ASTM E1460-92. Derivation rules that are represented in Arden Syntax should begin and end with an Arden slot delimiter (;;). Within this syntax, variables should be identified by *OM1-3-producer's test/observation ID*. We recommend the use of the Arden Syntax because it permits the unambiguous specification of most such derived values and is a published standard for medical logic modules.

8.8 LOCATION MASTER FILES

8.8.1 Patient location master file message (MFN/MFK)

This section is specifically concerned with describing a master file message that should be used to transmit information which identifies the inventory of healthcare patient locations, such as nursing units, rooms, beds, clinics, exam rooms, etc. In a network environment, this segment can be used to define patient locations to other applications. The segment also includes the readiness states and support locations for the patient locations.

The LOC, LCH, LRL, LDP, and LCC segments must be preceded by the MFI and MFE segments, as described in Sections 8.8.2, "LOC - location identification segment," through 8.8.68.3." In the following message, the *MFI-1-master file identifier* field should equal "LOC"

MFN	Master File Notification	Chapter
MSH	Message Header	2
MFI	Master File Identification	8
{MFE	Master File Entry	8
LOC	Patient Location Master	8
[{LCH}]	Location Characteristic	8
[{LRL}]	Location Relationship	8
{ LDP	Location Department	8
[{LCH}]	Location Characteristic	8
[{LCC}]	Location Charge Code	8
}		
}		

When the LCH segment appears immediately following the LOC segment, it communicates characteristics which are the same across multiple departments that may use the same room. When the LCH segment appears immediately following the LDP segment, it communicates characteristics which differ for different departments that may use the same room.

MFK	Master File Acknowledgment	Chapter
MSH	Message Header	2
MSA	Acknowledgment	2
MFI	Master File Identification	8
[{MFA}]	Master File ACK	8

Master Files Query Response: When the LOC segment is used in the MFR message, the part of the message represented by:

```
{MFE
    [Z..]}
```

is replaced by:

```
{MFE              Master File Entry
   LOC            Patient Location Master
   [{LCH}]        Location Characteristic
   [{LRL}]        Location Relationship
   {LDP           Location Department
   [{LCH}]        Location Characteristic
   [{LCC}]     }}Location Charge Code
```

8.8.2 LOC - location identification segment

The LOC segment can identify any patient location referenced by information systems. This segment gives physical set up information about the location. This is not intended to include any current occupant or

current use information. There should be one LOC segment for each patient location. If desired, there can also be one LOC segment for each nursing unit and room.

Figure 8-13. LOC attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	PL	R			01307	Primary Key Value - LOC
2	48	ST	O			00944	Location Description
3	2	IS	R	Y	0260	00945	Location Type
4	90	XON	O			00947	Organization Name
5	106	XAD	O			00948	Location Address
6	40	XTN	O	Y		00949	Location Phone
7	60	CE	O	Y		00951	License Number
8	3	IS	O	Y	0261	00953	Location Equipment

8.8.2.0 LOC field definitions

8.8.2.1 Primary key value - LOC (PL) 01307

```
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 contains the institution's identification code for the location. The identifying key value. Must match *MFE-4-primary key value*. This field has the same components as the patient location fields in the PV1 segment (except that bed status is not included here).

At least the first component of this field is required. The first component can be an identifying code for the nursing station for inpatient locations, or clinic, department or home for patient locations other than inpatient ones.

8.8.2.2 Location description (ST) 00944

Definition: This field contains the optional free text description of the location, to elaborate upon LOC primary key value.

8.8.2.3 Location type (IS) 00945

Definition: This field contains the code identifying what type of location this is. Refer to *user-defined table 0260 - Patient location type* for suggested values.

User-defined Table 0260 - Patient location type

Value	Description
N	Nursing Unit
R	Room
B	Bed
E	Exam Room
O	Operating Room
C	Clinic

D	Department
L	Other Location

8.8.2.4 Organization name (XON) 00947

```
Components:  <organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit
             (NM)> ^ < check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^
             <assigning facility ID (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 organization of which this location is a part. For inpatient locations, this can be the hospital or institution name. For outpatient locations, this can be the clinic or office name.

8.8.2.5 Location address (XAD) 00948

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

Definition: This field contains the address of the patient location, especially for use for outpatient clinic or office locations.

8.8.2.6 Location phone (XTN) 00949

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

Definition: This field contains the phone number within the patient location, if any. For example, the room or bed phone for use by the patient.

8.8.2.7 License number (CE) 00951

```
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 multiple license numbers for the facility.

8.8.2.8 Location equipment (IS) 00953

Definition: This repeating field indicates what types of equipment are built in. Applies only to room or bed locations. If *LOC-3-location type* indicates that this is a room, this will be the equipment in the room which can be used by more than one bed. If *LOC-3-location type* indicates this is a bed, this will be the bedside devices available to this bed. Refer to *user-defined table 0261 - Location equipment* for suggested values.

User-defined Table 0261 - Location equipment

Value	Description
OXY	Oxygen
SUC	Suction
VIT	Vital signs monitor
INF	Infusion pump

IVP	IV pump
EEG	Electro-Encephalogram
EKG	Electro-Cardiogram
VEN	Ventilator

8.8.3 LCH - location characteristic segment

The LCH segment is used to identify location characteristics which determine which patients will be assigned to the room or bed. It contains the location characteristics of the room or bed identified in the preceding LOC segment. There should be one LCH segment for each attribute.

When the LCH segment appears immediately following the LOC segment, it communicates characteristics which are the same across multiple departments that may use the same room. When the LCH segment appears immediately following the LDP segment, it communicates characteristics which differ for different departments that may use the same room. For example, the following characteristics are more likely to vary by which department is using the room: teaching, gender, staffed, set up, overflow, whereas the other characteristics are likely to remain the same.

Figure 8-14. LCH attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	PL	R			01305	Primary Key Value - LCH
2	1	ID	O		0206	00763	Segment Action Code
3	80	EI	O			00764	Segment Unique Key
4	80	CE	R		0324	01295	Location Characteristic ID
5	80	CE	R			01237	Location Characteristic Value

8.8.3.0 LCH field definitions

8.8.3.1 Primary key value - LCH (PL) 01305

