GE Healthcare

Lunar

HL7 Configuration Supplement

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The printable HL7 manual requires Adobe Acrobat Reader.

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Introduction

HL7

HL7 is a standard messaging network protocol that allows diverse health care applications in a hospital information system (HIS) to share data with each other. LUNAR's HL7 interface enables LUNAR densitometers to exchange specific sets of data with other applications on the HIS network. For example, a radiology information system (RIS) can notify the LUNAR enCORE software package (hereafter referred to as enCORE) about all the patients scheduled for bone densitometry diagnostic studies. enCORE can also send the results of the study back to the RIS. The LUNAR HL7 interface reduces the amount of time needed to perform a diagnostic study by eliminating data entry of patient demographics, and enables more accurate patient demographics for post-study reporting and billing systems.

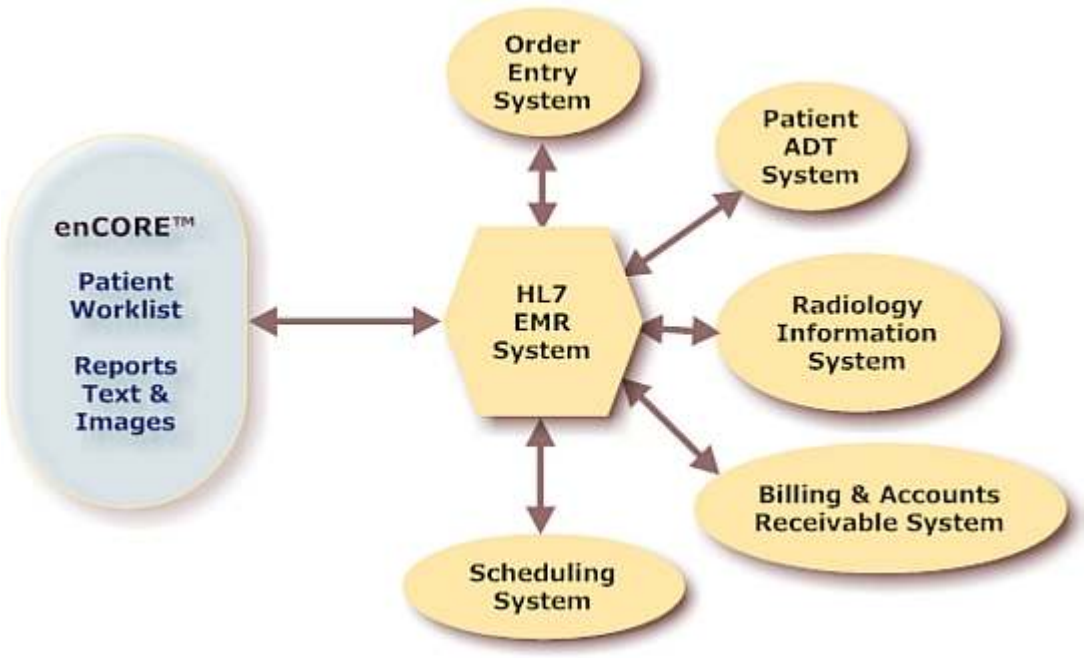


Figure 1-1.. enCORE collaboration with a hospital information system

The HL7 standard is powerful and flexible enough to be used by most hospital information systems and diagnostic devices (*Figure 1-1*). The HL7 standard includes support for many types of messages and data fields, LUNAR has developed its own protocol, HL7 protocol files, to map HL7 data to enCORE application data.

Typically, hospitals use HL7 interfaces to admit patients, place pharmacy orders, and add to a billing account, among other things. Just as hospitals do not use a single HL7 interface to address every possible event, the LUNAR HL7 interface addresses only the HL7 messages that are likely to involve enCORE. The data that is exchanged depends on the types of applications that are communicating. For example, a billing application has no need to exchange radiographic images with a pharmacy order application.

Note: Currently, the LUNAR enCORE HL7 Interface supports receiving HL7 Order messages (ORM, ADT, OMG and DFT) and sending HL7 Reports (ORU and MDM). Not every HL7 Order message that enCORE receives will contain all the information needed to begin a patient scan. In these cases, the medical technologist must manually enter the missing required information.

Typically, an application is both a producer and consumer of data. The HL7 interface includes all transactions sent back and forth between the two applications. Each transaction may consist of one or more messages in which each message is an atomic unit of data transferred between applications. The HL7 standard defines the data within each message, specifies when the messages are exchanged, and manages error messages between the applications.

1 enCORE HL7 Interface

1.1 enCORE HL7 Ambassador Architecture

The HL7 Ambassador is the enCORE subsystem that communicates with other health care systems which support the HL7 protocol. When the enCORE feature code for the HL7 option is enabled, the HL7 Ambassador can be

activated or deactivated in the background. The medical technologist can use enCORE as they normally would while the HL7 Ambassador receives and sends HL7 messages. enCORE deactivates the HL7 Ambassador during patient scans, the printing of patient reports, and daily QA to comply with medical equipment safety guidelines.

The HL7 Ambassador can operate in **online** or **batch mode**. In online mode the HL7 Ambassador uses the TCP/IP communications protocol to receive HL7 messages from remote HL7 systems. When the Ambassador receives an HL7 message using TCP/IP, it temporarily saves the message as an HL7 message file in the **ExchangeFolder** directory located off the directory containing the enCORE executable (for example: **Program Files \ LUNAR \ Prodigy \ ProdigyExchangeFolder;** the subdirectory names will reflect the software installed, such as, iDXA, Prodigy Advance, Prodigy, DPX-NT, DPX-MD etc.). In batch mode, the Ambassador responds to message files placed directly into the ExchangeFolder.

In either case, whenever HL7 message files appear in the ExchangeFolder, the Ambassador parses the HL7 message and, if possible, creates an entry in the Ambassador's HL7 database (named **HL7.mdb,** by default) which is usually located in the **DATA** directory. No information from this message is copied into the Patient database (MS Access or SQL Server) at this time. The Ambassador deletes each HL7 message file from the ExchangeFolder as it is finishes working with them. However, when the Ambassador is running in the **Debug** Processing ID, each of the processed HL7 message files are **tagged as hidden**, and not actually deleted until enCORE exits.

1.2 HL7 Messages

HL7 messages typically require certain information to be present. Other information is optional, and some information may repeat several times. The HL7 Standard specifies which information is required, which is optional, which information can repeat, and so on. For a complete description of this standard, see the Health Level Seven Standard manual (An Application Protocol for Electronic Data Exchange in Healthcare Environments, HL7 Inc., Ann Arbor, Mich., 1997 or online at: http://www.hl7.org).

An HL7 message has the following structure:

- A **message** is composed of segments, beginning with the **MSH segment**.
- Every **segment** consists of one or more **fields**.
- Every **field** consists of one or more **components**.
- Every **component** consists of one or more **subcomponents**. Special separator characters help to identify data, even if some optional data is not present.
- Every segment is terminated by a carriage return.
- Every **field** begins with a **field separator**, usually "**|**".
- Components optionally end with a **component separator**, usually "**^**".
- Subcomponents optionally end with a **subcomponent separator**, usually "**&**".

If necessary, you can specify different separator characters in enCORE on the HL7 tab of the Connectivity Options dialog (available from the Tools menu).

1.2.1 Sample ORM HL7 Order message:

MSH|^~\&|RIMS||LUNAR_AMBASSADOR||19981021085625||ORM^O01|1|D|2.3|||||
PID||01-111-123|583335||PAUL^LEE^^^^||19110101|Female|||3773 21th Avenue^^Madison^WI^53713-2701^USA||(608)233-2774|(608)288-5000||||||||||||
NTE|2|P|Family history of osteoporosisIN1|1|73-91129-AX|333-4567|Aetna
ORC|NW|1041421-1^RIMS|1041421-1^ALIUS||NW||^^^19991021084500^^NORM^^^|||||11822814^Smith^Brian^^^MD^|BA5A|||M90||
OBR||1041421-1^RIMS|1041421-1^ALIUS|NM999^Nuclear Medicine^MSR^^^||19991021084500|||||||||11833915^Wu^Lee^^^^|||MCRE4^US|||||S|||||Disease^Osteoporotic|||Darla Smith||19991021084500
OBR||1041421-1^RIMS|1041421-1^ALIUS||||||||||||11833915^O'Connor^Mike^^^PhD^|||||||||||||Fracture^Pelvis|||||
OBR||1041421-1^RIMS|1041421-1^ALIUS||||||||||||11833915^O'Connor^Mike^^^PhD^|||||||||||||Treatment^Bisphosphonate|||||
OBX|1|RP|^BODY WEIGHT||98|kg|||||S|||19991021084500||
OBX|1|RP|^HEIGHT||64|in|||||S|||19991021084500||

1.2.2 Receiving and Acknowledging HL7 Messages

The HL7 Protocol requires every message to be acknowledged. The acknowledgement message informs the remote HL7 system that enCORE either accepts or rejects the message. In Debug processing mode, acknowledgement messages are written to a log file. If enCORE accepts the original message, enCORE is responsible for the data from then on. If enCORE rejects the original message or does not reply with an acknowledgement message, enCORE is not responsible for the data. enCORE may reject an HL7 message either because it is incorrectly formed (this may include differences in **LLP** usage between enCORE and the placer system), because enCORE does not assume responsibility for it (due, for example, to the message being of an unsupported type) or because enCORE can temporarily not accept responsibility for the message due to an internal fault condition.

enCORE only pays attention to HL7 messages sent to enCORE. Every HL7 message contains a field in the MSH segment indicating the name of the application that will receive the message. By default, enCORE goes by the

application name "LUNAR_AMBASSADOR", and rejects any HL7 messages that do not match this name. You can specify the application name in the HL7 tab of the Connectivity Options, as explained in Chapter 7 & 8.

The HL7 protocol has several versions, each of which supports different types of messages and has slightly different rules for interpreting data. By default, enCORE supports version 2.3 of the HL7 protocol. enCORE will reject any HL7 messages that do not match the HL7 version it is configured to use. You can specify the HL7 protocol version in the HL7 tab of the Connectivity Options.

1.3 enCORE Protocol Files

By harnessing the power of XML (Extensible Markup Language), enCORE's HL7 implementation, associates HL7 data with enCORE application data. Protocol files contain the script that maps an HL7 field (e.g. "PID.5.1") to one of enCORE's predefined data fields (e.g. "LastName"). The point of this script is that if a given hospital interprets the HL7 standard differently from enCORE product interpretation, the user can still use enCORE product by overriding the default mappings. An interface analyst can modify a HL7 Protocol files to accommodate different interpreations without having to change the software.

Note: The requirements at your site may differ from those in the following examples. An HL7 protocol file contains a number of associations that map an HL7 data element to an enCORE data element. For example:

```
<association>
<src>PID.5.1</src>
<dst>LastName</dst>
</association>
```

The text enclosed in angle brackets (e.g.,<association>) is an XML tag. These tags identify the way data is used in a document. XML, unlike HTML, allows customized definition of tags. LUNAR has defined its own tags to create HL7 protocol files.

Table 1. Permissible HL7 tags

association	allows HL7 fields to be associated with specific enCORE data
src	primary source of data for an association
src_second	altenative association source should primary source have no data
dst	data distinction for an association
where	allows conditional data associations
op	indicates the operation to be performed by the protocol file
protocol	indicates that the file is a protocol file
conv	provides method for connecting external data for use with enCORE
from	data to convert from
to	date to convert to
type	data type to use in a where clause
value	date value to use in a where clause
unit	units of measure
units	indicates field describing units of measure
read	indicates a read operation
write	indicates a write operation
EditedNameLocation	indicates the component of the Name field in which to place the name contents if it is manually edited in enCORE and cannot be parsed. For example, EditedNameLocation of 2 will place an edited name in the second component, which is the Last Name component.
Version	Used by encore to update the protocol with a new release of enCORE – do not modify or remove this value

In some cases the remote HL7 system may not send the data in the format enCORE expects. For example, enCORE expects to see either "F" or "M" in the "Gender" field in the database. If the remote HL7 system sends the letter "Female" instead of "F", HL7 protocol files handle the discrepancy by converting "Female" to "F" as part of the HL7 interface, using the <conv> conversion tag:

```
<association>
<src>PID.8</src>
<dst>Gender</dst>
<conv><from>Female</from><to>F</to></conv>
<conv><from>Male</from><to>M</to></conv>
</association>
```

In order to meet the needs of all users, HL7 is very flexible. For example, some HL7 fields will contain data, but the meaning of that data will be unknown until the contents of another field are examined. The HL7 Protocol files deal with this variability by using <where> tags that explain where to find data, and <unit> tags that explain where to find the unit of measurement, as shown below:

```
<association>
<src>OBX.5</src>
<dst>Height</dst>
<where><type>OBX.3.2</type><value>HEIGHT</value></where>
<units><unit>OBX.6</unit></units>
</association>
```

In the example below, if ORC.2.1 is not used, a second source, ORC.3.1 is provided.

```
<association>
<src>ORC.2.1</src>
<src_second>ORC.3.1</src_second>
<dst>PlacerOrderID</dst>
</association>
```

A list of supported unit conversions in LUNAR's database is shown in Table 2.

Table 2.Supported unit conversions

mm (millimeters)
cm (centimeters)
dm (decimeters)
m (meters)
dam (dekameters)
hm (hectometers)
mg (milligrams)
cg (centigrams)
dg (decigrams)
g (grams)
dag (dekagrams)
km (kilometers)
hg (hectograms)
kg (kilograms)
in (inches)
oz (ounces)
ft (feet)
lbs (pounds)

2 HL7 (ORM) Order Message Specifications

HL7 Order Message structure and contents as expected by enCORE.

2.1 Message Structure

Segment name						Segment Description	HL7 2.3 Standards Location
MSH						Message Header	2.24.1
	PID					Patient Information	3.3.2
		NTE				Notes and Comments (for patient)	2.24.15
		IN1				Insurance	6.4.6
			ORC			Common Order	4.3.1
				OBR		Order Detail	7.3.1
					OBX	Observation/Result	7.3.2

2.2 Segment Details

2.2.1 MSH

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element name	Notes on Interaction with enCORE
1	1	ST	R(equired)	00001	Field Separator	Expected to match HL7 Messaging Settings:: Field Separator from the HL7 Messaging Settings dialog (default is: | (ASCII 124))
2	4	ST	R	00002	Encoding Characters	Expected to match HL7 Messaging Settings:: Component Separator, Repetition Separator, Escape Character, and Subcomponent Separator from the HL7 Messaging Settings dialog (default is: ^~\& (ASCII 94, 126, 92, and 38))
3	180	HD	O(ptional)	00003	Sending Application	Stored as SendingApplication for availability to return in HL7 report
4	180	HD	O	00004	Sending Facility	Stored as SendingFacility for availability to return in HL7 report
5	180	HD	O	00005	Receiving Application	Anything conforming to the standard
6	180	HD	O	00006	Receiving Facility	Anything conforming to the standard
7	26	TS	O	00007	Date/Time Of Message	Anything conforming to the standard
8	40	ST	O	00008	Security	<NULL>
9	7	CM	R	00009	Message Type	ORM^O01
10	20	ST	R	00010	Message Control ID	Anything conforming to the standard
11	3	PT	R	00011	Processing ID	Expected to match Processing Mode field on the HL7 tab of the Connectivity Options dialog (possible values: D, P, or T)
12	8	ID	R	00012	Version ID	Expected to match one of the supported HL7 Versions. Refer to section 8.2 for a list of supported HL7 versions.
13	15	NM	O	00013	Sequence Number	Anything conforming to the standard
14	180	ST	O	00014	Continuation Pointer	Anything conforming to the standard
15	2	ID	O	00015	Accept Acknowledgment Type	Anything conforming to the standard
16	2	ID	O	00016	Application Acknowledgment Type	Anything conforming to the standard
17	2	ID	O	00017	Country Code	Anything conforming to the standard
18	6	ID	O	00692	Character Set	<NULL> (therefore defaults to ASCII character set)
19	60	CE	O	00693	Principal Language Of Message	Anything conforming to the standard

b) Example: MSH|^~\&|EMR1|| LUNAR_AMBASSADOR ||20021104112957||ORM^O01|1|D|2.3|||||

2.2.2 PID

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on Interaction with enCORE
1	4	SI	O(ptional)	00104	Set ID - Patient ID	Anything conforming to the standard
2	20	CX	O	00105	Patient ID (External ID)	Anything conforming to the standard
3	20	CX	R(equired)	00106	Patient ID (Internal ID)	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file this populates the Patient ID field of the Primary tab of the Edit information primary dialog.
4	20	CX	O	00107	Alternate Patient ID - PID	Anything conforming to the standard
5	48	XPN	R	00108	Patient Name	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Last, First, and Middle Initial fields of the Primary tab of the Edit Information dialog.
6	48	XPN	O	00109	Mother's Maiden Name	Anything conforming to the standard
7	26	TS	O	00110	Date/Time of Birth	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Birth Date field of the Primary tab of the Edit Information dialog.
8	1	IS	O	00111	Sex	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Gender field of the Primary tab of the Edit Information dialog.
9	48	XPN	O	00112	Patient Alias	Anything conforming to the standard
10	1	IS	O	00113	Race	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Ethnicity field of the Primary tab of the Edit Information dialog
11	106	XAD	O	00114	Patient Address	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Address, City, State, Postal, and Country fields of the Secondary tab of the Edit Information dialog.
12	4	IS	B(ackward Compatibility)	00115	County Code	Anything conforming to the standard
13	40	XTN	O	00116	Phone Number - Home	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Home Phone field of the Secondary tab of the Edit Information dialog.

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on Interaction with enCORE
14	40	XTN	O	00117	Phone Number - Business	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Work Phone field of the Secondary tab of the Edit Information dialog.
15	60	CE	O	00118	Primary Language	Anything conforming to the standard
16	1	IS	O	00119	Marital Status	Anything conforming to the standard
17	3	IS	O	00120	Religion	Anything conforming to the standard
18	20	CX	O	00121	Patient Account Number	Anything conforming to the standard
19	16	ST	O	00122	SSN Number - Patient	Anything conforming to the standard
20	25	CM	O	00123	Driver's License Number – Patient	Anything conforming to the standard
21	20	CX	O	00124	Mother's Identifier	Anything conforming to the standard
22	3	IS	O	00125	Ethnic Group	Anything conforming to the standard
23	60	ST	O	00126	Birth Place	Anything conforming to the standard
24	2	ID	O	00127	Multiple Birth Indicator	Anything conforming to the standard
25	2	NM	O	00128	Birth Order	Anything conforming to the standard
26	4	IS	O	00129	Citizenship	Anything conforming to the standard
27	60	CE	O	00130	Veterans Military Status	Anything conforming to the standard
28	80	CE	O	00739	Nationality	Anything conforming to the standard
29	26	TS	O	00740	Patient Death Date and Time	Anything conforming to the standard
30	1	ID	O	00741	Patient Death Indicator	Anything conforming to the standard

b) Example: PID||01-111-123|583335||SHAW^CATHERINE^ANN^^MISS^||19110101|F|||3773 21th Avenue^^Madison^WI^53713-2701^USA||(608)233-2774|(608)288-5000||||||||||||

2.2.3 NTE

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item#	Element Name	Notes on interaction with enCORE
1	4	SI	O(ptional)	00096	Set ID- NTE	Anything conforming to the standard.
2	8	ID	O	00097	Source of Comment	Anything conforming to the standard.
3	64k	FT	O	00098	Comment	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Comments field of the Secondary tab of the Edit Information dialog.

b) Example: NTE|2|P|Family history of osteoporosis

2.2.4 IN1

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on interaction with enCORE
1	4	SI	R(equired)	00426	Set ID - IN1	Anything conforming to the standard
2	60	CE	R	00368	Insurance Plan ID	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Insurance Company Plan field of the Additional tab of the Edit Information dialog.
3	59	CX	R	00428	Insurance Company ID	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Insurance Company ID field of the Additional tab of the Edit Information dialog.
4	130	XON	O(ptional)	00429	Insurance Company Name	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Insurance Company Name field of the Additional tab of the Edit Information dialog.
5	106	XAD	O	00430	Insurance Company Address	Anything conforming to the standard.
6	48	XPN	O	00431	Insurance Co. Contact Person	Anything conforming to the standard
7	40	XTN	O	00432	Insurance Co. Phone Number	Anything conforming to the standard.
8	12	ST	O	00433	Group Number	Anything conforming to the standard.
9	130	XON	O	00434	Group Name	Anything conforming to the standard
10	12	CX	O	00435	Insured's Group Emp ID	Anything conforming to the standard
11	130	XON	O	00436	Insured's Group Emp Name	Anything conforming to the standard
12	8	DT	O	00437	Plan Effective Date	Anything conforming to the standard
13	8	DT	O	00438	Plan Expiration Date	Anything conforming to the standard
14	55	CM	O	00439	Authorization Information	Anything conforming to the standard
15	3	IS	O	00440	Plan Type	Anything conforming to the standard
16	48	XPN	O	00441	Name Of Insured	Anything conforming to the standard
17	2	IS	O	00442	Insured's Relationship To Patient	Anything conforming to the standard
18	26	TS	O	00443	Insured's Date Of Birth	Anything conforming to the standard
19	106	XAD	O	00444	Insured's Address	Anything conforming to the standard
20	2	IS	O	00445	Assignment Of Benefits	Anything conforming to the standard
21	2	IS	O	00446	Coordination Of Benefits	Anything conforming to the standard
22	2	ST	O	00447	Coordination Of Ben. Priority	Anything conforming to the standard
23	2	ID	O	00448	Notice Of Admission Flag	Anything conforming to the standard
24	8	DT	O	00449	Notice Of Admission Date	Anything conforming to the standard
25	2	ID	O	00450	Report Of Eligibility Flag	Anything conforming to the standard
26	8	DT	O	00451	Report Of Eligibility Date	Anything conforming to the standard

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on interaction with enCORE
27	2	IS	O	00452	Release Information Code	Anything conforming to the standard
28	15	ST	O	00453	Pre-Admit Cert (PAC)	Anything conforming to the standard
29	26	TS	O	00454	Verification Date/Time	Anything conforming to the standard
30	60	XCN	O	00455	Verification By	Anything conforming to the standard
31	2	IS	O	00456	Type Of Agreement Code	Anything conforming to the standard
32	2	IS	O	00457	Billing Status	Anything conforming to the standard.
33	4	NM	O	00458	Lifetime Reserve Days	Anything conforming to the standard.
34	4	NM	O	00459	Delay Before L.R. Day	Anything conforming to the standard
35	8	IS	O	00460	Company Plan Code	Anything conforming to the standard.
36	15	ST	O	00461	Policy Number	Anything conforming to the standard.
37	12	CP	O	00462	Policy Deductible	Anything conforming to the standard
38	12	CP	B(ackward Compatibility)	00463	Policy Limit-Amount	Anything conforming to the standard
39	4	NM	O	00464	Policy Limit-Days	Anything conforming to the standard
40	12	CP	O	00465	Room Rate - Semi-Private	Anything conforming to the standard
41	12	CP	O	00466	Room Rate - Private	Anything conforming to the standard
42	60	CE	O	00467	Insured's Employer Status	Anything conforming to the standard
43	1	IS	O	00468	Insured's Sex	Anything conforming to the standard
44	106	XAD	O	00469	Insured's Employer Address	Anything conforming to the standard
45	2	ST	O	00470	Verification Status	Anything conforming to the standard
46	8	IS	O	00471	Prior Insurance Plan ID	Anything conforming to the standard
47	3	IS	O	01227	Coverage Type	Anything conforming to the standard
48	2	IS	O	00753	Handicap	Anything conforming to the standard
49	12	CX	O	01230	Total Payments	Anything conforming to the standard

b) Example: IN1|1|73-91129-AX|333-4567|AETNA

2.2.5 ORC

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on Interaction with enCORE
1	2	ID	R(equired)	00215	Order Control	Supported values are: CA: Cancel Order Request NW: New Order XO: Change Order Request
2	22	EI	C(onditional)	00216	Placer Order Number	Stored as ExamID2 for return in HL7 report
3	22	EI	C	00217	Filler Order Number	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file this populates the Exam ID field of the Primary tab of the Edit information primary dialog.
4	22	EI	O(ptional)	00218	Placer Group Number	Stored as UniversalServiceID for return in HL7 report

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on Interaction with enCORE
5	2	ID	O	00219	Order Status	Anything conforming to the standard.
6	1	ID	O	00220	Response Flag	Anything conforming to the standard
7	200	TQ	O	00221	Quantity/Timing	Anything conforming to the standard. Component 4 displayed as Scheduled Time on Worklist.
8	200	CM	O	00222	Parent	Anything conforming to the standard.
9	26	TS	O	00223	Date/Time of Transaction	Anything conforming to the standard Stored as DateTimeOfTransaction for return in HL7 report
10	120	XCN	O	00224	Entered By	Anything conforming to the standard. Stored as EnteredBy for return in HL7 report
11	120	XCN	O	00225	Verified By	Anything conforming to the standard. Stored as VerifiedBy for return in HL7 report
12	120	XCN	B(ackward Compatibility)	00226	Ordering Provider	Anything conforming to the standard Stored as OrderingProvider for return in HL7 report, and sent to Referring Physician on Patient Info dialog
13	80	PL	O	00227	Enterer's Location	Anything conforming to the standard. Stored as EntererssLocation for return in HL7 report
14	40	XTN	O	00228	Call Back Phone Number	Anything conforming to the standard. Stored as CallBackPhoneNumber for return in HL7 report
15	26	TS	O	00229	Order Effective Date/Time	Anything conforming to the standard Stored as OrderEffectiveDateTime for return in HL7 report
16	200	CE	O	00230	Order Control Code Reason	Anything conforming to the standard Stored as OrderControlCodeReason for return in HL7 report
17	60	CE	O	00231	Entering Organization	Anything conforming to the standard Stored as EnteringOrganization for return in HL7 report
18	60	CE	O	00232	Entering Device	Anything conforming to the standard Stored as EnteringDevice for return in HL7 report
19	120	XCN	O	00233	Action By	Anything conforming to the standard Stored as ActionBy for return in HL7 report

b) Example: ORC|nw|1041421-1^RIMS|1041421-1^ALIUS||NW||^^^19991021084500^^NORM^^^|||||11822814^Mullen^Brian^^^MD^|BA5A||||M90||

2.2.6 OBR

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on interaction with enCORE
1	4	SI	C(onditional)	00237	Set ID - OBR	Anything conforming to the standard
2	75	EI	C	00216	Placer Order Number	Anything conforming to the standard.

