RADIOLOGY / NUCLEAR MEDICINE V. 5

HEALTH LEVEL SEVEN (HL7) INTERFACE SPECIFICATIONS FOR VOICE RECOGNITION DICTATION SYSTEMS

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Introduction

This document describes a bi-directional interface to the Radiology/Nuclear Medicine v5.0 package based upon HL7 V2.3 messaging standards. The COTS voice recognition systems currently interfaced to VISTA Radiology/Nuclear Medicine v5.0 are IBM MedSpeak, PowerScribe for Radiology, and TalkStation. Future interfaces to application, other than the aforementioned, should follow these specifications for compliance to the existing interface design.

General Specifications

COMMUNICATION PROTOCOL

The HL7 protocol defines only the seventh level of the Open System Interconnect (OSI) Model. This is the application level. Levels one through six involve primarily communication protocols. With the implementation of patch HL*1.6*19, the VISTA HL7 package can now support TCP/IP interfaces. The TCP/IP network standard will be used to support the Transport layer and Network layer of the interface. The Minimal Lower Layer Protocol (MLLP) as specified in the HL7 V2.3 Implementation Guide Appendix C.4 will be used to support the Presentation layer protocol for the interface and will encapsulate the HL7 V2.3 messages with start and end markers. Two links will be required for message transactions. VISTA will send order messages and receive acknowledgments over one link and the other link will send results and receive acknowledgements.

APPLICATION PROCESSING RULES

The HL7 protocol itself describes the basic rules for application processing by the sending and receiving systems. Information contained in the protocol will not be repeated here.

HL7 CONCEPTS AND DEFINITIONS

Messages

A **message** is the atomic unit of data transferred between systems. It is comprised of a group of segments in a defined sequence. Each message has a **message type** that defines its purpose. For example the ADT Message type is used to transmit portions of a patient's Patient Administration (ADT) data from one system to another. A three character code contained within each message identifies its type.

The real-world event that initiates an exchange of messages is called a trigger event. See section 2.2.1 "Trigger Events" of the HL7 2.3 Standard Specifications for more a detailed description of trigger events. These codes represent values such as **A patient is admitted** or **An order event occurred**. There is a one-to-many relationship between message types and trigger event codes. The same trigger event code may not be associated with more than one message type.

Segments

A **segment** is a logical grouping of **{**xe "Data Fields"**}data fields**. Segments of a message may be required or optional. They may occur only once in a message or they may be allowed to repeat. Each segment is given a name. For example, the ADT message may contain the following segments: Message Header (MSH), Event Type (EVN), Patient ID (PID), and Patient Visit (PV1).Each segment is identified by a unique three-character code known as the Segment ID.

Fields

A field is a string of characters. HL7 does not care how systems actually store data within an application. When fields are transmitted, they are sent as character strings. Except where noted, HL7 data fields may take on the null value. Sending the null value, which is transmitted as two double quote marks ("""), is different from omitting an optional data field. The difference appears when the contents of a message will be used to update a record in a database rather than create a new one. If no value is sent, (i.e., it is omitted) the old value should remain unchanged. If the null value is sent, the old value should be changed to null.

Position (sequence within the segment)

Ordinal position of the data field within the segment. This number is used to refer to the data field in the text comments that follow the segment definition table. In the segment attribute tables this information is in a column labeled **SEQ**.

Maximum length

Maximum number of characters that one occurrence of the data field may occupy. It is calculated to include the component and sub component separators. Because the maximum length is that of a single occurrence, the repetition separator is not included in calculating the maximum length. In the segment attribute tables this information is in a column labeled **LEN.**

Data type

Restrictions on the contents of the data field. There are a number of data types defined by HL7. The data types used in this specification are described in the next section titled Data Types. This information is in a column labeled **DT** in the segment attribute tables.

Optionality

Whether the field is required, optional, or conditional in a segment. The designations are:

R - required

O - optional

C - conditional on the trigger event or on some other field(s).

X - not used with this trigger event

In the segment attribute tables this information is in a column labeled **OPT**.

Repetition

Whether the field may repeat. The designations are:

N	-	no repetition
Y	-	the field may repeat an indefinite or site-determined number of times
(integer)	-	the field may repeat up to the number of times specified in the integer

Each occurrence may contain the number of characters specified by the field's maximum length. In the segment attribute tables this information is in a column labeled **RP/#.**

Message Delimiters

In constructing a message certain special characters are used. They are the segment terminator, the field separator, the component separator, subcomponent separator, repetition separator, and escape character. The segment terminator is always a carriage return (in ASCII, a hex 0D). The other delimiters are defined in the MSH segment, with the field delimiter in the 4th character position, and the other delimiters occurring as in the field called Encoding Characters, which is the first field after the segment ID. The delimiter values used in the MSH segment are the delimiter values used throughout the entire message. VISTA Radiology/Nuclear Medicine uses the HL7 recommended values found in the table below.

Delimiter values

Delimiter	Suggested Value	Encoding Character Position	Usage
Segment Terminator	<cr> hex 0D	-	Terminates a segment record. This value cannot be changed by implementors.
Field Separator	|	-	Separates two adjacent data fields within a segment. It also separates the segment ID from the first data field in each segment.
Component Separator	^	1	Separates adjacent components of data fields where allowed.
Subcomponent Separator	&	4	Separates adjacent subcomponents of data fields where allowed. If there are no subcomponents, this character may be omitted.
Repetition Separator	~	2	Separates multiple occurrences of a field where allowed.
Escape Character	\	3	Escape character for use with any field represented by an ST, TX or FT data type, or for use with the data (fourth) component of the ED data type If no escape characters are used in a message, this character may be omitted. However, it must be present if subcomponents are used in the message.