```
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 contains the institution's identification code for the location. The identifying key value. This field has the same components as the patient location fields in the PV1 segment (except that bed status is not included here). At least the first component of this field is required. The contents of this field must exactly match the content of its preceding MFE (*MFE-4-primary key value*), its preceding LOC (*LOC-1-LOC primary key value*), and its preceding LDP (*LDP-1-LDP primary key value*).

8.8.3.2 Segment action code (ID) 00763

Definition: This field indicates whether this repetition of the segment is being added, changed or deleted. This repetition of the repeating segment must be identified using *FT1-25-segment unique key*. The action code adds a validation check to indicate, from the point of view of the sending system, whether this repetition of a segment is being added, changed or deleted. This and the following field are used to implement the "unique key" mode of updating repeating segments. (See Chapter 2, Section 2.23.4.2, "Action

code/unique identifier mode update definition.".) Refer to *HL7 table 0206 - Segment action code* for valid values.

8.8.3.3 Segment unique key (EI) 00764

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

Definition: This field contains a unique identifier for one of the multiple repetitions of this segment, to be used in conjunction with the preceding field. Each of the repetitions of the segment will be uniquely identified by this unique key field for the purposes of updates.

8.8.3.4 Location characteristic ID (CE) 01295

```
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 an identifier code to show WHICH characteristic is being communicated with this segment. Refer to *user-defined table 0324 - Location characteristic ID* for suggested values.

User-defined Table 0324 - Location characteristic ID

Value	Description
SMK	Smoking
LIC	Licensed
IMP	Implant: can be used for radiation implant patients
SHA	Shadow: a temporary holding location that does not physically exist
INF	Infectious Disease: this location can be used for isolation
PRL	Privacy Level: indicating the level of private versus non-private room
LCR	Level of Care
OVR	Overflow
STF	Bed is Staffed
SET	Bed is Set Up
GEN	Gender of Patient(s)
TEA	Teaching Location

8.8.3.5 Location characteristic value (CE) 01237

```
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 value of the above field's characteristic. The expected coded values for this field will depend upon the previous field. For example, if the previous field is SMK, IMP, INF, the values would be "Y" or "N".

When *LCH-4-location characteristic ID* contains "SHA"- Shadow, refer to *HL7 table 0136 - Yes/no indicator* for valid values for *LRL-5-location relationship value* .

Y not a real bed, but a temporary holding location that does not physically exist in the census

N this is a real bed

When *LCH-4-location characteristic ID* contains "PRL" - Privacy level (CE) , then *LRL-5-location relationship value* indicates how the room is set up and intended to be used, disregarding different uses under special circumstances. Refer to *user-defined table 0262 - Privacy level* for suggested values.

User-defined Table 0262 - Privacy level

Value	Description
F	Isolation
P	Private Room
J	Private Room - Medically Justified
Q	Private Room - Due To Overflow
S	Semi-Private Room
W	Ward

When *LCH-4-location characteristic ID* contains "LCR" - Level of care, then *LRL-5-location relationship value* contains the code which indicates what severity of the patient's medical condition which this location is designed to handle. This indicates how the room is set up and intended to be used, disregarding different uses under special circumstances. Refer to *user-defined table 0263 - Level of care.*

User-defined Table 0263 - Level of care

Value	Description
A	Ambulatory
E	Emergency
F	Isolation
N	Intensive Care
C	Critical Care
R	Routine
S	Surgery

When *LCH-4-location characteristic ID* contains "IFD" - Infectious disease, refer to *HL7 table 0136 - Yes/no indicator* for valid values for *LRL-5-location relationship value.*

Y patients with infectious diseases can be admitted to this location, that is, this location can be used for isolation

N this location cannot be used for isolation

When *LCH-4-location characteristic ID* contains "SMO" - Smoking, refer to *HL7 table 0136 - Yes/no indicator* for valid values for *LRL-5-location relationship value.*

Y this is a smoking location

N this is a non-smoking location

When *LCH-4-location characteristic* ID contains "IMP"- Implant, refer to *HL7 table 0136 - Yes/no indicator* for valid values for *LRL-5-location relationship value*.

Y this location can be used by radiation implant patients

N this location can not be used by radiation implant patients

When *LCH-4-Location Characteristic ID* contains "LIC"- Licensed, refer to *HL7 table 0136 - Yes/no indicator* for valid values for *LRL-5-Location relationship value*.

Y this location is licensed

N this location is not licensed

8.8.4 LRL - location relationship segment

The LRL segment is used identify one location's relationship to another location, the nearest lab, pharmacy, etc.