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on interaction with enCORE
3	75	EI	C	00217	Filler Order Number +	Anything conforming to the standard
4	200	CE	R(equired)	00238	Universal Service ID	Anything conforming to the standard
5	2	ID	X (Not used for this message type)	00239	Priority	Anything conforming to the standard.
6	26	TS	X	00240	Requested Date/Time	Anything conforming to the standard
7	26	TS	C	00241	Observation Date/Time #	Anything conforming to the standard.
8	26	TS	O(ptional)	00242	Observation End Date/Time #	Anything conforming to the standard.
9	20	CQ	O	00243	Collection Volume *	Anything conforming to the standard
10	60	XCN	O	00244	Collector Identifier *	Anything conforming to the standard
11	1	ID	O	00245	Specimen Action Code *	Anything conforming to the standard
12	60	CE	O	00246	Danger Code	Anything conforming to the standard
13	300	ST	O	00247	Relevant Clinical Info.	Anything conforming to the standard
14	26	TS	O	00248	Specimen Received Date/Time *	Anything conforming to the standard
15	300	CM	O	00249	Specimen Source *	Anything conforming to the standard
16	80	XCN	O	00226	Ordering Provider	Anything conforming to the standard
17	40	XTN	O	00250	Order Callback Phone Number	Anything conforming to the standard
18	60	ST	O	00251	Placer field 1	Anything conforming to the standard
19	60	ST	O	00252	Placer field 2	Anything conforming to the standard
20	60	ST	O	00253	Filler Field 1+	Anything conforming to the standard
21	60	ST	O	00254	Filler Field 2+	Anything conforming to the standard
22	26	TS	O	00255	Results Rpt/Status Chng - Date/Time +	Anything conforming to the standard
23	40	CM	O	00256	Charge to Practice +	Anything conforming to the standard
24	10	ID	O	00257	Diagnostic Serv Sect ID	Anything conforming to the standard
25	1	ID	O	00258	Result Status +	Anything conforming to the standard
26	400	CM	O	00259	Parent Result +	Anything conforming to the standard
27	200	TQ	O	00221	Quantity/Timing	Anything conforming to the standard
28	150	XCN	O	00260	Result Copies To	Anything conforming to the standard
29	150	CM	O	00261	Parent *	Anything conforming to the standard
30	20	ID	O	00262	Transportation Mode	Anything conforming to the standard
31	300	CE	O	00263	Reason for study	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, the

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on interaction with enCORE
						Fractures, Indications, and Treatments are separated by the repetition separator.
32	200	CM	O	00264	Priciple Result Interpreter +	Anything conforming to the standard.
33	200	CM	O	00265	Assistant Result Interpreter +	Anything conforming to the standard.
34	200	CM	O	00266	Technician +	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this field populates the Attendant field of the Secondary tab of the Edit Information dialog.
35	200	CM	O	00267	Transcriptionist +	Anything conforming to the standard.
36	26	TS	O	00268	Scheduled Date/Time +	Anything conforming to the standard.
37	4	NM	O	01028	Number of Sample Containers +	Anything conforming to the standard
38	60	CE	B(ackward Compatibility)	01029	Transport Logistics of Collected Sample *	Anything conforming to the standard
39	200	CE	O	01030	Collector's Comment *	Anything conforming to the standard
40	60	CE	O	01031	Transport Arrangement Responsibility	Anything conforming to the standard
41	30	ID	O	01032	Transport Arranged	Anything conforming to the standard
42	1	ID	O	01033	Escort Required	Anything conforming to the standard
43	200	CE	O	01034	Planned Patient Transport Comment	Anything conforming to the standard

b) Example: OBR||1041421-1^RIMS|1041421-1^ALIUS|NM999^Nuclear Medicine^MSR^^^||19991021084500||||||||||11833915^O'Connor^Mike^^^PhD^|||MCRE4^US|||||S|||||808.8^Pelvis^I9~733^Osteoporosis^I9~E933.6^Bisphosphonate^I9|||&Darla Smith||19991021084500

2.2.7 OBX

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element name	Notes on Interaction with enCORE
1	10	SI	O(ptional)	00569	Set ID - OBX	Anything conforming to the standard
2	2	ID	C(onditional)	00570	Value Type	Anything conforming to the standard
3	590	CE	R(equired)	00571	Observation Identifier	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, the second component of this field can be used to determine whether the value in OBX.5 should populate the Height or Weight field of the Primary tab of the Edit Information dialog.
4	20	ST	C	00572	Observation Sub-ID	Anything conforming to the standard

Sequence ID	Item Length	Data Type	Optionality	Item #	Element name	Notes on Interaction with enCORE
5	65536	*	C	00573	Observation Value	Anything conforming to the standard. The value of either Height or Weight, depending on the identifier in OBX.3.
6	60	CE	O	00574	Units	Anything conforming to the standard. The units for the height or weight (e.g. “kg”)
7	10	ST	O	00575	Reference Range	Anything conforming to the standard
8	5	ID	O	00576	Abnormal Flags	Anything conforming to the standard
9	5	NM	O	00577	Probability	Anything conforming to the standard
10	2	ID	O	00578	Nature of Abnormal Test	Anything conforming to the standard
11	1	ID	R	00579	Observ Result Status	Anything conforming to the standard
12	26	TS	O	00580	Date Last Obs Normal Values	Anything conforming to the standard
13	20	ST	O	00581	User Defined Access Checks	Anything conforming to the standard
14	26	TS	O	00582	Date/Time of the Observation	Anything conforming to the standard
15	60	CE	O	00583	Producer's ID	Anything conforming to the standard
16	80	XCN	O	00584	Responsible Observer	Anything conforming to the standard
17	60	CE	O	00936	Observation Method	Anything conforming to the standard

b) Example: OBX|1|RP|^Body Weight||120|kg|||||S|||19991021084500||

2.3 Example Orders:

a. NW - New Order:

MSH|^~\&|RIMS||LUNAR_AMBASSADOR||19991021085626||ORM^O01|1|D|2.3|||||
PID||04-444-123|583335||Woozy^Susie^||19410404|F|||123 24th Street, NE^^Madison^WI^53713|||||||||||||||
ORC|NW|1041421-4^RIMS|1041421-
4^ALIUS||NW||^^^19981021084500^^NORM^^^|||||11911913^Oil^Olive^V^^MS^|BA5A||||||
OBR||1041421-1^RIMS|1041421-1^ALIUS|NM999^Nuclear
Medicine^MSR^^^||19991021084500|||||||||11911913^WOO^LEE^B^^MD^|
||MCRE4^US||||||S|||||||||||19991021084500

b. XO - Change Order Request:

MSH|^~\&|RIMS||LUNAR_AMBASSADOR||19991021085625||ORM^O01|1|D|2.3|||||
PID||02-377-137|583335||SHAW^KAITLIN^ANN^^MISS^||19590818|F|||313 W Beltline
HWY^^Madison^WI^53713|||||||||||||||
ORC|XO|1041421-1^RIMS|1041421-
1^ALIUS||NW||^^^19991021084500^^NORM^^^|||||11911913^Gordon^Artemius^^^PhD^|BA5A||||||
OBR||1041421-1^RIMS|1041421-1^ALIUS|NM999^Nuclear
Medicine^MSR^^^||19991021084500|||||||||11911913^Woo^Lee^^^MD^|
||MCRE4^US||||||S||||||^PELVIS-PELVIC PAIN L>R|||||19991021084500

c. CA - Cancel Order Request:

MSH|^~\&|RIMS||LUNAR_AMBASSADOR||19991021085626||ORM^O01|1|D|2.3|||||

PID||02-222-123|583335||Was^April^^^MISS^||19210202|F|||1234 22th Street^Madison^WI^53713-9876|||||||||||||||
ORC|CA|1041421-2^RIMS|1041421-
2^ALIUS||NW||^^^19991021084500^^NORM^^^|||||11911913^Gordon^Artemius^V^^PhD^|BA5A||||||
OBR||1041421-1^RIMS|1041421-1^ALIUS|NM999^Nuclear
Medicine^MSR^^^||19981021084500|||||||||11911913^Wu^Li^^^MD^|
||MCRE4^US||||||S||||||Fracture^Pelvis|||||19991021084500

2.4 ORM Supported Tokens

The HL7 ORM Order Interface is in the ProtocolOrder.xml file is found in the enCORE's CONFIG folder.

Table of ProtocolOrder.xml Supported Tokens

ActionBy	Ethnicity	OrderControlCodeReason
Address	ExamID	OrderEffectiveDateTime
Attendant	ExamID2	OrderingProvider
BirthTime	FacilityID	PatientID
CallBackPhoneNumber	FirstName	Physician
City	Fracture	PostalCode
Codes	Gender	ReadingPhysician
Comments	Height	ScheduleTime
Country	HomePhone	SendingApplication
DateTimeOfTransaction	InsuranceCompany	SendingFacility
DeptID	InsuranceID	State
Disease	InsurancePlan	Treatment
DocumentNumber	LastName	UniversalServiceID
EnteredBy	MenopauseTime	VerifiedBy
EnterersLocation	MidInit	Weight
EnteringDevice	ObservationTime	WorkPhone
EnteringOrganization		

Default ProtocolOrder.xml:

```
<?xml version="1.0"?>
<protocol op="read" version="5">
  <association>
        <src>ORC.2</src>
        <dst>ExamID2</dst>
  </association>
  <association>
        <src>ORC.7.4</src>
        <dst>ScheduleTime</dst>
  </association>
  <association>
        <src>PID.5.2</src>
        <dst>FirstName</dst>
  </association>
  <association>
        <src>PID.5.3</src>
        <dst>MidInit</dst>
  </association>
  <association>
        <src>PID.5.1</src>
        <dst>LastName</dst>
  </association>
  <association>
        <src>PID.3</src>
        <dst>PatientID</dst>
  </association>
  <association>
        <src>PID.7</src>
        <dst>BirthTime</dst>
  </association>
  <association>
        <src>OBX.5</src>
        <dst>Height</dst>
        <where>
              <type>OBX.3.2</type>
```

```
                <value>Height</value>
        </where>
        <units>
                <unit>OBX.6</unit>
        </units>
</association>
<association>
        <src>OBX.5</src>
        <dst>Weight</dst>
        <where>
                <type>OBX.3.2</type>
                <value>body weight</value>
        </where>
        <units>
                <unit>OBX.6</unit>
        </units>
</association>
<association>
        <src>PID.8</src>
        <dst>Gender</dst>
        <conv>
                <from>F</from>
                <to>Female</to>
        </conv>
        <conv>
                <from>M</from>
                <to>Male</to>
        </conv>
</association>
<association>
        <src>PID.10</src>
        <dst>Ethnicity</dst>
</association>
<association>
        <src>PID.11.1</src>
        <dst>Address</dst>
</association>
<association>
        <src>PID.11.3</src>
        <dst>City</dst>
</association>
<association>
        <src>PID.11.4</src>
        <dst>State</dst>
</association>
<association>
        <src>PID.11.5</src>
        <dst>PostalCode</dst>
</association>
<association>
        <src>PID.11.6</src>
        <dst>Country</dst>
</association>
<association>
        <src>PID.13.1</src>
        <dst>HomePhone</dst>
</association>
<association>
        <src>PID.14.1</src>
        <dst>WorkPhone</dst>
</association>
<association>
        <src>OBR.34.1</src>
        <dst>Attendant</dst>
</association>
<association>
        <src>ORC.12</src>
        <dst>Physician</dst>
</association>
<association>
```

```
		<src>ORC.17.1</src>
		<dst>FacilityID</dst>
</association>
<association>
		<src>NTE.3</src>
		<dst>Comments</dst>
		<where>
			<type>NTE.1</type>
			<value>2</value>
		</where>
</association>
<association>
		<src>IN1.4.1</src>
		<dst>InsuranceCompany</dst>
</association>
<association>
		<src>IN1.3.1</src>
		<dst>InsuranceID</dst>
</association>
<association>
		<src>IN1.2.1</src>
		<dst>InsurancePlan</dst>
</association>
<association>
		<src>OBR.4</src>
		<dst>UniversalServiceID</dst>
</association>
<association>
		<src>MSH.3</src>
		<dst>SendingApplication</dst>
</association>
<association>
		<src>MSH.4</src>
		<dst>SendingFacility</dst>
</association>
<association>
		<src>ORC.12</src>
		<dst>OrderingProvider</dst>
</association>
<association>
		<src>ORC.3</src>
		<dst>ExamID</dst>
</association>
<association>
		<src>ORC.9</src>
		<dst>DateTimeOfTransaction</dst>
</association>
<association>
		<src>ORC.10</src>
		<dst>EnteredBy</dst>
</association>
<association>
		<src>ORC.11</src>
		<dst>VerifiedBy</dst>
</association>
<association>
		<src>ORC.13</src>
		<dst>EnterersLocation</dst>
</association>
<association>
		<src>ORC.14</src>
		<dst>CallBackPhoneNumber</dst>
</association>
<association>
		<src>ORC.15</src>
		<dst>OrderEffectiveDateTime</dst>
</association>
<association>
		<src>ORC.16</src>
		<dst>OrderControlCodeReason</dst>
```

```
    </association>
    <association>
            <src>ORC.17</src>
            <dst>EnteringOrganization</dst>
    </association>
    <association>
            <src>ORC.18</src>
            <dst>EnteringDevice</dst>
    </association>
    <association>
            <src>ORC.19</src>
            <dst>ActionBy</dst>
    </association>
    <association>
            <src>OBR.31</src>
            <dst>Codes</dst>
    </association>
</protocol>
```

3 HL7 (ADT) Admission, Discharge & Transfer

HL7 Order Message structure and contents as expected by encore:

An ADT Admit/visit notification message (A04) is treated as a New Order request in enCORE.

An ADT Update Patient Information message (A08) is treated as an Update Order request in enCORE if an order with the given Placer Order Number is already present in enCORE, but is treated as a New Order request if such an order is not already present in enCORE.

3.1 Message Structure

Segment name				Segment Description	HL7 2.3 Standards Location
MSH				Message Header	2.24.1
	EVN			Event Type	3.3.1
		PID		Patient Information	3.3.2
			PV1	Patient Visit (Optional)	3.3.3
			IN1	Insurance Information (Optional)	6.4.6

3.2 Segment Details

Consult the later section on ADT Supported Tokens to see which tokens are available for transferring order items into enCORE.

3.2.1 MSH

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
1	1	ST	R(equired)	Field Separator	Expected to match HL7 Messaging Settings; Field Separator from the HL7 Messaging; Settings dialog (default is: |(ASCII 124))
2	4	ST	R	Encoding Characters	Expected to match HL7 Messaging Settings; Component Separator, Repetition Separator, Escape Character, and Subcomponent Separator from the HL7 Messaging Settings dialog (default is:^~\&(ASCII 94, 126, 92 and 38))
3	180	HD	O(ptional)	Sending Application	Anything conforming to the standard. Stored as SendingApplication for availability to return in HL7 report

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
4	180	HD	O	Sending Facility	Anything conforming to the standard. Stored as SendingFacility for availability to return in HL7 report.
5	180	HD	O	Receiving Application	Expected to match HL7 Messages::Application Name from the HL7 Messaging Setting dialog (default is: LUNAR_AMBASSADOR)
6	180	HD	O	Receiving Facility	Anything conforming to the standard
7	26	TS	O	Date/Time Of Message	Anything conforming to the standard
8	40	ST	O	Security	Anything conforming to the standard
9	7	CM	R	Message Type	Possible values: ADT^A04, ADT^A08, ADT^A13
10	20	ST	R	Message Control ID	Anything conforming to the standard
11	3	PT	R	Processing ID	D, P, or T
12	8	ID	R	Version ID	Expected to match HL7 Messaging Settings;
13	15	NM	O	Sequence Number	Anything conforming to the standard
14	180	ST	O	Continuation Pointer	Anything conforming to the standard
15	2	ID	O	Accept Acknowledgement Type	Anything conforming to the standard
16	2	ID	O	Application Acknowledgement Type	Anything conforming to the standard
17	2	ID	O	Country Code	Anything conforming to the standard
18	6	ID	O	Character Set	<NULL> (therefore defaults to the ASCII character set)
19	60	CE	O	Principal Language Of Message	Anything conforming to the standard

b) Example: MSH|^~\&| EMR1|| LUNAR_AMBASSADOR |SOUTH|20051003153249||ADT^A04|1443972769650780|P|2.3|||NE|NE

3.2.2 EVN

a) Schema:

Sequence ID	Length	Data Type	Optionality	Element Name	Notes on Interaction with enCORE
1	3	ID	B(ackward Compatibility)	Event Type Code	A04 (Register a patient), A08 (Update patient information), or A13 (Cancel discharge/End visit)
2	26	TS	R(equired)	Recorded Date/Time	Current date/time in the HL7 format (i.e. YYYYMMDDHHMMSS)
3	26	TS	O(ptional)	Date/Time Planned Event	Anything conforming to the standard
4	3	IS	O	Event Reason Code	Anything conforming to the standard
5	60	XCN	O	Operator ID	Anything conforming to the standard
6	26	TS	O	Event Occurred	Anything conforming to the standard

b) Example: EVN|A04|20021104112957

3.2.3 PID

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
1	4	SI	O(ptional)	Set ID - Patient ID	Anything conforming to the standard
2	20	CX	O	Patient ID (External ID)	Anything conforming to the standard
3	20	CX	R(equired)	Patient ID (Internal ID)	Anything conforming to the standard. Using the defaults in the ProtocolOrderADT.xml file, this populates the Patient ID field of the Primary tab of the Edit Information dialog.
4	20	CX	O	Alternate Patient ID - PID	Anything conforming to the standard
5	48	XPN	R	Patient Name	Anything conforming to the standard. Using the defaults in the ProtocolOrderADT.xml file, this populates the Last, First, and Middle Initial field of the Edit Information of the Edit Information dialog.
6	48	XPN	O	Mother's Maiden Name	Anything conforming to the standard
7	26	TS	O	Date/Time Of Birth	Anything conforming to the standard. Using the defaults in the ProtocolOrderADT.xml file, this populates the Birth Date field of the Primary tab of the Edit Information dialog.
8	1	IS	O	Sex	Anything conforming to the standard. Using the defaults in the ProtocolOrderADT.xml file, this populates the Gender field of the Primary tab of the Edit Information dialog.
9	48	XPN	O	Patient Alias	Anything conforming to the standard
10	1	IS	O	Race	Anything conforming to the standard. Using the defaults in the ProtocolOrderADT.xml file, this populates the Ethnicity field of the Primary tab of the Edit Information dialog.
11	106	XAD	O	Patient Address	Anything conforming to the standard. Using the defaults in the ProtocolOrderADT.xml file, this populates the Address, City, State, Postal, and Country field of the Secondary tab of the Edit Information dialog.
12	4	IS	B(ackward Compatibility)	Country Code	Anything conforming to the standard
13	40	XTN	O	Phone Number - Home	Anything conforming to the standard. Using the defaults in the ProtocolOrderADT.xml file, this populates the Home Phone field of the Secondary tab of the Edit Information dialog.
14	40	XTN	O	Phone Number - Business	Anything conforming to the standard. Using the defaults in the ProtocolOrderADT.xml file, this populates the Work Phone field of the Secondary tab of the Edit Information dialog.
15	60	CE	O	Primary Language	Anything conforming to the standard

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
16	1	IS	O	Marital Status	Anything conforming to the standard
17	3	IS	O	Religion	Anything conforming to the standard
18	20	CX	O	Patient Account Number	Anything conforming to the standard
19	16	ST	O	SSN Number - Patient	Anything conforming to the standard
20	25	CM	O	Driver's License Number - Patient	Anything conforming to the standard
21	20	CX	O	Mother's Identifier	Anything conforming to the standard
22	3	IS	O	Ethnic Group	Anything conforming to the standard
23	60	ST	O	Birth Place	Anything conforming to the standard
24	2	ID	O	Multiple Birth Indicator	Anything conforming to the standard
25	2	NM	O	Birth Order	Anything conforming to the standard
26	4	IS	O	Citizenship	Anything conforming to the standard
27	60	CE	O	Veterans Military Status	Anything conforming to the standard
28	80	CE	O	Nationality	Anything conforming to the standard
29	26	TS	O	Patient Death Date and Time	Anything conforming to the standard
30	1	ID	O	Patient Death Indicator	Anything conforming to the standard

b) Example: PID|1||234-TEST011|MR-846-624|Caldwell^Walter^S.||19420816|Male||White|4839 NW Montgomery St.^^Portland^OR^97434^USA||503-555-6054^^^caldwells@uswest.com|503-434-0090|English|M|||822-84-6624

3.2.4 PV1 (Optional)

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
1	4	SI	O(ptional)	Set ID - PV1	Anything conforming to the standard
2	1	IS	R(equired)	Patient Class	Anything conforming to the standard
3	80	PL	O	Assigned Patient Location	Anything conforming to the standard.
4	2	IS	O	Admission Type	Anything conforming to the standard
5	20	CX	O	Preadmit Number	Anything conforming to the standard.
6	80	PL	O	Prior Patient Location	Anything conforming to the standard
7	60	XCN	O	Attending Doctor	Anything conforming to the standard.
8	60	XCN	O	Referring Doctor	Anything conforming to the standard. Using the defaults ProtocolOrderADT.xml file, this populates the Referring Physician

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
					field of the Primary tab of the Edit Information dialog.
9	60	XCN	O	Consulting Doctor	Anything conforming to the standard
10	3	IS	O	Hospital Service	Anything conforming to the standard
11	80	PL	O	Temporary Location	Anything conforming to the standard
12	2	IS	O	Preadmit Test Indicator	Anything conforming to the standard
13	2	IS	O	Readmissio n Indicator	Anything conforming to the standard
14	3	IS	O	Admit Source	Anything conforming to the standard
15	2	IS	O	Ambulatory Status	Anything conforming to the standard
16	2	IS	O	VIP Indicator	Anything conforming to the standard
17	60	XCN	O	Admitting Doctor	Anything conforming to the standard
18	2	IS	O	Patient Type	Anything conforming to the standard
19	20	CX	O	Visit Number	Anything conforming to the standard
20	50	CM	O	Financial Class	Anything conforming to the standard
21	2	IS	O	Charge Price Indicator	Anything conforming to the standard
22	2	IS	O	Courtesy Code	Anything conforming to the standard
23	2	IS	O	Credit Rating	Anything conforming to the standard
24	2	IS	O	Contract Code	Anything conforming to the standard
25	8	DT	O	Contract Effective Date	Anything conforming to the standard
26	12	NM	O	Contract Amount	Anything conforming to the standard
27	3	NM	O	Contract Period	Anything conforming to the standard
28	2	IS	O	Interest Code	Anything conforming to the standard
29	1	IS	O	Transfer to Bad Debt Code	Anything conforming to the standard
30	8	DT	O	Transfer to Bad Date Date	Anything conforming to the standard
31	10	IS	O	Bad Debt Agency Code	Anything conforming to the standard
32	12	NM	O	Bad Debt Transfer Amount	Anything conforming to the standard.
33	12	NM	O	Bad Debt Recovery Amount	Anything conforming to the standard.
34	1	IS	O	Delete Account Indicator	Anything conforming to the standard

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
35	8	DT	O	Delete Account Date	Anything conforming to the standard.
36	3	IS	O	Discharge Disposition	Anything conforming to the standard.
37	25	CM	O	Discharged to Location	Anything conforming to the standard
38	2	IS	O	Diet Type	Anything conforming to the standard
39	2	IS	O	Servicing Facility	Anything conforming to the standard
40	1	IS	B(ackward Compatibility)	Bed Status	Anything conforming to the standard
41	2	IS	O	Account Status	Anything conforming to the standard
42	80	PL	O	Pending Location	Anything conforming to the standard
43	80	PL	O	Prior Temporary Location	Anything conforming to the standard
44	26	TS	O	Admit Date/Time	Anything conforming to the standard. Displays as Scheduled Time in Worklist.
45	26	TS	O	Discharge Date/Time	Anything conforming to the standard
46	12	NM	O	Current Patient Balance	Anything conforming to the standard
47	12	NM	O	Total Charges	Anything conforming to the standard
48	12	NM	O	Total Adjustments	Anything conforming to the standard
49	12	NM	O	Total Payments	Anything conforming to the standard
50	20	CX	O	Alternate Visit ID	Anything conforming to the standard
51	1	IS	O	Visit Indicator	Anything conforming to the standard
52	60	XCN	O	Other Healthcare Provider	Anything conforming to the standard

b) Example: PV1|1|O|^^^SOUTH||||hwinston

3.2.5 IN1 (Optional)

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
1	4	SI	R(equired)	Set ID - IN1	Anything conforming to the standard
2	60	CE	R	Insurance Plan ID	Anything conforming to the standard. Using the defaults ProtocolOrder.xml file, this populates the Insurance Company Plan field of the Additional tab of the Edit Information dialog.
3	59	CX	R	Insurance Company ID	Anything conforming to the standard. Using the defaults ProtocolOrder.xml file, this populates the Insurance Company ID field of the Additional tab of the Edit Information dialog.

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
4	130	XON	O(ptional)	Insurance Company Name	Anything conforming to the standard. Using the defaults ProtocolOrder.xml file, this populates the Insurance Company Name field of the Additional tab of the Edit Information dialog.
5	106	XAD	O	Insurance Company Address	Anything conforming to the standard.
6	48	XPN	O	Insurance Co. Contact Person	Anything conforming to the standard
7	40	XTN	O	Insurance Co. Phone Number	Anything conforming to the standard.
8	12	ST	O	Group Number	Anything conforming to the standard.
9	130	XON	O	Group Name	Anything conforming to the standard
10	12	CX	O	Insured's Group Emp ID	Anything conforming to the standard
11	130	XON	O	Insured's Group Emp Name	Anything conforming to the standard
12	8	DT	O	Plan Effective Date	Anything conforming to the standard
13	8	DT	O	Plan Expiration Date	Anything conforming to the standard
14	55	CM	O	Authorization Information	Anything conforming to the standard
15	3	IS	O	Plan Type	Anything conforming to the standard
16	48	XPN	O	Name Of Insured	Anything conforming to the standard
17	2	IS	O	Insured's Relationship To Patient	Anything conforming to the standard
18	26	TS	O	Insured's Date Of Birth	Anything conforming to the standard
19	106	XAD	O	Insured's Address	Anything conforming to the standard
20	2	IS	O	Assignment Of Benefits	Anything conforming to the standard
21	2	IS	O	Coordination Of Benefits	Anything conforming to the standard
22	2	ST	O	Coordination Of Ben. Priority	Anything conforming to the standard
23	2	ID	O	Notice Of Admission Flag	Anything conforming to the standard
24	8	DT	O	Notice Of Admission Date	Anything conforming to the standard
25	2	ID	O	Report Of Eligibility Flag	Anything conforming to the standard
26	8	DT	O	Report Of Eligibility Date	Anything conforming to the standard
27	2	IS	O	Release Information Code	Anything conforming to the standard

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
28	15	ST	O	Interest Code	Anything conforming to the standard
29	26	TS	O	Transfer to Bad Debt Code	Anything conforming to the standard
30	60	XCN	O	Transfer to Bad Date Date	Anything conforming to the standard
31	2	IS	O	Bad Debt Agency Code	Anything conforming to the standard
32	2	IS	O	Bad Debt Transfer Amount	Anything conforming to the standard.
33	4	NM	O	Bad Debt Recovery Amount	Anything conforming to the standard.
34	4	NM	O	Delete Account Indicator	Anything conforming to the standard
35	8	IS	O	Delete Account Date	Anything conforming to the standard.
36	15	ST	O	Discharge Disposition	Anything conforming to the standard.
37	12	CP	O	Discharged to Location	Anything conforming to the standard
38	12	CP	B(ackward Compatibility)	Diet Type	Anything conforming to the standard
39	4	NM	O	Servicing Facility	Anything conforming to the standard
40	12	CP	B	Bed Status	Anything conforming to the standard
41	12	CP	B	Account Status	Anything conforming to the standard
42	60	CE	O	Pending Location	Anything conforming to the standard
43	1	IS	O	Prior Temporary Location	Anything conforming to the standard
44	106	XAD	O	Admit Date/Time	Anything conforming to the standard
45	2	ST	O	Discharge Date/Time	Anything conforming to the standard
46	8	IS	O	Current Patient Balance	Anything conforming to the standard
47	3	IS	O	Total Charges	Anything conforming to the standard
48	2	IS	O	Total Adjustments	Anything conforming to the standard
49	12	CX	O	Total Payments	Anything conforming to the standard
50	20	CX	O	Alternate Visit ID	Anything conforming to the standard
51	1	IS	O	Visit Indicator	Anything conforming to the standard
52	60	XCN	O	Other Healthcare Provider	Anything conforming to the standard

b) Example: IN1|1|73-91129-AX|333-4567|AETNA

3.3 Example Admission, Discharge, Transfer message:

MSH|^~\&|LinkLogic-
TEST|TEST000^SOUTH|PracticeMgr|SOUTH|20051003153249||ADT^A04|1443972769650780|P|2.3|||NE|NE
EVN|A04|20051003153249
PID|1||234-TEST011|MR-846-624|Caldwell^Walter^S.||19420816|M||W|4839 NW Montgomery
St.^^Portland^OR^97434^USA||
503-555-6054^^^caldwells@uswest.com|503-434-0090|English|M|||822-84-6624
PV1|1|O|^^^SOUTH||||hwinston

3.4 ADT Supported Tokens

The HL7 ADT Order Interface is in the ProtocolOrderADT.xml file is found in the enCORE's CONFIG folder under the main installation directory.

Table of ProtocolOrderADT.xml Supported Tokens

ActionBy	Ethnicity	OrderControlCodeReason
Address	ExamID	OrderEffectiveDateTime
Attendant	ExamID2	OrderingProvider
BirthTime	FacilityID	PatientID
CallBackPhoneNumber	FirstName	Physician
City	Fracture	PostalCode
Codes	Gender	ReadingPhysician
Comments	Height	ScheduleTime
Country	HomePhone	SendingApplication
DateTimeOfTransaction	InsuranceCompany	SendingFacility
DeptID	InsuranceID	State
Disease	InsurancePlan	Treatment
DocumentNumber	LastName	UniversalServiceID
EnteredBy	MenopauseTime	VerifiedBy
EnterersLocation	MidInit	Weight
EnteringDevice	ObservationTime	WorkPhone
EnteringOrganization		

Default ProtocolOrderADT.xml:

```
<?xml version="1.0"?>
<!DOCTYPE protocol SYSTEM "protocol.dtd">
<protocol op="read" version="2">
  <association>
        <src>MSH.3</src>
        <dst>SendingApplication</dst>
  </association>
  <association>
        <src>MSH.4</src>
        <dst>SendingFacility</dst>
  </association>
  <association>
        <src>PID.3</src>
        <dst>PatientID</dst>
  </association>
  <association>
        <src>PID.5.1</src>
        <dst>LastName</dst>
  </association>
  <association>
        <src>PID.5.2</src>
        <dst>FirstName</dst>
  </association>
  <association>
        <src>PID.5.3</src>
        <dst>MidInit</dst>
  </association>
  <association>
        <src>PID.7</src>
        <dst>BirthTime</dst>
```

```
    </association>
    <association>
            <src>PID.8</src>
            <dst>Gender</dst>
            <conv>
                    <from>f</from>
                    <to>Female</to>
            </conv>
            <conv>
                    <from>M</from>
                    <to>Male</to>
            </conv>
    </association>
    <association>
            <src>PID.10</src>
            <dst>Ethnicity</dst>
    </association>
    <association>
            <src>PID.11.1</src>
            <dst>Address</dst>
    </association>
    <association>
            <src>PID.11.3</src>
            <dst>City</dst>
    </association>
    <association>
            <src>PID.11.4</src>
            <dst>State</dst>
    </association>
    <association>
            <src>PID.11.5</src>
            <dst>PostalCode</dst>
    </association>
    <association>
            <src>PID.11.6</src>
            <dst>Country</dst>
    </association>
    <association>
            <src>PID.13.1</src>
            <dst>HomePhone</dst>
    </association>
    <association>
            <src>PID.14.1</src>
            <dst>WorkPhone</dst>
    </association>
    <association>
            <src>PV1.8</src>
            <dst>Physician</dst>
    </association>
    <association>
            <src>IN1.4.1</src>
            <dst>InsuranceCompany</dst>
    </association>
    <association>
            <src>IN1.3.1</src>
            <dst>InsuranceID</dst>
    </association>
    <association>
            <src>IN1.2.1</src>
            <dst>InsurancePlan</dst>
    </association>
    <association>
            <src>PV1.44</src>
            <dst>ScheduleTime</dst>
    </association>
</protocol>
```

4 HL7 (OMG) Order Message Specifications

HL7 OMG Order Message structure and contents as expected by encore.

4.1 Message Structure

Segment name						Segment Description	HL7 2.3 Standards Location
MSH						Message Header	2.24.1
	PID					Patient Information	3.3.2
		NTE				Notes and Comments (for patient)	2.24.15
		IN1				Insurance	6.4.6
			ORC			Common Order	4.3.1
				OBR		Order Detail	7.3.1
					OBX	Observation/Result	7.3.2

4.2 Segment Details

4.2.1 MSH

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element name	Notes on Interaction with enCORE
1	1	ST	R(equired)	00001	Field Separator	Expected to match HL7 Messaging Settings:: Field Separator from the HL7 Messaging Settings dialog (default is: | (ASCII 124))
2	4	ST	R	00002	Encoding Characters	Expected to match HL7 Messaging Settings:: Component Separator, Repetition Separator, Escape Character, and Subcomponent Separator from the HL7 Messaging Settings dialog (default is: ^~\& (ASCII 94, 126, 92, and 38))
3	180	HD	O(ptional)	00003	Sending Application	Stored as SendingApplication for availability to return in HL7 report
4	180	HD	O	00004	Sending Facility	Stored as SendingFacility for availability to return in HL7 report
5	180	HD	O	00005	Receiving Application	Anything conforming to the standard
6	180	HD	O	00006	Receiving Facility	Anything conforming to the standard
7	26	TS	O	00007	Date/Time Of Message	Anything conforming to the standard
8	40	ST	O	00008	Security	<NULL>
9	7	CM	R	00009	Message Type	OMG^O19
10	20	ST	R	00010	Message Control ID	Anything conforming to the standard
11	3	PT	R	00011	Processing ID	Expected to match Processing Mode field on the HL7 tab of the Connectivity Options dialog (possible values: D, P, or T)

12	8	ID	R	00012	Version ID	Expected to match the HL7 Version field on the HL7 tab of the Connectivity Options dialog ()
13	15	NM	O	00013	Sequence Number	Anything conforming to the standard
14	180	ST	O	00014	Continuation Pointer	Anything conforming to the standard
15	2	ID	O	00015	Accept Acknowledgment Type	Anything conforming to the standard
16	2	ID	O	00016	Application Acknowledgment Type	Anything conforming to the standard
17	2	ID	O	00017	Country Code	Anything conforming to the standard
18	6	ID	O	00692	Character Set	<NULL> (therefore defaults to ASCII character set)
19	60	CE	O	00693	Principal Language Of Message	Anything conforming to the standard

b) Example: MSH|^~\&|EMR1|| LUNAR_AMBASSADOR ||20021104112957||OMG^O19|1|D|2.3|||||

4.2.2 PID

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on Interaction with enCORE
1	4	SI	O(ptional)	00104	Set ID - Patient ID	Anything conforming to the standard
2	20	CX	O	00105	Patient ID (External ID)	Anything conforming to the standard
3	20	CX	R(equired)	00106	Patient ID (Internal ID)	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file this populates the Patient ID field of the Primary tab of the Edit information primary dialog.
4	20	CX	O	00107	Alternate Patient ID - PID	Anything conforming to the standard
5	48	XPN	R	00108	Patient Name	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Last, First, and Middle Initial fields of the Primary tab of the Edit Information dialog.
6	48	XPN	O	00109	Mother's Maiden Name	Anything conforming to the standard
7	26	TS	O	00110	Date/Time of Birth	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Birth Date field of the Primary tab of the Edit Information dialog.