DATA TYPES

HL7 data types

Data Type Category/ Data type	Data Type Name	Notes/Format
Alphanumeric		
CE	Coded Element	identifier ^ text ^ name of coding system ^ alternate identifier ^ alternate text ^ name of alternate coding system
CM	Composite	Combination of components of varying data types
CQ	Composite quantity with units	quantity (NM) ^ units (CE)
CX	Extended composite ID with check digit	ID ^ check digit ^ code identifying the check digit scheme employed
EI	Entity identifier	entity identifier ^ namespace ID ^ universal ID ^ universal ID type
FT	Formatted text	See section (Use of escape sequences in text fields) for a list of allowed formatting commands.
HD	Hierarchic designator	namespace ID ^ universal ID ^ universal ID type
ID	Coded value for HL7 defined tables	Valued from a table of HL7 legal values
IS	Coded value for user-defined tables	Valued from a table of site legal values
PT	Processing type	Processing ID ^ processing mode
ST	String	String data is left justified with trailing blanks optional.
TQ	Timing quantity	Utilizes the Priority component for order priority
TS	Time stamp	YYYYMMDDHHMMSS
TX	Text data	String data meant for user display.
XCN	Extended composite id number and name for persons	ID ^ family name ^ given name ^ middle initial or name
XPN	Extended person name	family name ^ given name ^ middle initial or name

USE OF ESCAPE SEQUENCES IN TEXT FIELDS

When a field of type TX, FT, or CF is being encoded, the escape character may be used to signal certain special characteristics of portions of the text field. The escape character is whatever display ASCII character is specified in the Escape Character component of *MSH-2-encoding characters*. The character \ must be used to represent the character so designated in a message. An **escape sequence** consists of the escape character followed by an escape code ID of one character, and another occurrence of the escape character. The following escape sequences are decoded by the Rad/Nuc Med Interface for *OBX-5-Observation value* only:

\S\	component separator
\T\	subcomponent separator
\R\	repetition separator
\E\	escape character

No escape sequence may contain a nested escape sequence

SPECIFICATION CONVENTIONS

Segment Tables Definitions

Seq	Position – Ordinal position of the data field within the segment.
Len	Maximum length of a field.
DT	HL7 data type
OPT	(R)equired, (O)ptional or (C)onditional
RP/#	Repeating field (Y/N/#)
Element name	Field description
Comments	NV – Not valued when VISTA Rad/Nuc Med is receiver.
	NV – No value when VISTA Rad/Nuc Med is the sender.
	The <xx>/<xx>/<xx> after each field definition is <Seq>/<Len>/<DT> for that field and is for reference only.

HL7 Messages

HL7 MESSAGE DEFINITIONS

ORM - General Order Message (Event type O01)

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

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

Segment	Order Message	HL7 Chapter
MSH	Message header	2
PID	Patient identification	3
ORC	Common order	4
OBR	Order detail	4
OBX	Observation/Result	7

ORU – Unsolicited transmission of an observation (Event type R01)

The function of this message is to initiate the transmission of information about a report. With the observation segment (OBX), and the OBR, one can construct almost any clinical report as a three-level hierarchy, with the PID segment at the upper level, an order segment (OBR) at the next level and one or more observation segments (OBX) at the bottom. One result segment (OBX) is transmitted for each component of a diagnostic report, such as an EKG or obstetrical ultrasound or electrolyte battery.

Many report headers (OBR) may be sent beneath each patient segment, with many separate observation segments (OBX) beneath each OBR.

Segment	Order Message	HL7 Chapter
MSH	Message header	2

PID	Patient identification	3
OBR	Order detail	4
OBX	Observation/Result	7

HL7 SEGMENT DEFINITIONS AND SPECIFICS

MSH Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	1	ST	R		Field Separator	See Notes
2	4	ST	R		Encoding Characters	See Notes
3	180	HD	O		Sending Application	See Notes
4	180	HD	O		Sending Facility	See Notes
5	180	HD	O		Receiving Application	See Notes
6	180	HD	O		Receiving Facility	See Notes
7	26	TS	O		Date/Time Of Message	See Notes
8	40	ST	O		Security	NV
9	7	CM	R		Message Type	See Notes
10	20	ST	R		Message Control ID	See Notes
11	3	PT	R		Processing ID	See Notes
12	8	ID	R		Version ID	See Notes
13	15	NM	O		Sequence Number	NV
14	180	ST	O		Continuation Pointer	NV
15	2	ID	O		Accept Acknowledgment Type	NV
16	2	ID	O		Application Acknowledgment Type	NV
17	2	ID	O		Country Code	See Notes
18	6	ID	O	Y/3	Character Set	NV
19	60	CE	O		Principal Language Of Message	NV

MSH field definitions

MSH – Field Separator <1>/<1>/<ST>

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

MSH – Encoding Characters <2>/<4>/<ST>

Definition: This field contains the four characters in the following order: the component separator, repetition separator, escape character, and subcomponent separator. Recommended values are ^~\&, (ASCII 94, 126, 92, and 38, respectively).

MSH – Sending Application <3>/<180>/<HD>

Definition: This field uniquely identifies the sending application among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site defined.

MSH – Sending Facility <4>/<180>/<HD>

Definition: This field contains the address of one of several occurrences of the same application within the sending system. Entirely user-defined.

MSH – Receiving Application <5>/<180>/<HD>

Definition: This field uniquely identifies the receiving application among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site-defined.

MSH – Receiving Facility <6>/<180>/<HD>

Definition: This field identifies the receiving application among multiple identical instances of the application running on behalf of different organizations. See comments: *MSH-4-sending facility*. Entirely site-defined.

MSH – Date/Time Of Message <7>/<26>/<TS>

Definition: This field contains the date/time that the sending system created the message. If the time zone is specified, it will be used throughout the message as the default time zone.

