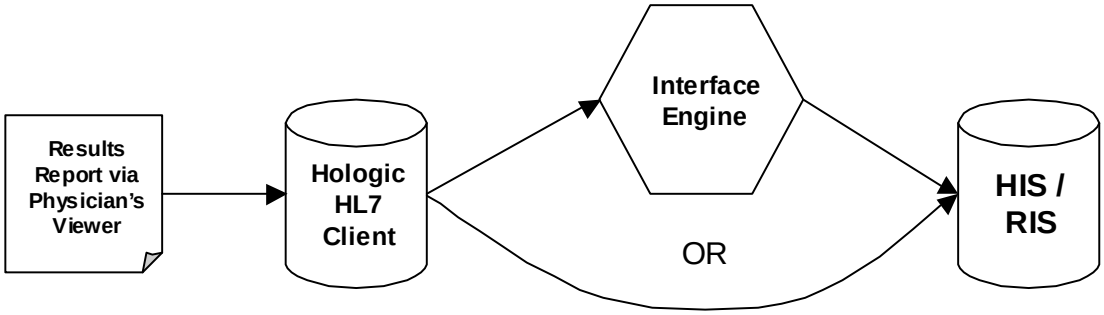
1 Introduction

This document describes Hologic's HL7 Results Interface. The unidirectional interface enables study results reports to be transferred electronically from Hologic's Physician Viewer reporting application directly into a HIS/RIS system.

2 Interface Workflow

The workflow of the results interface starts with the scan acquisition on a bone densitometer. The scan is analyzed and sent to the Physician's Viewer application where the physician would interpret the results. Once the report is completed, the physician initiates the report to be queued for transmission to the HIS/RIS via Hologic's HL7 Client application. After the report is received by the HIS/RIS, the physician can then finalize and sign out the report on the HIS/RIS system.



3 HL7 Version

These specifications adhere to the HL7 Standard version 2.3 unless otherwise noted. Copies of the HL7 Standard may be obtained from The Health Level Seven Organization (www.hl7.org).

4 Communications Protocol

TCP/IP Minimal Lower Layer Protocol is the supported communications protocol. Details of this protocol can be found in the HL7 Implementation Guide (Appendix C). Each message will have the following format:

<SB>dddd<EB><CR>

	Description	ASCII	Hex
<SB>	Start Block character	<VT>	0x0B
dddd	Data		
<EB>	End Block character	<FS>	0x1C
<CR>	Carriage Return	<CR>	0x0D

5 MESSAGE TYPES

The conventions used in the HOLOGIC USE column will be as follows:
`Text in this font represents constant values.`
Text in this font represents values derived from Hologic's application.

5.1 Unsolicited Observation Results (ORU/R01)

The Observation Report – Unsolicited *ORU* with the *R01* event is the supported triggering event.

ORU Message	
Segment	**Description**
MSH	Message Header
PID	Patient Identification
PV1	Patient Visit
ORC	Order Common
OBR	Observations Report ID
{OBX}	Observation/Result

5.1.1 MSH Segment

The MSH (Message Header) segment defines the intent, source, destination, and some specifics of the syntax of a message.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	1	ST	R	Field Separator	|
2	4	ST	R	Encoding Characters	^&~\
3	180	HD	C	Sending Application	HOLOGIC DEXA
4	180	HD	O	Sending Facility	*Institution Name*[1]
5	180	HD	O	Receiving Application	NOT USED
6	180	HD	O	Receiving Facility	NOT USED
7	26	TS	R	Date/Time Of Message	*Time Stamp of Creation*
8	40	ST	O	Security	NOT USED
9	7	CM	R	Message Type	ORU^R01
10	20	ST	R	Message Control ID	*Time Stamp of Creation*
11	3	PT	R	Processing ID	P
12	60	VID	R	Version ID	2.3
13	15	NM	O	Sequence Number	NOT USED
14	180	ST	O	Continuation Pointer	NOT USED
15	2	ID	O	Accept ACK Type	NOT USED
16	2	ID	O	Application ACK Type	NOT USED
17	2	ID	O	Country Code	NOT USED
18	16	ID	O	Character Set	NOT USED
19	60	CE	O	Principal Language Of Message	NOT USED
20	20	ID	O	Alt Char Set Handling Scheme	NOT USED

[1] The Institution Name for MSH-4 (Sending Facility) is site-configurable.

Sample MSH segment:

```
MSH||^~\&|HOLOGIC DEXA|General Hospital,
Radiology|||20020530101721||ORU^R01|20020530101721|P|2.3|||||||||
```

5.1.2 PID Segment

The PID (Patient Identification) segment is used as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that is not likely to change frequently.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID - Patient ID	NOT USED
2	20	CX	C	Patient ID	NOT USED
3	20	CX	R	Patient Identifier List	*Patient's ID*
4	20	CX	C	Alternate Patient ID - PID	*Patient's ID 2*
5	48	XPN	R	Patient Name	*Patient's Name*
6	48	XPN	O	Mother's Maiden Name	NOT USED
7	26	TS	O	Date/Time of Birth	*Patient's DOB*
8	1	IS	O	Sex	*Patient's Sex*[2]
9	48	XPN	O	Patient Alias	NOT USED
10	80	CE	O	Race	*Patient's Ethnicity*[3]
11	106	XAD	O	Patient Address	NOT USED
12	4	IS	O	County Code	NOT USED
13	40	XTN	O	Phone Number - Home	NOT USED
14	40	XTN	O	Phone Number - Business	NOT USED
15	60	CE	O	Primary Language	NOT USED
16	80	CE	O	Marital Status	NOT USED
17	80	CE	O	Religion	NOT USED
18	20	CX	O	Patient Account Number	NOT USED
19	16	ST	O	SSN Number - Patient	NOT USED
20	25	DLN	O	Driver's License Number - Patient	NOT USED
21	20	CX	O	Mother's Identifier	NOT USED
22	80	CE	O	Ethnic Group	NOT USED
23	60	ST	O	Birth Place	NOT USED
24	1	ID	O	Multiple Birth Indicator	NOT USED
25	2	NM	O	Birth Order	NOT USED
26	80	CE	O	Citizenship	NOT USED
27	60	CE	O	Veterans Military Status	NOT USED
28	80	CE	O	Nationality	NOT USED
29	26	TS	O	Patient Death Date and Time	NOT USED
30	1	ID	O	Patient Death Indicator	NOT USED

[2] Patient Sex Codes

F	Female
M	Male

[3] Patient Ethnicities

Asian
Black
Hispanic
Infant
Pediatric
White

Sample PID segment:

```
PID|||5077|933743|SMITH^VIRGINIA^E||19600324000000|F||White|||||||||||
|||||||||
```

5.1.3 PV1 Segment

The PV1 (Patient Visit) segment is used to communicate information about a specific visit.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID – PV1	NOT USED
2	1	IS	R	Patient Class	U
3	80	PL	O	Assigned Patient Location	NOT USED
4	2	IS	O	Admission Type	NOT USED
5	20	CX	O	Preadmit Number	NOT USED
6	80	PL	O	Prior Patient Location	NOT USED
7	60	XCN	O	Attending Doctor	NOT USED
8	60	XCN	O	Referring Doctor	*Referring Physician*
9	60	XCN	O	Consulting Doctor	NOT USED
10	3	IS	O	Hospital Service	NOT USED
11	80	PL	O	Temporary Location	NOT USED
12	2	IS	O	Preadmit Test Indicator	NOT USED
13	2	IS	O	Re-admission Indicator	NOT USED
14	3	IS	O	Admit Source	NOT USED
15	2	IS	O	Ambulatory Status	NOT USED
16	2	IS	O	VIP Indicator	NOT USED
17	60	XCN	O	Admitting Doctor	NOT USED
18	2	IS	O	Patient Type	NOT USED
19	20	CX	O	Visit Number	NOT USED
20	50	FC	O	Financial Class	NOT USED
21	2	IS	O	Charge Price Indicator	NOT USED
22	2	IS	O	Courtesy Code	NOT USED
23	2	IS	O	Credit Rating	NOT USED
24	2	IS	O	Contract Code	NOT USED
25	8	DT	O	Contract Effective Date	NOT USED
26	12	NM	O	Contract Amount	NOT USED
27	3	NM	O	Contract Period	NOT USED
28	2	IS	O	Interest Code	NOT USED
29	1	IS	O	Transfer to Bad Debt Code	NOT USED
30	8	DT	O	Transfer to Bad Debt Date	NOT USED
31	10	IS	O	Bad Debt Agency Code	NOT USED
32	12	NM	O	Bad Transfer Amount	NOT USED
33	12	NM	O	Bad Debt Recovery Amount	NOT USED
34	1	IS	O	Delete Account Indicator	NOT USED
35	8	DT	O	Delete Account Date	NOT USED
36	3	IS	O	Discharge Disposition	NOT USED
37	25	CM	O	Discharged to Location	NOT USED
38	80	CE	O	Diet Type	NOT USED
39	2	IS	O	Servicing Facility	NOT USED
40	1	IS	O	Bed Status	NOT USED
41	2	IS	O	Account Status	NOT USED
42	80	PL	O	Pending Location	NOT USED
43	80	PL	O	Prior Temporary Location	NOT USED
44	26	TS	O	Admit Date/Time	NOT USED
45	26	TS	O	Discharge Date/Time	NOT USED
46	12	NM	O	Current Patient Balance	NOT USED
47	12	NM	O	Total Charges	NOT USED
48	12	NM	O	Total Adjustments	NOT USED
49	12	NM	O	Total Payments	NOT USED
50	20	CX	O	Alternate Visit ID	NOT USED
51	1	IS	O	Visit Indicator	NOT USED
52	60	XCN	O	Other Healthcare Provider	NOT USED

Sample PV1 segment:

```
PV1||U||||||Jones^Andrew^H|||||||||||||||||||||||||||||||||||||||||||||||
```

5.1.4 ORC Segment

The ORC (Common Order) segment is used to communicate information common to orders.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	2	ID	R	Order Control	RE
2	22	EI	C	Placer Order Number	*HL7 Field 1*
3	22	EI	C	Filler Order Number	*Study Accession Number*
4	22	EI	O	Placer Group Number	NOT USED
5	2	ID	O	Order Status	NOT USED
6	1	ID	O	Response Flag	NOT USED
7	200	TQ	O	Quantity/Timing	NOT USED
8	200	CM	O	Parent	NOT USED
9	26	TS	O	Date/Time of Transaction	NOT USED
10	120	XCN	O	Entered By	NOT USED
11	120	XCN	O	Verified By	NOT USED
12	120	XCN	O	Ordering Provider	NOT USED
13	80	PL	O	Enterer's Location	NOT USED
14	40	XTN	O	Call Back Phone Number	NOT USED
15	26	TS	O	Order Effective Date/Time	NOT USED
16	200	CE	O	Order Control Code Reason	NOT USED
17	60	CE	O	Entering Organization	NOT USED
18	60	CE	O	Entering Device	NOT USED
19	120	XCN	O	Action By	NOT USED
20	40	CE	O	Adv Beneficiary Notice Code	NOT USED
21	60	XON	O	Ordering Facility Name	NOT USED
22	106	XAD	O	Ordering Facility Address	NOT USED
23	48	XTN	O	Ordering Facility Phone Number	NOT USED
24	106	XAD	O	Ordering Provider Address	NOT USED

Sample ORC segment:
`ORC|RE|372742|425025077||||||||||||||||||||`

5.1.5 OBR Segment

The Observation Request (OBR) segment is used to transmit information specific to an order for a diagnostic study or observation, physical exam, or assessment. The OBR defines the attributes of a particular request for diagnostic services or clinical observations. For radiology-based reporting, the OBR defines the attributes of the original request for the procedure(s).