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on Interaction with enCORE
8	1	IS	O	00111	Sex	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Gender field of the Primary tab of the Edit Information dialog.
9	48	XPN	O	00112	Patient Alias	Anything conforming to the standard
10	1	IS	O	00113	Race	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Ethnicity field of the Primary tab of the Edit Information dialog
11	106	XAD	O	00114	Patient Address	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Address, City, State, Postal, and Country fields of the Secondary tab of the Edit Information dialog.
12	4	IS	B(ackward Compatibility)	00115	County Code	Anything conforming to the standard
13	40	XTN	O	00116	Phone Number - Home	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Home Phone field of the Secondary tab of the Edit Information dialog.
14	40	XTN	O	00117	Phone Number - Business	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Work Phone field of the Secondary tab of the Edit Information dialog.
15	60	CE	O	00118	Primary Language	Anything conforming to the standard
16	1	IS	O	00119	Marital Status	Anything conforming to the standard
17	3	IS	O	00120	Religion	Anything conforming to the standard
18	20	CX	O	00121	Patient Account Number	Anything conforming to the standard
19	16	ST	O	00122	SSN Number - Patient	Anything conforming to the standard
20	25	CM	O	00123	Driver's License Number – Patient	Anything conforming to the standard
21	20	CX	O	00124	Mother's Identifier	Anything conforming to the standard
22	3	IS	O	00125	Ethnic Group	Anything conforming to the standard
23	60	ST	O	00126	Birth Place	Anything conforming to the standard
24	2	ID	O	00127	Multiple Birth Indicator	Anything conforming to the standard
25	2	NM	O	00128	Birth Order	Anything conforming to the standard

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on Interaction with enCORE
26	4	IS	O	00129	Citizenship	Anything conforming to the standard
27	60	CE	O	00130	Veterans Military Status	Anything conforming to the standard
28	80	CE	O	00739	Nationality	Anything conforming to the standard
29	26	TS	O	00740	Patient Death Date and Time	Anything conforming to the standard
30	1	ID	O	00741	Patient Death Indicator	Anything conforming to the standard

b) Example: PID||01-111-123|583335||SHAW^CATHERINE^ANN^^MISS^||19110101|F|||3773 21th Avenue^^Madison^WI^53713-2701^USA||(608)233-2774|(608)288-5000||||||||||||

4.2.3 NTE

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item#	Element Name	Notes on interaction with enCORE
1	4	SI	O(ptional)	00096	Set ID- NTE	Anything conforming to the standard.
2	8	ID	O	00097	Source of Comment	Anything conforming to the standard.
3	64k	FT	O	00098	Comment	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this populates the Comments field of the Secondary tab of the Edit Information dialog.

b) Example: NTE|2|P|Family history of osteoporosis

4.2.4 IN1

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on interaction with enCORE
1	4	SI	R(equired)	00426	Set ID - IN1	Anything conforming to the standard
2	60	CE	R	00368	Insurance Plan ID	Anything conforming to the standard. Using the defaults ProtocolOrder.xml file, this populates the Insurance Company Plan field of the Additional tab of the Edit Information dialog.
3	59	CX	R	00428	Insurance Company ID	Anything conforming to the standard. Using the defaults ProtocolOrder.xml file, this populates the Insurance Company ID field of the Additional tab of the Edit Information dialog.
4	130	XON	O(ptional)	00429	Insurance Company Name	Anything conforming to the standard. Using the defaults ProtocolOrder.xml file, this populates the Insurance Company Name field of the Additional tab of the Edit Information dialog.
5	106	XAD	O	00430	Insurance Company Address	Anything conforming to the standard.
6	48	XPN	O	00431	Insurance Co. Contact Person	Anything conforming to the standard
7	40	XTN	O	00432	Insurance Co. Phone Number	Anything conforming to the standard.
8	12	ST	O	00433	Group Number	Anything conforming to the standard.
9	130	XON	O	00434	Group Name	Anything conforming to the standard

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on interaction with enCORE
10	12	CX	O	00435	Insured's Group Emp ID	Anything conforming to the standard
11	130	XON	O	00436	Insured's Group Emp Name	Anything conforming to the standard
12	8	DT	O	00437	Plan Effective Date	Anything conforming to the standard
13	8	DT	O	00438	Plan Expiration Date	Anything conforming to the standard
14	55	CM	O	00439	Authorization Information	Anything conforming to the standard
15	3	IS	O	00440	Plan Type	Anything conforming to the standard
16	48	XPN	O	00441	Name Of Insured	Anything conforming to the standard
17	2	IS	O	00442	Insured's Relationship To Patient	Anything conforming to the standard
18	26	TS	O	00443	Insured's Date Of Birth	Anything conforming to the standard
19	106	XAD	O	00444	Insured's Address	Anything conforming to the standard
20	2	IS	O	00445	Assignment Of Benefits	Anything conforming to the standard
21	2	IS	O	00446	Coordination Of Benefits	Anything conforming to the standard
22	2	ST	O	00447	Coordination Of Ben. Priority	Anything conforming to the standard
23	2	ID	O	00448	Notice Of Admission Flag	Anything conforming to the standard
24	8	DT	O	00449	Notice Of Admission Date	Anything conforming to the standard
25	2	ID	O	00450	Report Of Eligibility Flag	Anything conforming to the standard
26	8	DT	O	00451	Report Of Eligibility Date	Anything conforming to the standard
27	2	IS	O	00452	Release Information Code	Anything conforming to the standard
28	15	ST	O	00453	Pre-Admit Cert (PAC)	Anything conforming to the standard
29	26	TS	O	00454	Verification Date/Time	Anything conforming to the standard
30	60	XCN	O	00455	Verification By	Anything conforming to the standard
31	2	IS	O	00456	Type Of Agreement Code	Anything conforming to the standard
32	2	IS	O	00457	Billing Status	Anything conforming to the standard.
33	4	NM	O	00458	Lifetime Reserve Days	Anything conforming to the standard.
34	4	NM	O	00459	Delay Before L.R. Day	Anything conforming to the standard
35	8	IS	O	00460	Company Plan Code	Anything conforming to the standard.
36	15	ST	O	00461	Policy Number	Anything conforming to the standard.
37	12	CP	O	00462	Policy Deductible	Anything conforming to the standard
38	12	CP	B(ackward Compatibility)	00463	Policy Limit-Amount	Anything conforming to the standard
39	4	NM	O	00464	Policy Limit-Days	Anything conforming to the standard
40	12	CP	O	00465	Room Rate - Semi-Private	Anything conforming to the standard
41	12	CP	O	00466	Room Rate - Private	Anything conforming to the standard
42	60	CE	O	00467	Insured's Employer Status	Anything conforming to the standard
43	1	IS	O	00468	Insured's Sex	Anything conforming to the standard

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on interaction with enCORE
44	106	XAD	O	00469	Insured's Employer Address	Anything conforming to the standard
45	2	ST	O	00470	Verification Status	Anything conforming to the standard
46	8	IS	O	00471	Prior Insurance Plan ID	Anything conforming to the standard
47	3	IS	O	01227	Coverage Type	Anything conforming to the standard
48	2	IS	O	00753	Handicap	Anything conforming to the standard
49	12	CX	O	01230	Total Payments	Anything conforming to the standard

b) Example: IN1|1|73-91129-AX|333-4567|AETNA

4.2.5 ORC

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on Interaction with enCORE
1	2	ID	R(equired)	00215	Order Control	Supported values are: CA: Cancel Order Request NW: New Order XO: Change Order Request
2	22	EI	C(onditional)	00216	Placer Order Number	Stored as ExamID2 for return in HL7 report
3	22	EI	C	00217	Filler Order Number	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file this populates the Exam ID field of the Primary tab of the Edit information primary dialog.
4	22	EI	O(ptional)	00218	Placer Group Number	Stored as UniversalServiceID for return in HL7 report
5	2	ID	O	00219	Order Status	Anything conforming to the standard.
6	1	ID	O	00220	Response Flag	Anything conforming to the standard
7	200	TQ	O	00221	Quantity/Timing	Anything conforming to the standard. Component 4 displayed as Scheduled Time on Worklist.
8	200	CM	O	00222	Parent	Anything conforming to the standard.
9	26	TS	O	00223	Date/Time of Transaction	Anything conforming to the standard Stored as DateTimeOfTransaction for return in HL7 report
10	120	XCN	O	00224	Entered By	Anything conforming to the standard. Stored as EnteredBy for return in HL7 report
11	120	XCN	O	00225	Verified By	Anything conforming to the standard. Stored as VerifiedBy for return in HL7 report
12	120	XCN	B(ackward Compatibility)	00226	Ordering Provider	Anything conforming to the standard Stored as OrderingProvider for return in HL7 report, and sent to Referring Physician on Patient Info dialog

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on Interaction with enCORE
13	80	PL	O	00227	Enterer's Location	Anything conforming to the standard. Stored as EnterersLocation for return in HL7 report
14	40	XTN	O	00228	Call Back Phone Number	Anything conforming to the standard. Stored as CallBackPhoneNumber for return in HL7 report
15	26	TS	O	00229	Order Effective Date/Time	Anything conforming to the standard Stored as OrderEffectiveDateTime for return in HL7 report
16	200	CE	O	00230	Order Control Code Reason	Anything conforming to the standard Stored as OrderControlCodeReason for return in HL7 report
17	60	CE	O	00231	Entering Organization	Anything conforming to the standard Stored as EnteringOrganization for return in HL7 report
18	60	CE	O	00232	Entering Device	Anything conforming to the standard Stored as EnteringDevice for return in HL7 report
19	120	XCN	O	00233	Action By	Anything conforming to the standard Stored as ActionBy for return in HL7 report

b) Example: ORC|nw|1041421-1^RIMS|1041421-1^ALIUS||NW||^^^19991021084500^^NORM^^^|||||11822814^Mullen^Brian^^^MD^|BA5A||||M90||

4.2.6 OBR

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on interaction with enCORE
1	4	SI	C(onditional)	00237	Set ID - OBR	Anything conforming to the standard
2	75	EI	C	00216	Placer Order Number	Anything conforming to the standard.
3	75	EI	C	00217	Filler Order Number +	Anything conforming to the standard
4	200	CE	R(equired)	00238	Universal Service ID	Anything conforming to the standard
5	2	ID	X (Not used for this message type)	00239	Priority	Anything conforming to the standard.
6	26	TS	X	00240	Requested Date/Time	Anything conforming to the standard
7	26	TS	C	00241	Observation Date/Time #	Anything conforming to the standard.
8	26	TS	O(ptional)	00242	Observation End Date/Time #	Anything conforming to the standard.
9	20	CQ	O	00243	Collection Volume *	Anything conforming to the standard
10	60	XCN	O	00244	Collector Identifier *	Anything conforming to the standard
11	1	ID	O	00245	Specimen Action Code *	Anything conforming to the standard
12	60	CE	O	00246	Danger Code	Anything conforming to the standard
13	300	ST	O	00247	Relevant Clinical Info.	Anything conforming to the standard

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on interaction with enCORE
14	26	TS	O	00248	Specimen Received Date/Time *	Anything conforming to the standard
15	300	CM	O	00249	Specimen Source *	Anything conforming to the standard
16	80	XCN	O	00226	Ordering Provider	Anything conforming to the standard
17	40	XTN	O	00250	Order Callback Phone Number	Anything conforming to the standard
18	60	ST	O	00251	Placer field 1	Anything conforming to the standard
19	60	ST	O	00252	Placer field 2	Anything conforming to the standard
20	60	ST	O	00253	Filler Field 1+	Anything conforming to the standard
21	60	ST	O	00254	Filler Field 2+	Anything conforming to the standard
22	26	TS	O	00255	Results Rpt/Status Chng - Date/Time +	Anything conforming to the standard
23	40	CM	O	00256	Charge to Practice +	Anything conforming to the standard
24	10	ID	O	00257	Diagnostic Serv Sect ID	Anything conforming to the standard
25	1	ID	O	00258	Result Status +	Anything conforming to the standard
26	400	CM	O	00259	Parent Result +	Anything conforming to the standard
27	200	TQ	O	00221	Quantity/Timing	Anything conforming to the standard
28	150	XCN	O	00260	Result Copies To	Anything conforming to the standard
29	150	CM	O	00261	Parent *	Anything conforming to the standard
30	20	ID	O	00262	Transportation Mode	Anything conforming to the standard
31	300	CE	O	00263	Reason for study	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, the Fractures, Indications, and Treatments are separated by the repetition separator.
32	200	CM	O	00264	Priciple Result Interpreter +	Anything conforming to the standard.
33	200	CM	O	00265	Assistant Result Interpreter +	Anything conforming to the standard.
34	200	CM	O	00266	Technician +	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, this field populates the Attendant field of the Secondary tab of the Edit Information dialog.
35	200	CM	O	00267	Transcriptionist +	Anything conforming to the standard.
36	26	TS	O	00268	Scheduled Date/Time +	Anything conforming to the standard.
37	4	NM	O	01028	Number of Sample Containers +	Anything conforming to the standard
38	60	CE	B(ackward Compatibility)	01029	Transport Logistics of Collected Sample *	Anything conforming to the standard

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes on interaction with enCORE
39	200	CE	O	01030	Collector's Comment *	Anything conforming to the standard
40	60	CE	O	01031	Transport Arrangement Responsibility	Anything conforming to the standard
41	30	ID	O	01032	Transport Arranged	Anything conforming to the standard
42	1	ID	O	01033	Escort Required	Anything conforming to the standard
43	200	CE	O	01034	Planned Patient Transport Comment	Anything conforming to the standard

b) Example: OBR||1041421-1^RIMS|1041421-1^ALIUS|NM999^Nuclear Medicine^MSR^^^||19991021084500||||||||||11833915^O'Connor^Mike^^^PhD^|||MCRE4^US|||||S|||||808.8^Pelvis ^I9~733^Osteoporosis^I9~E933.6^Bisphosphonate^I9|||&Darla Smith||19991021084500

4.2.7 OBX

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element name	Notes on Interaction with enCORE
1	10	SI	O(ptional)	00569	Set ID - OBX	Anything conforming to the standard
2	2	ID	C(onditional)	00570	Value Type	Anything conforming to the standard
3	590	CE	R(equired)	00571	Observation Identifier	Anything conforming to the standard. Using the defaults in the ProtocolOrder.xml file, the second component of this field can be used to determine whether the value in OBX.5 should populate the Height or Weight field of the Primary tab of the Edit Information dialog.
4	20	ST	C	00572	Observation Sub-ID	Anything conforming to the standard
5	65536	*	C	00573	Observation Value	Anything conforming to the standard. The value of either Height or Weight, depending on the identifier in OBX.3.
6	60	CE	O	00574	Units	Anything conforming to the standard. The units for the height or weight (e.g. “kg”)
7	10	ST	O	00575	Reference Range	Anything conforming to the standard
8	5	ID	O	00576	Abnormal Flags	Anything conforming to the standard
9	5	NM	O	00577	Probability	Anything conforming to the standard
10	2	ID	O	00578	Nature of Abnormal Test	Anything conforming to the standard
11	1	ID	R	00579	Observ Result Status	Anything conforming to the standard
12	26	TS	O	00580	Date Last Obs Normal Values	Anything conforming to the standard
13	20	ST	O	00581	User Defined Access Checks	Anything conforming to the standard

Sequence ID	Item Length	Data Type	Optionality	Item #	Element name	Notes on Interaction with enCORE
14	26	TS	O	00582	Date/Time of the Observation	Anything conforming to the standard
15	60	CE	O	00583	Producer's ID	Anything conforming to the standard
16	80	XCN	O	00584	Responsible Observer	Anything conforming to the standard
17	60	CE	O	00936	Observation Method	Anything conforming to the standard

b) Example: OBX|1|RP|^Body Weight||120|kg|||||S|||19991021084500||

4.3 Example Orders:

a. NW - New Order:

MSH|^~\&|RIMS||LUNAR_AMBASSADOR||19991021085626||OMG^O19|1|D|2.3|||||
PID||04-444-123|583335||Woozy^Susie^||19410404|F|||123 24th Street, NE^^Madison^WI^53713|||||||||||||||
ORC|NW|1041421-4^RIMS|1041421-
4^ALIUS||NW||^^^19981021084500^^NORM^^^|||||11911913^Oil^Olive^V^^MS^|BA5A||||||
OBR||1041421-1^RIMS|1041421-1^ALIUS|NM999^Nuclear
Medicine^MSR^^^||19991021084500|||||||||11911913^WOO^LEE^B^^MD^|
||MCRE4^US||||||S||||||||||19991021084500

b. XO - Change Order Request:

MSH|^~\&|RIMS||LUNAR_AMBASSADOR||19991021085625||OMG^O19|1|D|2.3|||||
PID||02-377-137|583335||SHAW^KAITLIN^ANN^^MISS^||19590818|F|||313 W Beltline
HWY^^Madison^WI^53713|||||||||||||||
ORC|XO|1041421-1^RIMS|1041421-
1^ALIUS||NW||^^^19991021084500^^NORM^^^|||||11911913^Gordon^Artemius^^^PhD^|BA5A||||||
OBR||1041421-1^RIMS|1041421-1^ALIUS|NM999^Nuclear
Medicine^MSR^^^||19991021084500|||||||||11911913^Woo^Lee^^^MD^|
||MCRE4^US||||||S||||||^PELVIS-PELVIC PAIN L>R|||||19991021084500

c. CA - Cancel Order Request:

MSH|^~\&|RIMS||LUNAR_AMBASSADOR||19991021085626||OMG^O19|1|D|2.3|||||
PID||02-222-123|583335||Was^April^^^MISS^||19210202|F|||1234 22th Street^Madison^WI^53713-9876|||||||||||||||
ORC|CA|1041421-2^RIMS|1041421-
2^ALIUS||NW||^^^19991021084500^^NORM^^^|||||11911913^Gordon^Artemius^V^^PhD^|BA5A||||||
OBR||1041421-1^RIMS|1041421-1^ALIUS|NM999^Nuclear
Medicine^MSR^^^||19981021084500|||||||||11911913^Wu^Li^^^MD^|
||MCRE4^US||||||S||||||Fracture^Pelvis|||||19991021084500

4.4 OMG Supported Tokens

The HL7 OMG Order Interface is in the ProtocolOrder.xml file is found in the enCORE's CONFIG folder.

Table of ProtocolOrderOMG.xml Supported Tokens

ActionBy	Ethnicity	OrderEffectiveDateTime
Address	ExamID	OrderingProvider
Attendant	ExamID2	PatientID
BirthTime	FacilityID	Physician
CallBackPhoneNumber	FirstName	PostalCode
City	Fracture	ReadingPhysician
Codes	Gender	ScheduleTime
Comments	Height	SendingApplication
Country	HomePhone	SendingFacility
DateTimeOfTransaction	InsuranceCompany	State
DeptID	InsuranceID	Treatment
Disease	InsurancePlan	UniversalServiceID

DocumentNumber	LastName	VerifiedBy
EnteredBy	MenopauseTime	Weight
EnterersLocation	MidInit	WorkPhone
EnteringDevice	ObservationTime	
EnteringOrganization	OrderControlCodeReason	

Default ProtocolOrderOMG.xml:

```
<?xml version="1.0"?>
<!DOCTYPE protocol SYSTEM "protocol.dtd">
<protocol op="read">
  <association>
        <src>ORC.2</src>
        <dst>ExamID2</dst>
  </association>
  <association>
        <src>ORC.7.4</src>
        <dst>ScheduleTime</dst>
  </association>
  <association>
        <src>PID.5.2</src>
        <dst>FirstName</dst>
  </association>
  <association>
        <src>PID.5.3</src>
        <dst>MidInit</dst>
  </association>
  <association>
        <src>PID.5.1</src>
        <dst>LastName</dst>
  </association>
  <association>
        <src>PID.3</src>
        <dst>PatientID</dst>
  </association>
  <association>
        <src>PID.7</src>
        <dst>BirthTime</dst>
  </association>
  <association>
        <src>OBX.5</src>
        <dst>Height</dst>
        <where>
              <type>OBX.3.2</type>
              <value>Height</value>
        </where>
        <units>
              <unit>OBX.6</unit>
        </units>
  </association>
  <association>
        <src>OBX.5</src>
        <dst>Weight</dst>
        <where>
              <type>OBX.3.2</type>
              <value>body weight</value>
        </where>
        <units>
              <unit>OBX.6</unit>
        </units>
  </association>
  <association>
        <src>PID.8</src>
        <dst>Gender</dst>
        <conv>
              <from>F</from>
              <to>Female</to>
        </conv>
        <conv>
              <from>M</from>
```

```
                    <to>Male</to>
            </conv>
</association>
<association>
            <src>PID.10</src>
            <dst>Ethnicity</dst>
</association>
<association>
            <src>PID.11.1</src>
            <dst>Address</dst>
</association>
<association>
            <src>PID.11.3</src>
            <dst>City</dst>
</association>
<association>
            <src>PID.11.4</src>
            <dst>State</dst>
</association>
<association>
            <src>PID.11.5</src>
            <dst>PostalCode</dst>
</association>
<association>
            <src>PID.11.6</src>
            <dst>Country</dst>
</association>
<association>
            <src>PID.13.1</src>
            <dst>HomePhone</dst>
</association>
<association>
            <src>PID.14.1</src>
            <dst>WorkPhone</dst>
</association>
<association>
            <src>ORC.17.1</src>
            <dst>FacilityID</dst>
</association>
<association>
            <src>NTE.3</src>
            <dst>Comments</dst>
            <where>
                        <type>NTE.1</type>
                        <value>2</value>
            </where>
</association>
<association>
            <src>IN1.4.1</src>
            <dst>InsuranceCompany</dst>
</association>
<association>
            <src>IN1.3.1</src>
            <dst>InsuranceID</dst>
</association>
<association>
            <src>IN1.2.1</src>
            <dst>InsurancePlan</dst>
</association>
<association>
            <src>OBR.31.2</src>
            <dst>Fracture</dst>
            <where>
                        <type>OBR.31.1</type>
                        <value>Fracture</value>
            </where>
</association>
<association>
            <src>OBR.31.2</src>
            <dst>Disease</dst>
```

```
</association>
<association>
        <src>OBR.31.2</src>
        <dst>Treatment</dst>
</association>
<association>
        <src>OBR.4</src>
        <dst>UniversalServiceID</dst>
</association>
<association>
        <src>MSH.3</src>
        <dst>SendingApplication</dst>
</association>
<association>
        <src>MSH.4</src>
        <dst>SendingFacility</dst>
</association>
<association>
        <src>ORC.12</src>
        <dst>OrderingProvider</dst>
</association>
<association>
        <src>ORC.12</src>
        <dst>Physician</dst>
</association>
<association>
        <src>ORC.3</src>
        <dst>ExamID</dst>
</association>
<association>
        <src>ORC.9</src>
        <dst>DateTimeOfTransaction</dst>
</association>
<association>
        <src>ORC.10</src>
        <dst>EnteredBy</dst>
</association>
<association>
        <src>ORC.11</src>
        <dst>VerifiedBy</dst>
</association>
<association>
        <src>ORC.13</src>
        <dst>EnterersLocation</dst>
</association>
<association>
        <src>ORC.14</src>
        <dst>CallBackPhoneNumber</dst>
</association>
<association>
        <src>ORC.15</src>
        <dst>OrderEffectiveDateTime</dst>
</association>
<association>
        <src>ORC.16</src>
        <dst>OrderControlCodeReason</dst>
</association>
<association>
        <src>ORC.17</src>
        <dst>EnteringOrganization</dst>
</association>
<association>
        <src>ORC.18</src>
        <dst>EnteringDevice</dst>
</association>
<association>
        <src>ORC.19</src>
        <dst>ActionBy</dst>
</association>
<association>
```

```
            <src>OBR.34.1</src>
            <dst>Attendant</dst>
    </association>
    <association>
            <src>OBR.31</src>
            <dst>Codes</dst>
    </association>
</protocol>
```

5 HL7 (DFT) Detailed Financial Transactions

HL7 Detailed Financial Transactions as expected by enCORE.

5.1 Message Structure

Segment name				Segment Description	HL7 2.3 Standards Location
MSH				Message Header	2.24.1
	EVN			Event Type	3.3.1
		PID		Patient Information	3.3.2
			PV1	Patient Visit	3.3.3
		FT1		Financial Transaction	6.4.1
			OBX	Observation/Result (optional)	7.3.2

5.2 Segment Details

Consult the later section on the DFT Supported Tags to see which tokens are available for transferring order items into enCORE.