Format: YYYYMMDDHHMMSS

MSH – Message Type <9>/<7>/<CM>

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

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

VISTA Rad/Nuc Med sends an ORM message type with the trigger event O01 for orders and ORU message type with the trigger event R01 for unsolicited observation results.

MSH – Message Control ID <10>/<20>/<ST>

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

MSH – Processing ID <11>/<3>/<PT>

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

Definition: This field identifies the current status of the interface. The processing mode component is not used.

Value	Description
P	Production
D	Debugging
T	Training

MSH – Version ID <12>/<8>/<ID>

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

The VISTA Rad/Nuc Med HL7 interface to COTS voice recognition systems use version 2.3 of the HL7 standard.

MSH – Country Code <17>/<2>/<ID>

Definition: This field contains the country of origin for the message.

PID Attributes{ XE "Figure 3-2. PID attributes" }

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	4	SI	O		Set ID - Patient ID	NV
2	20	CX	O		Patient ID (External ID)	See Notes
3	20	CX	R	Y	Patient ID (Internal ID)	See Notes
4	20	CX	O	Y	Alternate Patient ID - PID	NV
5	48	XPN	R	Y	Patient Name	See Notes
6	48	XPN	O		Mother's Maiden Name	NV
7	26	TS	O		Date/Time of Birth	See Notes
8	1	IS	O		Sex	See Notes
9	48	XPN	O	Y	Patient Alias	NV
10	1	IS	O		Race	NV
11	106	XAD	O	Y	Patient Address	NV
12	4	IS	B		County Code	NV
13	40	XTN	O	Y	Phone Number - Home	NV
14	40	XTN	O	Y	Phone Number - Business	NV
15	60	CE	O		Primary Language	NV
16	1	IS	O		Marital Status	NV
17	3	IS	O		Religion	NV
18	20	CX	O		Patient Account Number	NV
19	16	ST	O		SSN - Patient	See Notes
20	25	DLN	O		Driver's License Number - Patient	NV
21	20	CX	O	Y	Mother's Identifier	NV
22	3	IS	O		Ethnic Group	NV
23	60	ST	O		Birth Place	NV
24	2	ID	O		Multiple Birth Indicator	NV
25	2	NM	O		Birth Order	NV
26	4	IS	O	Y	Citizenship	NV
27	60	CE	O		Veterans Military Status	NV
28	80	CE	O		Nationality	NV
29	26	TS	O		Patient Death Date and Time	NV
30	1	ID	O		Patient Death Indicator	NV

{ XE "PID field definitions" **}**

PID field definitions

PID – Patient ID (external ID{ XE "Patient ID (external ID" }) <2>/<20>/<CX>

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)>

Definition: When the patient is from another institution, outside office, etc., the identifier used by that institution can be shown in this field.

VISTA Rad/Nuc Med uses the Patient SSN or pseudo-SSN as the Patient ID in the format of "555-55-5555" and "555-55-5555P". The "P" indicates a pseudo-SSN.

The ID component only is used in this field.

PID – Patient ID (internal ID) <3>/<20>/<CX>{ XE "Patient ID (internal ID)" }

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)>

Definition: This field contains the primary identifier, or other identifiers used by the facility to identify a patient uniquely. VISTA Rad/Nuc Med uses the M10 coding scheme.

PID – Patient Name <5>/<48>/<XPN>{ XE "Patient name" }

Components: <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)>

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

PID – Date/Time of Birth <7>/<26>/<TS>{ XE "Date of birth" }

Definition: This field contains the patient's date of birth.

Format: YYYYMMDD

PID – Sex <8>/<1>/<IS>{ XE "Sex" }

Definition: This field contains the patient's sex.

Value	Description
F	Female
M	Male
O	Other
U	Unknown

PID – SSN – Patient <19>/<16>/<ST>{ XE "SSN number - patient" **}**

Definition: This field contains the patient's social security number.

Format: [555555555] or [555555555P]

Note: PID does not include the "-" in this field.

ORC Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	2	ID	R		Order Control	See Notes
2	22	EI	C		Placer Order Number	NV
3	22	EI	C		Filler Order Number	NV
4	22	EI	O		Placer Group Number	See Notes
5	2	ID	O		Order Status	See Notes
6	1	ID	O		Response Flag	NV
7	200	TQ	O		Quantity/Timing	NV
8	200	CM	O		Parent	See Notes
9	26	TS	O		Date/Time of Transaction	See Notes
10	120	XCN	O		Entered By	NV
11	120	XCN	O		Verified By	NV
12	120	XCN	O		Ordering Provider	NV
13	80	PL	O		Enterer's Location	NV
14	40	XTN	O	Y/2	Call Back Phone Number	NV
15	26	TS	O		Order Effective Date/Time	NV
16	200	CE	O		Order Control Code Reason	NV
17	60	CE	O		Entering Organization	NV
18	60	CE	O		Entering Device	NV
19	120	XCN	O		Action By	NV

ORC field definitions

ORC – Order Control <1>/<2>/<ID>

Definition: Determines the function of the order segment.

Value	Description
NW	New Registered
CA	Cancelled or Deleted Exam
XO	Examined/Images Captured

ORC – Placer Group Number <4>/<22>/<EI>

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

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

One of the features introduced in v5.0 of VISTA Radiology/Nuclear Medicine allows multiple exams to be combined in a comprehensive report. This feature is called a "printset". The printset concept is addressed by HL7 through the use of a unique identifier passed to the receiving system in the placer group number to group a set of orders for a single report. An identical entity identifier will be sent in this field for each member of a printset.

The first component of this field, the entity identifier, only will be present only if the procedure is a member of a printset. The entity identifier will be represented by a combination of the patient SSN, or pseudo SSN, and the date and time that the printset

was ordered in VISTA. Receiving application should group the results for all orders with the same placer group number and update the order status appropriately.