Figure 8-15. LRL attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	PL	R			00943	Primary Key Value - LRL
2	3	ID	O		0206	00763	Segment Action Code
3	80	EI	O			00764	Segment Unique Key
4	80	CE	R		0325	01230	Location Relationship ID
5	80	XON	C			01301	Organizational Location Relationship Value
6	80	PL	C			01292	Patient Location Relationship Value

8.8.4.0 LRL field definitions

8.8.4.1 Primary key value - LRL (PL) 00943

```
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 contains the institution's identification code for the location. The identifying key value. This field has the same components as the patient location fields in the PV1 segment (except that bed status is not included here). At least the first component of this field is required. The contents of this field must exactly match the content of its preceding MFE (*MFE-4-primary key value*), its preceding LOC (*LOC-1-LOC primary key value*), and its preceding LDP (*LDP-1-LDP primary key value*).

8.8.4.2 Segment action code (ID) 00763

Definition: This field indicates whether this repetition of the segment is being added, changed or deleted. This repetition of the repeating segment must be identified using *FT1-25-segment unique key*. The action code adds a validation check to indicate, from the point of view of the sending system, whether this repetition of a segment is being added, changed or deleted. This and the following field are used to implement the "unique key" mode of updating repeating segments. (See Chapter 2, Section 2.23.4.2, "Action code/unique identifier mode update definition.") Refer to *HL7 table 0206 - Segment action code* for valid values.

8.8.4.3 Segment unique key (EI) 00764

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

Definition: This field contains a unique identifier for one of the multiple repetitions of this segment, to be used in conjunction with the preceding field. Each of the repetitions of the segment will be uniquely identified by this unique key field for the purposes of updates.

8.8.4.4 Location relationship ID (CE) 01230

```
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 an identifier code to show WHICH relationship is being communicated with this segment. Refer to *user-defined table 0325 - Location relationship ID* for suggested values.

User-defined Table 0325 - Location relationship ID

Value	Description
RX	Nearest Pharmacy
RX2	Second Pharmacy
LAB	Nearest Lab
LB2	Second Lab
DTY	Nearest Dietary
ALI	Location Alias(es)
PAR	Parent Location

8.8.4.5 Organizational location relationship value (XON) 01301

```
Components:  <organization name (ST)> ^ <organization name type code (IS)> ^ <ID number (NM)> ^ <check digit
              (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^
              <identifier type code (IS)> ^ <assigning facility ID (HD)>

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 conditional on the value of *LRL-4-location relationship ID*. When *LRL-4-location relationship ID* contains "RX" - Nearest Pharmacy, "RX2" - Other Pharmacy, "LAB" - Nearest Lab, "LB2" - Other Lab, or "DTY" - Dietary, this field holds that organization's extended name i.e., the value of this field is conditional on the value of *LRL-4-location relation ID*. For example, for an inpatient location, this could be an in-house department ID code using only the third component of this data type. For an outpatient location, this could be the nearest external pharmacy.

8.8.4.6 Patient location relationship value (PL) 01292

```
Components:  <nursing unit or department or clinic (ID)> ^ <room (ST)> ^ <bed (ST)> ^ <facility (HD)> ^
              <status  (ID)> ^ <person location type (ID)> ^ <building (ID)> ^ <floor (ST)> ^ <location
              description (ST)>

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

Definition: This field is conditional on the value of *LRL-4-location relationship ID*. When *LRL-4-location relationship* ID contains "ALI" - Location aliases or "PAR" - Parent location this field holds the value of the associated patient location

When *LRL-4-location relationship ID* contains "PAR" - Parent, this field holds the value of the parent location to allow for nested entries. For example, a bed entry can point to its containing room or nurse unit. The value for the parent location should match the *LOC-1-IPL primary key value* of the parent entry. Not intended to be used for multiple designations of the same physical location, but for identifying the larger physical locations (supersets) which include this physical location as a subset. Aliases should be put in *LOC-20-location aliases*.

8.8.5 LDP - location department segment

The LDP segment identifies how a patient location room is being used by a certain department. Multiple departments can use the same patient location, so there can be multiple LDP segments following an LOC segment. There must be at least one LDP segment for each LOC segment. This is not intended to include any current occupant information.

Figure 8-16. LDP attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	PL	R			00963	Primary Key Value - LDP
2	10	IS	R		0264	00964	Location Department
3	3	IS	O	Y	0069	00965	Location Service
4	60	CE	O	Y	0265	00966	Specialty Type
5	1	IS	O	Y	0004	00967	Valid Patient Classes
6	1	ID	O		0183	00675	Active/Inactive Flag
7	26	TS	O			00969	Activation Date
8	26	TS	O			00970	Inactivation Date - LDP
9	80	ST	O			00971	Inactivated Reason
10	80	VH	O	Y	0267	00976	Visiting Hours
11	40	XTN	O			00978	Contact Phone

8.8.5.0 LDP field definitions

8.8.5.1 Primary key value - LDP (PL) 00963

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

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

Definition: This field contains the institution's identification code for the location. The identifying key value. This field has the same components as the patient location fields in the PV1 segment (except that bed status is not included here). At least the first component of this field is required. The contents of this field must exactly match the content of its preceding MFE (*MFE-4-primary key value)* and its preceding LOC (*LOC-1-LOC primary key value)*.

8.8.5.2 Location department (IS) 00964

Definition: This field contains the institution's department to which this location belongs, or its cost center. Refer to *user-defined table 0264 - Location department* for suggested values.

8.8.5.3 Location Service (IS) 00965

Definition: This field contains the hospital or ancillary service with which this location is associated. Depends on institution use. Repeats for rooms that can be used, for example, by different services on different days. These values should match the values used for *PV1-10-hospital service*, which is site defined. Refer to *user-defined table 0069 - Hospital service* for suggested values.