5.2.1 MSH

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element name	Notes on interaction with enCORE
1	1	ST	R(equired)	00001	Field Separator	Setting of the HL7 Messages: Field Separator from the Advanced HL7 Messages dialog (default is: | (ASCII 124))
2	4	ST	R	00002	Encoding Characters	Expected to match HL7 Messaging Settings: Component Separator, Repetition Separator, Escape Character, and Subcomponent Separator from the HL7 Messaging Settings dialog (default is: ^~\& (ASCII 94, 126, 92, and 38))
3	180	HD	O(ptional)	00003	Sending Application	Stored as SendingApplication for availability to return in HL7 report
4	180	HD	O	00004	Sending Facility	Stored as SendingFacility for availability to return in HL7 report
5	180	HD	O	00005	Receiving Application	Expected to match HL7 Messages: Application Name from the HL7 Messaging Settings dialog (default is: LUNAR_AMBASSADOR)
6	180	HD	O	00006	Receiving Facility	Anything conforming to the standard
7	26	TS	O	00007	Date/Time Of Message	Anything conforming to the standard
8	40	ST	O	00008	Security	Anything conforming to the standard
9	7	CM	R	00009	Message Type	DFT^P03

Sequence ID	Item Length	Data Type	Optionality	Item #	Element name	Notes on interaction with enCORE
10	20	ST	R	00010	Message Control ID	Anything conforming to the standard
11	3	PT	R	00011	Processing ID	Expected to match Processing Mode field on the HL7 tab of the Connectivity Options dialog (possible values: D, P, or T)
12	8	ID	R	00012	Version ID	Expected to match the HL7 Version field on the HL7 tab of the Connectivity Options dialog
13	15	NM	O	00013	Sequence Number	Anything conforming to the standard
14	180	ST	O	00014	Continuation Pointer	Anything conforming to the standard
15	2	ID	O	00015	Accept Acknowledgment Type	Anything conforming to the standard
16	2	ID	O	00016	Application Acknowledgment Type	Anything conforming to the standard
17	2	ID	O	00017	Country Code	Anything conforming to the standard
18	6	ID	O	00692	Character Set	<NULL> (therefore defaults to the ASCII character set)
19	60	CE	O	00693	Principal Language Of Message	Anything conforming to the standard

b) Example: MSH|^~\&| EMR1|| LUNAR_AMBASSADOR |SOUTH|20051003153249||DFT^P03|1443972769650780|P|2.3|||NE|NE

5.2.2 EVN

a) Schema:

Sequence ID	Length	Optionality	Data Type	Element Name	Notes on interaction with enCORE
1	3	ID	B(ackward Compatibility)	Event Type Code	P03 (Post Detailed Financial Transaction)
2	26	TS	R(equired)	Recorded Date/Time	Current date/time in the HL7 format (i.e. YYYYMMDDHHMMSS)
3	26	TS	O(ptional)	Date/Time Planned Event	<NULL>
4	3	IS	O	Event Reason Code	<NULL>
5	60	XCN	O	Operator ID	<NULL>
6	26	TS	O	Event Occurred	<NULL>

b) Example: EVN|P03|20021104112957

5.2.3 PID

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
1	4	SI	O(ptional)	Set ID - Patient ID	Anything conforming to the standard
2	20	CX	O	Patient ID (External ID)	Anything conforming to the standard
3	20	CX	R(equired)	Patient ID (Internal ID)	Anything conforming to the standard. Using the defaults ProtocolOrderDFT.xml file, this populates the Patient ID field of the Primary tab of the Edit Information dialog.
4	20	CX	O	Alternate Patient ID - PID	Anything conforming to the standard
5	48	XPN	R	Patient Name	Anything conforming to the standard. Using the defaults ProtocolOrderDFT.xml file, this populates the Last, First, and Middle Initial field of the Edit Information of the Edit Information dialog.
6	48	XPN	O	Mother's Maiden Name	Anything conforming to the standard
7	26	TS	O	Date/Time Of Birth	Anything conforming to the standard. Using the defaults ProtocolOrderDFT.xml file, this populates the Birth Date field of the Primary tab of the Edit Information dialog.
8	1	IS	O	Sex	Anything conforming to the standard. Using the defaults ProtocolOrderDFT.xml file, this populates the Gender field of the Primary tab of the Edit Information dialog.
9	48	XPN	O	Patient Alias	Anything conforming to the standard
10	1	IS	O	Race	Anything conforming to the standard. Using the defaults ProtocolOrderDFT.xml file, this populates the Ethnicity field of the Primary tab of the Edit Information dialog.
11	106	XAD	O	Patient Address	Anything conforming to the standard. Using the defaults ProtocolOrderDFT.xml file, this populates the Address, City, State, Postal, and Country field of the Secondary tab of the Edit Information dialog.
12	4	IS	B(ackward Compatibility)	Country Code	Anything conforming to the standard
13	40	XTN	O	Phone Number - Home	Anything conforming to the standard. Using the defaults ProtocolOrderDFT.xml file, this populates the Home Phone field of the Secondary tab of the Edit Information dialog.
14	40	XTN	O	Phone Number - Business	Anything conforming to the standard. Using the defaults ProtocolOrderDFT.xml file, this populates the Work Phone field of the Secondary tab of the Edit Information dialog.
15	60	CE	O	Primary Language	Anything conforming to the standard

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
16	1	IS	O	Marital Status	Anything conforming to the standard
17	3	IS	O	Religion	Anything conforming to the standard
18	20	CX	O	Patient Account Number	Anything conforming to the standard
19	16	ST	O	SSN Number - Patient	Anything conforming to the standard
20	25	CM	O	Driver's License Number - Patient	Anything conforming to the standard
21	20	CX	O	Mother's Identifier	Anything conforming to the standard
22	3	IS	O	Ethnic Group	Anything conforming to the standard
23	60	ST	O	Birth Place	Anything conforming to the standard
24	2	ID	O	Multiple Birth Indicator	Anything conforming to the standard
25	2	NM	O	Birth Order	Anything conforming to the standard
26	4	IS	O	Citizenship	Anything conforming to the standard
27	60	CE	O	Veterans Military Status	Anything conforming to the standard
28	80	CE	O	Nationality	Anything conforming to the standard
29	26	TS	O	Patient Death Date and Time	Anything conforming to the standard
30	1	ID	O	Patient Death Indicator	Anything conforming to the standard

b) Example: PID|1||234-TEST011|MR-846-624|Caldwell^Walter^S.||19420816|Male||White|4839 NW Montgomer St.^^Portland^OR^97434^USA||503-555-6054^^^caldwells@uswest.com|503-434-0090|English|M|||822-84-6624

5.2.4 PV1

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
1	4	SI	O(ptional)	Set ID - PV1	Anything conforming to the standard
2	1	IS	R(equired)	PatientClass	Anything conforming to the standard
3	80	PL	O	Assigned Patient Location	Anything conforming to the standard.
4	2	IS	O	Admission Type	Anything conforming to the standard
5	20	CX	O	Preadmit Number	Anything conforming to the standard.
6	80	PL	O	Prior Patient Location	Anything conforming to the standard
7	60	XCN	O	Attending Doctor	Anything conforming to the standard.
8	60	XCN	O	Referring Doctor	Anything conforming to the standard. Using the defaults ProtocolOrderDFT.xml file, this populates the Referring Physician field

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
					of the Primary tab of the Edit Information dialog.
9	60	XCN	O	Consulting Doctor	Anything conforming to the standard
10	3	IS	O	Hospital Service	Anything conforming to the standard
11	80	PL	O	Temporary Location	Anything conforming to the standard
12	2	IS	O	Preadmit Test Indicator	Anything conforming to the standard
13	2	IS	O	Readmission Indicator	Anything conforming to the standard
14	3	IS	O	Admit Source	Anything conforming to the standard
15	2	IS	O	Ambulatory Status	Anything conforming to the standard
16	2	IS	O	VIP Indicator	Anything conforming to the standard
17	60	XCN	O	Admitting Doctor	Anything conforming to the standard
18	2	IS	O	Patient Type	Anything conforming to the standard
19	20	CX	O	Visit Number	Anything conforming to the standard
20	50	CM	O	Financial Class	Anything conforming to the standard
21	2	IS	O	Charge Price Indicator	Anything conforming to the standard
22	2	IS	O	Courtesy Code	Anything conforming to the standard
23	2	IS	O	Credit Rating	Anything conforming to the standard
24	2	IS	O	Contract Code	Anything conforming to the standard
25	8	DT	O	Contract Effective Date	Anything conforming to the standard
26	12	NM	O	Contract Amount	Anything conforming to the standard
27	3	NM	O	Contract Period	Anything conforming to the standard
28	2	IS	O	Interest Code	Anything conforming to the standard
29	1	IS	O	Transfer to Bad Debt Code	Anything conforming to the standard
30	8	DT	O	Transfer to Bad Date Date	Anything conforming to the standard
31	10	IS	O	Bad Debt Agency Code	Anything conforming to the standard
32	12	NM	O	Bad Debt Transfer Amount	Anything conforming to the standard.
33	12	NM	O	Bad Debt Recovery Amount	Anything conforming to the standard.
34	1	IS	O	Delete Account Indicator	Anything conforming to the standard
35	8	DT	O	Delete Account Date	Anything conforming to the standard.
36	3	IS	O	Discharge Disposition	Anything conforming to the standard.
37	25	CM	O	Discharged to Location	Anything conforming to the standard
38	2	IS	O	Diet Type	Anything conforming to the standard
39	2	IS	O	Servicing Facility	Anything conforming to the standard

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
40	1	IS	B(ackward Compatibility)	Bed Status	Anything conforming to the standard
41	2	IS	O	Account Status	Anything conforming to the standard
42	80	PL	O	Pending Location	Anything conforming to the standard
43	80	PL	O	Prior Temporary Location	Anything conforming to the standard
44	26	TS	O	Admit Date/Time	Anything conforming to the standard. Displayed as Scheduled Time in Worklist.
45	26	TS	O	Discharge Date/Time	Anything conforming to the standard
46	12	NM	O	Current Patient Balance	Anything conforming to the standard
47	12	NM	O	Total Charges	Anything conforming to the standard
48	12	NM	O	Total Adjustments	Anything conforming to the standard
49	12	NM	O	Total Payments	Anything conforming to the standard
50	20	CX	O	Alternate Visit ID	Anything conforming to the standard
51	1	IS	O	Visit Indicator	Anything conforming to the standard
52	60	XCN	O	Other Healthcare Provider	Anything conforming to the standard

b) Example: PV1|1|O|^^^SOUTH||||hwinston

5.2.5 FT1

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
1	4	SI	O(ptional)	Set ID - FT1	Anything conforming to the standard
2	12	ST	O	Transaction ID	Anything conforming to the standard
3	10	ST	O	Transaction Batch ID	Anything conforming to the standard
4	26	TS	R(equired)	Transaction Date	Anything conforming to the standard
5	26	TS	O	Transaction Posting Date	Anything conforming to the standard
6	8	IS	R	Transaction Type	Anything conforming to the standard
7	80	CE	R	Transaction Code	Anything conforming to the standard
8	40	ST	B(ackward Compatibility)	Transaction Description	Anything conforming to the standard
9	40	ST	B	Transaction Description - Alt	Anything conforming to the standard
10	6	NM	O	Transaction Quantity	Anything conforming to the standard
11	12	CP	O	Transaction Amount - Extended	Anything conforming to the standard

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on interaction with enCORE
12	12	CP	O	Transaction Amount - Unit	Anything conforming to the standard
13	60	CE	O	Department Code	Anything conforming to the standard. Using the defaults ProtocolOrderDFT.xml file, this populates the Department ID field of the Additional tab of the Edit Information dialog.
14	60	CE	O	Insurance Plan ID	Anything conforming to the standard.
15	12	CP	O	Insurance Amount	Anything conforming to the standard
16	80	PL	O	Assigned Patient Location	Anything conforming to the standard. Using the defaults ProtocolOrderDFT.xml file, this populates the Facility ID field of the Secondary tab of the Edit Information dialog.
17	1	IS	O	Fee Schedule	Anything conforming to the standard
18	2	IS	O	Patient Type	Anything conforming to the standard
19	60	CE	O	Diagnosis Code	Anything conforming to the standard. Using the defaults ProtocolOrderDFT.xml file, this populates the Fractures, Indications, and Treatments fields of the Additional tab of the Edit Information dialog.
20	120	XCN	O	Performed By Code	Anything conforming to the standard. Using the defaults ProtocolOrderDFT.xml file, this field populates the Attendant field of the Secondary tab of the Edit Information dialog.
21	120	XCN	O	Ordered By Code	Anything conforming to the standard. Using the defaults ProtocolOrderDFT.xml file, the second component of this field populates the Referring Physician field of the Primary tab of the Edit Information dialog. Also stored as OrderingProvider for return in HL7 report
22	12	CP	O	Unit Cost	Anything conforming to the standard
23	22	EI	O	Filler Order Number	Anything conforming to the standard. Unique identifier for use in reports associated with this order.
24	120	XCN	O	Entered By Code	Anything conforming to the standard
25	80	CE	O	Procedure Code	Anything conforming to the standard
26	80	CE	O	Procedure Code Modifier	Anything conforming to the standard

b) Example: FT1|1|||19980816|19990413210004|DP|CPT-93000|EKG w/ Interpretation||1||||Gold Plan^Consolidated Health Care||^^^SOUTH|||414.0^^I9||hwinston||6-6|hwinston|CPT-93000

5.2.6 OBX (Optional)

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element name	Notes on interaction with enCORE
1	10	SI	O(ptional)	00569	Set ID - OBX	Anything conforming to the standard
2	2	ID	C(onditional)	00570	Value Type	Anything conforming to the standard
3	590	CE	R(equired)	00571	Observation Identifier	Anything conforming to the standard. Using the defaults in the ProtocolOrderDFT.xml file, the second component of this field can be used to determine whether the value in OBX.5 should populate the Height or Weight field of the Primary tab of the Edit Information dialog.
4	20	ST	C	00572	Observation Sub-ID	Anything conforming to the standard
5	65536	*	C	00573	Observation Value	Anything conforming to the standard The value of either Height or Weight, depending on the identifier in OBX.3.
6	60	CE	O	00574	Units	Anything conforming to the standard The units for the height or weight (e.g. “kg”)
7	10	ST	O	00575	Reference Range	Anything conforming to the standard
8	5	ID	O	00576	Abnormal Flags	Anything conforming to the standard
9	5	NM	O	00577	Probability	Anything conforming to the standard
10	2	ID	O	00578	Nature of Abnormal Test	Anything conforming to the standard
11	1	ID	R	00579	Observ Result Status	Anything conforming to the standard
12	26	TS	O	00580	Date Last Obs Normal Values	Anything conforming to the standard
13	20	ST	O	00581	User Defined Access Checks	Anything conforming to the standard
14	26	TS	O	00582	Date/Time of the Observation	Anything conforming to the standard
15	60	CE	O	00583	Producer's ID	Anything conforming to the standard
16	80	XCN	O	00584	Responsible Observer	Anything conforming to the standard
17	60	CE	O	00936	Observation Method	Anything conforming to the standard

b) Example: OBX|1|RP|^Body Weight||120|kg|||||S|||19991021084500||

5.3 Example Post Detail Financial Transaction message:

MSH|^~\&|LinkLogic-TEST|TEST000^SOUTH|PracticeMgr|SOUTH|20051003153249||DFT^P03|1443972769650780|P|2.3|||NE|NEEVN|P03|20051003153249
PID|1||234-TEST011|MR-846-624|Caldwell^Walter^S.||19420816|M||W|4839 NW Montgomery St.^^Portland^OR^97434^USA||

503-555-6054^^^caldwells@uswest.com|503-434-0090|English|M|||822-84-6624
PV1|1|O|^^^SOUTH||||hwinston
FT1|1|||19980816|19990413210004|DP|CPT-93000|EKG w/ Interpretation||1||||Gold Plan^Consolidated Health Care||^^^SOUTH|||414.0^^I9||
hwinston||6-6|hwinston|CPT-93000
FT1|2|||19980816|19990413210005|DP|CPT-90724|Injection, Fluvax||1||||Gold Plan^Consolidated Health Care||^^^SOUTH|||414.0^^I9||
hwinston||6-7|hwinston|CPT-90724
FT1|3|||19980816|19990413210005|DP|CPT-90732|Injection, Pneumovax||1||||Gold Plan^Consolidated Health Care||^^^SOUTH|||414.0^^I9||
hwinston||6-8|hwinston|CPT-90732
FT1|4|||19980816|19990413210005|DP|CPT-99214|Ofc Vst, Est Level IV||1||||Gold Plan^Consolidated Health Care||^^^SOUTH|||414.0^^I9||
hwinston||6-9|hwinston|CPT-99214
FT1|5|||19980816|19990413210006|DP|CPT-90718|TD||1||||Gold Plan^Consolidated Health Care||^^^SOUTH|||414.0^^I9||hwinston||6-10|
hwinston|CPT-90718

5.4 DFT Supported Tokens

Table Supported Tokens DFT Orders

The HL7 DFT Order interface is in the ProtocolOrderDFT.xml file in enCORE's CONFIG folder.

ActionBy	Ethnicity	OrderEffectiveDateTime
Address	ExamID	OrderingProvider
Attendant	ExamID2	PatientID
BirthTime	FacilityID	Physician
CallBackPhoneNumber	FirstName	PostalCode
City	Fracture	ReadingPhysician
Codes	Gender	ScheduleTime
Comments	Height	SendingApplication
Country	HomePhone	SendingFacility
DateTimeOfTransaction	InsuranceCompany	State
DeptID	InsuranceID	Treatment
Disease	InsurancePlan	UniversalServiceID
DocumentNumber	LastName	VerifiedBy
EnteredBy	MenopauseTime	Weight
EnterersLocation	MidInit	WorkPhone
EnteringDevice	ObservationTime	
EnteringOrganization	OrderControlCodeReason	

Default ProtocolOrderDFT.xml:

```
<?xml version="1.0"?>
<!DOCTYPE protocol SYSTEM "protocol.dtd">
<protocol op="read" version="3">
  <association>
        <src>MSH.3</src>
        <dst>SendingApplication</dst>
  </association>
  <association>
        <src>MSH.4</src>
        <dst>SendingFacility</dst>
  </association>
  <association>
        <src>PID.3</src>
        <dst>PatientID</dst>
  </association>
  <association>
        <src>PID.5.1</src>
        <dst>LastName</dst>
  </association>
  <association>
        <src>PID.5.2</src>
        <dst>FirstName</dst>
  </association>
  <association>
        <src>PID.5.3</src>
```

```
        <dst>MidInit</dst>
</association>
<association>
        <src>PID.7</src>
        <dst>BirthTime</dst>
</association>
<association>
        <src>PID.8</src>
        <dst>Gender</dst>
        <conv>
                <from>f</from>
                <to>Female</to>
        </conv>
        <conv>
                <from>M</from>
                <to>Male</to>
        </conv>
</association>
<association>
        <src>PID.10</src>
        <dst>Ethnicity</dst>
</association>
<association>
        <src>PID.11.1</src>
        <dst>Address</dst>
</association>
<association>
        <src>PID.11.3</src>
        <dst>City</dst>
</association>
<association>
        <src>PID.11.4</src>
        <dst>State</dst>
</association>
<association>
        <src>PID.11.5</src>
        <dst>PostalCode</dst>
</association>
<association>
        <src>PID.11.6</src>
        <dst>Country</dst>
</association>
<association>
        <src>PID.13.1</src>
        <dst>HomePhone</dst>
</association>
<association>
        <src>PID.14.1</src>
        <dst>WorkPhone</dst>
</association>
<association>
        <src>PV1.8</src>
        <dst>Physician</dst>
</association>
<association>
        <src>FT1.13.1</src>
        <dst>DeptID</dst>
</association>
<association>
        <src>FT1.16.4</src>
        <dst>FacilityID</dst>
</association>
<association>
        <src>FT1.19.2</src>
        <dst>Fracture</dst>
        <where>
                <type>FT1.19.1</type>
                <value>Fracture</value>
        </where>
</association>
```

```
    <association>
            <src>FT1.19.2</src>
            <dst>Disease</dst>
            <where>
                    <type>FT1.19.1</type>
                    <value>Disease</value>
            </where>
    </association>
    <association>
            <src>FT1.19.2</src>
            <dst>Treatment</dst>
            <where>
                    <type>FT1.19.1</type>
                    <value>Treatment</value>
            </where>
    </association>
    <association>
            <src>FT1.20</src>
            <dst>Attendant</dst>
    </association>
    <association>
            <src>FT1.21</src>
            <dst>OrderingProvider</dst>
    </association>
    <association>
            <src>FT1.23</src>
            <dst>ExamID</dst>
    </association>
    <association>
            <src>OBX.5</src>
            <dst>Height</dst>
            <where>
                    <type>OBX.3.2</type>
                    <value>Height</value>
            </where>
            <units>
                    <unit>OBX.6</unit>
            </units>
    </association>
    <association>
            <src>OBX.5</src>
            <dst>Weight</dst>
            <where>
                    <type>OBX.3.2</type>
                    <value>body weight</value>
            </where>
            <units>
                    <unit>OBX.6</unit>
            </units>
    </association>
    <association>
            <src>PV1.44</src>
            <dst>ScheduleTime</dst>
    </association>
</protocol>
```

6 HL7 (ORU) Observation Report Structure

The following is a description of the HL7 Observation Report structure and contents as required by enCORE reporting applications.

6.1 enCORE HL7 Observation Report Structure

Segment name						Segment Description	HL7 2.3 Standards Location
MSH						Message Header	2.24.1
	PID					Patient Information	3.3.2
		NTE				Notes and Comments (for entire exam)	2.24.15

			ORC			Common Order Segment (optional)	4.3.1
				OBR		Observational Report Segment (Represents exam)	7.3.1
					OBX	Observation/Result (Represents exam site; sub-id's represent region and property for each site as well as assessment, recommendation, and follow-up sections from report; can repeat)	7.3.2

6.2 Segment Details

6.2.1 MSH

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Element name	Notes on Interaction with enCORE
1	1	ST	R(equired)	Field Separator	Setting of the HL7 Messages: Field Separator from the Advanced HL7 Messages dialog (default is: | (ASCII 124))
2	4	ST	R	Encoding Characters	Setting of the HL7 Messages: Component Separator, Repetition Separator, Escape Character, and Subcomponent Separator from the Advanced HL7 Messages dialog (default is: ^~\& (ASCII 94, 126,92, and 38))
3	180	HD	O(ptional)	Sending Application	Setting of the HL7 Messages: Application Name from the Advanced HL7 Messages dialog (default is: LUNAR_AMBASSADOR
4	180	HD	O	Sending Facility	<NULL>
5	180	HD	O	Receiving Application	From original placer order MSH, if available; otherwise, from setting of the HL7 Report Recipient:Application Name from the HL7Report Settings dialog
6	180	HD	O	Receiving Facility	From original placer order MSH, if available; otherwise, <NULL>
7	26	TS	O	Date/Time Of Message	Current date/time in the HL7 format (i.e. YYYYMMDDHHMMSS)
8	40	ST	O	Security	<NULL>
9	7	CM	R	Message Type	ORU^R01
10	20	ST	R	Message Control ID	Generated unique ID to be echoed back
11	3	PT	R	Processing ID	Setting of the Processing Mode field on the HL7 Connectivity Options tab (possible values: D, P, or T)
12	8	ID	R	Version ID	Setting of the HL7 Version field on the HL7 Connectivity Options tab
13	15	NM	O	Sequence Number	<NULL>
14	180	ST	O	Continuation Pointer	<NULL>
15	2	ID	O	Accept Acknowledgment Type	AL (Always acknowledge)

Sequence ID	Item Length	Data Type	Optionality	Element name	Notes on Interaction with enCORE
16	2	ID	O	Application Acknowledgment Type	<NULL> (see HL7 Standard section 2.12.1 for further details)
17	2	ID	O	Country Code	<NULL>
18	6	ID	O	Character Set	<NULL> (therefore defaults to ASCII character set)
19	60	CE	O	Principal Language Of Message	<NULL>

b) Example: MSH|^~\&|LUNAR_AMBASSADOR||||20021104112957||ORU^R01|r552oi1x9b25h|D|2.3|||AL

Note: Since fields 13-19 are <NULL>, they need not be explicitly included in the segment.

6.2.2 PID

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on Interaction with enCORE
1	4	SI	O(ptional)	Set ID - Patient ID	<NULL>
2	20	CX	O	Patient ID (External ID)	From the Patient ID field of the Primary tab of the Edit Information dialog
3	20	CX	R(equired)	Patient ID (Internal ID)	From the Patient ID field of the Primary tab of the Edit Information dialog
4	20	CX	O	Alternate Patient ID - PID	<NULL>
5	48	XPN	R	Patient Name	From the Last, First, and Middle Initial fields of the Primary tab of the Edit Information dialog and ProtocolReport.xml. Format:<family name (ST)> ^ <given name (ST)> ^ <middle initial (ST)> ^ ^ ^ ^ L
6	48	XPN	O	Mother's Maiden Name	<NULL>
7	26	TS	O	Date/Time of Birth	From the Birth Date field of the Primary tab of the Edit Information dialog and ProtocolReport.xml.
8	1	IS	O	Sex	From the Gender field of the Primary tab of the Edit Information dialog and ProtocolReport.xml.
9	48	XPN	O	Patient Alias	<NULL>
10	1	IS	O	Race	From the Ethnicity field of the Primary tab of the Edit Information dialog and ProtocolReport.xml.
11	106	XAD	O	Patient Address	From the Address, City, State, Postal, and Country fields of the Secondary tab of the Edit Information dialog and ProtocolReport.xml. Format:<street address (ST)> ^ ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)>

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on Interaction with enCORE
12	4	IS	B(ackward Compatibility)	County Code	<NULL>
13	40	XTN	O	Phone Number - Home	From the Home Phone field of the Secondary tab of the Edit Information dialog and ProtocolReport.xml.
14	40	XTN	O	Phone Number - Business	From the Work Phone field of the Secondary tab of the Edit Information dialog and ProtocolReport.xml.
15	60	CE	O	Primary Language	<NULL>
16	1	IS	O	Marital Status	<NULL>
17	3	IS	O	Religion	<NULL>
18	20	CX	O	Patient Account Number	<NULL>
19	16	ST	O	SSN Number - Patient	<NULL>
20	25	CM	O	Driver's License Number – Patient	<NULL>
21	20	CX	O	Mother's Identifier	<NULL>
22	3	IS	O	Ethnic Group	<NULL>
23	60	ST	O	Birth Place	<NULL>
24	2	ID	O	Multiple Birth Indicator	<NULL>
25	2	NM	O	Birth Order	<NULL>
26	4	IS	O	Citizenship	<NULL>
27	60	CE	O	Veterans Military Status	<NULL>
28	80	CE	O	Nationality	<NULL>
29	26	TS	O	Patient Death Date and Time	<NULL>
30	1	ID	O	Patient Death Indicator	<NULL>

b) Example: PID|||A good Patient ID||Was^April||19210202000000|Female||Asian

Note: Since fields 11-30 may be <NULL>, they will not be explicitly included in the segment when they are <NULL>.

6.2.3 NTE

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Element Name	Item #	Notes on Interaction with enCORE
1	4	SI	O(ptional)	00096	Set ID – NTE	<NULL>
2	8	ID	O	00097	Source of Comment	L
3	64k	FT	O	00098	Comment	From the Comments field of the Secondary tab of the Edit Information dialog and ProtocolReport.xml.

b) Example: NTE||L|This is a general comment about the exam

6.2.4 OBR

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on Interaction with enCORE
1	4	SI	C(onditional)	Set ID -OBR	<NULL>
2	75	EI	C	Placer Order Number	From placer order ORC-2, (defaults to first component), if available; otherwise from the Exam ID field of the Secondary tab of the Edit Information dialog (assumed to be a max of 22 characters to conform with ORC.2).
3	75	EI	C	Filler Order Number +	From filler order ORC-3 (of ORM), if available; otherwise, generated unique ID to be stored in exam file
4	200	CE	R(equired)	Universal Service ID	From placer order OBR-4, if available; otherwise, generated from exam contents (see example)
5	2	ID	X (Not used for this message type)	Priority	<NULL>
6	26	TS	X	Requested Date/time	<NULL>
7	26	TS	C	Observation Date/Time #	Exam acquisition date/time in the HL7 format (i.e. YYYYMMDDHHMMSS)
8	26	TS	O(ptional)	Observation End Date/Time #	<NULL>
9	20	CQ	O	Collection Volume *	<NULL>
10	60	XCN	O	Collector Identifier *	<NULL>
11	1	ID	O	Specimen Action Code *	<NULL>
12	60	CE	O	Danger Code	<NULL>
13	300	ST	O	Relevant Clinical Info.	ICD9 or ICD10 codes from Additional tab of the Edit Information dialog
14	26	TS	C	Specimen Received Date/Time *	<NULL>
15	300	CM	O	Specimen Source *	<NULL>
16	80	XCN	O	Ordering Provider	From placer order ORC-12, if available; otherwise, from the Referring Physician field of the Primary tab on the Edit Information Dialog (eg. ^<Referring Physician>)
17	40	XTN	O	Order Callback Phone Number	<NULL>

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on Interaction with enCORE
18	60	ST	O	Report type	Vendor dependent (recommend DI for centricity)
19	60	ST	O	Placer field 2	If sending a combined ORU and MDM report, the value in this field must match that in the TXA16 field of the MDM (which defaults to the value denoted by the DocumentNumber token in the ProtocolReport.xml file).
20	60	ST	O	Filler Field 1 +	<NULL>
21	60	ST	O	Filler Field 2 +	<NULL>
22	26	TS	C	Results Rpt/Status Chng - Date/Time +	Current system time in the HL7 format (i.e. YYYYMMDDHHMMSS)
23	40	CM	O	Charge to Practice +	<NULL>
24	10	ID	O	Diagnostic Serv Sect ID	<NULL>
25	1	ID	C	Result Status +	The first time this exam is sent, the value will be the selection of Result Status - Initial Send in Configuration Options (defaults to F for Final); subsequent times sending this exam, this value will be the selection of Result Status - Subsequent Sends in Configuration Options (defaults to C for Correction)
26	400	CM	O	Parent Result +	<NULL>
27	200	TQ	O	Quantity/Timing	<NULL>
28	150	XCN	O	Result Copies To	<NULL>
29	150	CM	O	Parent *	<NULL>
30	20	ID	O	Transportation Mode	<NULL>
31	300	CE	O	Reason for Study	ICD9 or ICD10 codes from Additional tab of the Edit Information dialog
32	200	CM	O	Principal Result Interpreter +	From the Reading Physician field of the Secondary tab of the Edit Information dialog and ProtocolReport.xml.
33	200	CM	O	Assistant Result Interpreter +	<NULL>
34	200	CM	O	Technician +	From the Attendant field of the Secondary tab of the Edit Information dialog and ProtocolReport.xml.
35	200	CM	O	Transcriptionist +	<NULL>
36	26	TS	O	Scheduled Date/Time +	<NULL>
37	4	NM	O	Number of Sample Containers *	<NULL>
38	60	CE	O	Transport Logistics of Collected Sample *	<NULL>

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on Interaction with enCORE
39	200	CE	O	Collector's Comment *	<NULL>
40	60	CE	O	Transport Arrangement Responsibility	<NULL>
41	30	ID	O	Transport Arranged	<NULL>
42	1	ID	O	Escort Required	<NULL>
43	200	CE	O	Planned Patient Transport Comment	<NULL>

b) Example:
1) For an AP Spine exam:
OBR|||fon_r552j23x9b25h|AP Spine^^GEMS Lunar|||20040225163137|||||808.8^Pelvis^I9~733^Osteoporosis^I9~E933.6^Bisphosphonate^I9|||&Dr. Hungary||DI||||20040818112622|||C||||||808.8^Pelvis^I9~733^Osteoporosis^I9~E933.6^Bisphosphonate^I9|&Dr. Tab||&Martha

2) For an exam containing the following image sites LVA, Right Femur, Left Femur:
OBR|||fon_r552j23x9b25h|LVA&Right Femur&Left Femur ^^GEMS Lunar|||20021031171658||||||||||DI||||20021104112957|||F

Note: Since fields 26-43 may be <NULL>, they will not be explicitly included in the segment.

6.2.5 ORC

ORC is an optional feature that echos back the ORC segment in the order. See sample ORC segment below:

ORC|RE||MOF5011~MOF50ww||CM||^^^""||""||||||""

6.2.6 OBX

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on Interaction with enCORE
1	10	SI	O(ptional)	Set ID - OBX	1-based sequence number of result; changes with each image
2	2	ID	C(onditional)	Value Type	See HL7 Standard Section C (**enCORE-specific Identifiers**) for list of possible value types
3	590	CE	R(equired)	Observation Identifier	See HL7 Standard Section C for list of possible **Observation Type** identifiers.
4	20	ST	C	Observation Sub-ID	1-based sequence for results from same observation ID that increments for each observation value
5	65536	*	C	Observation Value	Actual value of type in OBX.2
6	60	CE	O	Units	Depends on OBX.2. BMD: g/(cm^2) BMC, tissue, lean, fat: g Area: cm^2 T-Score, Z-Score, Follow-up, Recommendations, Assessment, body comp Z-Score: <NULL> % T-Score, % Z-Score, tissue fat, region fat: % Forearm & implant length: cm Total mass: kg
7	10	ST	O	References Range	<NULL>

Sequence ID	Item Length	Data Type	Optionality	Element Name	Notes on Interaction with enCORE
8	5	ID	O	Abnormal Flags	<NULL>(otherwise, could be construed as diagnosis)
9	5	NM	O	Probability	<NULL>
10	2	ID	O	Nature of Abnormal Test	<NULL> (otherwise, could be construed as diagnosis)
11	1	ID	R	Result Status	The first time this exam is sent, the value will be the selection of Result Status - Initial Send in Configuration Options (defaults to F for Final); subsequent times sending this exam, this value will be the selection of Result Status - Subsequent Sends in Configuration Options (defaults to C for Correction)
12	26	TS	O	Date Last Obs Normal Values	<NULL>
13	20	ST	O	User Defined Access Checks	<NULL>
14	26	TS	O	Date/Time of the Observation	Date/time of acquisition of each exam component in the HL7 format (i.e. YYYYMMDDHHMMSS)
15	60	CE	O	Producer's ID	<NULL>
16	80	XCN	O	Responsible Observer	<NULL>, same as OBR.34
17	60	CE	O	Observation Method	<NULL>

b) Example:
1) For a Left Femur Neck Young Adult Percentage result:
OBX|7|NM|FLNeckYA^Left Femur Neck %YA|5|99|%|||||F|||20040211073537

2) For an AP Spine L2-L4 BMD result:
OBX|1|NM|SL2L4BMD^AP Spine L2-L4 BMD|57|1.372|g/cm2|||||F|||20040211073527

Note: Since fields 15-17 may be <NULL>, they do not need to be explicitly included in the segment.