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID - OBR	1
2	22	EI	C	Placer Order Number	*HL7 Field 1*
3	22	EI	C	Filler Order Number	*Study Accession Number*
4	200	CE	R	Universal Service ID	*HL7 Field 2*
5	2	ID	X	Priority - OBR	NOT USED
6	26	TS	X	Requested Date/Time	NOT USED
7	26	TS	C	Observation Date/Time	*Scan Date/Time*
8	26	TS	O	Observation End Date/Time	NOT USED
9	20	CQ	O	Collection Volume	NOT USED
10	60	XCN	O	Collector Identifier	NOT USED
11	1	ID	O	Specimen Action Code	NOT USED
12	60	CE	O	Danger Code	NOT USED
13	300	ST	O	Relevant Clinical Info.	NOT USED
14	26	TS	O	Specimen Received Date/Time	NOT USED
15	300	CM	O	Specimen Source	NOT USED
16	80	XCN	O	Ordering Provider	NOT USED
17	40	XTN	O	Order Callback Phone Number	NOT USED
18	60	ST	O	Placer Field 1	*HL7 Field 2*
19	60	ST	O	Placer Field 2	*HL7 Field 3*
20	60	ST	O	Filler Field 1	NOT USED
21	60	ST	O	Filler Field 2	NOT USED
22	26	TS	O	Results Rpt/Status Chng - Dt/Tm	NOT USED
23	40	CM	O	Charge to Practice	NOT USED
24	10	ID	O	Diagnostic Service Sect ID	NOT USED
25	1	ID	C	Result Status	P[4]

26	400	CM	O	Parent Result	NOT USED
27	200	TQ	O	Quantity/Timing	NOT USED
28	150	XCN	O	Result Copies To	NOT USED
29	200	CM	O	Parent	NOT USED
30	20	ID	O	Transportation Mode	NOT USED
31	300	CE	O	Reason for Study	NOT USED
32	200	CM	O	Principal Result Interpreter	*Interpreting Physician*[5]
33	200	CM	O	Assistant Result Interpreter	NOT USED
34	200	CM	O	Technician	NOT USED
35	200	CM	O	Transcriptionist	NOT USED
36	26	TS	O	Scheduled Date/Time	NOT USED
37	4	NM	O	Number of Sample Containers	NOT USED
38	60	CE	O	Trans Logistics of Coll Sample	NOT USED
39	200	CE	O	Collector's Comment	NOT USED
40	60	CE	O	Trans Arrangement Resp	NOT USED
41	30	ID	O	Transport Arranged	NOT USED
42	1	ID	O	Escort Required	NOT USED
43	200	CE	O	Planned Patient Trans Comment	NOT USED
44	80	CE	O	Procedure Code	NOT USED
45	80	CE	O	Procedure Code Modifier	NOT USED

[4] The result status is sent as "preliminary" for OBR-25.

[5] OBR-32 (Principal Result Interpreter) contains 4 sub-components:

OBR-32.1	Interpreting Physician Code
OBR-32.2	Interpreting Physician Last Name
OBR-32.3	Interpreting Physician First Name
OBR-32.4	Interpreting Physician Middle Initial

Sample OBR segment:

```
OBR|1|372742|425025077|99982|||20020425000000||||||||||99982|A-
3452||||||P|||||||9999^Welby^Marcus^A|||||||||||||
```

5.1.6 OBX Segment

The OBX (Observation/Result) segment is used to transmit a single observation or observation fragment. It represents the smallest indivisible unit of a report. The principal mission of the segment is to carry information about observations in report messages.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID – OBX	*Unique Counter ID*
2	3	ID	O	Value Type	TX
3	80	CE	R	Observation Identifier	DEXA RPT
4	20	ST	O	Observation Sub-ID	NOT USED
5	64K	*	O	Observation Value	*Results Report Text*[6]
6	60	CE	O	Units	NOT USED
7	60	ST	O	Reference Range	NOT USED
8	5	ID	O	Abnormal Flags	NOT USED
9	5	NM	O	Probability	NOT USED
10	2	ID	O	Nature of Abnormal Test	NOT USED
11	1	ID	O	Observation Result Status	P
12	26	TS	O	Date Last Obs Normal Values	NOT USED
13	20	ST	O	User Defined Access Checks	NOT USED
14	26	TS	O	Date/Time of the Observation	NOT USED
15	60	CE	O	Producer's ID	NOT USED
16	80	XCN	O	Responsible Observer	NOT USED
17	60	CE	O	Observation Method	NOT USED

[6] Each OBX segment will contain one line of unformatted report text in OBX-5. The maximum length contained in each report line is site-configurable.

Sample OBX segments:

```
OBX|1|TX|DEXA RPT||Bone Density Report||||||P|||||||
OBX|2|TX|DEXA RPT|||||||P|||||||
OBX|3|TX|DEXA RPT||Name:          SMITH, VIRGINIA E|||||P|||||||
OBX|4|TX|DEXA RPT||Patient ID:    5077||||||P|||||||
OBX|5|TX|DEXA RPT||Age:           42||||||P|||||||
OBX|6|TX|DEXA RPT||Sex:           Female||||||P|||||||
OBX|7|TX|DEXA RPT||Ethnicity:     White||||||P|||||||
...
```

5.2 Unsolicited Observation Results (ORU/R01) with Notes

The Observation Report – Unsolicited *ORU* with the *R01* event is the supported triggering event.

ORU Message	
Segment	**Description**
MSH	Message Header
PID	Patient Identification
PV1	Patient Visit
ORC	Order Common
OBR	Observations Report ID
OBX	Observation/Result
{NTE}	Notes and Comments

5.2.1 MSH Segment

The MSH (Message Header) segment defines the intent, source, destination, and some specifics of the syntax of a message.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	1	ST	R	Field Separator	|
2	4	ST	R	Encoding Characters	^&~\
3	180	HD	C	Sending Application	HOLOGIC DEXA
4	180	HD	O	Sending Facility	*Institution Name*[1]
5	180	HD	O	Receiving Application	NOT USED
6	180	HD	O	Receiving Facility	NOT USED
7	26	TS	R	Date/Time Of Message	*Time Stamp of Creation*
8	40	ST	O	Security	NOT USED
9	7	CM	R	Message Type	ORU^R01
10	20	ST	R	Message Control ID	*Time Stamp of Creation*
11	3	PT	R	Processing ID	P
12	60	VID	R	Version ID	2.3
13	15	NM	O	Sequence Number	NOT USED
14	180	ST	O	Continuation Pointer	NOT USED
15	2	ID	O	Accept ACK Type	NOT USED
16	2	ID	O	Application ACK Type	NOT USED
17	2	ID	O	Country Code	NOT USED
18	16	ID	O	Character Set	NOT USED
19	60	CE	O	Principal Language Of Message	NOT USED
20	20	ID	O	Alt Char Set Handling Scheme	NOT USED

[1] The Institution Name for MSH-4 (Sending Facility) is site-configurable.

Sample MSH segment:

```
MSH||^~\&|HOLOGIC DEXA|General Hospital,
Radiology|||20020530101721||ORU^R01|20020530101721|P|2.3|||||||||
```

5.2.2 PID Segment

The PID (Patient Identification) segment is used as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that is not likely to change frequently.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID - Patient ID	NOT USED
2	20	CX	C	Patient ID	*Patient's ID*
3	20	CX	R	Patient Identifier List	NOT USED
4	20	CX	C	Alternate Patient ID - PID	*Patient's ID 2*
5	48	XPN	R	Patient Name	*Patient's Name*
6	48	XPN	O	Mother's Maiden Name	NOT USED
7	26	TS	O	Date/Time of Birth	*Patient's DOB*
8	1	IS	O	Sex	*Patient's Sex*[2]
9	48	XPN	O	Patient Alias	NOT USED
10	80	CE	O	Race	*Patient's Ethnicity*[3]
11	106	XAD	O	Patient Address	NOT USED
12	4	IS	O	County Code	NOT USED
13	40	XTN	O	Phone Number - Home	NOT USED
14	40	XTN	O	Phone Number - Business	NOT USED
15	60	CE	O	Primary Language	NOT USED
16	80	CE	O	Marital Status	NOT USED
17	80	CE	O	Religion	NOT USED
18	20	CX	O	Patient Account Number	NOT USED
19	16	ST	O	SSN Number - Patient	NOT USED
20	25	DLN	O	Driver's License Number - Patient	NOT USED
21	20	CX	O	Mother's Identifier	NOT USED
22	80	CE	O	Ethnic Group	NOT USED
23	60	ST	O	Birth Place	NOT USED
24	1	ID	O	Multiple Birth Indicator	NOT USED
25	2	NM	O	Birth Order	NOT USED
26	80	CE	O	Citizenship	NOT USED
27	60	CE	O	Veterans Military Status	NOT USED
28	80	CE	O	Nationality	NOT USED
29	26	TS	O	Patient Death Date and Time	NOT USED
30	1	ID	O	Patient Death Indicator	NOT USED

[2] Patient Sex Codes

F	Female
M	Male

[3] Patient Ethnicities

Asian
Black
Hispanic
Infant
Pediatric
White

Sample PID segment:

```
PID||5077||933743|SMITH^VIRGINIA^E||19600324000000|F||White|||||||||||
|||||||||
```