Example: 4583359007009280.8678 or 458335900P7009280.8678

ORC – Order Status <5>/<2>/<ID>

Definition: This field is the status of an order.

Value	Description
IP	Registered (In Progress)
CA	Cancelled or Deleted exam
CM	Examined/Images Captured

ORC – Parent <8>/<200>/<CM>

Definition: This field relates a child to its parent when a parent-child relationship exists.

The first component only will be present only if the procedure is part of an exam set (ordered under one procedure name) or printset (ordered under one procedure name and only one report message will be generated since a single report covers entire set of procedures.) See ORC-4 Placer Group number for details of printset operations.

Format: EXAMSET: parent_procedure_name
PRINTSET: parent_procedure_name

Note: Under rare circumstances, the parent procedure order will have been purged at the time the message is created. If this is true, the parent_procedure_name will be replaced by the text “ORIGINAL ORDER PURGED”.

ORC – Date/Time of Transaction <9>/<26>/<TS>

Definition: This field is the date and time the current transaction enters the ordering application.

Date/time of registration, cancel, or image collection.

Format: YYYYMMDDHHMMSS

OBR Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	4	SI	C		Set ID - OBR	NV
2	75	EI	C		Placer Order Number	See Notes
3	75	EI	C		Filler Order Number +	See Notes
4	200	CE	R		Universal Service ID	See Notes
5	2	ID	B		Priority	NV
6	26	TS	B		Requested Date/time	NV
7	26	TS	C		Observation Date/Time #	See Notes
8	26	TS	O		Observation End Date/Time #	NV
9	20	CQ	O		Collection Volume *	NV
10	60	XCN	O	Y	Collector Identifier *	NV
11	1	ID	O		Specimen Action Code *	NV
12	60	CE	O		Danger Code	NV
13	300	ST	O		Relevant Clinical Info.	NV
14	26	TS	C		Specimen Received Date/Time *	See Notes
15	300	CM	O		Specimen Source *	NV
16	80	XCN	O	Y	Ordering Provider	See Notes
17	40	XTN	O	Y/2	Order Callback Phone Number	NV
18	60	ST	O		Placer field 1	See Notes
19	60	ST	O		Placer field 2	NV
20	60	ST	O		Filler Field 1 +	See Notes
21	60	ST	O		Filler Field 2 +	NV
22	26	TS	C		Results Rpt/Status Chng - Date/Time +	See Notes
23	40	CM	O		Charge to Practice +	NV
24	10	ID	O		Diagnostic Serv Sect ID	NV
25	1	ID	C		Result Status +	See Notes
26	400	CM	O		Parent Result +	NV
27	200	TQ	O	Y	Quantity/Timing	See Notes
28	150	XCN	O	Y/5	Result Copies To	NV
29	150	CM	O		Parent	NV
30	20	ID	O		Transportation Mode	NV
31	300	CE	O	Y	Reason for Study	NV
32	200	CM	O		Principal Result Interpreter +	See Notes
33	200	CM	O	Y	Assistant Result Interpreter +	See Notes
34	200	CM	O	Y	Technician +	NV
35	200	CM	O	Y	Transcriptionist +	See Notes
36	26	TS	O		Scheduled Date/Time +	NV
37	4	NM	O		Number of Sample Containers *	NV
38	60	CE	O	Y	Transport Logistics of Collected Sample *	NV
39	200	CE	O	Y	Collector's Comment *	NV
40	60	CE	O		Transport Arrangement Responsibility	NV
41	30	ID	O		Transport Arranged	NV
42	1	ID	O		Escort Required	NV
43	200	CE	O	Y	Planned Patient Transport Comment	NV

OBR Field Definitions

OBR – Placer Order Number <2>/<75>/<EI>

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

Definition: This field contains the VISTA Rad/Nuc Med long case number. The first component only will be present. The data represented by the entity identifier component is a combination of the order date and case number. The component only is used in this field.

Format: 071999-521

Note: The order date used in this field is not used as an actual date. Its use is strictly limited to that of an identifier. No date calculations are performed on this field.

OBR – Filler Order Number <3>/<75>/<EI>

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

Definition: This is a permanent identifier for an order and it's associated observations. The first component contains the date/time the procedure was ordered on VISTA and the procedure number for the case after the "-". The procedure number will increment by one for each additional member of a printset. The second component contains the long case number. The third component is the coding scheme and is defined as "L" for Local. The fourth component is not used.

Format: `7009280.8678-1^071999-521^L`

OBR – Universal Service ID <4>/<200>/<CE>

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

Definition: This field is the identifier code for the requested observation/test/battery.

Note: VISTA Rad/Nuc Med uses the CPT-4 coding scheme. The name of coding system component is defined as "C4" for the CPT-4 coding scheme in the HL7 and ASTM 1238-88 standards.

Example:

```
75659^X-RAY EXAM OF ARM ARTERIES^C4^280^ANGIO BRACHIAL RETROGRADE
CP^99RAP
```

OBR – Observation Date/Time <7>/<26>/<TS>

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

Format: YYYYMMDDHHMMSS

OBR – Observation end date/time <8>/<26>/<TS>

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

Note: VISTA Rad/Nuc Med will always send a null value in this field.

OBR – Collection volume <9>/<20>/<CQ>

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

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

Note: VISTA Rad/Nuc Med will always send a null value in this field.

OBR – Received Date/Time <14>/<26>/<TS>

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

Format: YYYYMMDDHHMMSS

OBR – Ordering Provider <16>/<80>/<XCN>

Components: <ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)>

Definition: This field identifies the provider who ordered the procedure.

OBR – Placers Field #1 <18>/<60>/<ST>

Definition: This field contains the patient location, Ward/Clinic.