8.8.5.4 Specialty type (CE) 00966

```
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 specialty type (if any) of the department or clinic. This may also be considered a bed type. Specialty type is a physical accommodation type, whereas 'accommodation type' (*LOC-20-accommodation type*) is a financial accommodation type. Refer to *user-defined table 0265 - Specialty type* for suggested values. See also *LOC-33-privacy level* and *LOC-34-level of care*.

User-defined Table 0265 - Specialty type

Value	Description
AMB	Ambulatory
PSY	Psychiatric
PPS	Pediatric Psychiatric
REH	Rehabilitation
PRE	Pediatric Rehabilitation
ISO	Isolation
OBG	Obstetrics, Gynecology
PIN	Pediatric/Neonatal Intensive Care
INT	Intensive Care
SUR	Surgery
PSI	Psychiatric Intensive Care
EDI	Education
CAR	Coronary/Cardiac Care
NBI	Newborn, Nursery, Infants
CCR	Critical Care
PED	Pediatrics
EMR	Emergency
OBS	Observation
WIC	Walk-In Clinic
PHY	General/Family Practice
ALC	Allergy
FPC	Family Planning

CHI	Chiropractic
CAN	Cancer
NAT	Naturopathic
OTH	Other Specialty

8.8.5.5 Valid patient classes (IS) 00967

Definition: This field contains the patient types that are allowed to be assigned to this bed. For example, Inpatient, Outpatient, Series, Clinic, ER, Ambulatory, Observation, etc. These values should be the same set of values as those used for *PV1-2-patient class*. Refer to *user-defined table 0004 - Patient class* for suggested values.

8.8.5.6 Active/inactive flag (ID) 00675

Definition: This field indicates whether the entry for this location is currently an active, that is, valid, usable entry (disregarding whether it's waiting to be maintained by housekeeping). Refer to *HL7 table 0183 - Active/inactive* for valid values.

8.8.5.7 Activation date (TS) 00969

Definition: This field contains the date and time when the location became active or "in service" for a department (disregarding whether it is waiting to be maintained by housekeeping).

8.8.5.8 Inactivation date - LDP (TS) 00970

Definition: This field contains the date when the location became inactive or "out of service" for this department (disregarding whether it is waiting to be maintained by housekeeping).

8.8.5.9 Inactivated reason (ST) 00971

Definition: This field contains the reason the location was put out of service. It is used when *LDP-8-inactivation date-LDP* is sent.

8.8.5.10 Visiting hours (VH) 00976

```
Components:  <start day range (ID)> ^ <end day range (ID)> ^ <start hour range (TM)> ^ <end hour range (TM)>
```

Definition: This field contains the hours when this location is open for visiting. Refer to *HL7 table 0267 - Days of the week* for valid values for the first two components.

Table 0267 - Days of the Week

Value	Description
SAT	Saturday
SUN	Sunday
MON	Monday
TUE	Tuesday
WED	Wednesday
THU	Thursday
FRI	Friday

8.8.5.11 Contact phone (XTN) 00978

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

Definition: This field contains the phone number to use to contact facility personnel about the patient location, in case of inquiries about the location. This phone is not necessarily within the named patient location.

8.8.6 LCC - location charge code segment

The optional LCC segment identifies how a patient location room can be billed by a certain department. A department can use different charge codes for the same room or bed, so there can be multiple LCC segments following an LDP segment.

Figure 8-17. LCC attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	PL	R			00979	Primary Key Value - LCC
2	10	IS	R		0264	00964	Location Department
3	60	CE	O	Y		00980	Accommodation Type
4	60	CE	R	Y	0132	00981	Charge Code

8.8.6.0 LCC field definitions

8.8.6.1 Primary key value - LCC (PL) 00979

```
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 contains the institution's identification code for the location. The identifying key value. This field has the same components as the patient location fields in the PV1 segment (except that bed status is not included here). At least the first component of this field is required. The content of this field must exactly match the content of its preceding MFE (*MFE-4-primary key value*), its preceding LOC (*LOC-1-LOC primary key value*), and its preceding LDP (*LDP-1-LDP primary key value*).

8.8.6.2 Location department (IS) 00964

Definition: This field contains the institution's department to which this location belongs, or its cost center. It must match the value in its preceding LDP (*LDP-2-location department*). Refer to *user-defined table 0264 -Location department* for suggested values.

8.8.6.3 Accommodation type (CE) 00980

```
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 financial accommodation type of the bed or room which implies the rate to be used when occupied by a patient under specific medical conditions, which determines how it is billed. Not the same as specialty type. Used for general ledger categories. Specialty type is a physical accommodation type, whereas this field is a financial accommodation type. Repeating coded value. Site-defined codes.

8.8.6.4 Charge code (CE) 00981

```
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 repeating coded entry for codes identifying how the use of this location is to be charged. For cross-referencing beds master files with the charge master files, or for generating charges when a patient is assigned to a bed. These should be the same set of values used *in FT1-7-transaction code*. Values are site negotiated. Refer to *user-defined table 0132 - Transaction code* for suggested values.