5.1.3 PV1 Segment

The PV1 (Patient Visit) segment is used to communicate information about a specific visit.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID – PV1	NOT USED
2	1	IS	R	Patient Class	U
3	80	PL	O	Assigned Patient Location	NOT USED
4	2	IS	O	Admission Type	NOT USED
5	20	CX	O	Preadmit Number	NOT USED
6	80	PL	O	Prior Patient Location	NOT USED
7	60	XCN	O	Attending Doctor	NOT USED
8	60	XCN	O	Referring Doctor	*Referring Physician*
9	60	XCN	O	Consulting Doctor	NOT USED
10	3	IS	O	Hospital Service	NOT USED
11	80	PL	O	Temporary Location	NOT USED
12	2	IS	O	Preadmit Test Indicator	NOT USED
13	2	IS	O	Re-admission Indicator	NOT USED
14	3	IS	O	Admit Source	NOT USED
15	2	IS	O	Ambulatory Status	NOT USED
16	2	IS	O	VIP Indicator	NOT USED
17	60	XCN	O	Admitting Doctor	NOT USED
18	2	IS	O	Patient Type	NOT USED
19	20	CX	O	Visit Number	NOT USED
20	50	FC	O	Financial Class	NOT USED
21	2	IS	O	Charge Price Indicator	NOT USED
22	2	IS	O	Courtesy Code	NOT USED
23	2	IS	O	Credit Rating	NOT USED
24	2	IS	O	Contract Code	NOT USED
25	8	DT	O	Contract Effective Date	NOT USED
26	12	NM	O	Contract Amount	NOT USED
27	3	NM	O	Contract Period	NOT USED
28	2	IS	O	Interest Code	NOT USED
29	1	IS	O	Transfer to Bad Debt Code	NOT USED
30	8	DT	O	Transfer to Bad Debt Date	NOT USED
31	10	IS	O	Bad Debt Agency Code	NOT USED
32	12	NM	O	Bad Transfer Amount	NOT USED
33	12	NM	O	Bad Debt Recovery Amount	NOT USED
34	1	IS	O	Delete Account Indicator	NOT USED
35	8	DT	O	Delete Account Date	NOT USED
36	3	IS	O	Discharge Disposition	NOT USED
37	25	CM	O	Discharged to Location	NOT USED
38	80	CE	O	Diet Type	NOT USED
39	2	IS	O	Servicing Facility	NOT USED
40	1	IS	O	Bed Status	NOT USED
41	2	IS	O	Account Status	NOT USED
42	80	PL	O	Pending Location	NOT USED
43	80	PL	O	Prior Temporary Location	NOT USED
44	26	TS	O	Admit Date/Time	NOT USED
45	26	TS	O	Discharge Date/Time	NOT USED
46	12	NM	O	Current Patient Balance	NOT USED
47	12	NM	O	Total Charges	NOT USED
48	12	NM	O	Total Adjustments	NOT USED
49	12	NM	O	Total Payments	NOT USED
50	20	CX	O	Alternate Visit ID	NOT USED
51	1	IS	O	Visit Indicator	NOT USED
52	60	XCN	O	Other Healthcare Provider	NOT USED

Sample PV1 segment:

```
PV1||U||||||Jones^Andrew^H||||||||||||||||||||||||||||||||||||||||||||||||
```

5.2.4 ORC Segment

The ORC (Common Order) segment is used to communicate information common to orders.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	2	ID	R	Order Control	RE
2	22	EI	C	Placer Order Number	*HL7 Field 1*
3	22	EI	C	Filler Order Number	*Study Accession Number*
4	22	EI	O	Placer Group Number	NOT USED
5	2	ID	O	Order Status	NOT USED
6	1	ID	O	Response Flag	NOT USED
7	200	TQ	O	Quantity/Timing	NOT USED
8	200	CM	O	Parent	NOT USED
9	26	TS	O	Date/Time of Transaction	NOT USED
10	120	XCN	O	Entered By	NOT USED
11	120	XCN	O	Verified By	NOT USED
12	120	XCN	O	Ordering Provider	*Interpreting Physician*[4]
13	80	PL	O	Enterer's Location	NOT USED
14	40	XTN	O	Call Back Phone Number	NOT USED
15	26	TS	O	Order Effective Date/Time	NOT USED
16	200	CE	O	Order Control Code Reason	NOT USED
17	60	CE	O	Entering Organization	NOT USED
18	60	CE	O	Entering Device	NOT USED
19	120	XCN	O	Action By	NOT USED
20	40	CE	O	Adv Beneficiary Notice Code	NOT USED
21	60	XON	O	Ordering Facility Name	NOT USED
22	106	XAD	O	Ordering Facility Address	NOT USED
23	48	XTN	O	Ordering Facility Phone Number	NOT USED
24	106	XAD	O	Ordering Provider Address	NOT USED

[4] ORC-12 (Ordering Provider) contains 4 sub-components:

ORC-12.1	Interpreting Physician Code
ORC-12.2	Interpreting Physician Last Name
ORC-12.3	Interpreting Physician First Name
ORC-12.4	Interpreting Physician Middle Initial

Sample ORC segment:

```
ORC|RE|372742|425025077||||||||9999^Welby^Marcus^A||||||||||||
```

5.2.5 OBR Segment

The Observation Request (OBR) segment is used to transmit information specific to an order for a diagnostic study or observation, physical exam, or assessment. The OBR defines the attributes of a particular request for diagnostic services or clinical observations. For radiology-based reporting, the OBR defines the attributes of the original request for the procedure(s).

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID - OBR	1
2	22	EI	C	Placer Order Number	*HL7 Field 1*
3	22	EI	C	Filler Order Number	*Study Accession Number*
4	200	CE	R	Universal Service ID	*HL7 Field 2*
5	2	ID	X	Priority - OBR	NOT USED
6	26	TS	X	Requested Date/Time	NOT USED
7	26	TS	C	Observation Date/Time	*Scan Date/Time*
8	26	TS	O	Observation End Date/Time	NOT USED
9	20	CQ	O	Collection Volume	NOT USED
10	60	XCN	O	Collector Identifier	NOT USED
11	1	ID	O	Specimen Action Code	NOT USED
12	60	CE	O	Danger Code	NOT USED
13	300	ST	O	Relevant Clinical Info.	NOT USED
14	26	TS	O	Specimen Received Date/Time	NOT USED
15	300	CM	O	Specimen Source	NOT USED
16	80	XCN	O	Ordering Provider	*Interpreting Physician*[4]
17	40	XTN	O	Order Callback Phone Number	NOT USED

18	60	ST	O	Placer Field 1	*HL7 Field 2*
19	60	ST	O	Placer Field 2	*HL7 Field 3*
20	60	ST	O	Filler Field 1	NOT USED
21	60	ST	O	Filler Field 2	NOT USED
22	26	TS	O	Results Rpt/Status Chng - Dt/Tm	*Time Stamp of Creation*
23	40	CM	O	Charge to Practice	NOT USED
24	10	ID	O	Diagnostic Service Sect ID	NOT USED
25	1	ID	C	Result Status	F[5]
26	400	CM	O	Parent Result	NOT USED
27	200	TQ	O	Quantity/Timing	NOT USED
28	150	XCN	O	Result Copies To	NOT USED
29	200	CM	O	Parent	NOT USED
30	20	ID	O	Transportation Mode	NOT USED
31	300	CE	O	Reason for Study	NOT USED
32	200	CM	O	Principal Result Interpreter	NOT USED
33	200	CM	O	Assistant Result Interpreter	NOT USED
34	200	CM	O	Technician	NOT USED
35	200	CM	O	Transcriptionist	NOT USED
36	26	TS	O	Scheduled Date/Time	NOT USED
37	4	NM	O	Number of Sample Containers	NOT USED
38	60	CE	O	Trans Logistics of Coll Sample	NOT USED
39	200	CE	O	Collector's Comment	NOT USED
40	60	CE	O	Trans Arrangement Resp	NOT USED
41	30	ID	O	Transport Arranged	NOT USED
42	1	ID	O	Escort Required	NOT USED
43	200	CE	O	Planned Patient Trans Comment	NOT USED
44	80	CE	O	Procedure Code	NOT USED
45	80	CE	O	Procedure Code Modifier	NOT USED

[5] The result status is sent as "Final" for OBR-25.

Sample OBR segment:

```
OBR|1|372742|425025077|99982|||20020425000000|||||||||9999^Welby^Marcus
^A||99982|A-3452|||20020426143203|||F|||||||||||||||||||||
```

5.2.6 OBX Segment

The OBX (Observation/Result) segment is used to transmit a single observation or observation fragment. It represents the smallest indivisible unit of a report. The principal mission of the segment is to carry information about observations in report messages.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID – OBX	1
2	3	ID	O	Value Type	TX
3	80	CE	R	Observation Identifier	DEXA RPT
4	20	ST	O	Observation Sub-ID	NOT USED
5	64K	*	O	Observation Value	Hologic DEXA Results
6	60	CE	O	Units	NOT USED
7	60	ST	O	Reference Range	NOT USED
8	5	ID	O	Abnormal Flags	NOT USED
9	5	NM	O	Probability	NOT USED
10	2	ID	O	Nature of Abnormal Test	NOT USED
11	1	ID	O	Observation Result Status	F
12	26	TS	O	Date Last Obs Normal Values	NOT USED
13	20	ST	O	User Defined Access Checks	NOT USED
14	26	TS	O	Date/Time of the Observation	NOT USED
15	60	CE	O	Producer's ID	NOT USED
16	80	XCN	O	Responsible Observer	NOT USED
17	60	CE	O	Observation Method	NOT USED

Sample OBX segment:

```
OBX|1|TX|DEXA RPT||Hologic DEXA Results||||||F|||||||
```

5.2.6 NTE Segment

The NTE segment is used to transmit a comments and notes about an observation.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID – NTE	*Unique Counter ID*
2	3	ID	O	Source of Comment	NOT USED
3	80	FT	O	Comment	*Results Report Text*[6]
4	60	CE	O	Comment Type	NOT USED

[6] Each NTE segment will contain one line of unformatted report text in NTE-3. The maximum length contained in each report line is site-configurable.

Sample NTE segments:

```
NTE|1||Bone Density Report|
NTE|2|||
NTE|3||Name:          SMITH, VIRGINIA E|
NTE|4||Patient ID:    5077|
NTE|5||Age:           42|
NTE|6||Sex:           Female|
NTE|7||Ethnicity:     White|
...
```

5.3 Document Notification and Content (MDM/T02)

Document Notification MDM with the T02 event is the supported triggering event.

ORU Message	
Segment	**Description**
MSH	Message Header
EVN	Event Type
PID	Patient Identification
PV1	Patient Visit
TXA	Transcription Document Header
OBR	Observations Report ID
OBX	Observation/Result

5.3.1 MSH Segment

The MSH (Message Header) segment defines the intent, source, destination, and some specifics of the syntax of a message.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	1	ST	R	Field Separator	|
2	4	ST	R	Encoding Characters	^&~\
3	40	HD	C	Sending Application	HOLOGIC DEXA
4	20	HD	O	Sending Facility	*Institution Name*[1]
5	40	HD	O	Receiving Application	NOT USED
6	30	HD	O	Receiving Facility	NOT USED
7	26	TS	R	Date/Time Of Message	*Time Stamp of Creation*
8	40	ST	O	Security	NOT USED
9	7	CM	R	Message Type	MDM
10	20	ST	R	Message Control ID	*Time Stamp of Creation*

11	3	PT	R	Processing ID	P
12	8	ID	R	Version ID	2.3
13	15	NM	O	Sequence Number	NOT USED
14	180	ST	O	Continuation Pointer	NOT USED
15	2	ID	O	Accept ACK Type	AL
16	2	ID	O	Application ACK Type	NOT USED
17	2	ID	O	Country Code	NOT USED
18	6	ID	O	Character Set	NOT USED
19	60	CE	O	Principal Language Of Message	NOT USED

[1] The Institution Name for MSH-4 (Sending Facility) is site-configurable.