OBR – Fillers Field #1 <20>/<60>/<ST>

Definition: This field is definable for any use by the filler. However, Rad/Nuc Med will send information about the imaging location in this field to maintain backward compatibility with PACS systems. The information that is sent in the order message in this field is not required in the report message returned by voice recognition systems.

Format: IEN file #79.1^name of imaging location^station #^station name

Example: `4^X-RAY CLINIC^499^SUPPORT ISC`

OBR – Fillers Field #2 <21>/<60>/<ST>

Definition: This field is similar to filler field #1. Rad/Nuc Med will send information about the imaging location in this field to maintain backward compatibility with PACS systems. The information that is sent in the order message in this field is not required in the report message returned by voice recognition systems.

Format: abbreviated Imaging-type^Imaging type name

Example: `RAD^GENERAL RADIOLOGY`

OBR – Results Rpt/Status Change Date/Time <22>/<26>/<TS>

Definition: This field specifies the date/time when the results were reported or status changed. This field is used to indicate the date and time that the results are composed into a report and released, or that a status, as defined in ORC-5 *order status*, is entered or changed. (This is a results field only.) When other applications (such as office or clinical database applications) query the laboratory application for untransmitted results, the information in this field may be used to control processing on the communications link. Usually, the ordering service would want only those results for which the reporting date/time is greater than the date/time the inquiring application last received results.

Format: YYYYMMDDHHMMSS

OBR – Result Status <25>/<1>/<ID>

Definition: This field is the status of results for this order. This conditional field is required whenever the OBR is contained in a report message.

Value	Description
A	Addendum, Correction
F	Final, Verified
R	Preliminary, Released/Not Verified

OBR – Quantity/Timing <27>/<20>/<TQ>

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

Definition: This field contains the priority component of the order only.

Format: ^^^^^S

Value	Description
S	Stat
A	Urgent
R	Routine

OBR – Principal Result Interpreter <32>/<200>/<CM>

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

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

Definition: This field identifies the attending, or staff, physician or who interpreted the observation and is responsible for the report content.

Note: The name component is the only component validated in this field by VISTA Rad/Nuc Med. The Subcomponents of name must be followed according to the standard for correct validation. The identifier must match the IEN of the provider in the NEW PERSON File in VISTA and must have a STAFF designation.

OBR – Assistant Result Interpreter <33>/<200>/<CM>

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

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

Definition: This field identifies the resident physician who assisted with the interpretation of this study.

Note: The name component is the only component validated in this field by VISTA Rad/Nuc Med. The Subcomponents of name must be followed according to the standard for correct validation. The identifier must match the IEN of the provider in the NEW PERSON File in VISTA and must have RESIDENT designation

OBR – Transcriptionist <35>/<200>/<CM>

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

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

Definition: This field identifies the report transcriber.

Note: The name component is the only component validated in this field by VISTA Rad/Nuc Med. The Subcomponents of name must be followed according to the standard for correct validation. The identifier must match the IEN of the transcriptionist in the NEW PERSON File in VISTA.

OBX Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	10	SI	O		Set ID - OBX	NV
2	2	ID	C		Value Type	See Notes
3	590	CE	R		Observation Identifier	See Notes
4	20	ST	C		Observation Sub-ID	NV
5	65536[1]	*	C	Y[2]	Observation Value	See Notes
6	60	CE	O		Units	NV
7	10	ST	O		References Range	NV
8	5	ID	O	Y/5	Abnormal Flags	NV
9	5	NM	O		Probability	NV
10	2	ID	O	Y	Nature of Abnormal Test	NV
11	1	ID	R		Observ Result Status	See Notes
12	26	TS	O		Date Last Obs Normal Values	NV
13	20	ST	O		User Defined Access Checks	NV
14	26	TS	O		Date/Time of the Observation	NV
15	60	CE	O		Producer's ID	NV
16	80	XCN	O		Responsible Observer	NV
17	60	CE	O	Y	Observation Method	NV

OBX field definitions

OBX – Value Type <2>/<2>/<ID>

Definition: This field contains the format of the observation value in OBX. If the value is CE then the result must be a coded entry. When the value type is TX or FT then the results are bulk text. The valid values for the value type of an observation accepted by VISTA Rad/Nuc Med are listed below.

Value	Description
CE	Coded Element – Procedure or Diagnostic code follows
FT	Formatted Text
TX	Text Data - Modifier, clinical history or result text follows
ST	String Data – Diagnostic code follows

VISTA Rad/Nuc Med will accept Diagnostic codes sent in two ways.

1. OBX-2 Value Type is CE and OBX-5 Observation Value contains a valid Rad/Nuc Med Diagnosis code from file 78.3.

Example: `OBX|1|CE|70551^MAGNETIC IMAGE, BRAIN (MRI)^CPT4|0|4^ABNORMALITY, ATTN. NEEDED^I9~5^MAJOR ABNORMALITY, PHYSICIAN AWARE^I9~8^POSSIBLE MALIGNANCY, FOLLOW-UP NEEDED^I9||||||F`

2. OBX-2 Value Type is ST and identifier component of OBX-3 Observation Identifier is DIAG.

---

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

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

OBX – Observation Identifier <3>/<590>/<CE>

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

Definition: This field contains a unique identifier for the observation. The format is that of the Coded Element (CE). The valid identifier components are as follows.

Value	OBX Value Type	Description
A	TX	Allergies
D	ST	Signifies a locally defined Diagnosis code
F	TX ,FT	Report Findings/Text
H	TX	History
I	TX	Impression Text
M	TX	Modifiers
[1]C4	CE	CPT Modifiers
P	CE	Procedure
R	TX	Report Text

Diagnostic code must be from a predefined set contained in VISTA Rad/Nuc Med file #78.3. If multiple diagnostic codes exist, the primary diagnosis will occur first.