6.3 ORU Data Only (no ORC segment) - AP Spine Example Report:

MSH|^~\&|LUNAR_AMBASSADOR||||20040817132533||ORU^R01|rlflIz4lisl2i|D|2.3|||AL
PID|||1234||Davenport^Joyce||19800101000000|Female||White
NTE||L|D:\data\desktop.dfs
OBR||fon_r552qy4491mth|fon_rlflbv3kisl2i|AP Spine^^GEMS Lunar|||20040224163142||||||||||||||20040817132533|||F
OBX|1|NM|SL1Area^AP Spine L1 Area|1|15.01|cm2|||||F|||20040224163142
OBX|1|NM|SL1BMD^AP Spine L1 BMD|2|1.357|g/cm2|||||F|||20040224163142
OBX|1|NM|SL1BMC^AP Spine L1 BMC|3|20.37|g|||||F|||20040224163142
OBX|1|NM|SL1YAT^AP Spine L1 T-Score|4|1.8|""|||||F|||20040224163142
OBX|1|NM|SL1YA^AP Spine L1 %YA|5|119|%|||||F|||20040224163142
OBX|1|NM|SL1AMZ^AP Spine L1 Z-Score|6|1.9|""|||||F|||20040224163142
OBX|1|NM|SL1AM^AP Spine L1 %AM|7|120|%|||||F|||20040224163142
OBX|1|NM|SL2Area^AP Spine L2 Area|8|16.61|cm2|||||F|||20040224163142
OBX|1|NM|SL2BMD^AP Spine L2 BMD|9|1.392|g/cm2|||||F|||20040224163142
OBX|1|NM|SL2BMC^AP Spine L2 BMC|10|23.13|g|||||F|||20040224163142
OBX|1|NM|SL2YAT^AP Spine L2 T-Score|11|1.5|""|||||F|||20040224163142
OBX|1|NM|SL2YA^AP Spine L2 %YA|12|115|%|||||F|||20040224163142
OBX|1|NM|SL2AMZ^AP Spine L2 Z-Score|13|1.6|""|||||F|||20040224163142
OBX|1|NM|SL2AM^AP Spine L2 %AM|14|116|%|||||F|||20040224163142
OBX|1|NM|SL3Area^AP Spine L3 Area|15|19.22|cm2|||||F|||20040224163142
OBX|1|NM|SL3BMD^AP Spine L3 BMD|16|1.353|g/cm2|||||F|||20040224163142
OBX|1|NM|SL3BMC^AP Spine L3 BMC|17|26.01|g|||||F|||20040224163142
OBX|1|NM|SL3YAT^AP Spine L3 T-Score|18|1.1|""|||||F|||20040224163142
OBX|1|NM|SL3YA^AP Spine L3 %YA|19|111|%|||||F|||20040224163142
OBX|1|NM|SL3AMZ^AP Spine L3 Z-Score|20|1.2|""|||||F|||20040224163142

OBX|1|NM|SL3AM^AP Spine L3 %AM|21|112|%|||||F|||20040224163142
OBX|1|NM|SL4Area^AP Spine L4 Area|22|20.91|cm2|||||F|||20040224163142
OBX|1|NM|SL4BMD^AP Spine L4 BMD|23|1.373|g/cm2|||||F|||20040224163142
OBX|1|NM|SL4BMC^AP Spine L4 BMC|24|28.70|g|||||F|||20040224163142
OBX|1|NM|SL4YAT^AP Spine L4 T-Score|25|1.2|""|||||F|||20040224163142
OBX|1|NM|SL4YA^AP Spine L4 %YA|26|112|%|||||F|||20040224163142
OBX|1|NM|SL4AMZ^AP Spine L4 Z-Score|27|1.3|""|||||F|||20040224163142
OBX|1|NM|SL4AM^AP Spine L4 %AM|28|113|%|||||F|||20040224163142
OBX|1|NM|SL1L2Area^AP Spine L1-L2 Area|29|31.63|cm2|||||F|||20040224163142
OBX|1|NM|SL1L2BMD^AP Spine L1-L2 BMD|30|1.375|g/cm2|||||F|||20040224163142
OBX|1|NM|SL1L2BMC^AP Spine L1-L2 BMC|31|43.50|g|||||F|||20040224163142
OBX|1|NM|SL1L2YAT^AP Spine L1-L2 T-Score|32|1.7|""|||||F|||20040224163142
OBX|1|NM|SL1L2YA^AP Spine L1-L2 %YA|33|117|%|||||F|||20040224163142
OBX|1|NM|SL1L2AMZ^AP Spine L1-L2 Z-Score|34|1.8|""|||||F|||20040224163142
OBX|1|NM|SL1L2AM^AP Spine L1-L2 %AM|35|118|%|||||F|||20040224163142
OBX|1|NM|SL1L3Area^AP Spine L1-L3 Area|36|50.84|cm2|||||F|||20040224163142
OBX|1|NM|SL1L3BMD^AP Spine L1-L3 BMD|37|1.367|g/cm2|||||F|||20040224163142
OBX|1|NM|SL1L3BMC^AP Spine L1-L3 BMC|38|69.50|g|||||F|||20040224163142
OBX|1|NM|SL1L3YAT^AP Spine L1-L3 T-Score|39|1.5|""|||||F|||20040224163142
OBX|1|NM|SL1L3YA^AP Spine L1-L3 %YA|40|115|%|||||F|||20040224163142
OBX|1|NM|SL1L3AMZ^AP Spine L1-L3 Z-Score|41|1.6|""|||||F|||20040224163142
OBX|1|NM|SL1L3AM^AP Spine L1-L3 %AM|42|117|%|||||F|||20040224163142
OBX|1|NM|SL1L4Area^AP Spine L1-L4 Area|43|71.75|cm2|||||F|||20040224163142
OBX|1|NM|SL1L4BMD^AP Spine L1-L4 BMD|44|1.369|g/cm2|||||F|||20040224163142
OBX|1|NM|SL1L4BMC^AP Spine L1-L4 BMC|45|98.21|g|||||F|||20040224163142
OBX|1|NM|SL1L4YAT^AP Spine L1-L4 T-Score|46|1.4|""|||||F|||20040224163142
OBX|1|NM|SL1L4YA^AP Spine L1-L4 %YA|47|114|%|||||F|||20040224163142
OBX|1|NM|SL1L4AMZ^AP Spine L1-L4 Z-Score|48|1.5|""|||||F|||20040224163142
OBX|1|NM|SL1L4AM^AP Spine L1-L4 %AM|49|115|%|||||F|||20040224163142
OBX|1|NM|SL2L3Area^AP Spine L2-L3 Area|50|35.83|cm2|||||F|||20040224163142
OBX|1|NM|SL2L3BMD^AP Spine L2-L3 BMD|51|1.371|g/cm2|||||F|||20040224163142
OBX|1|NM|SL2L3BMC^AP Spine L2-L3 BMC|52|49.13|g|||||F|||20040224163142
OBX|1|NM|SL2L3YAT^AP Spine L2-L3 T-Score|53|1.3|""|||||F|||20040224163142
OBX|1|NM|SL2L3YA^AP Spine L2-L3 %YA|54|113|%|||||F|||20040224163142
OBX|1|NM|SL2L3AMZ^AP Spine L2-L3 Z-Score|55|1.4|""|||||F|||20040224163142
OBX|1|NM|SL2L3AM^AP Spine L2-L3 %AM|56|114|%|||||F|||20040224163142
OBX|1|NM|SL2L4Area^AP Spine L2-L4 Area|57|56.74|cm2|||||F|||20040224163142
OBX|1|NM|SL2L4BMD^AP Spine L2-L4 BMD|58|1.372|g/cm2|||||F|||20040224163142
OBX|1|NM|SL2L4BMC^AP Spine L2-L4 BMC|59|77.83|g|||||F|||20040224163142
OBX|1|NM|SL2L4YAT^AP Spine L2-L4 T-Score|60|1.3|""|||||F|||20040224163142
OBX|1|NM|SL2L4YA^AP Spine L2-L4 %YA|61|113|%|||||F|||20040224163142
OBX|1|NM|SL2L4AMZ^AP Spine L2-L4 Z-Score|62|1.3|""|||||F|||20040224163142
OBX|1|NM|SL2L4AM^AP Spine L2-L4 %AM|63|114|%|||||F|||20040224163142
OBX|1|NM|SL3L4Area^AP Spine L3-L4 Area|64|40.12|cm2|||||F|||20040224163142
OBX|1|NM|SL3L4BMD^AP Spine L3-L4 BMD|65|1.363|g/cm2|||||F|||20040224163142
OBX|1|NM|SL3L4BMC^AP Spine L3-L4 BMC|66|54.71|g|||||F|||20040224163142
OBX|1|NM|SL3L4YAT^AP Spine L3-L4 T-Score|67|1.2|""|||||F|||20040224163142
OBX|1|NM|SL3L4YA^AP Spine L3-L4 %YA|68|112|%|||||F|||20040224163142
OBX|1|NM|SL3L4AMZ^AP Spine L3-L4 Z-Score|69|1.3|""|||||F|||20040224163142
OBX|1|NM|SL3L4AM^AP Spine L3-L4 %AM|70|113|%|||||F|||20040224163142

6.4 enCORE-Specific Report Identifiers

Table of Image Sites (OBR.4)

The following list contains the supported image site identifiers (as used in OBR.4):

AP Spine
DualFemur
Lateral Spine
Left Femur
Left Forearm
Left Hand
Left Ortho
LVA (Densitometry only)
Right Femur
Right Forearm
Right Hand
Right Ortho

Total Body

Table of Value **Data Type NM:**

The following HL7 value types may be used in the OBX.2 field:

a) For all regions of all images, the following observations use this data type:

BMD
Area
BMC
T-Score
%T-Score
Z-Score
%Z-Score

b) For body and animal body images, the following observations are also of this type:

Body comp tissue
Body comp fat
Body comp lean
Body comp tissue fat
Body comp region fat
Body comp BMC
Body comp total mass
Body comp Z-Score

Table of Value **Data Type TX:**

These values may also be reported as TX. This data type is for the following information that appears in reports:

Assessment
Recommendation
Follow-up

6.4.1 Observational ID Components

The following list identifiers for building the default observation ID used in OBX.3. The Observation ID in OBX.3 is in the form of:

<Image Site Code><Region Code><Measurement Code>^ <Image Site Description><RegionDescription><Measurement Description>

for all except the Composer-related observation (i.e. Assessment, Recommendation, Followup).

For Composer-related observation of Assessment, Recommendation and Followup, the Observation ID is of the form:

<Measurement Code>^<Measurement Description>

All Observation IDs are no longer than 12 characters in length.

a)**Table of Image Site Components** - contains the supported identifiers for each image site (as used in OBX.3):

Image Site Code	Image Site Description
S	AP Spine
E	DualFemur
L	Lateral Spine
FL	Left Femur
AL	Left Forearm
PL	Left Hand
HL	Left Ortho
M	LVA
FR	Right Femur
AR	Right Forearm
PR	Right Hand
HR	Right Ortho
B	Total Body

b) Table of Region Components - contains the supported region identifiers for each image site (as used in OBX.3.):

Image Site	Region Code	Region Description	Notes
AP Spine	C1	C1	
	C2	C2	
	C3	C3	
	C4	C4	
	C5	C5	
	C6	C6	
	C7	C7	
	T1	T1	
	T2	T2	
	T3	T3	
	T4	T4	
	T5	T5	
	T6	T6	
	T7	T7	
	T8	T8	
	T9	T9	
	T10	T10	
	T11	T11	
	T12	T12	
	L1	L1	
	L2	L2	
	L3	L3	
	L4	L4	
	L5	L5	
	Sac	Sacrum	
	Coc	Coccyx	
	L1L2	L1-L2	
	L1L3	L1-L3	
	L1L4	L1-L4	
	L2L3	L2-L3	
	L2L4	L2-L4	
	L3L4	L3-L4	
	L1L3X2	L1-L3 (L2)	
	L1L4X2	L1-L4 (L2)	
	L1L4X23	L1-L4 (L2,L3)	
	L1L4X3	L1-L4 (L3)	
	L2L4X3	L2-L4 (L3)	
DualFemur	Neck	Neck	
	Wards	Wards	
	Troch	Troch	
	Shaft	Shaft	
	LoNeck	Lower Neck	
	UpNeck	Upper Neck	
	Total	Total	
	NkMn	Neck Mean	
	WdsMn	Wards Mean	
	TrMn	Troch Mean	
	ShMn	Shaft Mean	
	LNkMn	Lower Neck Mean	
	UnkMn	Upper Neck Mean	
	TMn	Total Mean	
	NkDf	Neck Difference	
	WdsDf	Wards Difference	
	TrDf	Troch Difference	
	ShDf	Shaft Difference	
	LNkDf	Lower Neck Difference	
	UnkDf	Upper Neck Difference	
	TDf	Total Difference	
Lateral Spine,LVA	B1	B1	

Image Site	Region Code	Region Description	Notes
	B2	B2	
	B3	B3	
	B4	B4	
	B2B3	B2-B3	
	B2B4	B2-B4	
	B3B4	B3-B4	
Left/Right Femur	Neck	Neck	
	Wards	Wards	
	Troch	Troch	
	Shaft	Shaft	
	LoNeck	Lower Neck	
	UpNeck	Upper Neck	
	Total	Total	
Left/Right Forearm	RadUD	Radius UD	
	UlnUD	Ulna UD	
	BothUD	Both UD	
	Rad33	Radius 33%	
	Uln33	Ulna 33%	
	Both33	Both 33%	
	RadTl	Radius Total	
	UlnTl	Ulna Total	
	BothTl	Both Total	
Left/Right Hand	Total	Total	
Left/Right Ortho	1	1	
	2	2	
	3	3	
	4	4	
	5	5	
	6	6	
	7	7	
	1A	1A	
	1B	1B	
	1C	1C	
	2A	2A	
	2B	2B	
	2C	2C	
	3A	3A	
	3B	3B	
	3C	3C	
	4A	4A	
	4B	4B	
	4C	4C	
	5A	5A	
	5B	5B	
	5C	5C	
	6A	6A	
	6B	6B	
	6C	6C	
	7A	7A	
	7B	7B	
	7C	7C	
Total Body	Arms	Arms	
	A	Arms	Used for Composition-related measurements only
	AD	Left/Right Arm Difference	
	An	Android	
	Gy	Gynoid	
	Head	Head	

Image Site	Region Code	Region Description	Notes
	I1	Fat Mass / Height^2 Indice	
	I2	Lean Mass / Height^2 Indice	
	I3	Lean Mass Limbs / Height^2 Indice	
	I4	%Fat Trunk / %Fat Legs Indice	
	I5	Fat Mass Trunk / Fat Mass Limbs Indice	
	I6	Fat Mass Trunk / Fat Mass Total Ratio	
	I7	Fat Mass Legs / Fat Mass Total Ratio	
	I8	Fat Mass Limbs / Fat Mass Trunk Ratio	
	I9	%Fat Android / %Fat Gynoid Ratio	
	K	Trunk	Used for Composition-related measurements only
	L	Legs	Used for Composition-related measurements only
	LA	Left Arm	
	LD	Left/Right Leg Difference	
	Legs	Legs	
	LF	Left Femur	
	LH	Left Humerus	
	LL	Left Leg	
	LR	Left Radius	
	LT	Left Tibia	
	Pelvis	Pelvis	
	R1	Radius/Humerus Ratio Left	
	R2	Tibia/Femur Ratio Left	
	R3	Humerus/Femur Ratio Left	
	R4	Radius/Tibia Ratio Left	
	R5	Radius/Humerus Ratio Right	
	R6	Tibia/Femur Ratio Right	
	R7	Humerus/Femur Ratio Right	
	R8	Radius/Tibia Ratio Right	
	RA	Right Arm	
	RF	Right Femur	
	RH	Right Humerus	
	Ribs	Ribs	
	RL	Right Leg	
	RR	Right Radius	
	RT	Right Tibia	
	Spine	Spine	
	T	Total	Used for Composition-related measurements only
	Total	Total	
	TotXH	Total (Headless)	
	Trunk	Trunk	
	X	Total (Headless)	Used for Composition-related measurements only

c)**Table of Measurement Types** - The following list contains the supported observation type identifiers (as used in OBX.3):

Measurement Code	Measurement Description	Image types used by
A	Area	Total Body (region-specific)
AM	%AM	All (except Hand, Ortho)
AMZ	Z-Score	All (except Hand, Ortho)
AREA	Area	All
ASSESSMENT	Assessment	All with a report
B	BMD	Total Body (region-specific)
BA4Ht	Bone Area vs. Height Centile	Total Body
BA4HZ	Bone Area vs. Height Z-Score	Total Body
BCC	BMC Centile	All
BDC	BMD Centile	All
BMC	BMC	All
BMD	BMD	All
BMC4BA	BMC vs. Bone Area Centile	Total Body
BMC4BAZ	BMC vs. Bone Area Z-Score	Total Body
BMC4HC	BMC vs. Height Centile	Total Body
BMC4HZ	BMC vs. Height Z-Score	Total Body
BMC4LBM	BMC vs. Lean Bone Mass Centile	Total Body
BMC4LBZ	BMC vs. Lean Bone Mass Z-Score	Total Body
BMD4HC	BMD vs. Height Centile	Total Body
BMD4HZ	BMD vs. Height Z-Score	Total Body
BMI	BMI	All
BMICLS	BMI Classification	All
C	BMC	Total Body (region-specific)
ComBMC	Composition BMC	Total Body
ComCent	Composition Centile	Total Body
ComFat	Composition Fat	Total Body
ComLean	Composition Lean	Total Body
ComRegFat	Composition Region Fat	Total Body
ComTis	Composition Tissue	Total Body
ComTisFat	Composition Tissue Fat	Total Body
CompZ	Composition Z-Score	Total Body
Es	Estimated	Total Body
Fat	Composition Fat	Total Body
FatEK	Fat Ratio: Extremities/Trunk	Total Body
FatKT	Fat Ratio: Trunk/Total	Total Body
FatLT	Fat Ratio: Legs/Total	Total Body
FOLLOWUP	Followup	All with a report
Height	Height	All
Ht	Height	All
ImpLength	Implant Length	Ortho
Lean	Composition Lean	Total Body
Length	Length	Forearm
MoAntHt	Anterior Height	All
MoAntZ	Anterior Height Z-Score	All
MoAPRat	Middle/Anterior Height Ratio	All
MoAPRatZ	Middle/Anterior Height Ratio Z-Score	All
MoMidHt	Middle Height	All
MoMidZ	Middle Height Z-Score	All
MoMPRat	Middle/Posterior Height Ratio	All
MoMPRatZ	Middle/Posterior Height Ratio Z-Score	All
MoPstHt	Posterior Height	All
MoPstZ	Posterior Height Z-Score	All
MorAvHt	Average Height	All
MorAvHtR	Average Height Ratio	All
MorAvHtZ	Average Height Z-Score	All
RECOMMEND	Recommendation	All with a report
RegFat	Composition Region Fat	Total Body

Measurement Code	Measurement Description	Image types used by
REPORT_LINE	Report line	All with full-text reports
sB	SBMD	All
T	T-Score	Total Body (region-specific)
Tis	Composition Tissue	Total Body
TisFat	Composition Tissue Fat	Total Body
TMass	Composition Total Mass	Total Body (Total region only)
TotalMass	Composition Total Mass	Total Body (Total region only)
W	Width	All
Width	Width	All
YA	%YA	All (except Hand, Ortho)
YAT	T-Score	All (except Hand, Ortho)
Z	Z-Score	Total Body (region-specific)

d) **Table of ScanCheck Codes** - The following list contains the codes that are appended for ScanCheck items:

ScanCheck Code Prefix	Description	Image types used by
Q0	Correct scan mode used?	All
Q1	ROI Centered within image?	AP Spine
Q2	ROI reasonably straight?	AP Spine, Femur, Forearm
Q3	Sufficient pelvis and shaft separation?	Femur
Q4	ROIs properly defined?	All
Q5	Tissue region properly defined?	AP Spine, Femur, Forearm
Q6	Bone edges properly defined?	AP Spine, Femur, Forearm
Q7	Optimal contrast and brightness set?	All
Q8	ROIs labeled correctly?	AP Spine
Q9	Analysis region free of unusual high density bone?	All
Q10	Free of unusual T-score variation?	AP Spine
Q11	Free of unusual curvature?	AP Spine
Q12	Patient within scan field?	Total Body
Q13	Proper femur rotation?	Femur
Q14	Results consistent with previous scan?	AP Spine, Femur
Q15	Patient Weight Entered Correctly?	Total Body
Q16	Patient Height Entered Correctly?	Total Body
C	Comments	All

ScanCheck Code Suffix	Description	Image types used by
Q0	Correct scan mode used?	All
W0	"Patient thickness is outside the range of this scan mode."	All
W1	"Extremely thin tissue areas detected."	All
W2	"Poor pelvis and shaft separation."	Femur
W3	"Region does not appear to be aligned properly."	AP Spine
W4	"One or more regions are missing."	AP Spine
W5	"Insufficient reference tissue was detected."	AP Spine
W6	"Scan was started too high."	Femur
W7	"Scan was stopped too soon."	Femur

ScanCheck Code Suffix	Description	Image types used by
W8	"Unusual bone point typing detected."	All
W9	"One or more ROIs have zero BMD."	All
W10	"Metal artifacts may be present."	All
W11	"Unusual high density areas detected."	AP Spine
W12	"T-score for an individual vertebra shows an unusual variation from the L1-L4 T-score."	AP Spine
W13	"T-score for at least one vertebra shows an unusual variation from the T-score of an adjacent vertebra."	AP Spine
W14	Unusual spine curvature was detected.	AP Spine
W15	Region appears to be off center.	All
W16	Misplaced ROIs	Femur, Total Body
W17	T-score for at least one vertebra shows an unusual variation from the T-score of another vertebra.	AP Spine
W18	Patient outside scan width.	Total Body
W19	Misplaced ROIs	Femur
W20	Poor femur rotation.	Femur
W21	Bone area is substantially different from previous scan.	All
W22	Bone edges are missing.	AP Spine
W23	Bone edges are too wide.	AP Spine
W24	Suboptimal medial proximal femur edges detected.	Femur
W25	Suboptimal lower ischium edges detected.	Femur
W26	Suboptimal upper lateral proximal femur or ischium edges detected.	Femur
W27	Suboptimal lower lateral proximal femur edges detected.	Femur
W28	Left side is outside scan field.	Total Body
W29	Right side is outside scan field.	Total Body
W30	Patient Weight does not agree with measured weight	Total Body
W31	Patient Height does not agree with measured height	Total Body
T0	Bone Angle Threshold	All
T1	Cobb Angle Threshold	AP Spine
T2	Osteophytes Threshold	AP Spine

ScanCheck Code Suffix	Description	Image types used by
T3	T-score Average Threshold	AP Spine
T4	T-score exclusion Threshold	AP Spine
T5	T-score Adjacent Threshold	AP Spine
T6	T-score Variation Threshold	AP Spine
T7	Scan Start Threshold	All
T8	Scan End Threshold	All
T9	Rotation Threshold	All
T10	Bone Area Threshold	All
M0	Adjusted point typing	All
M1	Adjusted ROIs	All
M2	Excluded ROIs	All
M3	Scan Mode Message	All
M4	Bone Area Message	All

6.5 Output enCORE HL7 Observation Reports:

See Chapter 8 for information on configuring HL7 Reporting. enCORE HL7 ORU Report information sent is dependant on the options selected in Reports and the HL7 Configuration screens.

6.5.1 enCORE DXA ORU Report

With an image open after analysis, click on the Reports button.

On the Report Center dialog, check the HL7 checkbox and click Print / Send button to send the HL7 Observation (ORU) DXA Report.

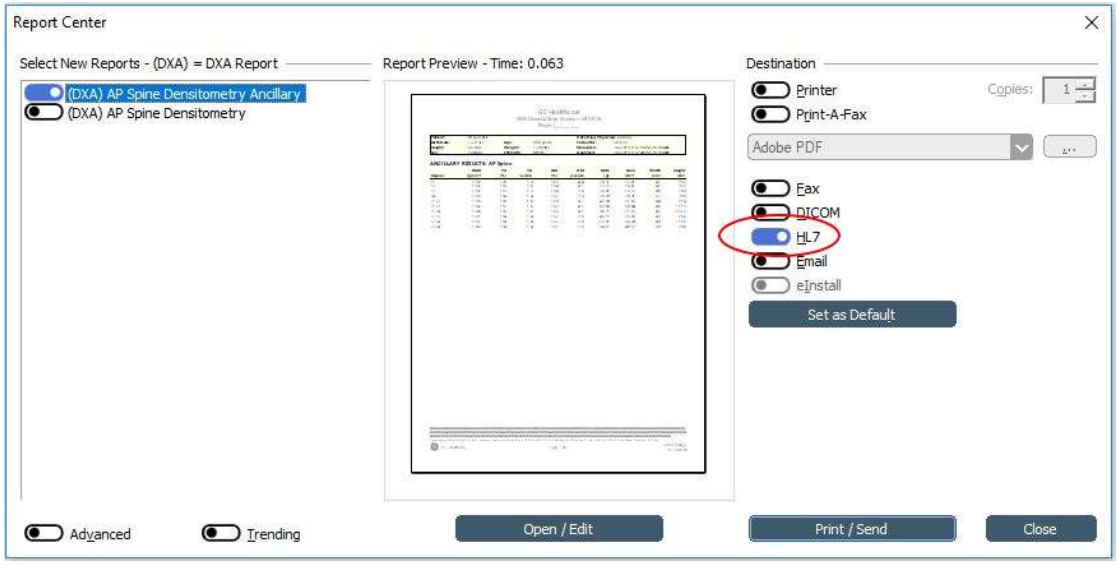


Figure 6-1. Report Center dialog

6.5.2 enCORE Composer ORU Report

To generate a report, open an analyzed image.
(Refer to enCORE's online Help and multimedia for a reports tutorial)
Click on Composer / Report / New in the toolbar at the top of the screen.

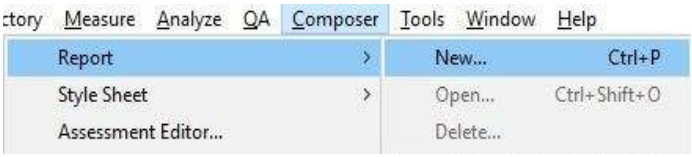


Figure: 6-2. New report menu item

The Report Center opens.

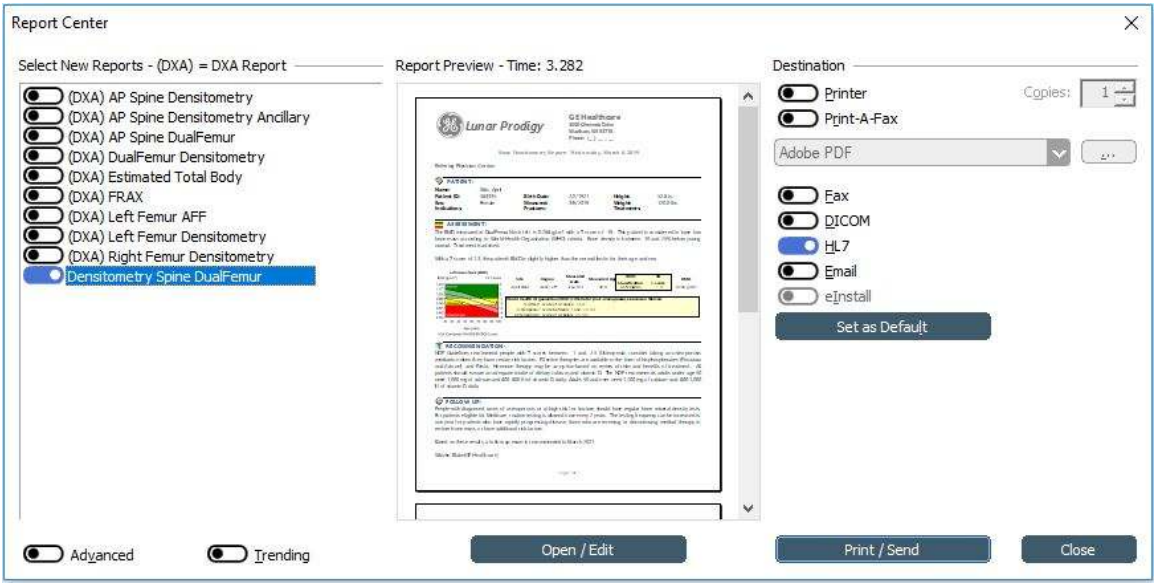


Figure: 6-3. Report Center

Click on Open / Edit.
The report opens.

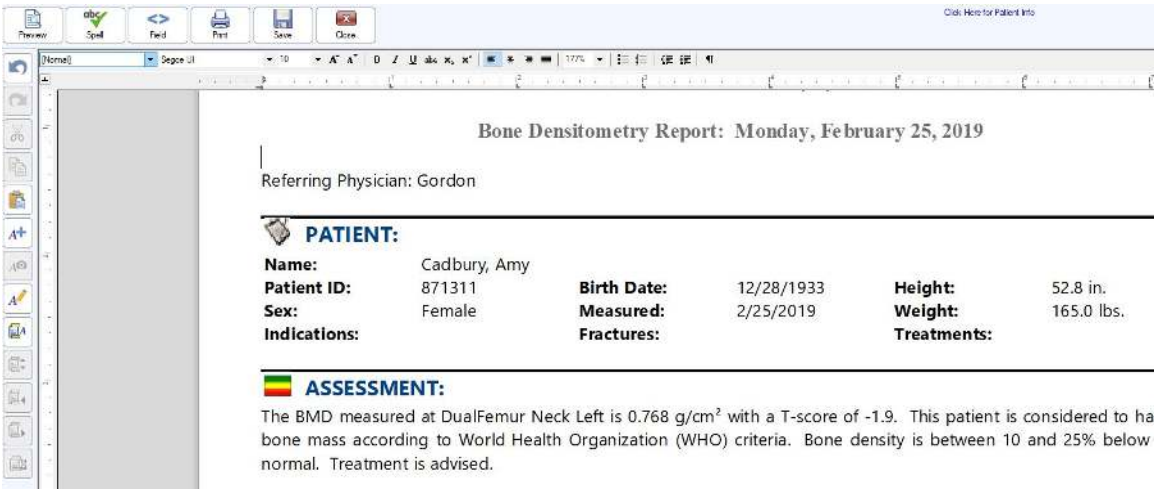


Figure: 6-4. Report Screen

Click on the **Print** button.
On the Report Center dialog, check the HL7 checkbox and click Print / Send button to send the HL7 Observation (ORU) DXA Report.
The report may be sent from either the Report View or the Report Center.
Check the HL7 Destination option.
Check the reports and additional options.