Sample MSH segment:

```
MSH||^~\&|HOLOGIC DEXA|General Hospital,
Radiology|||20020530101721||MDM|20020530101721|P|2.3|||||||||
```

5.3.2 EVN Segment

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	3	ID		Event Code Type	T02
2	26	TS		Recorded Date/Time	*Time Stamp of Creation*
3	26	TS		Date/Time of Planned Event	NOT USED
4	3	IS		Event Reason Code	NOT USED
5	60	XCN		Operator ID	NOT USED
6	26	TS		Event Occurred	NOT USED

Sample EVN Segment

```
EVN|T02
```

5.3.3 PID Segment

The PID (Patient Identification) segment is used as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that is not likely to change frequently.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID - Patient ID	NOT USED
2	20	CX	C	Patient ID	NOT USED
3	20	CX	R	Patient Identifier List	*Patient's ID*
4	16	CX	C	Alternate Patient ID - PID	*Patient's ID 2*
5	48	XPN	R	Patient Name	*Patient's Name*
6	48	XPN	O	Mother's Maiden Name	NOT USED
7	26	TS	O	Date/Time of Birth	*Patient's DOB*
8	1	IS	O	Sex	*Patient's Sex*[2]
9	48	XPN	O	Patient Alias	NOT USED
10	1	IS	O	Race	*Patient's Ethnicity*[3]
11	106	XAD	O	Patient Address	NOT USED
12	4	IS	O	County Code	NOT USED
13	20	XTN	O	Phone Number - Home	NOT USED
14	20	XTN	O	Phone Number - Business	NOT USED
15	60	CE	O	Primary Language	NOT USED
16	1	IS	O	Marital Status	NOT USED
17	3	IS	O	Religion	NOT USED
18	20	CX	O	Patient Account Number	NOT USED
19	11	ST	O	SSN Number - Patient	NOT USED
20	25	DLN	O	Driver's License Number - Patient	NOT USED
21	20	CX	O	Mother's Identifier	NOT USED
22	3	IS	O	Ethnic Group	NOT USED
23	60	ST	O	Birth Place	NOT USED

24	2	ID	O	Multiple Birth Indicator	NOT USED
25	2	NM	O	Birth Order	NOT USED
26	4	IS	O	Citizenship	NOT USED
27	60	CE	O	Veterans Military Status	NOT USED
28	80	CE	O	Nationality	NOT USED
29	26	TS	O	Patient Death Date and Time	NOT USED
30	1	ID	O	Patient Death Indicator	NOT USED

[2] Patient Sex Codes

F	Female
M	Male

[3] Patient Ethnicities

O	Asian
B	Black
H	Hispanic
U	Infant
U	Pediatric
W	White

Sample PID segment:

```
PID|||5077|933743|SMITH^VIRGINIA^E||19600324000000|F||W|||||||||||||||
||||
```

5.3.4 PV1 Segment

The PV1 (Patient Visit) segment is used to communicate information about a specific visit.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID – PV1	NOT USED
2	1	IS	R	Patient Class	NOT USED
3	80	PL	O	Assigned Patient Location	NOT USED
4	2	IS	O	Admission Type	NOT USED
5	20	CX	O	Preadmit Number	NOT USED
6	80	PL	O	Prior Patient Location	NOT USED
7	60	XCN	O	Attending Doctor	*Referring Physician*
8	60	XCN	O	Referring Doctor	NOT USED
9	60	XCN	O	Consulting Doctor	NOT USED
10	3	IS	O	Hospital Service	NOT USED
11	80	PL	O	Temporary Location	NOT USED
12	2	IS	O	Preadmit Test Indicator	NOT USED
13	2	IS	O	Re-admission Indicator	NOT USED
14	3	IS	O	Admit Source	NOT USED
15	2	IS	O	Ambulatory Status	NOT USED
16	2	IS	O	VIP Indicator	NOT USED
17	60	XCN	O	Admitting Doctor	NOT USED
18	2	IS	O	Patient Type	NOT USED
19	20	CX	O	Visit Number	NOT USED
20	50	FC	O	Financial Class	NOT USED
21	2	IS	O	Charge Price Indicator	NOT USED
22	2	IS	O	Courtesy Code	NOT USED
23	2	IS	O	Credit Rating	NOT USED
24	2	IS	O	Contract Code	NOT USED
25	8	DT	O	Contract Effective Date	NOT USED
26	12	NM	O	Contract Amount	NOT USED
27	3	NM	O	Contract Period	NOT USED
28	2	IS	O	Interest Code	NOT USED
29	1	IS	O	Transfer to Bad Debt Code	NOT USED

30	8	DT	O	Transfer to Bad Debt Date	NOT USED
31	10	IS	O	Bad Debt Agency Code	NOT USED
32	12	NM	O	Bad Transfer Amount	NOT USED
33	12	NM	O	Bad Debt Recovery Amount	NOT USED
34	1	IS	O	Delete Account Indicator	NOT USED
35	8	DT	O	Delete Account Date	NOT USED
36	3	IS	O	Discharge Disposition	NOT USED
37	25	CM	O	Discharged to Location	NOT USED
38	80	CE	O	Diet Type	NOT USED
39	2	IS	O	Servicing Facility	NOT USED
40	1	IS	O	Bed Status	NOT USED
41	2	IS	O	Account Status	NOT USED
42	80	PL	O	Pending Location	NOT USED
43	80	PL	O	Prior Temporary Location	NOT USED
44	26	TS	O	Admit Date/Time	NOT USED
45	26	TS	O	Discharge Date/Time	NOT USED
46	12	NM	O	Current Patient Balance	NOT USED
47	12	NM	O	Total Charges	NOT USED
48	12	NM	O	Total Adjustments	NOT USED
49	12	NM	O	Total Payments	NOT USED
50	20	CX	O	Alternate Visit ID	NOT USED
51	1	IS	O	Visit Indicator	NOT USED
52	60	XCN	O	Other Healthcare Provider	NOT USED

Sample PV1 segment:

```
PV1||
||||||^Jones^Andrew^H||||||||||||||||||||||||||||||||||||||||||||||||
```

5.3.5 OBR Segment

The Observation Request (OBR) segment is used to transmit information specific to an order for a diagnostic study or observation, physical exam, or assessment. The OBR defines the attributes of a particular request for diagnostic services or clinical observations. For radiology-based reporting, the OBR defines the attributes of the original request for the procedure(s).

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID - OBR	1
2	22	EI	C	Placer Order Number	*HL7 Field 1*
3	22	EI	C	Filler Order Number	*Study Accession Number*
4	200	CE	R	Universal Service ID	*HL7 Field 2*
5	2	ID	X	Priority - OBR	NOT USED
6	26	TS	X	Requested Date/Time	NOT USED
7	26	TS	C	Observation Date/Time	*Scan Date/Time*
8	26	TS	O	Observation End Date/Time	NOT USED
9	20	CQ	O	Collection Volume	NOT USED
10	60	XCN	O	Collector Identifier	NOT USED
11	1	ID	O	Specimen Action Code	NOT USED
12	60	CE	O	Danger Code	NOT USED
13	300	ST	O	Relevant Clinical Info.	NOT USED
14	26	TS	O	Specimen Received Date/Time	NOT USED
15	300	CM	O	Specimen Source	NOT USED
16	80	XCN	O	Ordering Provider	NOT USED
17	40	XTN	O	Order Callback Phone Number	NOT USED
18	60	ST	O	Placer Field 1	*HL7 Field 2*
19	60	ST	O	Placer Field 2	*HL7 Field 3*
20	60	ST	O	Filler Field 1	NOT USED
21	60	ST	O	Filler Field 2	NOT USED
22	26	TS	O	Results Rpt/Status Chng - Dt/Tm	NOT USED
23	40	CM	O	Charge to Practice	NOT USED
24	10	ID	O	Diagnostic Service Sect ID	NOT USED
25	1	ID	C	Result Status	P[4]
26	400	CM	O	Parent Result	NOT USED
27	200	TQ	O	Quantity/Timing	NOT USED
28	150	XCN	O	Result Copies To	NOT USED

29	200	CM	O	Parent	NOT USED
30	20	ID	O	Transportation Mode	NOT USED
31	300	CE	O	Reason for Study	NOT USED
32	200	CM	O	Principal Result Interpreter	*Interpreting Physician*[5]
33	200	CM	O	Assistant Result Interpreter	NOT USED
34	200	CM	O	Technician	NOT USED
35	200	CM	O	Transcriptionist	NOT USED
36	26	TS	O	Scheduled Date/Time	NOT USED
37	4	NM	O	Number of Sample Containers	NOT USED
38	60	CE	O	Trans Logistics of Coll Sample	NOT USED
39	200	CE	O	Collector's Comment	NOT USED
40	60	CE	O	Trans Arrangement Resp	NOT USED
41	30	ID	O	Transport Arranged	NOT USED
42	1	ID	O	Escort Required	NOT USED
43	200	CE	O	Planned Patient Trans Comment	NOT USED
44	80	CE	O	Procedure Code	NOT USED
45	80	CE	O	Procedure Code Modifier	NOT USED

[4] The result status is sent as "preliminary" for OBR-25.