8.8.7 Example: MFN location master file message

```
MSH|^~\&|HL7REG|UH|HL7LAB|CH|19910918060544||MFN^M05|MSGID002|P|2.2||AL
|NE<cr>
MFI|LOC|UPD|||AL<cr>
MFE|MAD|PMF98123789182|199110011230|3A^RM17^17-2^FAC1<cr>
LOC|3A^RM17^17-2^FAC1|BEST BED IN UNIT|B|UNIVERSITY HOSPITAL|54326 SAND
P0INT WAY^^SEATTLE^WA^98199|(206)689-1329|92837465998|OXY<cr>
LCH|3A^RM17^17-2^FAC1|||IMP|Y<cr>
LRL|3A^RM17^17-2^FAC1|||LAB|3WEST PATH LAB<cr>
LDP|3A^RM17^17-2^FAC1|PED|MED|PIN|I|A|19941004|||(206)689-1363<cr>
LCC|3A^RM17^17-2^FAC1|PED|PIC|R38746<cr>
```

8.9 CHARGE DESCRIPTION MASTER FILES

8.9.1 Charge description master file message (MFN/MFK)

The charge description (CDM) master file segment should be used in conjunction with the general master file segments in Section 8.4, "General Master File Segments." Interfacing systems often need not only to communicate data about a patient's detailed charges, but also to communicate the charge identification entries by which an application knows how to handle a particular charge code. The charge description master is a master file. The CDM segment below is a specially designed master file segment for interfacing charge description masters. In the following message, the MFI-master file identifier should equal "CDM." When the CDM segment is used in an MFN message, the abstract definition is as follows:

MFN	Master File Notification	Chapter
MSH	Message Header	2
MFI	Master File Identification	8
{MFE	Master File Entry	8
CDM	Charge Description Master	8
{ [PRC] }	Price Segment	8
}		

MFK	Master File Acknowledgment	Chapter
MSH	Message Header	2
MSA	Acknowledgment	2
MFI	Master File Identification	8
{ [MFA] }	Master File ACK segment	8

Master File Response Message: When the CDM segment is used in the MFR message, the part of the message represented by:

```
{MFE
[Z..] }
```

is replaced by:

```
{MFE
 CDM
 { [PRC] }
    }
```

8.9.2 CDM - charge description master segment

The CDM segment contains the fields for identifying anything which is charged to patient accounts, including procedures, services, supplies. It is intended to be used to maintain a list of valid chargeable utilization items. Its purpose is to keep billing codes synchronized between HIS, Patient Accounting, and other departmental systems. It is not intended to completely support materials management, inventory, or complex pricing structures for which additional complex fields would be required. Given an identifying charge code, the associated fields in the charge description master file will provide basic pricing and billing data. All the additional information necessary for patient accounting systems to do billing and claims is not intended to be included in this segment; those should be part of insurance or billing profile tables.

The CDM segment contains the fields which, for one chargeable item, remain the same across facilities, departments, and patient types. The following PRC segment contains the fields which, for the same chargeable item, vary depending upon facility or department or patient type.

Figure 8-18. CDM attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	CE	R		0132	01306	Primary Key Value - CDM
2	200	CE	O	Y		00983	Charge Code Alias
3	20	ST	R			00984	Charge Description Short
4	250	ST	O			00985	Charge Description Long
5	1	IS	O		0268	00986	Description Override Indicator
6	60	CE	O	Y		00987	Exploding Charges
7	200	CE	O	Y		00988	Procedure Code
8	1	ID	O		0183	00675	Active/Inactive Indicator
9	60	CE	O	Y		00990	Inventory Number
10	12	NM	O			00991	Resource Load
11	200	CK	O	Y		00992	Contract Number
12	200	XON	O			00993	Contract Organization
13	1	ID	O		0136	00994	Room Fee Indicator

8.9.2.0 CDM field definitions

8.9.2.1 Primary key value - CDM (CE) 01306

```
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 code assigned by the institution for the purpose of uniquely identifying the thing that can be charged. The key field of the entry. For example, this field would be used to uniquely identify a procedure, item, or test for charging purposes. Probably the same set of values as used in *FT1-7 transaction code* in financial messages. Must match *MFE-4-primary key*. Refer to *user-defined table 0132 - Transaction code*. See Chapter 7 for discussion of the universal service ID.

8.9.2.2 Charge code alias (CE) 00983

```
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 an alternative charge code. For example, points to another charge description master entry in cases where one code supersedes or overrides another code. Repeating field allows for different codes used by different systems which should be handled as if they were the same; for example, the general ledger code may differ from the billing code. Or, in a multi-facility environment which does facility-specific pricing, there may be more than one of these master file entries for one charge description, each with a different facility.

8.9.2.3 Charge description short (ST) 00984

Definition: This field contains the text abbreviations or code that is associated with this CDM entry.

8.9.2.4 Charge description long (ST) 00985

Definition: This field contains the full text description of this CDM entry.

8.9.2.5 Description override indicator (IS) 00986

Definition: This field indicates whether this CDM entry's description can be overridden. Refer to *user-defined table 0268 - Override* for suggested values.

User-defined Table 0268 - Override

Value	Description
X	Override Not Allowed
A	Override Allowed
R	Override Required

8.9.2.6 Exploding charges (CE) 00987

```
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 repeating occurrences for a list of other CDM entry charge codes identifying the other charges which should be generated from this CDM entry. If non-null, posting a charge to this CDM entry should result in posting the charges identified here. These are sometimes called "linked items."

In the case of "chained" charges where the "lead" charge must be included in the exploded charges, the "lead" charge should be included in the list of exploding charges. If the price of this parent charge is included in the message, then it overrides the sum of the exploded charges prices.

8.9.2.7 Procedure code (CE) 00988

```
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 procedure code for procedure, if any, associated with this charge description. Repeating field allows for different procedure coding systems such as CPT4, ASTM, ICD9. Coded entry made up of code plus coding schema.

8.9.2.8 Active/inactive indicator (ID) 00675

Definition: This field indicates whether this is a usable CDM entry. Refer *to HL7 table 0183 - Active/inactive* for valid values.