6.6 Report Examples of Assessment, Recommendation & Followup

OBX|14|TX|ASSESSMENT^Assessment|1|+A 10-year absolute risk for any osteoporotic fracture of _8% indicates a low risk of fracture over the next 10 years. |""|||||F|||20040211073550
OBX|15|TX|RECOMMEND^Recommendation|1|+Mild to aggressive therapies are available in the form of Hormone replacement therapy (HRT), bisphosphonates, Calcitonin, and SERMs. Additionally, all patients should ensure an adequate intake of dietary calcium (1200 mg/d) and vitamin D (400-800 IU daily).|""|||||F|||20040211073550
OBX|16|TX|FOLLOWUP^Followup|1|+People with an elevated risk of fracture should be regularly tested for bone mineral density. For patients eligible for Medicare, routine testing is allowed once every 2 years. Testing frequency can be increased for patients who have rapidly progressing disease, or for those who are receiving medical therapy to restore bone mass.|""|||||F|||20040211073550

6.7 ORU Supported Tokens

Table of ORU Reports Supported Tokens

HL7 Report ORU interface is in the ProtocolReport.xml for reports. The ProtocolReport.xml file is located in the enCORE's Config folder.

ActionBy	Ethnicity	OrderControlCodeReason
Address	ExamID	OrderEffectiveDateTime
Attendant	ExamID2	OrderingProvider
BirthTime	FacilityID	PatientID
CallBackPhoneNumber	FirstName	Physician
City	Fracture	PostalCode
Codes	Gender	ReadingPhysician
Comments	Height	ScheduleTime
Country	HomePhone	SendingApplication
DateTimeOfTransaction	InsuranceCompany	SendingFacility
DeptID	InsuranceID	State
Disease	InsurancePlan	Treatment
DocumentNumber	LastName	UniversalServiceID
EnteredBy	MenopauseTime	VerifiedBy
EnterersLocation	MidInit	Weight

EnteringDevice	ObservationTime	WorkPhone
EnteringOrganization		

Default ProtocolReport.xml:

```
<?xml version="1.0"?>
<!DOCTYPE protocol SYSTEM "protocol.dtd">
<protocol op="write" version="7">
  <association>
        <src>PID.5.2</src>
        <dst>FirstName</dst>
  </association>
  <association>
        <src>PID.5.3</src>
        <dst>MidInit</dst>
  </association>
  <association>
        <src>PID.5.1</src>
        <dst>LastName</dst>
  </association>
  <association>
        <src>PID.3</src>
        <dst>PatientID</dst>
  </association>
  <association>
        <src>PID.7</src>
        <dst>BirthTime</dst>
  </association>
  <association>
        <src>PID.8</src>
        <dst>Gender</dst>
        <conv>
              <from>F</from>
              <to>Female</to>
        </conv>
        <conv>
              <from>M</from>
              <to>Male</to>
        </conv>
  </association>
  <association>
        <src>PID.10</src>
        <dst>Ethnicity</dst>
        <conv>
              <from>W</from>
              <to>White</to>
        </conv>
        <conv>
              <from>B</from>
              <to>Black</to>
        </conv>
        <conv>
              <from>O</from>
              <to>Asian</to>
        </conv>
        <conv>
              <from>T</from>
              <to>Other</to>
        </conv>
        <conv>
              <from>H</from>
              <to>Hispanic</to>
        </conv>
  </association>
  <association>
        <src>PID.11.1</src>
        <dst>Address</dst>
  </association>
  <association>
        <src>PID.11.3</src>
```

```
            <dst>City</dst>
</association>
<association>
            <src>PID.11.4</src>
            <dst>State</dst>
</association>
<association>
            <src>PID.11.5</src>
            <dst>PostalCode</dst>
</association>
<association>
            <src>PID.11.6</src>
            <dst>Country</dst>
</association>
<association>
            <src>PID.13.1</src>
            <dst>HomePhone</dst>
</association>
<association>
            <src>PID.14.1</src>
            <dst>WorkPhone</dst>
</association>
<association>
            <src>NTE.3</src>
            <dst>Comments</dst>
</association>
<association>
            <src>OBR.3</src>
            <dst>ExamID</dst>
</association>
<association>
            <src>OBR.2</src>
            <dst>ExamID2</dst>
</association>
<association>
            <src>OBR.4</src>
            <dst>UniversalServiceID</dst>
</association>
<association>
            <src>OBR.7</src>
            <dst>ObservationTime</dst>
</association>
<association>
            <src>OBR.16</src>
            <dst>Physician</dst>
</association>
<association>
            <src>OBR.34.1</src>
            <dst>Attendant</dst>
</association>
<association>
            <src>OBR.32.1</src>
            <dst>ReadingPhysician</dst>
</association>
<association>
            <src>OBR.19</src>
            <dst>DocumentNumber</dst>
</association>
<association>
            <src>ORC.2</src>
            <dst>ExamID2</dst>
</association>
<association>
            <src>ORC.3</src>
            <dst>ExamID</dst>
</association>
<association>
            <src>ORC.7.4</src>
            <dst>ScheduleTime</dst>
</association>
```

```
    <association>
            <src>ORC.9</src>
            <dst>DateTimeOfTransaction</dst>
    </association>
    <association>
            <src>ORC.10</src>
            <dst>EnteredBy</dst>
    </association>
    <association>
            <src>ORC.11</src>
            <dst>VerifiedBy</dst>
    </association>
    <association>
            <src>ORC.12</src>
            <dst>OrderingProvider</dst>
    </association>
    <association>
            <src>ORC.13</src>
            <dst>EnterersLocation</dst>
    </association>
    <association>
            <src>ORC.14</src>
            <dst>CallBackPhoneNumber</dst>
    </association>
    <association>
            <src>ORC.15</src>
            <dst>OrderEffectiveDateTime</dst>
    </association>
    <association>
            <src>ORC.16</src>
            <dst>OrderControlCodeReason</dst>
    </association>
    <association>
            <src>ORC.17</src>
            <dst>EnteringOrganization</dst>
    </association>
    <association>
            <src>ORC.18</src>
            <dst>EnteringDevice</dst>
    </association>
    <association>
            <src>ORC.19</src>
            <dst>ActionBy</dst>
    </association>
    <EditedNameLocation>2</EditedNameLocation>
    <association>
            <src>OBR.18</src>
            <dst>""</dst>
    </association>
    <association>
            <src>OBR.13</src>
            <dst>Codes</dst>
    </association>
    <association>
            <src>OBR.31</src>
            <dst>Codes</dst>
    </association>
  </protocol>
```

7 HL7 (MDM) Medical Document Management Message

This document describes the HL7 Medical Document Management (MDM) message structure and contents. This message type is the required means by which GE Centricity (Logician) imports image file references.

7.1 Medical Document Management Message Structure

Segment name				Segment Description	HL7 2.3 Standards Location
MSH				Message Header	2.24.1
	EVN			Event Type	3.3.1

		PID		Patient Information	3.3.2
			PV1	Observational Report Segment (Represents exam)	7.3.1
		TXA		Document Notification	9.5.1
			OBX	Observation/Result (Represents individual image reference; can repeat)	7.3.2

7.2 Segment Details

7.2.1 MSH

a) Schema:

Sequence **ID**	Item Length	Data Type	Optionality	Item #	Element name	Notes in Interaction with enCORE
1	1	ST	R(equired)	00001	Field Separator	Setting of the HL7 Messages:: Field Separator from the Advanced HL7 Messages dialog (default is: | (ASCII 124))
2	4	ST	R	00002	Encoding Characters	Setting of the HL7 Messages:: Component Separator, Repetition Separator, Escape Character, and Subcomponent Separator from the Advanced HL7 Messages dialog (default is: ^~\& (ASCII 94, 126, 92, and 38))
3	180	HD	O(ptional)	00003	Sending Application	Setting of the HL7 Messages:: Application Name from the Advanced HL7 Messages dialog (default is: LUNAR_AMBASSADOR)
4	180	HD	O	00004	Sending Facility	<NULL>
5	180	HD	O	00005	Receiving Application	From original placer order MSH, if available; otherwise, from setting of the HL7 Report Recipient::Application Name from the HL7 Report Settings dialog
6	180	HD	O	00006	Receiving Facility	From original placer order MSH, if available; otherwise, <NULL>
7	26	TS	O	00007	Date/Time Of Message	Current date/time in the HL7 format (i.e. YYYYMMDDHHMMSS)
8	40	ST	O	00008	Security	<NULL>
9	7	CM	R	00009	Message Type	MDM
10	20	ST	R	00010	Message Control ID	Generated unique ID to be echoed back
11	3	PT	R	00011	Processing ID	Setting of the Processing Mode field on the HL7 Connectivity Options tab (possible values: D, P, or T)
12	8	ID	R	00012	Version ID	Setting of the HL7 Version field on the HL7 Connectivity Options tab
13	15	NM	O	00013	Sequence Number	<NULL>

Sequence ID	Item Length	Data Type	Optionality	Item #	Element name	Notes in Interaction with enCORE
14	180	ST	O	00014	Continuation Pointer	<NULL>
15	2	ID	O	00015	Accept Acknowledgment Type	AL (Always acknowledge)
16	2	ID	O	00016	Application Acknowledgment Type	<NULL> (see 2.12.1 for further details)
17	2	ID	O	00017	Country Code	<NULL>
18	6	ID	O	00692	Character Set	<NULL> (defaults to ASCII character set)
19	60	CE	O	00693	Principal Language Of Message	<NULL>

b) Example: MSH|^~\&|LUNAR_AMBASSADOR||||20041014143940||MDM|rlflox14mal5i|P|2.3|||AL

Note: Since fields 13-19 are <NULL>, they do not need to be explicitly included in the segment.

7.2.2 EVN

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes in Interaction with enCORE
1	3	ID	B(ackward Compatability)	00099	Event Type Code	T02 (Original document notification and content and corresponds to a value of F in OBX.11), T04 (Document status change notification and content and corresponds to a value of C in OBX.11)
2	26	TS	R(equired)	00100	Recorded Date/Time	Current date/time in the HL7 format (i.e. YYYYMMDDHHMMSS)
3	26	TS	O(ptional)	00101	Date/Time Planned Event	<NULL>
4	3	IS	O	00102	Event Reason Code	<NULL>
5	60	XCN	O	00103	Operator ID	<NULL>
6	26	TS	O	01278	Event Occurred	<NULL>

b) Example: EVN|T02|20021104112957

Note: Since fields 3-6 are <NULL>, they do not need to be explicitly included in the segment.

7.2.3 PID

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes in Interaction with enCORE
1	4	SI	O(ptional)	00104	Set ID - Patient ID	<NULL>
2	20	CX	O	00105	Patient ID (External ID)	From the Patient ID field of the Primary tab of the Edit Information dialog
3	20	CX	R(equired)	00106	Patient ID (Internal ID)	From the Patient ID field of the Primary tab of the Edit Information dialog and ProtocolReportMDM.xml.
4	20	CX	O	00107	Alternate Patient ID - PID	<NULL>
5	48	XPN	R	00108	Patient Name	From the Last, First, and Middle Initial fields of the Primary tab of the Edit Information dialog and ProtocolReportMDM.xml. Format:<family name (ST)> ^ <given name (ST)> ^ <middle initial (ST)> ^ ^ ^ L
6	48	XPN	O	00109	Mother's Maiden Name	<NULL>
7	26	TS	O	00110	Date/Time of Birth	From the Birth Date field of the Primary tab of the Edit Information dialog and ProtocolReportMDM.xml.
8	1	IS	O	00111	Sex	From the Gender field of the Primary tab of the Edit Information dialog and ProtocolReportMDM.xml.
9	48	XPN	O	00112	Patient Alias	<NULL>
10	1	IS	O	00113	Race	From the Ethnicity field of the Primary tab of the Edit Information dialog and ProtocolReportMDM.xml.
11	106	XAD	O	00114	Patient Address	From the Address, City, State, Postal, and Country fields of the Secondary tab of the Edit Information dialog and ProtocolReportMDM.xml. Format:<street address (ST)> ^ ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)>
12	4	IS	B(ackward Compatibility)	00115	Country Code	<NULL>
13	40	XTN	O	00116	Phone Number - Home	From the Home Phone field of the Secondary tab of the Edit Information dialog and ProtocolReportMDM.xml.
14	40	XTN	O	00117	Phone Number - Business	From the Work Phone field of the Secondary tab of the Edit Information dialog and ProtocolReportMDM.xml.
15	60	CE	O	00118	Primary Language	<NULL>
16	1	IS	O	00119	Marital Status	<NULL>
17	3	IS	O	00120	Religion	<NULL>
18	20	CX	O	00121	Patient Account Number	<NULL>
19	16	ST	O	00122	SSN Number - Patient	<NULL>

Sequence ID	Item Length	Data Type	Optionality	Item #	Element Name	Notes in Interaction with enCORE
20	25	CM	O	00123	Driver's License Number – Patient	<NULL>
21	20	CX	O	00124	Mother's Identifier	<NULL>
22	3	IS	O	00125	Ethnic Group	<NULL>
23	60	ST	O	00126	Birth Place	<NULL>
24	2	ID	O	00127	Multiple Birth Indicator	<NULL>
25	2	NM	O	00128	Birth Order	<NULL>
26	4	IS	O	00129	Citizenship	<NULL>
27	60	CE	O	00130	Veterans Military Status	<NULL>
28	80	CE	O	00739	Nationality	<NULL>
29	26	TS	O	00740	Patient Death Date and Time	<NULL>
30	1	ID	O	00741	Patient Death Indicator	<NULL>

b) Example: PID|||107_TEST011||Stone^Marilyn^A||19260423000000|Female||Black

Note: Since fields 11-30 may be <NULL>, they will not be explicitly included in the segment when they are <NULL>.

7.2.4 PV1

a) Schema:

Sequence ID	Item Length	Data Type	Item#	Optionality	Element Name	Notes on interaction with enCORE
1	4	SI	00131	O(ptional)	Set ID - PV1	<NULL>
2	1	IS	00132	R(equired)	Patient Class	Anything conforming to the standard
3	80	PL	00133	O	Assigned Patient Location	Anything conforming to the standard. ProtocolReportMDM.xml defaults to placing Facility ID here.
4	2	IS	00134	O	Admission Type	<NULL>
5	20	CX	00135	O	Preadmit Number	<NULL>
6	80	PL	00136	O	Prior Patient Location	<NULL>
7	60	XCN	00137	O	Attending Doctor	Anything conforming to the standard. ProtocolReportMDM.xml defaults to placing Reading Physician on the Secondary tab of Patient information dialog here.
8	60	XCN	00138	O	Referring Doctor	Anything conforming to the standard. Using the defaults ProtocolReportMDM.xml file, this populates the Referring Physician field of the Primary tab of the Patient Information dialog.

Sequence ID	Item Length	Data Type	Item#	Optionality	Element Name	Notes on interaction with enCORE
9	60	XCN	00139	O	Consulting Doctor	<NULL>
10	3	IS	00140	O	Hospital Service	<NULL>
11	80	PL	00141	O	Temporary Location	<NULL>
12	2	IS	00142	O	Preadmit Test Indicator	<NULL>
13	2	IS	00143	O	Readmission Indicator	<NULL>
14	3	IS	00144	O	Admit Source	<NULL>
15	2	IS	00145	O	Ambulatory Status	<NULL>
16	2	IS	00146	O	VIP Indicator	<NULL>
17	60	XCN	00147	O	Admitting Doctor	<NULL>
18	2	IS	00148	O	Patient Type	<NULL>
19	20	CX	00149	O	Visit Number	<NULL>
20	50	CM	00150	O	Financial Class	<NULL>
21	2	IS	00151	O	Charge Price Indicator	<NULL>
22	2	IS	00152	O	Courtesy Code	<NULL>
23	2	IS	00153	O	Credit Rating	<NULL>
24	2	IS	00154	O	Contract Code	<NULL>
25	8	DT	00155	O	Contract Effective Date	<NULL>
26	12	NM	00156	O	Contract Amount	<NULL>
27	3	NM	00157	O	Contract Period	<NULL>
28	2	IS	00158	O	Interest Code	<NULL>
29	1	IS	00159	O	Transfer to Bad Debt Code	<NULL>
30	8	DT	00160	O	Transfer to Bad Date Date	<NULL>
31	10	IS	00161	O	Bad Debt Agency Code	<NULL>
32	12	NM	00162	O	Bad Debt Transfer Amount	<NULL>
33	12	NM	00163	O	Bad Debt Recovery Amount	<NULL>
34	1	IS	00164	O	Delete Account Indicator	<NULL>
35	8	DT	00165	O	Delete Account Date	<NULL>
36	3	IS	00166	O	Discharge Disposition	<NULL>

Sequence ID	Item Length	Data Type	Item#	Optionality	Element Name	Notes on interaction with enCORE
37	25	CM	00167	O	Discharged to Location	<NULL>
38	2	IS	00168	O	Diet Type	<NULL>
39	2	IS	00169	O	Servicing Facility	<NULL>
40	1	IS	00170	B(ackward Compatibility)	Bed Status	<NULL>
41	2	IS	00171	O	Account Status	<NULL>
42	80	PL	00172	O	Pending Location	<NULL>
43	80	PL	00173	O	Prior Temporary Location	<NULL>
44	26	TS	00174	O	Admit Date/Time	<NULL>
45	26	TS	00175	O	Discharge Date/Time	<NULL>
46	12	NM	00176	O	Current Patient Balance	<NULL>
47	12	NM	00177	O	Total Charges	<NULL>
48	12	NM	00178	O	Total Adjustments	<NULL>
49	12	NM	00179	O	Total Payments	<NULL>
50	20	CX	00180	O	Alternate Visit ID	<NULL>
51	1	IS	01226	O	Visit Indicator	<NULL>
52	60	XCN	01224	O	Other Healthcare Provider	<NULL>

b) Example: PV1||R|||||^Beau Broccoli

Note: Since fields 9-52 are <NULL>, they will not be explicitly included in the segment.

7.2.5 TXA

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element name	Notes on interaction with enCORE
1	4	SI	R(equired)	00914	Set ID - Document	1-based, be stored in exam file
2	30	IS	R	00915	Document Type	ZZ (Other) is the default. Other choices are: CL, CN, CO, CS, DI, DR, GC, PN, RA, SS
3	2	ID	C(onditional)	00916	Document Content Presentation	TX (Text) is the default. Other choices are: FT, RP, ST
4	26	TS	O(ptional)	00917	Activity Date/Time	Latest acquisition date/time of images being reported on in the HL7 format (i.e. YYYYMMDDHHMMSS)
5	60	XCN	C	00918	Primary Activity Provider Code/Name	From the Attendant field of the Secondary tab of the Edit Information dialog and ProtocolReportMDM.xml. Format: ~<Attendant name>

Sequence ID	Item Length	Data Type	Optionality	Item #	Element name	Notes on interaction with enCORE
6	26	TS	O	00919	Transcription Date/Time	Latest date/time ofcreation of report images, in the HL7 format (i.e. YYYYMMDDHHMMSS)
7	60	TS	C	00920	Origination Date/Time	<NULL>
8	26	TS	O	00921	Edit Date/Time	<NULL>
9	26	XCN	O	00922	Originator Code/Name	<NULL>
10	26	XCN	O	00923	Assigned Document Authenticator	<NULL>
11	48	XCN	C	00924	Transcriptionist Code/Name	<NULL>
12	30	EI	R	00925	Unique Document Number	Generated unique ID to be stored in exam file, different than TXA-15
13	30	ST	C	00926	Parent Document Number	<NULL>, as enCORE is not supporting Event Type T06
14	22	EI	O	00216	Placer Order Number	From placer order ORC-3 (defaults to first component), if available; otherwise from the Exam ID field of the Secondary tab of the Edit Information dialog and ProtocolReportMDM.xml.
15	22	EI	O	00217	Filler Order Number	From filler order ORC-3 (of ORM), if available; otherwise, generated unique ID to be stored in exam file
16	30	ST	O	00927	Unique Document File Name	Same as TXA-12; if sending a combined ORU and MDM report, the value in this field must match that in the OBR.19 field of the corresponding ORU.
17	2	ID	R	00928	Document Completion Status	DO (Documented)
18	2	ID	O	00929	Document Confidentiality Status	UC (Usual Control)
19	2	ID	O	00930	Document Availability Status	AV (Available for Patient Care)
20	2	ID	O	00932	Document Storage Status	<NULL>
21	30	ST	C	00933	Document Change Reason	<NULL>
22	60	CM	C	00934	Authentication Person, Time Stamp	<NULL>
23	60	XCM	O	00935	Distributed Copies (Code and Name of Recipients)	<NULL>

b) Example: TXA|1|ZZ|TX|20041021092724|^Doris Mae|20041021104347||||||dn_rlfl9e6mw9s5i|||fon_rlflqy4mw9s5i|dn_rlfl9e6mw9s5i|DO|UC|AV

Note: Since fields 20-23 are <NULL>, they will not be explicitly included in the segment.

7.2.6 OBX

a) Schema:

Sequence ID	Item Length	Data Type	Optionality	Item #	Element name	Notes on interaction with enCORE
1	10	SI	O(ptional)	00569	Set ID - OBX	1-based sequence number of result; changes with each image
2	2	ID	C(onditional)	00570	Value Type	TX (Text), RP (Reference Pointer), ED (Encapsulated Data), FT, ST
3	590	CE	R(equired)	00571	Observation Identifier	IMAGE_REF (for image references), PDF_REF (for encapsulated PDF data)
4	20	ST	C	00572	Observation Sub-ID	<NULL>
5	65536	*	C	00573	Observation Value	IMAGE_REF: Takes the form of <moniker>^<comment>>^<data type>^<file type> where <moniker> contains the reference (full path or URL) to the external image file attachment, <comment> is a description of the image file, <data type> is "AP" for application data or "IM" for image data, and <file type> is "PDF" or "JPEG" PDF_REF: Takes the form of enCore^Application^PDF^Base64^<data> where <data> is the PDF bytestream encoded in Base 64.
6	60	CE	O	00574	Units	<NULL>
7	10	ST	O	00575	Reference Range	<NULL>
8	5	ID	O	00576	Abnormal Flags	<NULL>
9	5	NM	O	00577	Probability	<NULL>
10	2	ID	O	00578	Nature of Abnormal Test	<NULL>
11	1	ID	R	00579	Result Status	The first time this exam is sent, the value will be the selection of Result Status - Initial Send in Configuration Options (defaults to F for Final); subsequent times sending this exam, this value will be the selection of Result Status - Subsequent Sends in Configuration

Sequence ID	Item Length	Data Type	Optionality	Item #	Element name	Notes on interaction with enCORE
						Options (defaults to C for Correction)
12	26	TS	O	00580	Date Last Obs Normal Values	<NULL>
13	20	ST	O	00581	User Defined Access Checks	<NULL>
14	26	TS	O	00582	Date/Time of the Observation	Latest acquisition date/time in the HI7 format (i.e. YYYYMMDDHHMMSS)
15	60	CE	O	00583	Producer's ID	<NULL>
16	80	XCN	O	00584	Responsible Observer	<NULL>, same as TXA.5
17	60	CE	O	00936	Observation Method	<NULL>

b). Example:
(1) For an AP Spine report using a value type of “TX” and Image Format of “JPG”:
OBX|1|TX|IMAGE_REF|1|D:\HL7 Image Report Folder\AAFK0001.JPG^_AP Spine_ (Page 1 of 2)|""|||||C|||20041021092724
OBX|2|TX|IMAGE_REF|1|D:\HL7 Image Report Folder\AAFK0002.JPG^_AP Spine_ (Page 2 of 2)|""|||||C|||20041021092724

(2) For a report using a value type of “RP” and Image Format of “JPG”:
OBX|3|RP|IMAGE_REF|1|D:\HL7 Image Report Folder\AAFL0001.JPG^Composer_ (Page 1 of 1)^IM^JPEG |""|||||C|||20041021092724

(3) For a report using a value type of “RP” and Image Format of “PDF”:
OBX|3|RP|IMAGE_REF|1|D:\HL7 Image Report Folder\AAFL0001.PDF^Composer_ (Page 1 of 1)^AP^PDF|""|||||C|||20041021092724

Note: Since fields 15-17 may be <NULL>, they do not need to be explicitly included in the segment.

7.3 Example Image Report containing AP Spine and report images:

MSH|^~\&|LUNAR_AMBASSADOR||||20041021104347||MDM|rlflyk5zcyx5i|P|2.3|||AL
EVN|T04|20041021104347
PID|||107-TEST011||Stone^Marilyn^A||19260423000000|F||B
PV1||R|||||^Mullen
TXA|1|ZZ|TX|20041021092724|^Doris Mae|20041021104347|||||dn_rlfl9e6mw9s5i|||fon_rlflqy4mw9s5i|dn_rlfl9e6mw9s5i|DO|UC|AV
OBX|1|TX|IMAGE_REF|1|D:\HL7 Image Report Folder\AAFK0001.JPG^_AP Spine_ (Page 1 of 2)|""|||||C|||20041021092724
OBX|2|TX|IMAGE_REF|1|D:\HL7 Image Report Folder\AAFK0002.JPG^_AP Spine_ (Page 2 of 2)|""|||||C|||20041021092724
OBX|3|TX|IMAGE_REF|1|D:\HL7 Image Report Folder\AAFL0001.JPG^Composer_ (Page 1 of 1)|""|||||C|||20041021092724

7.4 MDM Supported Tokens

Table of MDM Reports Supported tokens

The HL7 Report MDM interface is in the ProtocolReportMDM.xml file located in enCORE's CONFIG folder.

ActionBy	Ethnicity	OrderControlCodeReason
Address	ExamID	OrderEffectiveDateTime
Attendant	ExamID2	OrderingProvider
BirthTime	FacilityID	PatientID

CallBackPhoneNumber	FirstName	Physician
City	Fracture	PostalCode
Codes	Gender	ReadingPhysician
Comments	Height	ScheduleTime
Country	HomePhone	SendingApplication
DateTimeOfTransaction	InsuranceCompany	SendingFacility
DeptID	InsuranceID	State
Disease	InsurancePlan	Treatment
DocumentNumber	LastName	UniversalServiceID
EnteredBy	MenopauseTime	VerifiedBy
EnterersLocation	MidInit	Weight
EnteringDevice	ObservationTime	WorkPhone
EnteringOrganization		

Default ProtocolReportMDM.xml:

```
<?xml version="1.0"?>
<!DOCTYPE protocol SYSTEM "protocol.dtd">
<protocol op="write" version="1">
  <association>
        <src>PID.5.2</src>
        <dst>FirstName</dst>
  </association>
  <association>
        <src>PID.5.3</src>
        <dst>MidInit</dst>
  </association>
  <association>
        <src>PID.5.1</src>
        <dst>LastName</dst>
  </association>
  <association>
        <src>PID.3</src>
        <dst>PatientID</dst>
  </association>
  <association>
        <src>PID.7</src>
        <dst>BirthTime</dst>
  </association>
  <association>
        <src>PID.8</src>
        <dst>Gender</dst>
        <conv>
              <from>F</from>
              <to>Female</to>
        </conv>
        <conv>
              <from>M</from>
              <to>Male</to>
        </conv>
  </association>
  <association>
        <src>PID.10</src>
        <dst>Ethnicity</dst>
        <conv>
              <from>W</from>
              <to>White</to>
        </conv>
        <conv>
              <from>B</from>
              <to>Black</to>
        </conv>
        <conv>
              <from>O</from>
              <to>Asian</to>
        </conv>
        <conv>
              <from>T</from>
              <to>Other</to>
```

```
            </conv>
            <conv>
                  <from>H</from>
                  <to>Hispanic</to>
            </conv>
      </association>
      <association>
            <src>PID.11.1</src>
            <dst>Address</dst>
      </association>
      <association>
            <src>PID.11.3</src>
            <dst>City</dst>
      </association>
      <association>
            <src>PID.11.4</src>
            <dst>State</dst>
      </association>
      <association>
            <src>PID.11.5</src>
            <dst>PostalCode</dst>
      </association>
      <association>
            <src>PID.11.6</src>
            <dst>Country</dst>
      </association>
      <association>
            <src>PID.13.1</src>
            <dst>HomePhone</dst>
      </association>
      <association>
            <src>PID.14.1</src>
            <dst>WorkPhone</dst>
      </association>
      <association>
            <src>PV1.3</src>
            <dst>FacilityID</dst>
      </association>
      <association>
            <src>PV1.7</src>
            <dst>ReadingPhysician</dst>
      </association>
      <association>
            <src>PV1.8</src>
            <dst>Physician</dst>
      </association>
      <association>
            <src>TXA.4</src>
            <dst>ObservationTime</dst>
      </association>
      <association>
            <src>TXA.5</src>
            <dst>Attendant</dst>
      </association>
      <association>
            <src>TXA.14</src>
            <dst>ExamID</dst>
      </association>
      <EditedNameLocation>2</EditedNameLocation>
</protocol>
```

8 Configuring enCORE HL7 Worklist

8.1 enCORE HL7 Connectivity Options for Worklist

Start the enCORE program and select the **Options** button from the enCORE main screen.

Select **Connectivity Options**, and then select the **HL7** tab to display the HL7 settings.

Note: If the HL7 tab does not appear in the Connectivity Options dialog box, make sure your feature code is correct.

a. Select **Cancel** to close the Connectivity Options.
b. Select the **Options** button from the main screen.
c. Select **User Options**, and select the **Systems** tab.
d. Make sure the feature code shown in the dialog box is the same as the code shown on the enCORE software CD sleeve. Change the code if necessary.
e. If you have changed the feature code, you will be directed to restart the application.

8.2 HL7 Worklist Settings Options

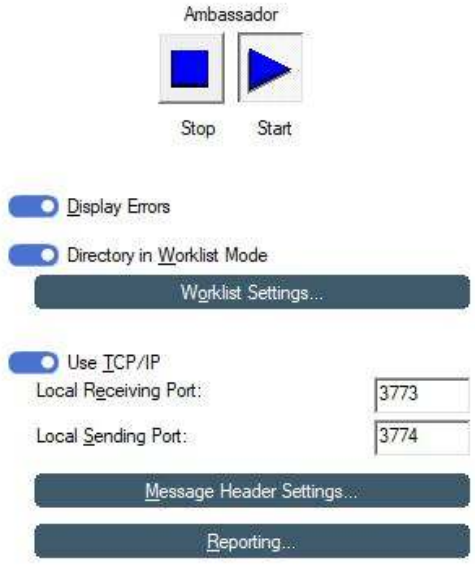


Figure 8-1. HL7 Worklist setup screen.