[5] OBR-32 (Principal Result Interpreter) contains 4 sub-components:

OBR-32.1	Interpreting Physician Code
OBR-32.2	Interpreting Physician Last Name
OBR-32.3	Interpreting Physician First Name
OBR-32.4	Interpreting Physician Middle Initial

Sample OBR segment:

```
OBR|1|372742|425025077|99982|||20020425000000||||||||||99982|A-
3452||||||P|||||||9999^Welby^Marcus^A|||||||||||||
```

5.3.6 TXA Segment

The transcription document header (TXA) segment contains information specific to a transcribed document but does not include the text of the document. The message is created as a result of a document status change. This information is used to update other healthcare systems to identify reports that are available in the transcription system.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID – Document	NOT USED
2	30	IS	R	Document Type	DI
3	2	ID	O	Document Content Presentation	TX
4	26	TS	O	Activity Date/Time	*SCAN DATE/TIME*
5	60	XCN	O	Primary Activity Provider Code/Name	NOT USED
6	26	TS	O	Origination Date/Time	NOT USED
7	26	TS	O	Transcription Date/Time	*Time Stamp of Creation*
8	26	TS	O	Edit date / Time	NOT USED
9	60	XCN	O	Originator Code/Name	NOT USED
10	60	XCN	O	Assigned Document	NOT USED
11	48	XCN	O	Transcriptionist Code/Name	NOT USED
12	30	EI	O	Unique Document Number	NOT USED
13	16	ST	O	Parent Document Number	NOT USED
14	22	EI	O	Placer Order Number	NOT USED
15	8	EI	O	Filler Order Number	NOT USED
16	30	ST	O	Unique Document File Name	NOT USED
17	2	ID	R	Document Completion Status	DO
18	2	ID	O	Document Confidentiality Status	NOT USED
19	2	ID	O	Document Availability Status	NOT USED
20	2	ID	O	Document Storage Status	NOT USED
21	30	ST	O	Document Change Reason	NOT USED
22	60	PPN	O	Authentication Person, Time Stamp	NOT USED
23	60	XCN	O	Distributed Copies	NOT USED

Sample TXA segment:
```
TXA||DI|TX|||20020530101721||||||||||DO|||||||
```

5.3.7 OBX Segment

The OBX (Observation/Result) segment is used to transmit a single observation or observation fragment. It represents the smallest indivisible unit of a report. The principal mission of the segment is to carry information about observations in report messages.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	10	SI	O	Set ID – OBX	*Unique Counter ID*
2	2	ID	O	Value Type	TX
3	590	CE	R	Observation Identifier	TEXT_REF
4	20	ST	O	Observation Sub-ID	NOT USED
5	64K	ST	O	Observation Value	*Physician Interpreting Report path\filename*
6	60	CE	O	Units	NOT USED
7	60	ST	O	Reference Range	NOT USED
8	10	ID	O	Abnormal Flags	NOT USED
9	5	NM	O	Probability	NOT USED
10	5	ID	O	Nature of Abnormal Test	NOT USED
11	2	ID	O	Observation Result Status	NOT USED
12	26	TS	O	Date Last Obs Normal Values	NOT USED
13	20	ST	O	User Defined Access Checks	NOT USED
14	26	TS	O	Date/Time of the Observation	NOT USED
15	200	CE	O	Producer's ID	NOT USED
16	80	XCN	O	Responsible Observer	NOT USED
17	60	CE	O	Observation Method	NOT USED

Sample OBX segments:
```
OBX|1|TX|TEXT_REF||C:\Program Files\HOLOGIC\Physician's
Viewer\Options\DxReport\Output\Raimo_Patrick_Joshua_03_09_2006_A.doc
||||||P|||||||
```

5.4 ACK

Systems receiving Hologic's messages shall send acknowledgements using the HL7 Original Mode. Enhanced Acknowledgement Mode is not supported.

ORU Message	
Segment	**Description**
MSH	Message Header
MSA	Message Acknowledgement

5.4.1 MSH Segment

The MSH (Message Header) segment defines the intent, source, destination, and some specifics of the syntax of a message.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	1	ST	R	Field Separator	|
2	4	ST	R	Encoding Characters	^&~\
3	40	HD	C	Sending Application	NOT USED
4	20	HD	O	Sending Facility	NOT USED
5	40	HD	O	Receiving Application	NOT USED
6	30	HD	O	Receiving Facility	NOT USED
7	26	TS	R	Date/Time Of Message	NOT USED
8	40	ST	O	Security	NOT USED
9	7	CM	R	Message Type	ACK

10	20	ST	R	Message Control ID	NOT USED
11	3	PT	R	Processing ID	NOT USED
12	8	ID	R	Version ID	NOT USED
13	15	NM	O	Sequence Number	NOT USED
14	180	ST	O	Continuation Pointer	NOT USED
15	2	ID	O	Accept ACK Type	NOT USED
16	2	ID	O	Application ACK Type	NOT USED
17	2	ID	O	Country Code	NOT USED
18	6	ID	O	Character Set	NOT USED
19	60	CE	O	Principal Language Of Message	NOT USED

5.4.2 MSA Segment

The MSA (Message Acknowledgement) segment contains information sent while acknowledging another message.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	2	ID	R	Acknowledgement Code	AA, AR, or AE
2	20	ST	R	Message Control ID	*MCI of originating message*
3	80	ST	O	Test Message	NOT USED
4	15	NM	O	Expected Sequence Number	NOT USED
5	1	ID	O	Delayed Acknowledgment Type	NOT USED
6	100	CE	O	Error Condition	NOT USED

5.5 Unsolicited Observation Results (ORU/R01) with Discrete Values

The Observation Report – Unsolicited *ORU* with the *R01* event is the supported triggering event.

ORU Message	
Segment	**Description**
MSH	Message Header
PID	Patient Identification
PV1	Patient Visit
ORC	Order Common
OBR	Observations Report ID
{OBX}	Observation/Result

5.5.1 MSH Segment

The MSH (Message Header) segment defines the intent, source, destination, and some specifics of the syntax of a message.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	1	ST	R	Field Separator	|
2	4	ST	R	Encoding Characters	^&~\
3	180	HD	C	Sending Application	HOLOGIC DEXA
4	180	HD	O	Sending Facility	*Institution Name*[1]
5	180	HD	O	Receiving Application	NOT USED
6	180	HD	O	Receiving Facility	NOT USED
7	26	TS	R	Date/Time Of Message	*Time Stamp of Creation*
8	40	ST	O	Security	NOT USED
9	7	CM	R	Message Type	ORU^R01
10	20	ST	R	Message Control ID	*Time Stamp of Creation*
11	3	PT	R	Processing ID	P
12	60	VID	R	Version ID	2.3
13	15	NM	O	Sequence Number	NOT USED
14	180	ST	O	Continuation Pointer	NOT USED
15	2	ID	O	Accept ACK Type	NOT USED
16	2	ID	O	Application ACK Type	NOT USED

17	2	ID	O	Country Code	NOT USED
18	16	ID	O	Character Set	NOT USED
19	60	CE	O	Principal Language Of Message	NOT USED
20	20	ID	O	Alt Char Set Handling Scheme	NOT USED

[1] The Institution Name for MSH-4 (Sending Facility) is site-configurable.

Sample MSH segment:

```
MSH||^~\&|HOLOGIC DEXA|General Hospital,
Radiology|||20020530101721||ORU^R01|20020530101721|P|2.3|||||||||
```

5.5.2 PID Segment

The PID (Patient Identification) segment is used as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that is not likely to change frequently.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID - Patient ID	NOT USED
2	20	CX	C	Patient ID	NOT USED
3	20	CX	R	Patient Identifier List	*Patient's ID*
4	20	CX	C	Alternate Patient ID - PID	*Patient's ID 2*
5	48	XPN	R	Patient Name	*Patient's Name*
6	48	XPN	O	Mother's Maiden Name	NOT USED
7	26	TS	O	Date/Time of Birth	*Patient's DOB*
8	1	IS	O	Sex	*Patient's Sex*[2]
9	48	XPN	O	Patient Alias	NOT USED
10	80	CE	O	Race	*Patient's Ethnicity*[3]
11	106	XAD	O	Patient Address	NOT USED
12	4	IS	O	County Code	NOT USED
13	40	XTN	O	Phone Number - Home	NOT USED
14	40	XTN	O	Phone Number - Business	NOT USED
15	60	CE	O	Primary Language	NOT USED
16	80	CE	O	Marital Status	NOT USED
17	80	CE	O	Religion	NOT USED
18	20	CX	O	Patient Account Number	NOT USED
19	16	ST	O	SSN Number - Patient	NOT USED
20	25	DLN	O	Driver's License Number - Patient	NOT USED
21	20	CX	O	Mother's Identifier	NOT USED
22	80	CE	O	Ethnic Group	NOT USED
23	60	ST	O	Birth Place	NOT USED
24	1	ID	O	Multiple Birth Indicator	NOT USED
25	2	NM	O	Birth Order	NOT USED
26	80	CE	O	Citizenship	NOT USED
27	60	CE	O	Veterans Military Status	NOT USED
28	80	CE	O	Nationality	NOT USED
29	26	TS	O	Patient Death Date and Time	NOT USED
30	1	ID	O	Patient Death Indicator	NOT USED

[2] Patient Sex Codes

F	Female
M	Male

[3] Patient Ethnicities

Asian
Black
Hispanic
Infant
Pediatric

```
White
```

Sample PID segment:

```
PID|||5077|933743|SMITH^VIRGINIA^E||19600324000000|F||White||||||||||||
||||||||
```

5.5.3 PV1 Segment

The PV1 (Patient Visit) segment is used to communicate information about a specific visit.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID – PV1	NOT USED
2	1	IS	R	Patient Class	U
3	80	PL	O	Assigned Patient Location	NOT USED
4	2	IS	O	Admission Type	NOT USED
5	20	CX	O	Preadmit Number	NOT USED
6	80	PL	O	Prior Patient Location	NOT USED
7	60	XCN	O	Attending Doctor	NOT USED
8	60	XCN	O	Referring Doctor	*Referring Physician*
9	60	XCN	O	Consulting Doctor	NOT USED
10	3	IS	O	Hospital Service	NOT USED
11	80	PL	O	Temporary Location	NOT USED
12	2	IS	O	Preadmit Test Indicator	NOT USED
13	2	IS	O	Re-admission Indicator	NOT USED
14	3	IS	O	Admit Source	NOT USED
15	2	IS	O	Ambulatory Status	NOT USED
16	2	IS	O	VIP Indicator	NOT USED
17	60	XCN	O	Admitting Doctor	NOT USED
18	2	IS	O	Patient Type	NOT USED
19	20	CX	O	Visit Number	NOT USED
20	50	FC	O	Financial Class	NOT USED
21	2	IS	O	Charge Price Indicator	NOT USED
22	2	IS	O	Courtesy Code	NOT USED
23	2	IS	O	Credit Rating	NOT USED
24	2	IS	O	Contract Code	NOT USED
25	8	DT	O	Contract Effective Date	NOT USED
26	12	NM	O	Contract Amount	NOT USED
27	3	NM	O	Contract Period	NOT USED
28	2	IS	O	Interest Code	NOT USED
29	1	IS	O	Transfer to Bad Debt Code	NOT USED
30	8	DT	O	Transfer to Bad Debt Date	NOT USED
31	10	IS	O	Bad Debt Agency Code	NOT USED
32	12	NM	O	Bad Transfer Amount	NOT USED
33	12	NM	O	Bad Debt Recovery Amount	NOT USED
34	1	IS	O	Delete Account Indicator	NOT USED
35	8	DT	O	Delete Account Date	NOT USED
36	3	IS	O	Discharge Disposition	NOT USED
37	25	CM	O	Discharged to Location	NOT USED
38	80	CE	O	Diet Type	NOT USED
39	2	IS	O	Servicing Facility	NOT USED
40	1	IS	O	Bed Status	NOT USED
41	2	IS	O	Account Status	NOT USED
42	80	PL	O	Pending Location	NOT USED
43	80	PL	O	Prior Temporary Location	NOT USED
44	26	TS	O	Admit Date/Time	NOT USED
45	26	TS	O	Discharge Date/Time	NOT USED
46	12	NM	O	Current Patient Balance	NOT USED
47	12	NM	O	Total Charges	NOT USED
48	12	NM	O	Total Adjustments	NOT USED
49	12	NM	O	Total Payments	NOT USED
50	20	CX	O	Alternate Visit ID	NOT USED
51	1	IS	O	Visit Indicator	NOT USED
52	60	XCN	O	Other Healthcare Provider	NOT USED