8.9.2.9 Inventory number (CE) 00990

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

Definition: This optional field contains an identifying stock number, if any, which might be used, for example, as a cross reference for materials management.

8.9.2.10 Resource load (NM) 00991

Definition: This field contains the Relative Value Unit (RVU) minutes and ATS, a factor related to CPT4 coding and to pricing structure for physical billing.

8.9.2.11 Contract number (CK) 00992

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

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

Definition: This field contains any contract number pertaining to this chargeable item. For example, supplier contract or service contract.

8.9.2.12 Contract organization (XON) 00993

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

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

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

Definition: This field contains the organization with whom there is a contractual arrangement for providing the service or material used for this chargeable item.

8.9.2.13 Room fee indicator (ID) 00994

Definition: This field contains a room fee indicator. Refer to *HL7 Table 0136-Yes/no indicator* for valid values.

Y this is a component of the room fees

N this is any other chargeable item other than room fees

8.9.3 PRC - pricing segment

The PRC segment contains the pricing information for the preceding CDM segment's chargeable item. It contains the fields which, for the same chargeable item, might vary depending upon facility or department or patient type. The preceding CDM segment contains the fields which, for one chargeable item, remain the same across facilities, departments, and patient types.

Figure 8-19. PRC attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	CE	R		0132	00982	Primary Key Value - PRC
2	60	CE	O	Y		00995	Facility ID
3	30	CE	O	Y		00996	Department
4	1	IS	O	Y	0004	00997	Valid Patient Classes
5	12	CP	C	Y		00998	Price
6	200	ST	O	Y		00999	Formula
7	4	NM	O			01000	Minimum Quantity
8	4	NM	O			01001	Maximum Quantity
9	12	MO	O			01002	Minimum Price
10	12	MO	O			01003	Maximum Price
11	26	TS	O			01004	Effective Start Date
12	26	TS	O			01005	Effective End Date
13	1	IS	O		0268	01006	Price Override Flag
14	60	CE	O	Y	0293	01007	Billing Category
15	1	ID	O		0136	01008	Chargeable Flag
16	1	ID	O		0183	00675	Active/Inactive Flag
17	12	MO	O			00989	Cost
18	1	IS	O		0269	01009	Charge On Indicator

8.9.3.0 PRC fields definitions

8.9.3.1 Primary key value - PRC (CE) 00982

```
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 code assigned by the institution for the purpose of uniquely identifying the thing that can be charged. The key field of the entry. For example, this field would be used to uniquely identify a procedure, item, or test for charging purposes. Probably the same set of values as used in *FT1-7 transaction code* in financial messages. Must match *MFE-4-MFE primary key* and *CDM-1-CDM primary key*. Refer to *user-defined table 0132 - Transaction code*. See Chapter 7 for discussion of the universal service ID.

8.9.3.2 Facility ID (CE) 00995

```
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 facility of the institution for which this price (for the preceding CDM entry) is valid. For use when needing multi-facility pricing. If null, assume all facilities. In a multi-facility environment, the facility associated with this chargeable item may not be the same as the sending or receiving facility identified in the MSH segment. Use only when the price is not the same for all facilities, that is, a null value indicates that this pricing is valid for all facilities.

When two PRC segments are sent with the same key values but different facility identifiers, the second is sent in addition to the first, not to replace the first. The effective unique identifier is the charge code *(PRC-1-PRC primary key)* plus the facility ID *(PRC-2-facility ID)*. Multiple facility identifiers can be sent in the same segment to indicate that those facilities use the same pricing.

8.9.3.3 Department (CE) 00996

```
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 department of the facility which accrues revenue/cost for this type of charge. When pricing is different for different departments within the same facility, this will indicate for which department the following pricing information is valid. Use only when the price is not the same for all departments, that is, a null value indicates that this pricing is valid for all departments.

When two PRC segments are sent the same key values but with different departments, the second is sent in addition to the first, not to replace the first. The effective unique identifier is the charge *code (PRC-1-PRC primary key)* plus the facility ID *(PRC-2-facility ID)* plus the department *(PRC-3-department)*. Multiple departments can be sent in the same segment to indicate that those departments use the same pricing.

8.9.3.4 Valid patient classes (IS) 00997

Definition: This field contains the patient types for which this charge description is valid. For example, Inpatient, Outpatient, Series, Clinic, ER, Ambulatory, Observation, etc. These values should be the same set of values as those used for *PV1-3-patient class*, which is site defined. Use only when the price is not valid for all patient types, that is, a null value indicates that this pricing is valid for all patient classes. Refer to *user-defined table 0004 - Patient class* for suggested values.

When two PRC segments are sent the same key values but with different valid patient classes, the second is sent in addition to the first, not to replace the first. The effective unique identifier is the charge *code (PRC-1-PRC primary key)* plus the facility ID *(PRC-2-facility ID)* plus the department *(PRC-3-department)* plus

the patient class *(PRC-4-valid patient classes)*. Multiple patient classes can be sent in the same segment to indicate that those patient classes use the same pricing.

8.9.3.5 Price (CP) 00998

```
Components:  <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^
              <range type (ID)>

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

Subcomponents of range nits:  <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 price to be charged for service, item, or procedure. If CDM price will always be overridden when charges are posted, then this field is optional. Otherwise, price would be a required field. The formula or calculation that is to be used to get total price from these price components is left to implementation negotiations agreed upon by the participating institutions. See Chapter 2, Section 2.8.8, "CP - composite price," for a description of the use of the composite price (CP) data type.