- **Stop/Start** - To temporarily stop the HL7 Ambassador from transmitting data to enCORE, click the Stop button. To resume, click the Start button.

- **Display Errors** - Check this option to enable onscreen error messaging. Regardless of whether this feature is checked or not, errors will continue to be logged to enCORE's error log. Find enCORE error logs by selecting Error Log from the Tools menu.

- **HL7 Version** - By default, enCORE supports version 2.3 of the HL7 protocol. enCORE will reject any HL7 messages that do not match the version of HL7 it is configured to use. enCORE also supports versions 2.2, 2.3.1, 2.4, 2.5, 2.5.1, 2.6, and 2.7of HL7.

  Directory in Worklist Mode - Select this option to enable the HL7 interface to display a patient worklist before the medical technologist measures a patient.

- **Click Worklist Settings to bring up:**

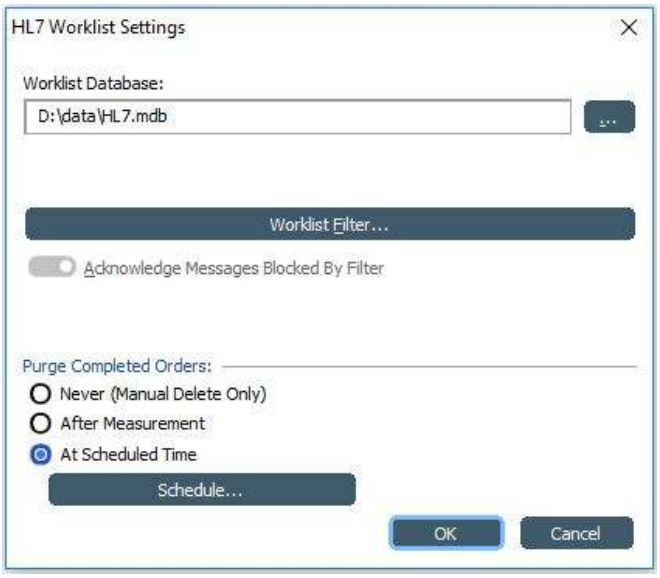


Figure 8-2. HL7 Worklist Settings

- **Worklist Database** - This is the database where HL7 data is stored. To change the name or directory location of this database, click the ellipsis (...) button next to the field. By default this file is HL7.mdb located in the \data folder.
- **Worklist Filter** – Specify only the messages that enCORE should recognize
- **Purge Completed Orders** – This option allows you to specify whether to automatically delete orders from the HL7 Worklist at specified times. Alternatively, you can manually delete them using the Delete button on the Worklist Wizard.

- **Use TCP/IP** - If the enCORE system will use TCP/IP for HL7 network communications, check this box. For more details on network communications, see Chapter 10.
- **Local Receiving Port** - By default, enCORE uses port 3773 to receive HL7 messages. If this port number conflicts with another port already in use, you can change the port number in this field.
- **Local Sending Port** - This is the enCORE outbound port that the application uses (port 3774 is the default) to send HL7 messages. If this port number conflicts with another port already in use, you can change the port number in this field.

- Click **Message Header Settings** button to display HL7 communication nomenclature.

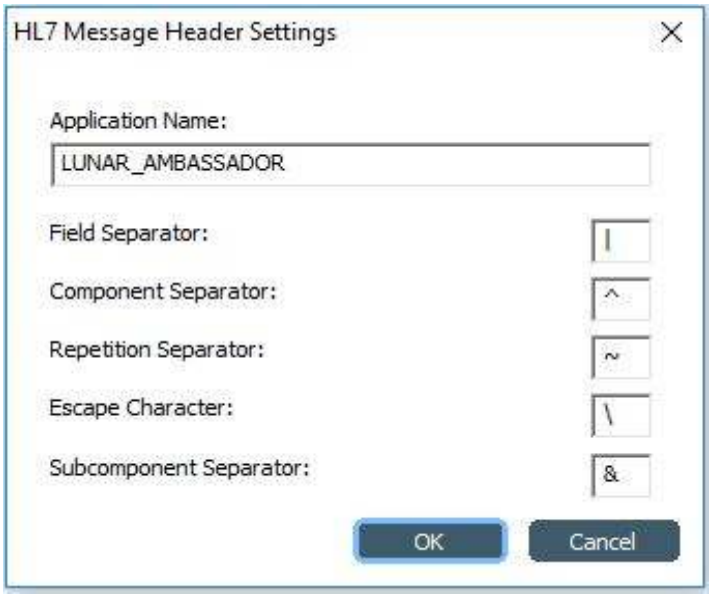


Figure 8-3. HL7 Messaging settings.

- **Application Name** - By default, enCORE uses the application name "LUNAR_AMBASSADOR." enCORE rejects any HL7 messages that do not match this name.
- Separator and Escape character may be changed if the server requires atypical nomenclature.

Click OK in the Settings dialog and the Connectivity Options dialog to save your HL7 settings. Restart enCORE to make the new settings take effect.

8.3 Testing Worklist

8.3.1 <Product> Exchange Folder

Transfer information may be examined when transactions are in either Debug or Training mode. Files will be located in the ProdigyExchangeFolder or the iDXAExchangeFolder subdirectory of the LUNAR installation folder.

Figure 8-4. <Product>ExchangeFolder.

enCORE's CONFIG directory contains the HL7 Protocol XML files. These files will not appear until the corresponding message is received (in the case of ORM, ADT, OMG and DFT messages) or sent (for ORU and MDM reports).

- The **ProtocolOrder.xml** (see appropriate section) contains the worklist information and can be modified to receive worklist information from ORM messages.
- The ProtocolOrderADT.xml contains the worklist information for the ADT messages (see Chapter on ADT).
- The ProtocolOrderOMG.xml contains the worklist information for the OMG messages (see Chapter 4 on OMG).
- The ProtocolOrderDFT.xml contains the worklist information for the DFT messages (see Chapter on DFT).
- The ProtocolReport.xml contains the results/image information for the ORU messages (see Chapter on ORU).
- The ProtocolReportMDM.xml is required to export image references (see Chapter on MDM).

Processing Mode
enCORE will accept any ORM, ADT, DFT, OMG or ACK messages that use a Processing Mode defined by the HL7 Standard and are not blocked by the Filter set using enCORE's Connectivity Options | HL7 | Worklist Settings | Worklist Filter

8.3.2 Run enCORE HL7 Worklist

After configuring enCORE's HL7 for Worklist Mode, restart the enCORE program.
Click on **Measure** from the main enCORE screen.

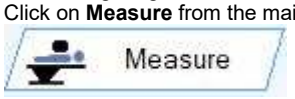


Figure 8-5.. Measure Button

A list of patients should appear.

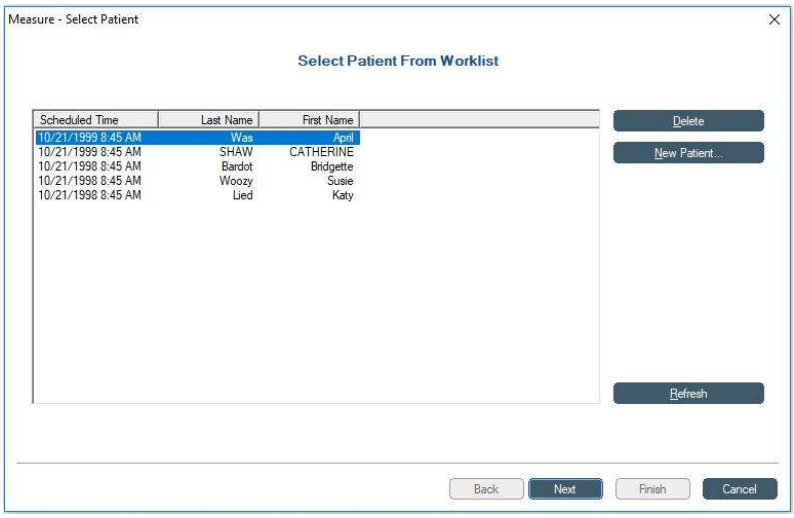


Figure 8-6.. HL7 Worklist Wizard Step 1.

Click on the study patient from the HL7 Worklist.
Click on **Next**.
The patient is compared to the patients already within the database. If there is no match found, the patient is entered as a **New Patient**.

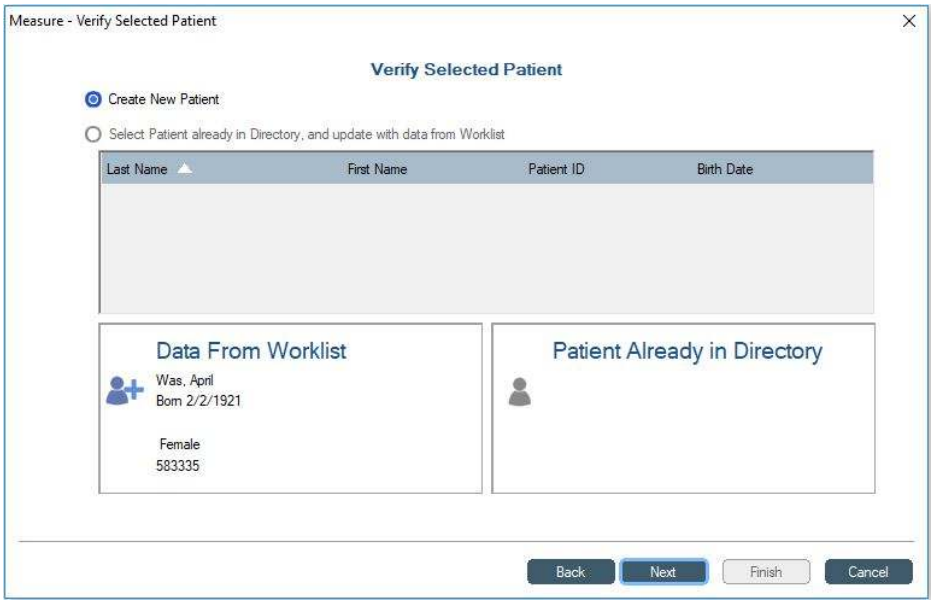


Figure 8-7.. Worklist Wizard Step 2. Verify Selected Patient

The patient name is displayed for verification as a new patient. If correct, click on **Next**.
If the patient needs to be compared against the existing database, click on Select Existing Patient.

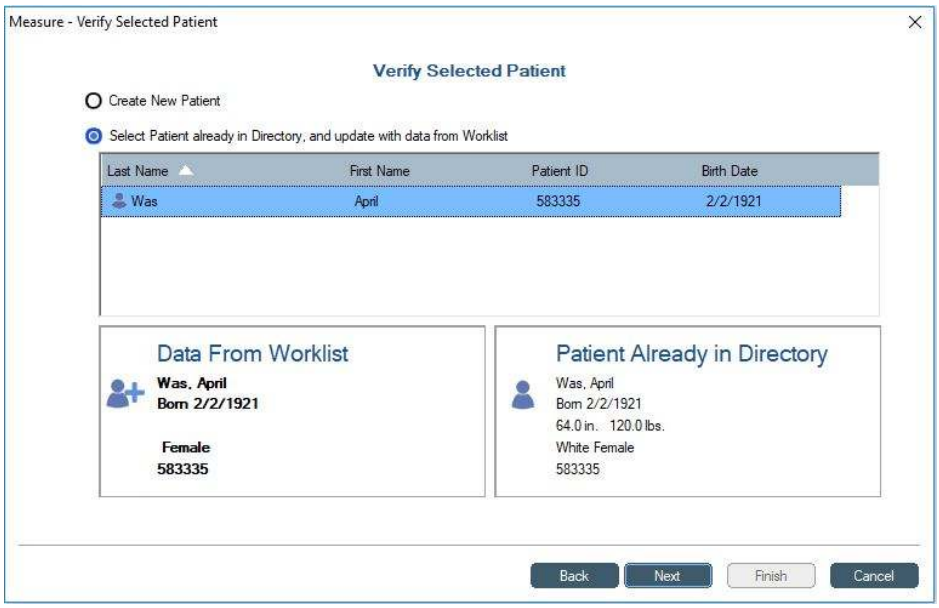


Figure 8-8.. Select an existing patient

If the technologist selects a patient that is already present in the enCORE patient database, the screen displays both the patient information from the worklist and the patient information from the directory. Click on Next if they are the same patient.

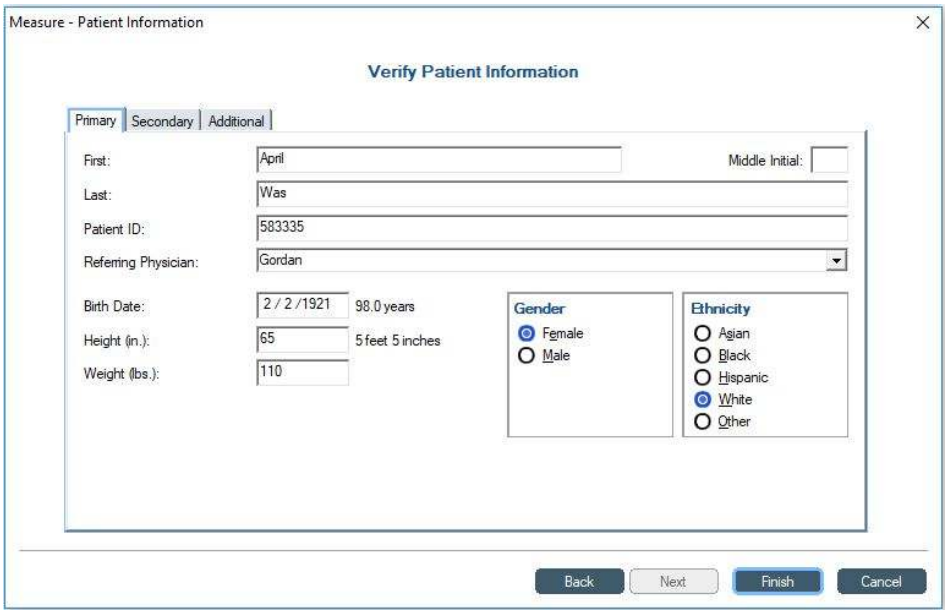


Figure 8-9.. Worklist Wizard Step 3. Patient information editing screen

Edit or add any information that is missing from the patient information screen.
The only way that Orders in the enCORE HL7 database can be added or changed is through subsequent HL7 messages from the Order Placer. Orders can be deleted either through subsequent HL7 messages or manually from enCORE HL7 Worklist Wizard Step 1(Figure 8-6.).

If a required value is not provided by the HIS, the software will prompt the user for that information during step 3 of the HL7 Worklist Wizard. Complete the information required and click OK. Click on Finish to update the database information with the new Worklist demographic data. The patient data is added to the LUNAR patient database and the Measure screen appears. (See the enCORE Help Topics for more details on performing patient measurements.)

If the patient needs to be manually added to the worklist, select New Patient, to the right of the HL7 Worklist Wizard Step 1 (Figure 8-6.).

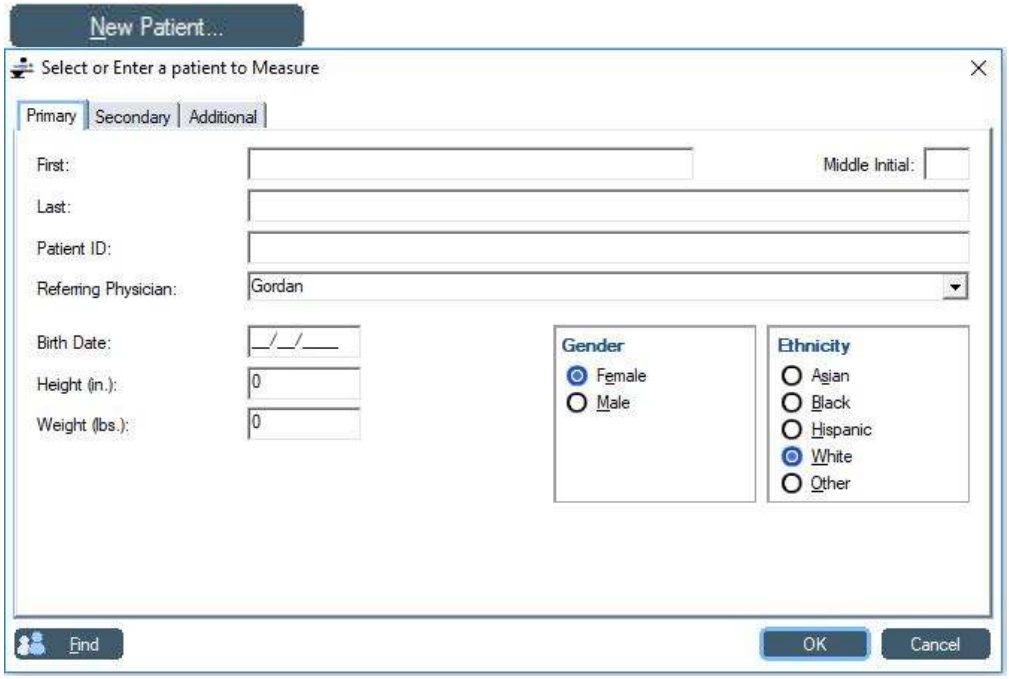


Figure 8-10.. New patient option.

Enter the patient information OR to search the database again, you can enter a the first two letters of the last name and select the **Find** button.

Figure 8-11.. Find Button.

Use the database Search function to check if the patient already exists in the database.

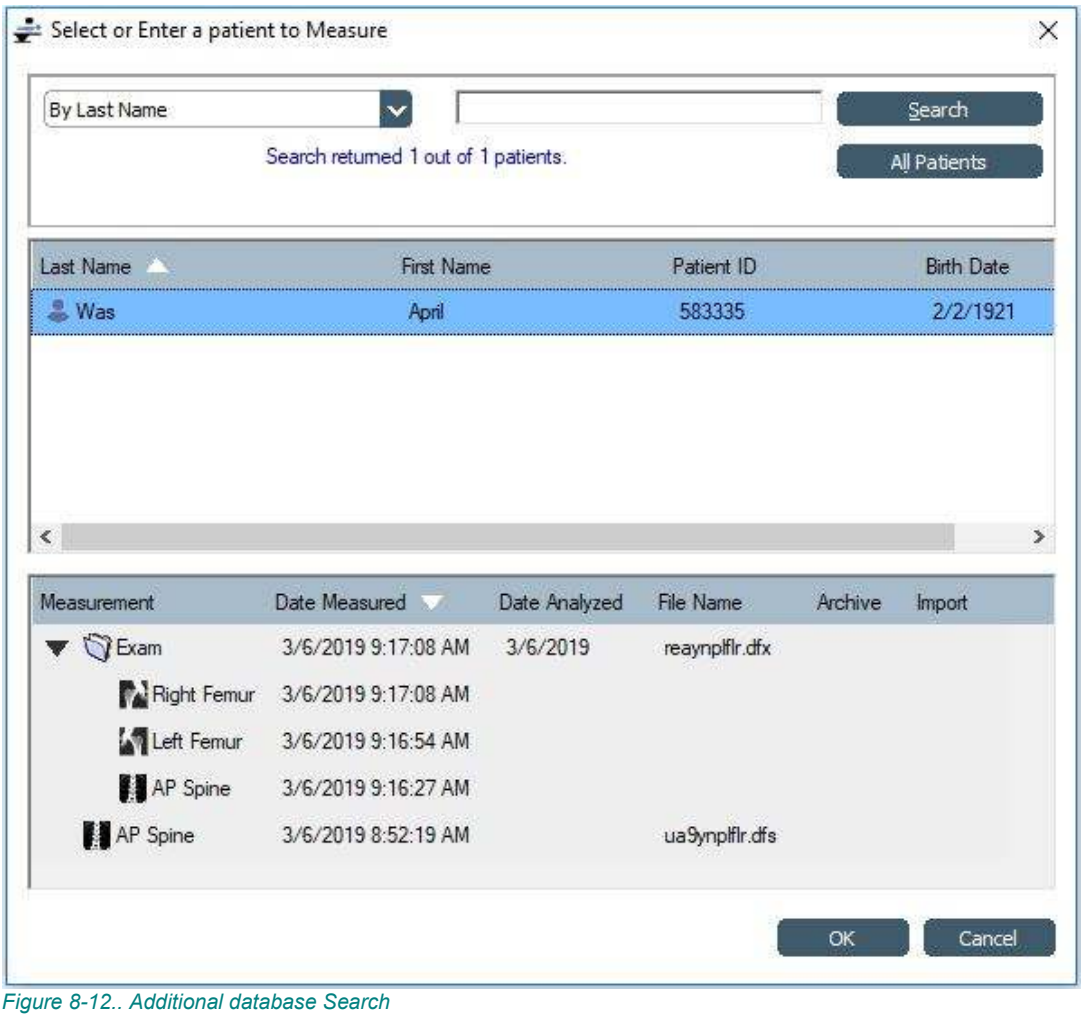


Figure 8-12.. Additional database Search

If the patient resides in the database, the name will appear in the list. Highlight the patient name and click OK.
If the patient does not reside in the database, click on Cancel.
Enter the new information into the patient information screen and click OK.

9 Configuring HL7 Reporting Options

enCORE HL7 interface provides the options to send Data and Images simultaneously. Data may be sent as Numeric or Text values.

The HL7 report is dependent on the Report option settings in enCORE.

The HL7 report that is sent may contain:

1) Patient information
2) Results
3) Assessment
4) Recommendations
Each of these sections is limited to 64kb of data.

The HL7 report that is sent from the DXA Report as an option in the Report Center may contain:

1) Patient information
2) Results
Each of these sections is limited to 64kb of data.

By default, enCORE software will make 1 attempt to send a report before generating an error. This is configurable in the HL7 Report Settings dialog available from the HL7 tab of the Connectivity Options dialog. In addition, each

connection attempt and subsequent wait for message acknowledgement has a timeout of 20 seconds each. Adjustments to ReportConnectionTimeoutSeconds and AcknowledgementTimeoutSeconds are made in Service Mode Tools\ System File Editor\ <product name>.ini.

To receive one-time access to this feature, call into the Lunar Customer Service Phone Support Line and ask for a "Day Pass". The service person will direct you through the software prompts.

Note: If the HL7 tab does not appear in the dialog box, make sure your feature code is correct.
a. Select **Cancel**.
b. Select the **Options** button from the main screen.
c. Select **User Options**, and select the **Systems** tab.
d. Make sure the feature code shown in the dialog box is the same as the code shown on the enCORE software CD sleeve. Reinstall enCORE software and change the code if necessary.

9.1 Configuration Screens for HL7 Reporting

Start the enCORE program and select the **Options** button from the enCORE main screen.
Select **Connectivity Options**, and then select the **HL7** tab to display the HL7 settings.

- **Stop/ Start** Control
- **HL7 Version** Selection
- Select the compatible HL7 version and check the Display Errors box when troubleshooting.
- **Local Receiving Port** - By default, enCORE assigns port 3773 to receive HL7 messages. Change the port number in this field if needed.
- **Local Sending Port** - By default enCORE assigns port 3774 to send information. Change the port number in this field if needed.

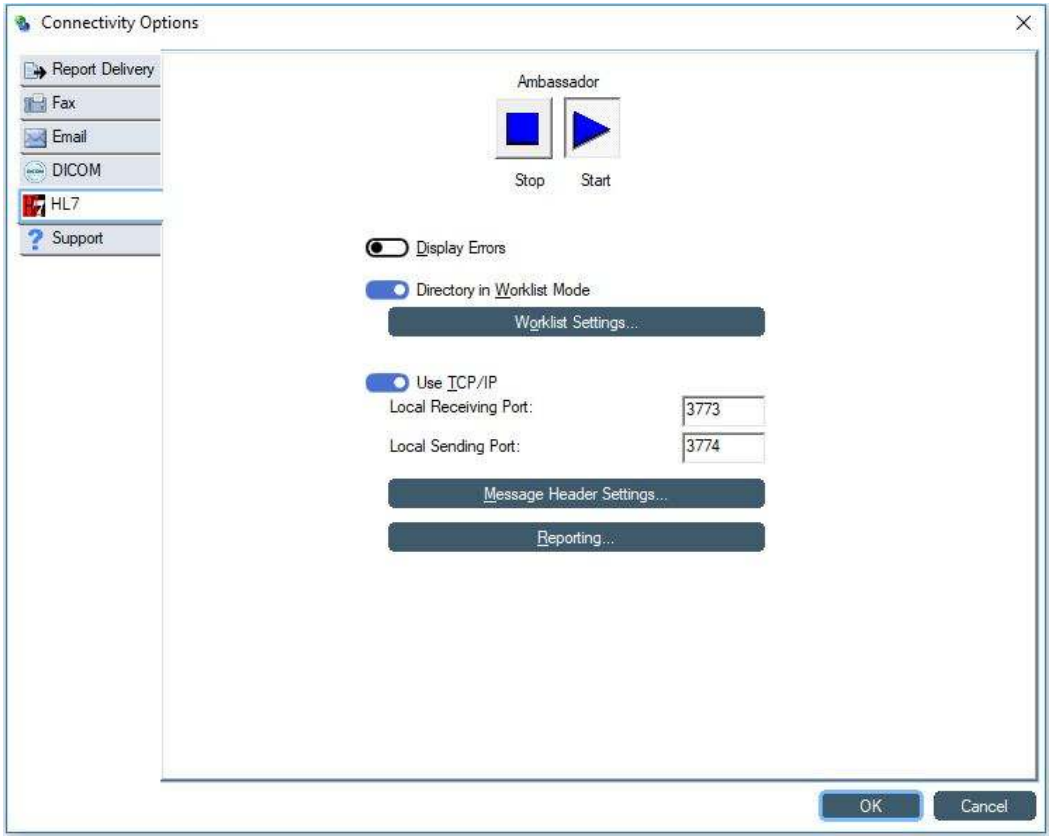


Figure 9-1.. HL7 option dialog in enCORE.

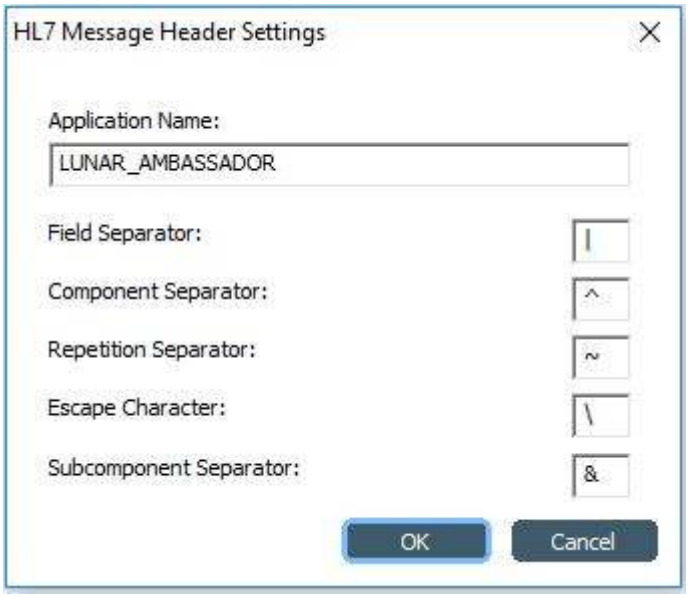


Figure 9-2.. Messaging option screen.

Message Header Settings Click the **Message Header Settings** button to display HL7 communication nomenclature. Nomenclature should correspond with the server nomenclature. The Application Name here represents enCORE's application name. By default, enCORE uses the application name "LUNAR_AMBASSADOR." enCORE rejects any HL7 messages that do not match this name. Separators and Escape character may be changed if the server requires atypical nomenclature.

9.2 Reporting

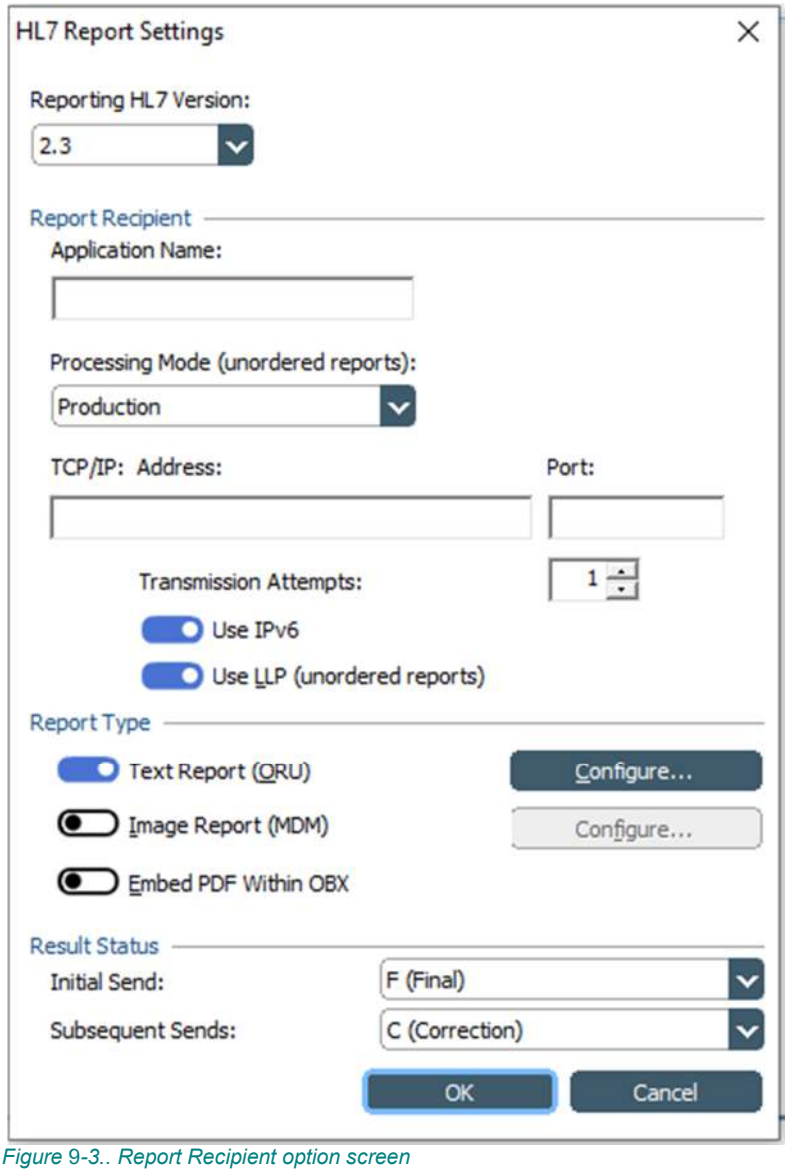


Figure 9-3.. Report Recipient option screen

1. Application Name

The Application Name under the Reporting options represents the non-enCORE Application interface program that will be receiving the HL7 report information.