Sample PV1 segment:
```
PV1||U||||||Jones^Andrew^H||||||||||||||||||||||||||||||||||||||||||||||||
```

5.5.4 ORC Segment

The ORC (Common Order) segment is used to communicate information common to orders.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	2	ID	R	Order Control	RE
2	22	EI	C	Placer Order Number	*HL7 Field 1*
3	22	EI	C	Filler Order Number	*Study Accession Number*
4	22	EI	O	Placer Group Number	NOT USED
5	2	ID	O	Order Status	NOT USED
6	1	ID	O	Response Flag	NOT USED
7	200	TQ	O	Quantity/Timing	NOT USED
8	200	CM	O	Parent	NOT USED
9	26	TS	O	Date/Time of Transaction	NOT USED
10	120	XCN	O	Entered By	NOT USED
11	120	XCN	O	Verified By	NOT USED
12	120	XCN	O	Ordering Provider	NOT USED
13	80	PL	O	Enterer's Location	NOT USED
14	40	XTN	O	Call Back Phone Number	NOT USED
15	26	TS	O	Order Effective Date/Time	NOT USED
16	200	CE	O	Order Control Code Reason	NOT USED
17	60	CE	O	Entering Organization	NOT USED
18	60	CE	O	Entering Device	NOT USED
19	120	XCN	O	Action By	NOT USED
20	40	CE	O	Adv Beneficiary Notice Code	NOT USED
21	60	XON	O	Ordering Facility Name	NOT USED
22	106	XAD	O	Ordering Facility Address	NOT USED
23	48	XTN	O	Ordering Facility Phone Number	NOT USED
24	106	XAD	O	Ordering Provider Address	NOT USED

Sample ORC segment:
```
ORC|RE|372742|425025077|||||||||||||||||||||
```

5.5.5 OBR Segment

The Observation Request (OBR) segment is used to transmit information specific to an order for a diagnostic study or observation, physical exam, or assessment. The OBR defines the attributes of a particular request for diagnostic services or clinical observations. For radiology-based reporting, the OBR defines the attributes of the original request for the procedure(s).

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID - OBR	1
2	22	EI	C	Placer Order Number	*HL7 Field 1*
3	22	EI	C	Filler Order Number	*Study Accession Number*
4	200	CE	R	Universal Service ID	*HL7 Field 2*
5	2	ID	X	Priority - OBR	NOT USED
6	26	TS	X	Requested Date/Time	NOT USED
7	26	TS	C	Observation Date/Time	*Scan Date/Time*
8	26	TS	O	Observation End Date/Time	NOT USED
9	20	CQ	O	Collection Volume	NOT USED
10	60	XCN	O	Collector Identifier	NOT USED
11	1	ID	O	Specimen Action Code	NOT USED
12	60	CE	O	Danger Code	NOT USED
13	300	ST	O	Relevant Clinical Info.	NOT USED
14	26	TS	O	Specimen Received Date/Time	NOT USED
15	300	CM	O	Specimen Source	NOT USED

16	80	XCN	O	Ordering Provider	NOT USED
17	40	XTN	O	Order Callback Phone Number	NOT USED
18	60	ST	O	Placer Field 1	*HL7 Field 2*
19	60	ST	O	Placer Field 2	*HL7 Field 3*
20	60	ST	O	Filler Field 1	NOT USED
21	60	ST	O	Filler Field 2	NOT USED
22	26	TS	O	Results Rpt/Status Chng - Dt/Tm	NOT USED
23	40	CM	O	Charge to Practice	NOT USED
24	10	ID	O	Diagnostic Service Sect ID	NOT USED
25	1	ID	C	Result Status	P[4]
26	400	CM	O	Parent Result	NOT USED
27	200	TQ	O	Quantity/Timing	NOT USED
28	150	XCN	O	Result Copies To	NOT USED
29	200	CM	O	Parent	NOT USED
30	20	ID	O	Transportation Mode	NOT USED
31	300	CE	O	Reason for Study	NOT USED
32	200	CM	O	Principal Result Interpreter	*Interpreting Physician*[5]
33	200	CM	O	Assistant Result Interpreter	NOT USED
34	200	CM	O	Technician	NOT USED
35	200	CM	O	Transcriptionist	NOT USED
36	26	TS	O	Scheduled Date/Time	NOT USED
37	4	NM	O	Number of Sample Containers	NOT USED
38	60	CE	O	Trans Logistics of Coll Sample	NOT USED
39	200	CE	O	Collector's Comment	NOT USED
40	60	CE	O	Trans Arrangement Resp	NOT USED
41	30	ID	O	Transport Arranged	NOT USED
42	1	ID	O	Escort Required	NOT USED
43	200	CE	O	Planned Patient Trans Comment	NOT USED
44	80	CE	O	Procedure Code	NOT USED
45	80	CE	O	Procedure Code Modifier	NOT USED

[4] The result status is sent as "preliminary" for OBR-25.

[5] OBR-32 (Principal Result Interpreter) contains 4 sub-components:

OBR-32.1	Interpreting Physician Code
OBR-32.2	Interpreting Physician Last Name
OBR-32.3	Interpreting Physician First Name
OBR-32.4	Interpreting Physician Middle Initial

Sample OBR segment:

```
OBR|1|372742|425025077|99982|||20020425000000||||||||||99982|A-
3452||||||P|||||||9999^Welby^Marcus^A|||||||||||||
```

5.5.7 OBX Segment

The OBX (Observation/Result) segment is used to transmit a single observation or observation fragment. It represents the smallest indivisible unit of a report. The principal mission of the segment is to carry information about observations in report messages.

SEQ	LEN	DT	OPT	ELEMENT NAME	HOLOGIC USE
1	4	SI	O	Set ID – OBX	*Unique Counter ID*
2	3	ID	O	Value Type	*HL7 Value Type*[6]
3	80	CE	R	Observation Identifier	*Discrete Value Type*[7]
4	20	ST	O	Observation Sub-ID	*Row ID*[8]
5	64K	*	O	Observation Value	*Discrete Value*[9]
6	60	CE	O	Units	*Discrete Value Units*[10]
7	60	ST	O	Reference Range	NOT USED
8	5	ID	O	Abnormal Flags	*Discrete Value List of Abnormal Flags*[11]
9	5	NM	O	Probability	NOT USED
10	2	ID	O	Nature of Abnormal Test	NOT USED

11	1	ID	O	Observation Result Status	P
12	26	TS	O	Date Last Obs Normal Values	NOT USED
13	20	ST	O	User Defined Access Checks	NOT USED
14	26	TS	O	Date/Time of the Observation	NOT USED
15	60	CE	O	Producer's ID	NOT USED
16	80	XCN	O	Responsible Observer	NOT USED
17	60	CE	O	Observation Method	NOT USED

[6] OBX-2 contains the HL7 Value Type mapping of the Discrete Value Type contained in the Observation Identifier field OBX-3. See Note [7].

[7] Discrete Value Types

Discrete Value Type	HL7 Value Type	Units	Abnormal Flags
Body Composition Analysis			
BCA TITLE	TX		
BCA REGION	TX		
BCA FAT MASS	NM	g or lbs	
BCA TOTAL MASS	NM	g or lbs	
BCA LEAN BMC	NM	g or lbs	
BCA FAT PERCENTILE	NM	%	
BCA VAR DATA 1	NM		
BCA VAR DATA 2	NM		
BCA FOOTNOTE	TX		
Body Composition Analysis: Adipose Indices			
BCAADIPOSE TITLE	TX		
BCAADIPOSE MEASURE	TX		
BCAADIPOSE RESULT	NM		
BCAADIPOSE VAR DATA 1	NM		
BCAADIPOSE VAR DATA 2	NM		
Body Composition Analysis: Lean Mass Indices			
BCALEANMASS TITLE	TX		
BCALEANMASS MEASURE	TX		
BCALEANMASS RESULT	NM		
BCALEANMASS VAR DATA 1	NM		
BCALEANMASS VAR DATA 2	NM		
BCALEANMASS FOOTNOTE	TX		
Body Composition Analysis: Rate-of-Change Table 1			
BCAROC1 MEASURE	TX		
BCAROC1 EXAM DATE	DT		
BCAROC1 AGE	NM	yr	
BCAROC1 RESULT	NM		
BCAROC1 VAR DATA 1	NM		
BCAROC1 VAR DATA 2	NM		
BCAROC1 VSBASELINE	NM	%	D = Dissimilar scan types or analysis methods S = Significance at 95% confidence
BCAROC1 VSPREVIOUS	NM	%	D = Dissimilar scan types or analysis methods S = Significance at 95% confidence
BCAROC1 VAR DATA TITLE 1	TX		
BCAROC1 VAR DATA TITLE 2	TX		
BCAROC1 FOOTNOTE	TX		
Body Composition Analysis: Rate-of-Change Table 2			
BCAROC2 MEASURE	TX		
BCAROC2 EXAM DATE	DT		
BCAROC2 AGE	NM	yr	

Discrete Value Type	HL7 Value Type	Units	Abnormal Flags
BCAROC2 RESULT	NM		
BCAROC2 VAR DATA 1	NM		
BCAROC2 VAR DATA 2	NM		
BCAROC2 VSBASELINE	NM	%	D = Dissimilar scan types or analysis methods S = Significance at 95% confidence
BCAROC2 VSPREVIOUS	NM	%	D = Dissimilar scan types or analysis methods S = Significance at 95% confidence
BCAROC2 VAR DATA TITLE 1	TX		
BCAROC2 VAR DATA TITLE 2	TX		
BCAROC2 FOOTNOTE	TX		
Body Composition Analysis: Rate-of-Change Table 3			
BCAROC3 MEASURE	TX		
BCAROC3 EXAM DATE	DT		
BCAROC3 AGE	NM	yr	
BCAROC3 RESULT	NM		
BCAROC3 VAR DATA 1	NM		
BCAROC3 VAR DATA 2	NM		
BCAROC3 VSBASELINE	NM	%	D = Dissimilar scan types or analysis methods S = Significance at 95% confidence
BCAROC3 VSPREVIOUS	NM	%	D = Dissimilar scan types or analysis methods S = Significance at 95% confidence
BCAROC3 VAR DATA TITLE 1	TX		
BCAROC3 VAR DATA TITLE 2	TX		
BCAROC3 FOOTNOTE	TX		
Body Composition Analysis: Rate-of-Change Table 4			
BCAROC4 MEASURE	TX		
BCAROC4 EXAM DATE	DT		
BCAROC4 AGE	NM	yr	
BCAROC4 RESULT	NM		
BCAROC4 VAR DATA 1	NM		
BCAROC4 VAR DATA 2	NM		
BCAROC4 VSBASELINE	NM	%	D = Dissimilar scan types or analysis methods S = Significance at 95% confidence
BCAROC4 VSPREVIOUS	NM	%	D = Dissimilar scan types or analysis methods S = Significance at 95% confidence
BCAROC4 VAR DATA TITLE 1	TX		
BCAROC4 VAR DATA TITLE 2	TX		
BCAROC4 FOOTNOTE	TX		
BMD Extended Spine			
BMDEXTSPINE SCAN TYPE	TX		
BMDEXTSPINE SCAN ID	TX		
BMDEXTSPINE SCAN DATE	DT		
BMDEXTSPINE L1 AREA	NM	cm2	
BMDEXTSPINE L1 BMC	NM	g	
BMDEXTSPINE L1 BMD	NM	g/cm2	
BMDEXTSPINE L1 TSCORE	NM		
BMDEXTSPINE L1 ZSCORE	NM		