OBX – Observation Value <5>/<65536>/<*>

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

Representation

This field contains the value of *OBX-3-observation identifier* of the same segment. Depending upon the observation, the data type may be a number (e.g., a respiratory rate), a coded answer (e.g., a pathology impression recorded as SNOMED), or a date/time (the date/time that a unit of blood is sent to the ward). An observation value is always represented as the data type specified in *OBX-2-value type* of the same segment. Whether numeric or short text, the answer shall be recorded in ASCII text.

Reporting logically independent observations

The main sections of dictated reports, such as radiologic studies or history and physicals, are reported as separate OBX segments. In addition, each logically independent observation should be reported in a separate OBX segment, i.e. one OBX segment should not contain the **result** of more than one logically independent observation.

[1] Patch RA*5*17 July 2000 Radiology HL7 interfaces for the new VISTA HL7 standards (post HL*1.6*57).

OBX – Observ Result Status <11>/<1>/<ID>

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

Value	Description
F	Final, results Verified; Can only be changed with a corrected result.
P	Preliminary, results Released/Not Verified
C	Record coming over is a correction and thus replaces a final result.

MSA Attributes

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	COMMENTS
1	2	ID	R		Acknowledgment Code	See Notes
2	20	ST	R		Message Control ID	See Notes
3	80	ST	O		Text Message	See Notes
4	15	NM	O		Expected Sequence Number	NV
5	1	ID	B		Delayed Acknowledgment Type	NV
6	100	CE	O		Error Condition	NV

MSA field definitions

MSA – Acknowledgment Code <1>/<2>/<ID>

Definition: This field contains an acknowledgment code

Value	Description
AA	Application Accept
AE	Application Error
AR	Application Reject

MSA – Message Control ID <2>/<20>/<ST>

Definition: This field contains the message control ID of the message sent by the sending system. It allows the sending system to associate this response with the message for which it is intended.

MSA – Text Message <3>/<80>/<ST>

Definition: This field further describes an error condition. This text may be printed in the Rad/Nuc Med HL7 Voice Reporting Errors option and presented to an end user.

Transactions Specifications

GENERAL

The Radiology/Nuclear Medicine package will send an HL7 message with exam information to the COTS voice recognition system when each exam has been registered, examined (i.e., images have been collected), canceled, and when a report has been put in a status of Verified or Released/Not Verified.

SPECIFIC TRANSACTIONS

Registration

A VAMC may register a patient for an imaging exam at the time the patient arrives at the radiology or nuclear medicine reception desk for his/her appointment, or registration may be done up to a week prior to the appointment depending on the policy of that VAMC's imaging services. At this point, the registration message is broadcast as an Order (ORM) message and sent to the COTS voice recognition system. See the section on Messaging Specifics – ORM Message for details.

Examined/Images Collected

The **V***IST***A** Rad/Nuc Med software allows the ADPAC to specify an exam status that will trigger this event. If, for example, the "Examined" status is specified, when the radiology tech enters the required data to cause the exam record to reach the "Examined" status, the examined message will be broadcast as an Order (ORM) message and sent to COTS voice recognition system. The segments used will be the same as the Registration module.

Cancellation/Deletion

If an imaging tech or other **V***IST***A** Rad/Nuc Med software user cancels or deletes an exam, this will trigger the cancel message broadcast. An exam is usually canceled before it is done. However, since exam data may have been erroneously entered or entered for the wrong patient, the **V***IST***A** Rad/Nuc Med system allows users to back data out and cancel after an exam is done, and possibly after results reports are entered. So, there is a possibility that an examined message and a report message would have been broadcast prior to a cancellation message.

Verified/Released Unverified Report

The report message is triggered when a **V***IST***A** Rad/Nuc Med radiologist or transcriptionist enters data causing the findings report to move to a "Verified" (final) or "Released/Unverified" (preliminary) status. Depending on the policy of the VAMC, the "Released/Unverified" status may or may not be allowed. If the released/unverified report is broadcast on a message, a later message will contain the verified (final) report. It is also possible for a verified report to be retracted ("Unverified"), then re-verified later. If this happens a second report message would be broadcast with the amended, re-verified report, or else an exam cancel/delete message would be broadcast retracting the entire exam.

MESSAGING SPECIFICS

ORM Message

When an exam is **registered, examined** or **canceled** by the Radiology/Nuclear Medicine package, an Order (ORM) message is sent to the site-specified application. The ORM message consists of the following segments:

MSH	Message Header
PID	Patient Identification
ORC	Common Order
OBR	Observational Request
OBX	Result

Example: ORM message for new/registered order

```
MSH|^~\&|RA-VOICE-SERVER|HINES CIOFO|RA-PSCRIBE-
TCP|POWERSCRIBE|19990728125034||ORM^O01|4998329|P|2.3|||||US
PID||000-66-9999|46^9^M10||RADPATIENT^ONE||19411225|M||||||||||000669999
ORC|NW||||IP||||19990728125034
OBR||072899-542|7009271.8754-1^072899-542^L|71030^CHEST X-RAY^C4^61^CHEST 4
VIEWS^99RAP|||19990728125034|""|""|||||""||2172^RADPROVIDER^TWO^N||4AS||4^X-RAY CLINIC^499^SUPPORT
ISC|RAD^GENERAL RADIOLOGY|19990728125034|||||^^^^^R
OBX||CE|P^PROCEDURE^L||61^CHEST 4 VIEWS^L||||||""
OBX||TX|M^MODIFIERS^L||OPERATING ROOM EXAM||||||""
OBX||TX|H^HISTORY^L||This is the clinical history for the patient's exam.  This is going to be
||||||""
OBX||TX|H^HISTORY^L||several lines in length so we can see what happens when we create the HL7
||||||""
OBX||TX|H^HISTORY^L||message.  ||||||""
OBX||TX|H^HISTORY^L|| ||||||""
OBX||TX|H^HISTORY^L||This is the first line of the second paragraph.  This is the second line of
the||||||""
OBX||TX|H^HISTORY^L||paragraph.  ||||||""
```