2. Processing Mode

The HL7 protocol can operate in three processing modes: Debug, Training, and Production. The Debug mode allows you to troubleshoot without affecting actual patient accounts. Once the installation is debugged, switch the Processing Mode to Production for normal operation.

3. Address and Port

Enter the TCP/IP Address and Port number of the HL7 Report destination.

4. Transmission Attempts

Increase the number of attempts from the default if the network is slow or problematic.

5. Use IPv6

Allow reports to be sent using IPv6 instead of IPv4. The system must be connected to an IPv6 capable network in order for this feature to work. A valid IPv6 address must be entered.

6. Use LLP

LLP (Lower Layer Protocol) greatly improves the reliability of HL7 systems using TCP/IP, LUNAR highly recommends that you select this option when using TCP/IP. Note that enCORE can only use LLP if the remote HL7 system also uses LLP.

7. Result Status

- Initial Send: This is the value that will appear in the Result Status field of outgoing report messages the first time a report for a given exam is sent. The default is F (Final).
- Subsequent Sends: This is the value that will appear in the Result Status field of outgoing report messages if a report for a given exam has been previously sent. The default is C (Correction).

9.3 HL7 Reporting Options

Select the desired Report Types by placing a check in front of the feature.
Choose Text (ORU) and/or Image (MDM) Report Types.

Figure 9-4.. Report Type Selection

1. Text Report (ORU) Configuration Options

Click on the Configure button next to Text Report (ORU).
enCORE HL7 feature will accomodate a variety of Data and Text output options to match the requirements of the EMR application.

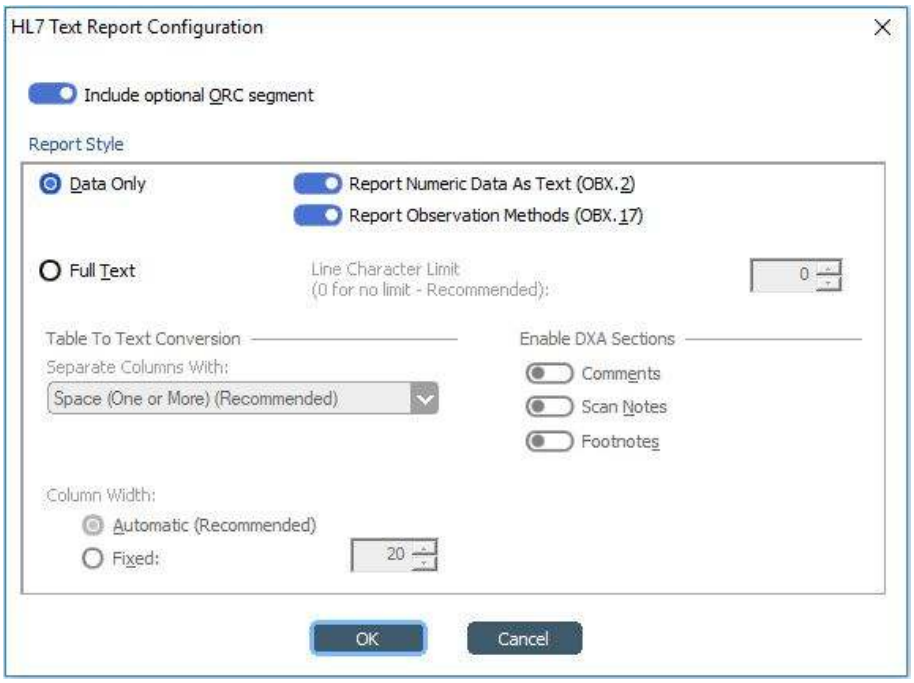


Figure 9-5. ORC Segment, Data Only and Report options

a. Include Optional ORC segment

This segment is not required by the HL7 Standard, but may be sent if desired by the receiving system.

b. Report Style

- Data Only Report Style sends data in HL7 format with the option to send Numeric Data as Text
- Report Numeric Data As Text (OBX.2)
- Report Observation Methods (OBX.17)
- Full Text allows further formatting control to populate a customer-specific template
  Line Character Limit (0 for no limit)

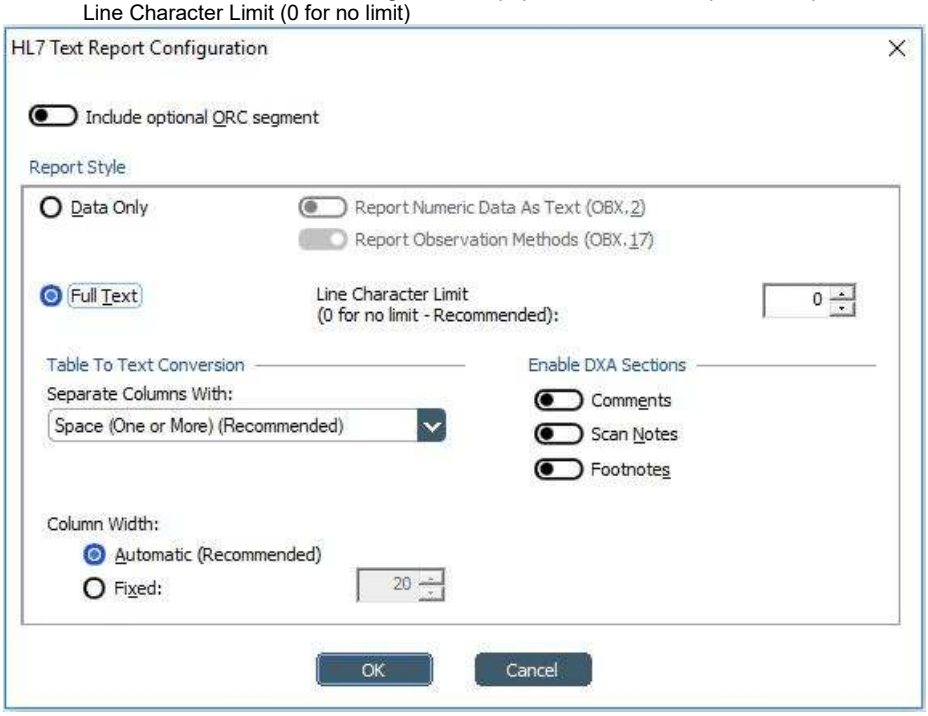


Figure 9-6. Report type Text

c. Table To Text Conversion Options

Separate Columns With:

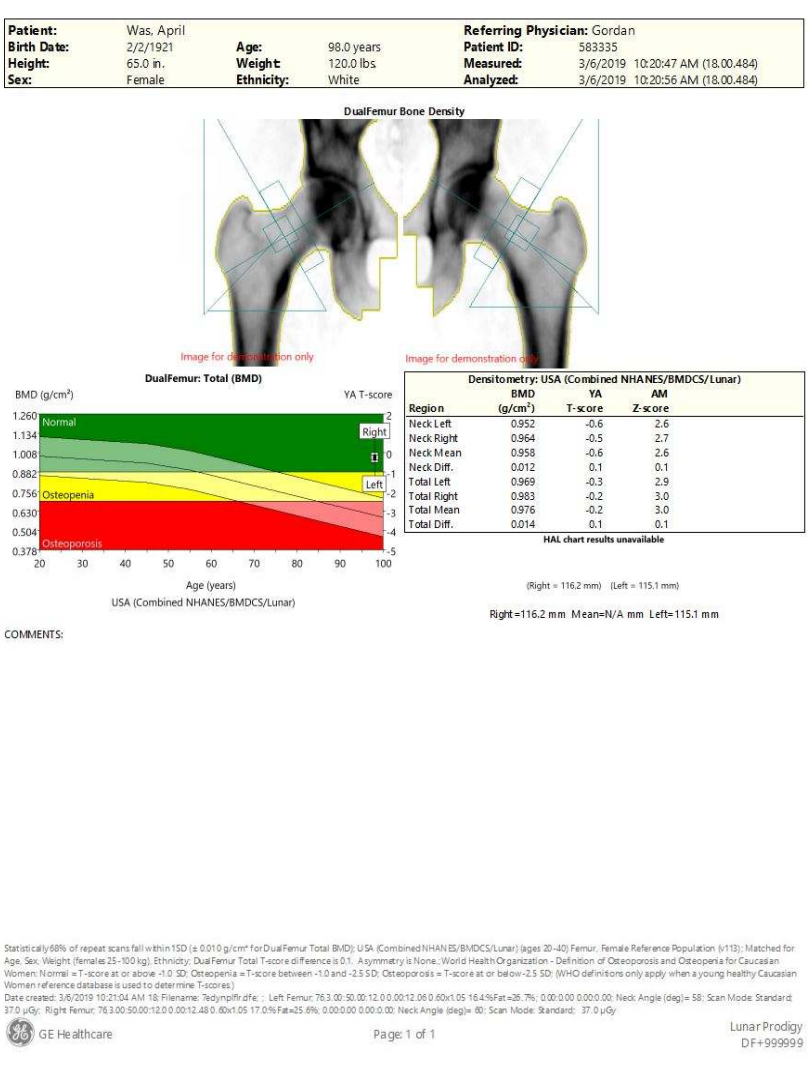
- Space (One or More) - recommended
- Comma (One or More)
- Comma (Single)
- Other (One or More)
- Other (Single)
- Space (One or More) - recommended
- Space (Single)
- Tabs

Column Width

- Automatic - recommended
- Fixed - choose width

Enable the desired DXA Output Options typically seen on a printed report (Figure 9-7)

- Comments
- Scan Notes
- Footnotes



Demographics

Table Data

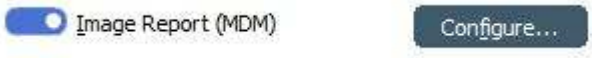
Comments

Footnotes
Scan Notes

Footer

Figure 9-7. Enable DXA Sections meanings.

2. Image Report MDM Configuration Options



Check the Image Report (MDM) feature option and click on the Configure button.
Note: If Embed PDF within OBX is enabled, none of these configurations will have any impact.

a. Destination Folder of the Recipient.
To include a JPEG image of the report with the output, a Destination Folder needs to be assigned. This folder may be on the local computer or on the network.

b. Location of the HL7 Image Viewer
If the HL7 image viewer is located at the current computer, check the corresponding option box (Figure 9-8).

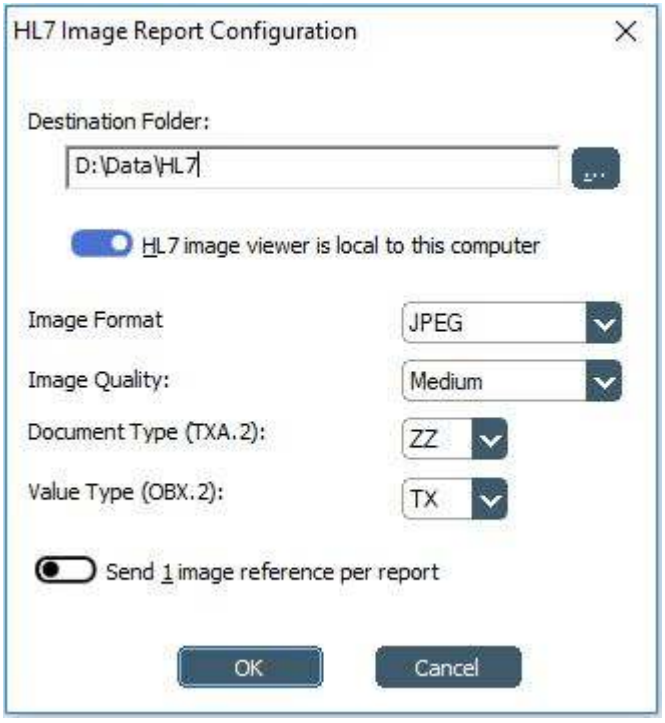


Figure 9-8. Image Report destination.

Note: An interface with GE Centricity (Logician) must remain in Production processing ID while troubleshooting.

c. Image Format
- PDF
- JPEG

d. Image Quality
- High
- Medium
- Low

e. Table of Document Type (TXA.2)

CL	Clinic Letter
CN	Consultation
CO	Clinic Note
CS	Clinical Summary
DI	Diagnostic Imaging

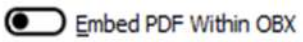
DR	Diagnostic Report
GC	General Correspondence
PN	Procedure Note
RA	Radiology
SS	Special Studies
ZZ	Other

f. Table of Value Type (OBX.2)

FT	Formatted Text
RP	Reference Pointer
ST	String Data
TX	Text Data

g. Send 1 image reference per report
With this option unchecked, multiple reports are sent in a single HL7 message, with multiple OBX segments. With this option checked, multiple reports are sent in multiple HL7 messages, with one OBX segment in each. This option does not function for embedding PDF within OBX tags.

3. Embed PDF within OBX



Check the Embed PDF Within OBX option to send the PDF of the report as an Encapsulated Data type (ED) within an OBX tag for either the MDM or the ORU report types. The PDF byte data will be present in the Value field of an ED value-type OBX tag and will be encoded in base-64.

a. ORU
For a Full Text ORU report, the PDF is added as an Encapsulated Data type to the beginning of the OBX tags. The full text OBX tags will follow the embedded PDF data. The Observation ID will increment for each PDF sent.

For a Data Only ORU report, the PDF is added as an Encapsulated Data type after all other OBX tags. The Observation ID will increment from the Data Only Observation IDs, but multiple PDFs will be within the same Observation ID and separated by Observation Sub-IDs.

b. MDM
For a MDM report, the PDF will be used **instead** of the IMAGE_REF OBX tags. OBX value type TX/RP will be replaced with ED, and the OBX will include PDF data embedded as base-64 encoded bytes. MDM configuration options do not function when Embedded PDF is enabled.

9.4 Sending HL7 Reports

9.4.1 Exchange Folder (Text)

The Exchange Folder files will temporarily hold the Text information before sending it out to the Destination Folder. The folder is located in the D:\Program Files \LUNAR \ <product> folder.

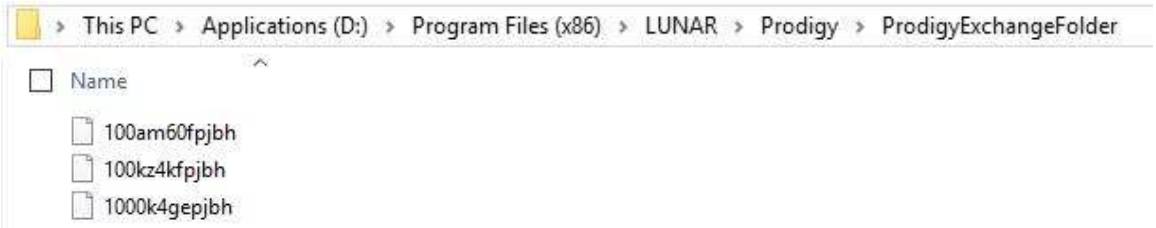


Figure 9-9. ProdigyExchangeFolder .

1. Protocol Report XML

The ProtocolReport.xml contains the report information needed to adjust HL7 protocol for sending ORU reports. ProtocolReportMDM.xml provides a similar interface for MDM reports.
Both of these protocol files are located in the CONFIG subdirectory of the enCORE program. The protocol files are created when the first worklist is initiated or report is sent.

2. Local Destination Folder (Image)

The Destination Folder (Local) will temporarily hold the Image Report (MDM) before it is sent to the Report Recipient. In this example, the Local Destination Folder was "TempImg".

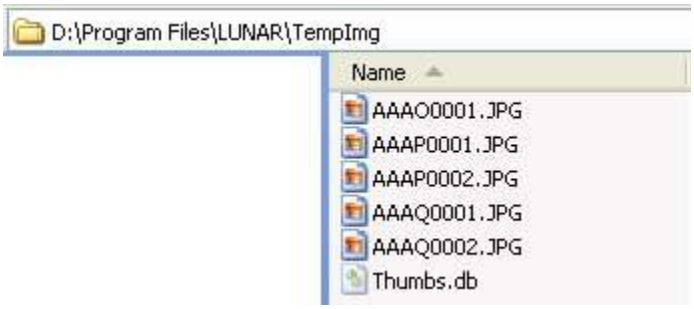


Figure 9-10. Report Images temporary location

3. Send a DXA Report

With an image open after analysis, click on the Reports button.
On the Report Center dialog, check the HL7 checkbox and click Print / Send button to send the HL7 Observation DXA Report.

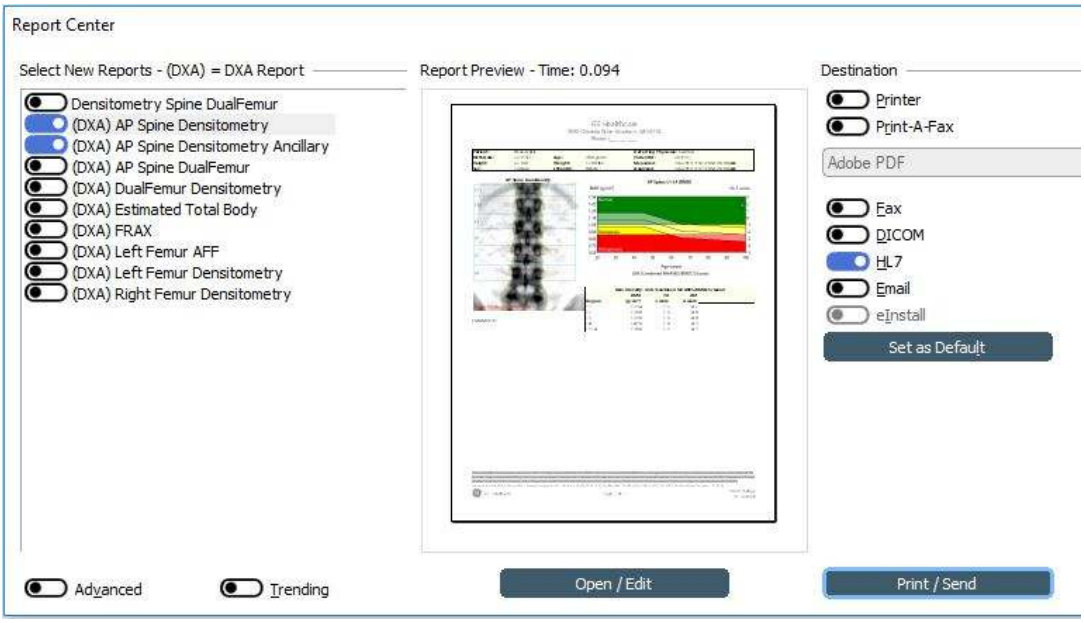


Figure 9-11. Report Center dialog.

9.5 Reporting to GE Centricity

enCORE HL7 interface provides the option to send Data and Image reports simultaneously.

1. Setup to Send Text Reports to Centricity

a. Start the enCORE application.
b. Select Connectivity Options from the Tools menu.
c. Click on the HL7 tab. Check the Display Errors box. Set the HL7 version to the desired value. Check the Use TCP/IP checkbox.
d. Click on the Reporting button to view the next interface dialog box.

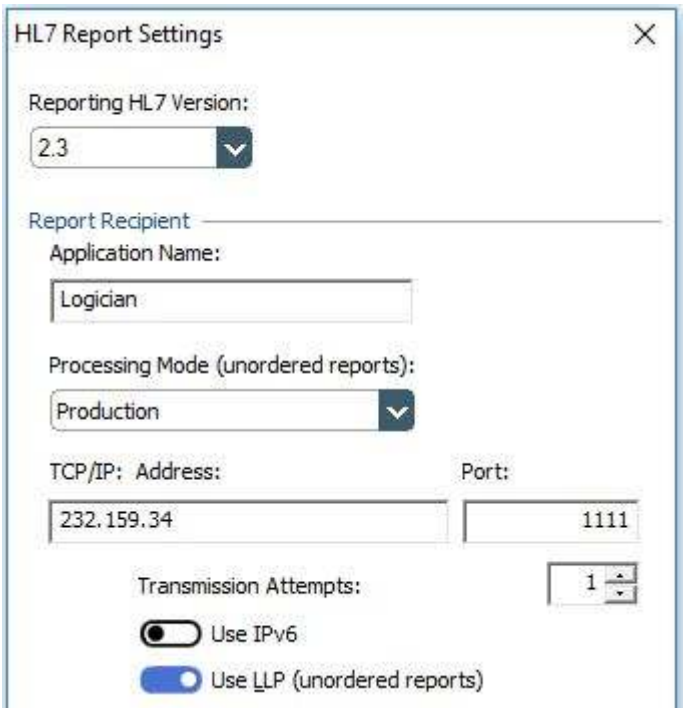


Figure 9-12. Report recipient

e. On the HL7 Report Settings dialog Type “Logician” into the Application Name field and set the Processing Mode to Production. Place the Logician DTS computer name or TCP/IP address in the TCP/IP Address field and enter the DTS port number in the TCP/IP Port field. Check the Use LLP box.

Figure 9-13. Report type

f. Check the Report Type; Text Report (ORU).

2. Setup to Send the Image Report

a. On the HL7 Report Settings dialog Check “Image Report (MDM).
b. Destination Folder = The shared network location where enCORE places image files for Centricity to access.

Figure 9-14.MDM settings

3. Send the Exam Image and Report Data to Centricity DTS

a. Open the enCORE patient directory screen. For the testing environment use a patient name that already exists in the Logician demo environment. Here we are using the patient, " Don Bassett" and a Patient ID of: "80-TEST011".

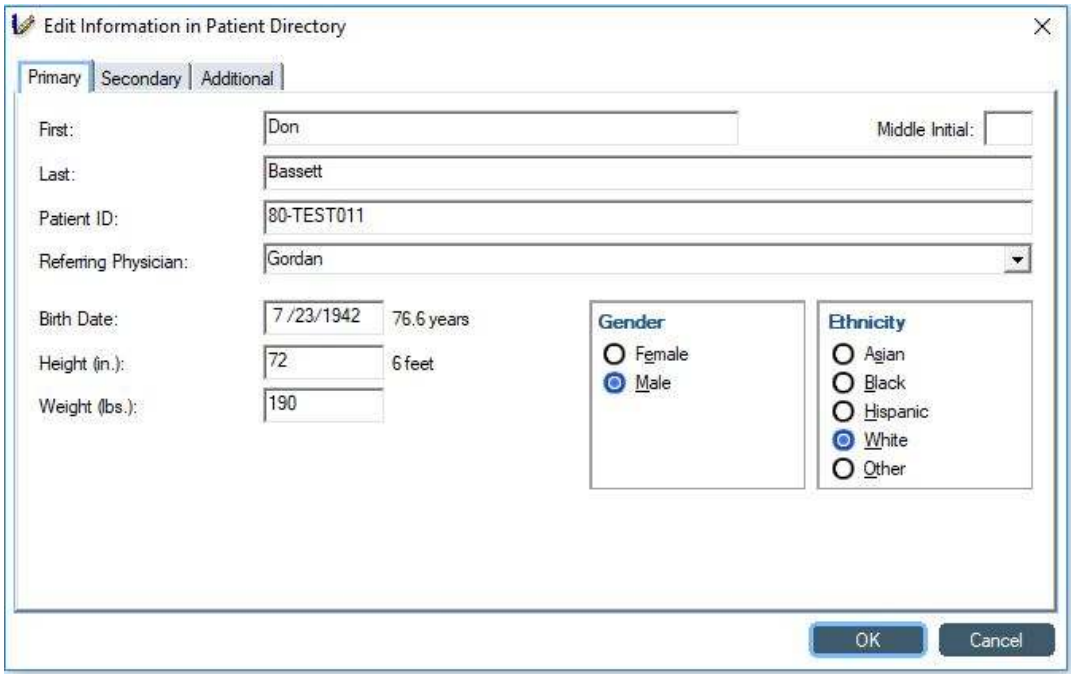


Figure 9-15. Logician test patient

Scan a phantom or take an existing test Prodigy scan and change the patient information to match figure 9-17. Be sure to Save the analyzed scan after editing it.

b. With the scan image open on screen in enCORE, click on the Reports button.

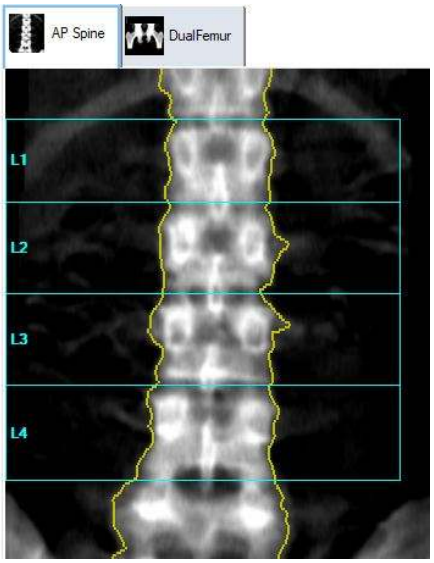


Figure 9-16. Select report with image open

c. Check the Report options that are typical for your lab. Check HL7 as the destination.

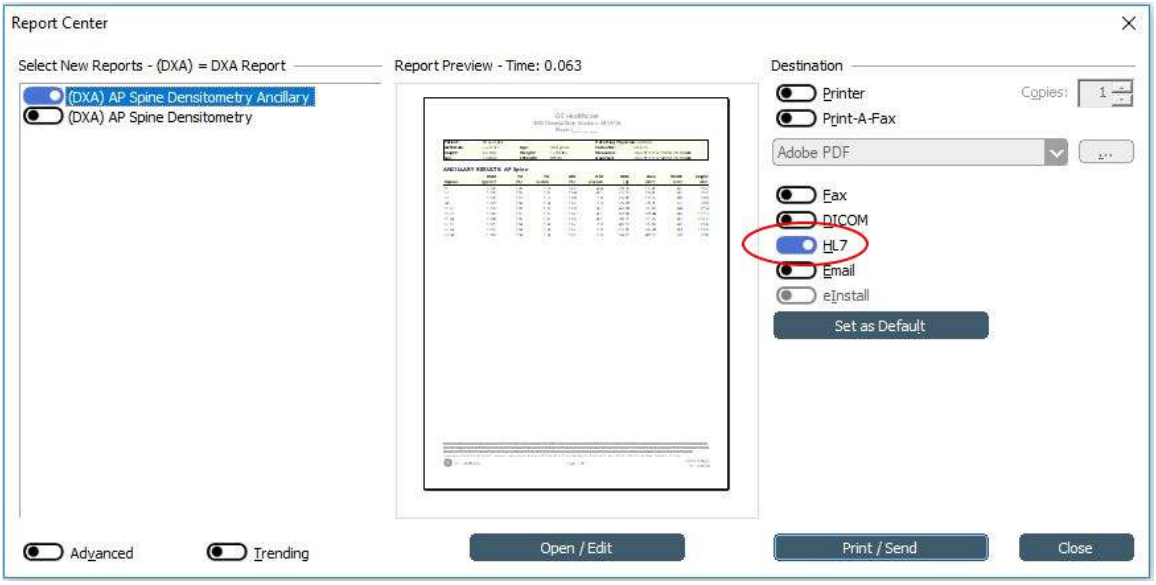


Figure 9-17. enCORE Report center

d. Be sure the Logician DTS is running before clicking OK in the enCORE Report center. A progress window will appear. A successful send will show you an acknowledgement that the report was sent.

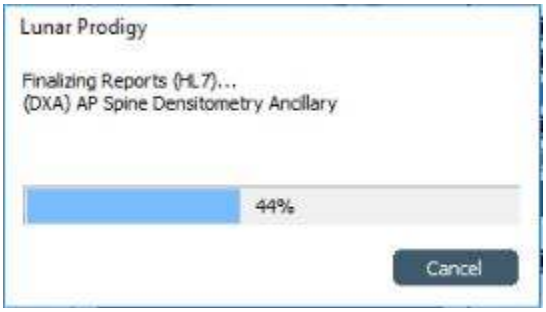


Figure 9-18. enCORE Report progress bar

4. View the Results at the EMR system.

This completes the test configuration of the software.

10 Configuring HL7 for Network Communications

10.1 TCP/IP

The User will need Administrative rights or Power User permissions for sending/ receiving HL7 messages across the network.
The HL7 Standard specifies the format of messages but does not dictate how HL7 messages are communicated between HL7-compliant systems. However,enCORE expects HL7 messages to be transported over TCP/IP client/server networks.

Note: enCORE requires the presence of a network interface card to communicate via a network.

The hospital information system (HIS) will send HL7 messages to enCORE without a request from enCORE. In other words, enCORE acts as the client and the HIS is the server. In order for the HIS to send HL7 data to enCORE, the HIS must know how to connect with enCORE using TCP/IP sockets.

A **socket** is defined by two items:

- **TCP/IP por**t. By default, enCORE uses port 3773 to receive HL7 messages. If this port number conflicts with another port already in use, you can change the port number in the Advanced HL7 Setting dialog available from the Connectivity Options.

- **TCP/IP address**. A network administrator must assign a TCP/IP address to the enCORE computer that will receive HL7 messages. Each enCORE installation has a separate TCP/IP address and will only receive messages sent to this address. The medical facility must provide this address.

10.2 DNS

The TCP/IP address is often in dotted quad notation, such as 127.0.0.1. However, if the customer site is running DNS (Domain Name Server), a user-friendly name can be assigned to the enCORE computer and used as the TCP/IP address. Once the network administrator has assigned a TCP/IP address to the enCORE computer, an interface analyst can configure the HIS to send HL7 messages to enCORE at that TCP/IP address and port number. No configuration is necessary for the HL7 Ambassador to send HL7 replies to the remote HIS once a connection is established with the Ambassador.

10.3 LLP

The TCP/IP protocol works by breaking long messages into smaller packets and then sending the smaller packets over the network. When a long message is broken into smaller packets for transmission, it is not obvious when the final packet arrives at the receiving end. Therefore, LUNAR highly recommends that you use the HL7 Lower Layer Protocol (LLP) option when using TCP/IP. The LLP acts like an envelope containing the HL7 message. You can configure enCORE to use LLP in the Advanced HL7 Settings dialog in Tools\ Connectivity Options.