8.9.3.6 Formula (ST) 00999

Definition: This field contains the mathematical formula to apply to *PRC-5-price in order to compute total price*. The syntax of this formula must conform to Arden Syntax rules.

8.9.3.7 Minimum quantity (NM) 01000

Definition: This field contains the minimum number of identical charges allowed on one patient account for this CDM entry.

8.9.3.8 Maximum quantity (NM) 01001

Definition: This field contains the maximum number of identical charges allowed on one patient account for this CDM entry.

8.9.3.9 Minimum price (MO) 01002

```
Components:  <quantity (NM)> ^ <denomination (ID)>
```

Definition: This field contains the minimum total price (after computation of components of price) that can be charged for this item.

8.9.3.10 Maximum price (MO) 01003

```
Components: <quantity (NM)> ^ <denomination (ID)>
```

Definition: This field contains the maximum total price (after computation of components of price) that can be charged for this item.

8.9.3.11 Effective start date (TS) 01004

Definition: This field contains the date/time when this CDM entry becomes effective.

8.9.3.12 Effective end date (TS) 01005

Definition: This field contains the date/time when this CDM entry is no longer effective.

8.9.3.13 Price override flag (IS) 01006

Definition: This field indicates whether this CDM entry's price can be overridden. Refer to *user-defined table 0268 - Override* for suggested values.

8.9.3.14 Billing category (CE) 01007

```
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 billing category codes for any classification systems needed, for example, general ledger codes and UB92 categories. Repeating field with coded entry made up of category code plus category system. Refer to *user-defined table 0293 - Billing category* for suggested values.

8.9.3.15 Chargeable flag (ID) 01008

Definition: This field contains a chargeable indicator. Refer to *HL7 table 0136 - Yes/no Indicator* for valid values.

N charge is not billable, that is, do not create charges for this CDM entry; this is zero price item

Y item is billable (this is also the default when NULL)

8.9.3.16 Active/inactive flag (ID) 00675

Definition: This indicates whether this is a usable CDM entry. Refer to *HL7 table 0183 - Active/inactive* for valid values.

8.9.3.17 Cost (MO) 00989

```
Components:  <quantity (NM)> ^ <denomination (ID)>
```

Definition: This field contains the institution's calculation of how much it costs to provide this item, that is, what the institution had to pay for the material plus any specified payment expenditure, effort or loss due to performing or providing the chargeable item.

8.9.3.18 Charge on indicator (IS) 01009

Definition: This field contains the user-defined table of values which indicates when a charge for services or procedures should be accrued. Refer to *user-defined table 0269 - Charge on indicator* for suggested values.

User-defined Table 0269 - Charge on indicator

Value	Description
O	Charge on Order
R	Charge on Result

8.9.4 Example: MRN message charge description master file

```
MSH|^~\&|HL7REG|UH|HL7LAB|CH|19910918060544||MFN^M04|MSGID002|P|2.2||AL
|NE<cr>
MFI|CDM|UPD|||AL<cr>
MFE|MAD|CDM98123789182|199110011230|U2246^^PLW<cr>
CDM|P2246^^PLW |2445||APPENDECTOMY|N||244.34|A|2321||||A<cr>
PRC|P2246^^PLW |FAC3|SURG|O~A|100.00^UP |formula |1|1
   |100.00^USD|1000.00^USD|19941031||Y|GL545|Y|A|<cr>
```

8.10 CLINICAL TRIALS MASTER FILES

8.10.1 Clinical trials master file message (MFN/MFK)

The CM0 (Clinical Study Master), CM1 (Clinical Study Phase), and CM2 (Clinical Study Schedule) segments can be used to transmit master files information between systems. The CM0 segment contains the information about the study itself; the CM1 contains the information about one phase of the study identified in the preceding CM0; and the CM2 contains the information about the scheduled time points for the preceding study or phase-related treatment or evaluation events. When these segments are used in an MFN message, the abstract definition is described below.

Case 1: MFN message for Clinical Study with phases and schedules

MFI-1-master file identifier code = CMA

MFN	Master File Notification	Chapter
MSH	Message Header	2
MFI	Master File Identification	8
{ MFE	Master File Entry	8
CM0	Clinical Study Master	8
[{ CM1	Clinical Study Phase	8
[{CM2}] }]	Clinical Study Schedule	8
}		

MFK	Master File Acknowledgment	Chapter
MSH	Message Header	2
MSA	Acknowledgment	2
MFI	Master File Identification	8
{ [MFA] }	Master file ACK	8

Case 2: MFN message for Clinical Study without phases but with schedules

MFI-1-master file identifier code = CMB

MFN	Master File Notification	Chapter
MSH	Message Header	2
MFI	Master File Identification	8
{ MFE	Master File Entry	8
CM0	Clinical Study Master	8
[{CM2}]	Clinical Study Schedule	8
}		

MFK	Master File Acknowledgment	Chapter
MSH	Message Header	2
MSA	Acknowledgment	2
MFI	Master File Identification	8
{ [MFA] }	Master file ACK	8

When the Clinical Trials master segments are used in the MFR message, the part of the message represented by:

```
{MFE
    [Z..] }
```

is replaced by, in case 1 above:

```
{ MFE
    CM0
    [{ CM1
      [ {CM2}]
 }
```

In case 2 above, the corresponding segments in the MFR message represented by:

```
{MFE
[Z..] }
```

are replaced by

```
{ MFE
    CM0
     [ {CM2}] }]
  }
```

8.10.2 CM0 - clinical study master segment

The Clinical Study Master (CM0) segment contains the information about the study itself. The sending application study number for each patient is sent in the CSR segment. The optional CM0 enables information about the study at the sending application that may be useful to the receiving systems. All of the fields in the segment describe the study status at the sending facility unless otherwise agreed upon.

Figure 8-20. CM0 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			01010	Set ID - CM0
2	60	EI	R			01011	Sponsor Study ID
3	60	CE	O	Y/3		01012	Alternate Study ID's
4	300	ST	R			01013	Title of Study
5	60	XCN	O			01014	Chairman of Study
6	8	DT	O			01015	Last IRB Approval Date
7	8	NM	O			01016	Total Accrual to Date
8	8	DT	O			01017	Last Accrual Date
9	60	XCN	O			01018	Contact for Study
10	40	XTN	O			01019	Contact's Tel. Number
11	100	XAD	O			01020	Contact's Address

8.10.2.0 CM0 field definitions

8.10.2.1 Set ID - CM0 (SI) 01010

Definition: This field contains a number that uniquely identifies this transaction for the purpose of adding, changing, or deleting the transaction. For those messages that permit segments to repeat, the Set ID field is used to identify the repetitions.

8.10.2.2 Sponsor study ID (EI) 01011

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

Definition: This field contains the study number established by the study sponsor. Please see discussion in Section 7.7.1.1, “Sponsor study ID.”

8.10.2.3 Alternate study ID (CE) 01012

```
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 local or collaborators' cross-referenced study numbers.

8.10.2.4 Title of study (ST) 01013

Definition: This field contains the sending institution's title for the clinical trial. It gives recipients further identification of the study.

8.10.2.5 Chairman (XCN) 01014

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

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

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

Definition: This field contains the sending institution's chairman. It further identifies the study. The chairman's name may be needed for communication purposes.

8.10.2.6 Last IRB approval date (DT) 01015

Definition: This field contains an institution's Internal Review Board approval dates which are required annually to continue participation in a clinical trial.

8.10.2.7 Total accrual to date (NM) 01016

Definition: This field is a quality control field to enable checks that patient data have been transmitted on all registered patients.

8.10.2.8 Last accrual date (DT) 01017

Definition: This field contains the status information on the patient registration activity for quality control and operations purposes.

8.10.2.9 Contact for study (XCN) 01018

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

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

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

Definition: This field contains the name of the individual who should be contacted for inquiries about data transmitted for this study.

8.10.2.10 Contact's telephone (XTN) 01019

```
Components: [NNN] [(999)]999-9999 [X9999] [C any text] ^ <telecommunication use code (ID)> ^
             <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <county code (NM)> ^ <area/city
             code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any test (ST)>
```

Definition: This field contains the phone number of the study contact identified in *CM0-9-contact for study*

8.10.2.11 Contact's address (XAD) 01020

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

Definition: This field contains the address of the study contact identified in *CM0-9contact for study*.

8.10.3 CM1 - clinical study phase master segment

Each Clinical Study Phase Master (CM1) segment contains the information about one phase of a study identified in the preceding CM0. This is an optional structure to be used if the study has more than one treatment or evaluation phase within it. The identification of study phases that the patient enters are sent in the CSP segment: sequence 2. The CM1 segment describes the phase in general for the receiving system.

Figure 8-21. CM1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			01021	Set ID - CM1
2	60	CE	R			01022	Study Phase Identifier
3	300	ST	R			01023	Description of Study Phase

8.10.3.0 CM1 field definitions

8.10.3.1 Set ID - CM1 (SI) 01021

Definition: This field contains a number that uniquely identifies this transaction for the purpose of adding, changing, or deleting the transaction. For those messages that permit segments to repeat, the Set IF field is used to identify the repetitions.

8.10.3.2 Study phase identifier (CE) 01022

```
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 should correspond to the study phase ID coding system in Section 7.7.2.1, "Study phase ID."

8.10.3.3 Description of study phase (ST) 01023

Definition: This field contains a brief explanation for recipients to understand what the phase represents.

8.10.4 CM2 - clinical study schedule master segment

The Clinical Study Schedule Master (CM2) contains the information about the scheduled time points for study or phase-related treatment or evaluation events. The fact that a patient has data satisfying a scheduled time point is sent in the CSS segment, sequence 2. The CM2 segment describes the scheduled time points in general.

Figure 8-22. CM2 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			01024	Set ID- CM2
2	60	CE	R			01025	Scheduled Time Point
3	300	ST	O			01026	Description of Time Point
4	60	CE	R	Y/200		01027	Events Scheduled This Time Point

8.10.3.0 CM2 field definitions

8.10.4.1 Set ID - CM2 (SI) 01024

Definition: This field contains a number that uniquely identifies this transaction for the purpose of adding, changing, or deleting the transaction. For those messages that permit segments to repeat, the Set ID field is used to identify the repetitions.

8.10.4.2 Scheduled time point (CE) 01025

```
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 should correspond to the scheduled time point coding system in Section 7.7.3.1, “Study scheduled time point.”

8.10.4.3 Description of time point (ST) 01026

Definition: This field contains a brief explanation so recipients will understand what the time point represents.

8.10.4.4 Events scheduled this time point (CE) 01027

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

Definition: This field contains a study-specific event. Coding systems may be developed for this field or applications may use facility-wide or standardized orders and procedures coding systems. This enables integration of procedures or events ordered for clinical trials with medical order entry systems.

8.11 OUTSTANDING ISSUES

8.11.1 We invite proposals for the specification of other HL7-wide master files segments.