Example: ORM messages for registration of a printset

```
MSH|^~\&|RA-VOICE-SERVER|HINES CIOFO|RA-PSCRIBE-
TCP|POWERSCRIBE|19990728150450||ORM^O01|4998367|P|2.3|||||US
PID||000-66-9999|46^9^M10||RADPATIENT^ONE||19411225|M||||||||||000669999
ORC|NW|||0006699997009271.8496|IP|||PRINTSET: HIP 1 VIEW|19990728150450
OBR||072899-549|7009271.8496-1^072899-549^L|75659^X-RAY EXAM OF ARM ARTERIES^C4^280^ANGIO
BRACHIAL RETROGRADE CP^99RAP|||19990728150450|""|""|||||""||2172^RADPROVIDER^TWO^N||4AS||4^X-RAY
CLINIC^499^SUPPORT ISC|RAD^GENERAL RADIOLOGY|19990728150450|||||^^^^^R
OBX||CE|P^PROCEDURE^L||280^ANGIO BRACHIAL RETROGRADE CP^L||||||""
OBX||TX|M^MODIFIERS^L||None||||||""
OBX||TX|H^HISTORY^L||This is the clinical history for the patient on the printset order ||||||""

MSH|^~\&|RA-VOICE-SERVER|HINES CIOFO|RA-PSCRIBE-
TCP|POWERSCRIBE|19990728150450||ORM^O01|4998372|P|2.3|||||US
PID||000-66-9999|46^9^M10||RADPATIENT^ONE||19411225|M||||||||||000669999
ORC|NW|||0006699997009271.8496|IP|||PRINTSET: HIP 1 VIEW|19990728150450
```

```
OBR||072899-550|7009271.8496-2^072899-550^L|75658^X-RAY EXAM OF ARM ARTERIES^C4^279^ANGIO
BRACHIAL RETROGRADE S&I^99RAP|||19990728150450|""|""|||||""||2172^RADPROVIDER^TWO^N||4AS||4^X-RAY
CLINIC^499^SUPPORT ISC|RAD^GENERAL RADIOLOGY|19990728150450|||||^^^^^R
OBX||CE|P^PROCEDURE^L||279^ANGIO BRACHIAL RETROGRADE S&I^L||||||""
OBX||TX|M^MODIFIERS^L||None||||||""
OBX||TX|H^HISTORY^L||This is the clinical history for the patient on the printset order ||||||""
```

A printset is a group of individual orders that comprise a single report. There are three differences between a printset order message and a single order message.

1. ORC-4 Placer Group Number field will be populated with a unique identifier for each printset. Each order message for a member of the printset will have the same identifier in ORC-4.
2. ORC-8 Parent field will be populated with the printset parent name.
   The format will always be in the form of [PRINTSET: {*parent_procedure_name*}]
3. OBR-3 Filler Order Number entity identifier component will have an incrementing procedure number for each member of the printset.
   The format will always be in the form of [{nnnnnnn.nnnn-1}, {nnnnnnnn.nnnn-2}, etc.]

Example: ORM message for an examined/images collected order

```
MSH|^~\&|RA-VOICE-SERVER|HINES CIOFO|RA-PSCRIBE-
TCP|POWERSCRIBE|19990728130506||ORM^O01|4998337|P|2.3|||||US
PID||000-66-9999|46^9^M10||RADPATIENT^ONE||19411225|M||||||||||000669999
ORC|XO||||CM||||19990728130506
OBR||072899-542|7009271.8754-1^072899-542^L|71030^CHEST X-RAY^C4^61^CHEST 4
VIEWS^99RAP|||19990728130506|""|""|||||""||2172^RADPROVIDER^TWO^N||4AS||4^X-RAY CLINIC^499^SUPPORT
ISC|RAD^GENERAL RADIOLOGY|19990728130506|||||^^^^^R
OBX||CE|P^PROCEDURE^L||61^CHEST 4 VIEWS^L||||||""
OBX||TX|M^MODIFIERS^L||OPERATING ROOM EXAM||||||""
OBX||TX|H^HISTORY^L||This is the clinical history for the patient's exam.  This is going to be
||||||""
OBX||TX|H^HISTORY^L||several lines in length so we can see what happens when we create the HL7
||||||""
OBX||TX|H^HISTORY^L||message.  ||||||""
OBX||TX|H^HISTORY^L|| ||||||""
OBX||TX|H^HISTORY^L||This is the first line of the second paragraph.  This is the second line of
the||||||""
OBX||TX|H^HISTORY^L||paragraph.  ||||||""
```

Example: ORM message for a cancelled order

```
MSH|^~\&|RA-VOICE-SERVER|HINES CIOFO|RA-PSCRIBE-
TCP|POWERSCRIBE|19990728131832||ORM^O01|4998353|P|2.3|||||US
PID||000-66-9999|46^9^M10||RADPATIENT^ONE||19411225|M||||||||||000669999
ORC|CA||||CA||||19990728131832
OBR||072899-543|7009271.8683-1^072899-543^L|70551^MAGNETIC IMAGE, BRAIN (MRI)^C4^541^MAGNETIC
IMAGE,BRAIN^99RAP|||19990728131832|""|""
|||||""||2172^RADPROVIDER^TWO^N||4AS||6^MRI^499^SUPPORT ISC|MRI^MAGNETIC RESONANCE
IMAGING|19990728131832
OBX||CE|P^PROCEDURE^L||541^MAGNETIC IMAGE,BRAIN^L||||||""
OBX||TX|M^MODIFIERS^L||BILATERAL EXAM||||||""
OBX||TX|H^HISTORY^L||This order was created to show an HL7 cancel order message.  ||||||""
```

Note: The messages broadcast at these three event points (**registered, examined** and **canceled**) are almost identical, with the exception of the Order Control, Order Status, and Quantity/Timing fields. Differences to note between an HL7 message for registration, image collection (examined) and cancellation are shown here:

HL7 ORC Field	Registration	Cancel/Delete	Examined
1-Order Control	NW	CA	XO
5-Order Status	IP	CA	CM

The Quantity/Timing value on the OBR segment (in the examples above, ^^^^^R) is omitted from the cancellation message.