Discrete Value Type	HL7 Value Type	Units	Abnormal Flags
BMDEXTSPINE L1 PEAKREF	NM		
BMDEXTSPINE L1 AGEMATCHED	NM		
BMDEXTSPINE L2 AREA	NM	cm2	
BMDEXTSPINE L2 BMC	NM	g	
BMDEXTSPINE L2 BMD	NM	g/cm2	
BMDEXTSPINE L2 TSCORE	NM		
BMDEXTSPINE L2 ZSCORE	NM		
BMDEXTSPINE L2 PEAKREF	NM		
BMDEXTSPINE L2 AGEMATCHED	NM		
BMDEXTSPINE L3 AREA	NM	cm2	
BMDEXTSPINE L3 BMC	NM	g	
BMDEXTSPINE L3 BMD	NM	g/cm2	
BMDEXTSPINE L3 TSCORE	NM		
BMDEXTSPINE L3 ZSCORE	NM		
BMDEXTSPINE L3 PEAKREF	NM		
BMDEXTSPINE L3 AGEMATCHED	NM		
BMDEXTSPINE L4 AREA	NM	cm2	
BMDEXTSPINE L4 BMC	NM	g	
BMDEXTSPINE L4 BMD	NM	g/cm2	
BMDEXTSPINE L4 TSCORE	NM		
BMDEXTSPINE L4 ZSCORE	NM		
BMDEXTSPINE L4 PEAKREF	NM		
BMDEXTSPINE L4 AGEMATCHED	NM		
BMDEXTSPINE L1L2 AREA	NM	cm2	
BMDEXTSPINE L1L2 BMC	NM	g	
BMDEXTSPINE L1L2 BMD	NM	g/cm2	
BMDEXTSPINE L1L2 TSCORE	NM		
BMDEXTSPINE L1L2 ZSCORE	NM		
BMDEXTSPINE L1L2 PEAKREF	NM		
BMDEXTSPINE L1L2 AGEMATCHED	NM		
BMDEXTSPINE L1L3 AREA	NM	cm2	
BMDEXTSPINE L1L3 BMC	NM	g	
BMDEXTSPINE L1L3 BMD	NM	g/cm2	
BMDEXTSPINE L1L3 TSCORE	NM		
BMDEXTSPINE L1L3 ZSCORE	NM		
BMDEXTSPINE L1L3 PEAKREF	NM		
BMDEXTSPINE L1L3 AGEMATCHED	NM		
BMDEXTSPINE L1L4 AREA	NM	cm2	
BMDEXTSPINE L1L4 BMC	NM	g	
BMDEXTSPINE L1L4 BMD	NM	g/cm2	
BMDEXTSPINE L1L4 TSCORE	NM		
BMDEXTSPINE L1L4 ZSCORE	NM		
BMDEXTSPINE L1L4 PEAKREF	NM		
BMDEXTSPINE L1L4 AGEMATCHED	NM		
BMDEXTSPINE L2L3 AREA	NM	cm2	
BMDEXTSPINE L2L3 BMC	NM	g	
BMDEXTSPINE L2L3 BMD	NM	g/cm2	
BMDEXTSPINE L2L3 TSCORE	NM		
BMDEXTSPINE L2L3 ZSCORE	NM		
BMDEXTSPINE L2L3 PEAKREF	NM		
BMDEXTSPINE L2L3 AGEMATCHED	NM		
BMDEXTSPINE L2L4 AREA	NM	cm2	
BMDEXTSPINE L2L4 BMC	NM	g	
BMDEXTSPINE L2L4 BMD	NM	g/cm2	
BMDEXTSPINE L2L4 TSCORE	NM		
BMDEXTSPINE L2L4 ZSCORE	NM		
BMDEXTSPINE L2L4 PEAKREF	NM		
BMDEXTSPINE L2L4 AGEMATCHED	NM		
BMDEXTSPINE L3L4 AREA	NM	cm2	
BMDEXTSPINE L3L4 BMC	NM	g	
BMDEXTSPINE L3L4 BMD	NM	g/cm2	
BMDEXTSPINE L3L4 TSCORE	NM		
BMDEXTSPINE L3L4 ZSCORE	NM		
BMDEXTSPINE L3L4 PEAKREF	NM		

Discrete Value Type	HL7 Value Type	Units	Abnormal Flags
BMDEXTSPINE L3L4 AGEMATCHED	NM		
BMDEXTSPINE L1L2L3 AREA	NM	cm2	
BMDEXTSPINE L1L2L3 BMC	NM	g	
BMDEXTSPINE L1L2L3 BMD	NM	g/cm2	
BMDEXTSPINE L1L2L3 TSCORE	NM		
BMDEXTSPINE L1L2L3 ZSCORE	NM		
BMDEXTSPINE L1L2L3 PEAKREF	NM		
BMDEXTSPINE L1L2L3 AGEMATCHED	NM		
BMDEXTSPINE L1L2L4 AREA	NM	cm2	
BMDEXTSPINE L1L2L4 BMC	NM	g	
BMDEXTSPINE L1L2L4 BMD	NM	g/cm2	
BMDEXTSPINE L1L2L4 TSCORE	NM		
BMDEXTSPINE L1L2L4 ZSCORE	NM		
BMDEXTSPINE L1L2L4 PEAKREF	NM		
BMDEXTSPINE L1L2L4 AGEMATCHED	NM		
BMDEXTSPINE L1L3L4 AREA	NM	cm2	
BMDEXTSPINE L1L3L4 BMC	NM	g	
BMDEXTSPINE L1L3L4 BMD	NM	g/cm2	
BMDEXTSPINE L1L3L4 TSCORE	NM		
BMDEXTSPINE L1L3L4 ZSCORE	NM		
BMDEXTSPINE L1L3L4 PEAKREF	NM		
BMDEXTSPINE L1L3L4 AGEMATCHED	NM		
BMDEXTSPINE L2L3L4 AREA[12]	NM	cm2	
BMDEXTSPINE L2L3L4 BMC[12]	NM	g	
BMDEXTSPINE L2L3L4 BMD[12]	NM	g/cm2	
BMDEXTSPINE L2L3L4 TSCORE[12]	NM		
BMDEXTSPINE L2L3L4 ZSCORE[12]	NM		
BMDEXTSPINE L2L3L4 PEAKREF[12]	NM		
BMDEXTSPINE L2L3L4 AGEMATCHED[12]	NM		
BMDEXTSPINE L1L2L3L4 AREA	NM	cm2	
BMDEXTSPINE L1L2L3L4 BMC	NM	g	
BMDEXTSPINE L1L2L3L4 BMD	NM	g/cm2	
BMDEXTSPINE L1L2L3L4 TSCORE	NM		
BMDEXTSPINE L1L2L3L4 ZSCORE	NM		
BMDEXTSPINE L1L2L3L4 PEAKREF	NM		
BMDEXTSPINE L1L2L3L4 AGEMATCHED	NM		
BMD Left Forearm			
BMDLARM SCAN TYPE	TX		
BMDLARM SCAN ID	TX		
BMDLARM SCAN DATE	DT		
BMDLARM RANGE	TX		
BMDLARM UD BMD	NM	g/cm2	
BMDLARM UD TSCORE	NM		
BMDLARM UD ZSCORE	NM		
BMDLARM UD PEAKREF	NM		
BMDLARM UD AGEMATCHED	NM		
BMDLARM MID BMD	NM	g/cm2	
BMDLARM MID TSCORE	NM		
BMDLARM MID ZSCORE	NM		
BMDLARM MID PEAKREF	NM		
BMDLARM MID AGEMATCHED	NM		
BMDLARM THIRD BMD	NM	g/cm2	
BMDLARM THIRD TSCORE	NM		
BMDLARM THIRD ZSCORE	NM		
BMDLARM THIRD PEAKREF	NM		
BMDLARM THIRD AGEMATCHED	NM		
BMDLARM THIRD CLASSIFICATION	TX		
BMDLARM TOTAL BMD	NM	g/cm2	
BMDLARM TOTAL TSCORE	NM		
BMDLARM TOTAL ZSCORE	NM		
BMDLARM TOTAL PEAKREF	NM		
BMDLARM TOTAL AGEMATCHED	NM		
BMDLARM TOTAL CLASSIFICATION	TX		
BMD Lateral Spine			

Discrete Value Type	HL7 Value Type	Units	Abnormal Flags
BMDLAT SCAN TYPE	TX		
BMDLAT SCAN ID	TX		
BMDLAT SCAN DATE	DT		
BMDLAT L2 BMD	NM	g/cm2	
BMDLAT L2 TSCORE	NM		
BMDLAT L2 ZSCORE	NM		
BMDLAT L2 PEAKREF	NM		
BMDLAT L2 AGEMATCHED	NM		
BMDLAT L3 BMD	NM	g/cm2	
BMDLAT L3 TSCORE	NM		
BMDLAT L3 ZSCORE	NM		
BMDLAT L3 PEAKREF	NM		
BMDLAT L3 AGEMATCHED	NM		
BMDLAT L4 BMD	NM	g/cm2	
BMDLAT L4 TSCORE	NM		
BMDLAT L4 ZSCORE	NM		
BMDLAT L4 PEAKREF	NM		
BMDLAT L4 AGEMATCHED	NM		
BMDLAT MIDS TOTAL BMD	NM	g/cm2	
BMDLAT MIDS TOTAL TSCORE	NM		
BMDLAT MIDS TOTAL ZSCORE	NM		
BMDLAT MIDS TOTAL PEAKREF	NM		
BMDLAT MIDS TOTAL AGEMATCHED	NM		
BMDLAT TOTAL BMD	NM	g/cm2	
BMDLAT TOTAL TSCORE	NM		
BMDLAT TOTAL ZSCORE	NM		
BMDLAT TOTAL PEAKREF	NM		
BMDLAT TOTAL AGEMATCHED	NM		
BMDLAT TOTAL CLASSIFICATION	TX		
BMDLAT INCLUDED REGIONS	TX		
BMD Left Hip			
BMDLHIP SCAN TYPE	TX		
BMDLHIP SCAN ID	TX		
BMDLHIP SCAN DATE	DT		
BMDLHIP NECK BMD	NM	g/cm2	
BMDLHIP NECK TSCORE	NM		
BMDLHIP NECK ZSCORE	NM		
BMDLHIP NECK PEAKREF	NM		
BMDLHIP NECK AGEMATCHED	NM		
BMDLHIP TROCHANTER BMD	NM	g/cm2	
BMDLHIP TROCHANTER TSCORE	NM		
BMDLHIP TROCHANTER ZSCORE	NM		
BMDLHIP TROCHANTER PEAKREF	NM		
BMDLHIP TROCHANTER AGEMATCHED	NM		
BMDLHIP INTERTROCH BMD	NM	g/cm2	
BMDLHIP INTERTROCH TSCORE	NM		
BMDLHIP INTERTROCH ZSCORE	NM		
BMDLHIP INTERTROCH PEAKREF	NM		
BMDLHIP INTERTROCH AGEMATCHED	NM		
BMDLHIP WARDS BMD	NM	g/cm2	
BMDLHIP WARDS TSCORE	NM		
BMDLHIP WARDS ZSCORE	NM		
BMDLHIP WARDS PEAKREF	NM		
BMDLHIP WARDS AGEMATCHED	NM		
BMDLHIP TOTAL BMD	NM	g/cm2	
BMDLHIP TOTAL TSCORE	NM		
BMDLHIP TOTAL ZSCORE	NM		
BMDLHIP TOTAL PEAKREF	NM		
BMDLHIP TOTAL AGEMATCHED	NM		
BMDLHIP TOTAL CLASSIFICATION	TX		
BMDLHIP NECK CLASSIFICATION	TX		
BMD Right Forearm			
BMDRARM SCAN TYPE	TX		
BMDRARM SCAN ID	TX		