Please also be aware that the OBR segment may exceed 255 characters.

ORU Message

When a report is **Verified** or **Released/Not Verified** by the Radiology/Nuclear Medicine package, an Order (ORU) message is sent to the site specified application. The ORU message consists of the following segments:

MSH	Message Header
PID	Patient Identification
OBR	Observational Request
OBX	Result

Example: ORU message containing report for single procedure

```
MSH|^~\&|RA-VOICE-SERVER|HINES CIOFO|RA-TALKLINK-
TCP|TalkStation|19990728143025||ORU^R01|4998363|P|2.3|||||US
PID||000-66-9999|46^9^M10||RADPATIENT^ONE||19411225|M||||||||||000669999
OBR|||7009271.8754-1^072899-542^L|71030^CHEST X-RAY^CPT4^61^CHEST 4
VIEWS^99RAP|||199907281245|""|""|||||199907281430||2172^RADPROVIDER^TWO^N||4AS||||199907281430|||F||
|||||2172^RADPROVIDER^TWO^N|2172^RADPROVIDER^TWO^N
OBX||TX|I^IMPRESSION^L||This is the impression text of a test report.  ||||||F
OBX||ST|D^DIAGNOSTIC CODE^L||NORMAL||||||F
OBX||TX|R^REPORT^L||Report:  Chest X-Ray ||||||F
OBX||TX|R^REPORT^L|| ||||||F
OBX||TX|R^REPORT^L||||||||F
OBX||CE|P^PROCEDURE^L||61^CHEST 4 VIEWS^L||||||""
OBX||TX|M^MODIFIERS^L||OPERATING ROOM EXAM||||||""
```

Example: ORU message for "printset", (i.e., multiple procedures and single report)

```
MSH|^~\&|RA-VOICE-SERVER|HINES CIOFO|RA-TALKLINK-
TCP|TalkStation|19990728155951||ORU^R01|4998401|P|2.3|||||US
PID||000-66-9999|46^9^M10||RADPATIENT^ONE||19411225|M||||||||||000669999
OBR|||7009271.8496-1^072899-549^L|75659^X-RAY EXAM OF ARM ARTERIES^CPT4^280^ANGIO BRACHIAL
RETROGRADE
CP^99RAP|||199907281503|""|""|||||199907281559||2172^RADPROVIDER^TWO^N||4AS||||199907281559|||F|||||
|2172^RADPROVIDER^TWO^N|2172^RADPROVIDER^TWO^N
OBX||CE|P^PROCEDURE^L||280^ANGIO BRACHIAL RETROGRADE CP^L||||||""
OBR|||7009271.8496-2^072899-550^L|75658^X-RAY EXAM OF ARM ARTERIES^CPT4^279^ANGIO BRACHIAL
RETROGRADE
S&I^99RAP|||199907281503|""|""|||||199907281559||2172^RADPROVIDER^TWO^N||4AS||||199907281559|||F||||
||2172^RADPROVIDER^TWO^N|2172^RADPROVIDER^TWO^N
OBX||CE|P^PROCEDURE^L||279^ANGIO BRACHIAL RETROGRADE S&I^L||||||""
OBX||TX|I^IMPRESSION^L||This is the impression text of the printset results.  This text will be
filed||||||F
OBX||TX|I^IMPRESSION^L||for both procedures.  ||||||F
OBX||TX|R^REPORT^L|| ||||||F
OBX||TX|R^REPORT^L|| ||||||F
OBX||TX|R^REPORT^L||Report:  X-Ray of ARM ARTERIES ||||||F
OBX||TX|R^REPORT^L|| ||||||F
OBX||TX|R^REPORT^L||||||||F
OBX||TX|M^MODIFIERS^L||CONTRAST MEDIA USED||||||""
```

ACK Message

The General Acknowledgment (ACK) message is sent by both systems as a response to an ORM and ORU message. The ACK message consists of the following segments:

MSH Message Header
MSA Message Acknowledgment

Example: ACK message

```
MSH|^~\&|RA-VOICE-SERVER|HINES CIOFO|RA-PSCRIBE-
TCP|POWERSCRIBE|19990728155941||ACK^R01|4998399|P|2.3||||US
MSA|AA|19990728160834
```

[1]Appendix – CPT Modifiers (RA*5*10)

The routine RAHLRU sets up the OBX segments for CPT Modifiers. This routine will be invoked when an HL7 message is sent due to any one of the following:

- An exam is registered,
- An exam is cancelled,
- An exam status is reached that is assigned to generate an HL7 message, or
- An exam report is verified.

The routine will set up the OBX segment(s) for CPT Modifier(s) in the following format:

```
OBX-2 = "CE"
OBX-3 = "C4~CPT MODIFIERS~C4"
OBX-5 = "nn~longname~C4~mmmmm~C4~longname~C4"
OBX-11 = "X"
```

Note:

nn is field .01 of file #81.3, CPT MODIFIER
longname is field .02 of file #81.3, CPT MODIFIER
mmmmm is field .03 of file #81.3, CPT MODIFIER; the triplet containing this value will be null if the CPT Modifier has no data for field .03 in file #81.3.

The delimiter symbol ~ may vary, as it is site configurable.

[1] Patch RA*5*10 CPT Modifiers