Discrete Value Type	HL7 Value Type	Units	Abnormal Flags
BMDRARM SCAN DATE	DT		
BMDRARM RANGE	TX		
BMDRARM UD BMD	NM	g/cm2	
BMDRARM UD TSCORE	NM		
BMDRARM UD ZSCORE	NM		
BMDRARM UD PEAKREF	NM		
BMDRARM UD AGEMATCHED	NM		
BMDRARM MID BMD	NM	g/cm2	
BMDRARM MID TSCORE	NM		
BMDRARM MID ZSCORE	NM		
BMDRARM MID PEAKREF	NM		
BMDRARM MID AGEMATCHED	NM		
BMDRARM THIRD BMD	NM	g/cm2	
BMDRARM THIRD TSCORE	NM		
BMDRARM THIRD ZSCORE	NM		
BMDRARM THIRD PEAKREF	NM		
BMDRARM THIRD AGEMATCHED	NM		
BMDRARM THIRD CLASSIFICATION	TX		
BMDRARM TOTAL BMD	NM	g/cm2	
BMDRARM TOTAL TSCORE	NM		
BMDRARM TOTAL ZSCORE	NM		
BMDRARM TOTAL PEAKREF	NM		
BMDRARM TOTAL AGEMATCHED	NM		
BMDRARM TOTAL CLASSIFICATION	TX		
BMD Right Hip			
BMDRHIP SCAN TYPE	TX		
BMDRHIP SCAN ID	TX		
BMDRHIP SCAN DATE	DT		
BMDRHIP NECK BMD	NM	g/cm2	
BMDRHIP NECK TSCORE	NM		
BMDRHIP NECK ZSCORE	NM		
BMDRHIP NECK PEAKREF	NM		
BMDRHIP NECK AGEMATCHED	NM		
BMDRHIP TROCHANTER BMD	NM	g/cm2	
BMDRHIP TROCHANTER TSCORE	NM		
BMDRHIP TROCHANTER ZSCORE	NM		
BMDRHIP TROCHANTER PEAKREF	NM		
BMDRHIP TROCHANTER AGEMATCHED	NM		
BMDRHIP INTERTROCH BMD	NM	g/cm2	
BMDRHIP INTERTROCH TSCORE	NM		
BMDRHIP INTERTROCH ZSCORE	NM		
BMDRHIP INTERTROCH PEAKREF	NM		
BMDRHIP INTERTROCH AGEMATCHED	NM		
BMDRHIP WARDS BMD	NM	g/cm2	
BMDRHIP WARDS TSCORE	NM		
BMDRHIP WARDS ZSCORE	NM		
BMDRHIP WARDS PEAKREF	NM		
BMDRHIP WARDS AGEMATCHED	NM		
BMDRHIP TOTAL BMD	NM	g/cm2	
BMDRHIP TOTAL TSCORE	NM		
BMDRHIP TOTAL ZSCORE	NM		
BMDRHIP TOTAL PEAKREF	NM		
BMDRHIP TOTAL AGEMATCHED	NM		
BMDRHIP TOTAL CLASSIFICATION	TX		
BMDRHIP NECK CLASSIFICATION			
BMD Rate-of-Change			
BMDROC SCAN TYPE	TX		
BMDROC REGION	TX		
BMDROC DATE	DT		
BMDROC AGE	NM	yr	
BMDROC BMD	NM	g/cm2	
BMDROC TSCORE	NM		
BMDROC VSBASELINE	NM	%	D = Dissimilar scan types or analysis

Discrete Value Type	HL7 Value Type	Units	Abnormal Flags
			methods S = Significance at 95% confidence
BMDROC VSPREVIOUS	NM	%	D = Dissimilar scan types or analysis methods S = Significance at 95% confidence
BMD Spine			
BMDSPINE SCAN TYPE	TX		
BMDSPINE SCAN ID	TX		
BMDSPINE SCAN DATE	DT		
BMDSPINE L1 BMD	NM	g/cm2	
BMDSPINE L1 TSCORE	NM		
BMDSPINE L1 ZSCORE	NM		
BMDSPINE L1 PEAKREF	NM		
BMDSPINE L1 AGEMATCHED	NM		
BMDSPINE L2 BMD	NM	g/cm2	
BMDSPINE L2 TSCORE	NM		
BMDSPINE L2 ZSCORE	NM		
BMDSPINE L2 PEAKREF	NM		
BMDSPINE L2 AGEMATCHED	NM		
BMDSPINE L3 BMD	NM	g/cm2	
BMDSPINE L3 TSCORE	NM		
BMDSPINE L3 ZSCORE	NM		
BMDSPINE L3 PEAKREF	NM		
BMDSPINE L3 AGEMATCHED	NM		
BMDSPINE L4 BMD	NM	g/cm2	
BMDSPINE L4 TSCORE	NM		
BMDSPINE L4 ZSCORE	NM		
BMDSPINE L4 PEAKREF	NM		
BMDSPINE L4 AGEMATCHED	NM		
BMDSPINE L5 BMD	NM	g/cm2	
BMDSPINE L5 TSCORE	NM		
BMDSPINE L5 ZSCORE	NM		
BMDSPINE L5 PEAKREF	NM		
BMDSPINE L5 AGEMATCHED	NM		
BMDSPINE TOTAL BMD	NM	g/cm2	
BMDSPINE TOTAL TSCORE	NM		
BMDSPINE TOTAL ZSCORE	NM		
BMDSPINE TOTAL PEAKREF	NM		
BMDSPINE TOTAL AGEMATCHED	NM		
BMDSPINE TOTAL CLASSIFICATION	TX		
BMDSPINE INCLUDED REGIONS	TX		
BMD Wholebody			
BMDWB SCAN TYPE	TX		
BMDWB SCAN ID	TX		
BMDWB SCAN DATE	DT		
BMDWB SUBTOTAL AREA	NM	cm2	
BMDWB SUBTOTAL BMC	NM	g	
BMDWB SUBTOTAL BMD	NM	g/cm2	
BMDWB SUBTOTAL TSCORE	NM		
BMDWB SUBTOTAL ZSCORE	NM		
BMDWB SUBTOTAL PEAKREF	NM		
BMDWB SUBTOTAL AGEMATCHED	NM		
BMDWB SUBTOTAL PCTFAT	NM	%	
BMDWB SUBTOTAL FAT	NM	g	
BMDWB SUBTOTAL LEANBMC	NM	g	
BMDWB SUBTOTAL MASS	NM	g	
BMDWB TOTAL AREA	NM	cm2	
BMDWB TOTAL BMC	NM	g	
BMDWB TOTAL BMD	NM	g/cm2	
BMDWB TOTAL TSCORE	NM		
BMDWB TOTAL ZSCORE	NM		
BMDWB TOTAL PEAKREF	NM		

Discrete Value Type	HL7 Value Type	Units	Abnormal Flags
BMDWB TOTAL AGEMATCHED	NM		
BMDWB TOTAL PCTFAT	NM	%	
BMDWB TOTAL FAT	NM	g	
BMDWB TOTAL LEANBMC	NM	g	
BMDWB TOTAL MASS	NM	g	
BMDWB TOTAL CLASSIFICATION	TX		
Fracture Risk			
FXRISK SCAN TYPE	TX		
FXRISK SCAN ID	TX		
FXRISK SCAN DATE	DT		
FXRISK LABEL	TX		
FXRISK FRACTURE COLUMN LABEL	TX		
FXRISK MAJOR OSTEO FRACTURE LABEL	TX		
FXRISK MAJOR OSTEO FRACTURE VALUE	NM		
FXRISK HIP FRACTURE LABEL	TX		
FXRISK HIP FRACTURE VALUE	NM		
FXRISK REPORTED RISK FACTORS LABEL	TX		
FXRISK REPORTED RISK FACTORS	TX		
FXRISK RANGE WARNING	TX		
FXRISK NOTE	TX		
FXRISK NOF VALUE	TX		
Hip Structure Analysis			
HSA SCAN TYPE	TX		
HSA SCAN ID	TX		
HSA SCAN DATE	DT		
HSA NECK SHAFT ANGLE	NM	deg	
HSA HIP AXIS LENGTH	NM	mm	
HSA NN SUBPERI WIDTH	NM	cm	
HSA NN ENDOCORT WIDTH	NM	cm	
HSA NN CSA	NM	cm2	
HSA NN CSMI	NM	cm4	
HSA NN Z	NM	cm3	
HSA NN CORT THICK	NM	cm	
HSA NN BR	NM		
HSA IT SUBPERI WIDTH	NM	cm	
HSA IT ENDOCORT WIDTH	NM	cm	
HSA IT CSA	NM	cm2	
HSA IT CSMI	NM	cm4	
HSA IT Z	NM	cm3	
HSA IT CORT THICK	NM	cm	
HSA IT BR	NM		
HSA FS SUBPERI WIDTH	NM	cm	
HSA FS ENDOCORT WIDTH	NM	cm	
HSA FS CSA	NM	cm2	
HSA FS CSMI	NM	cm4	
HSA FS Z	NM	cm3	
HSA FS CORT THICK	NM	cm	
HSA FS BR	NM		
Institution			
INST ADDRESS	TX		
INST CITY	TX		
INST PHONE	TX		
INST FAX	TX		
INST EMAIL	TX		
IVA Lateral			
IVALAT SCAN TYPE	TX		
IVALAT SCAN ID	TX		
IVALAT SCAN DATE	DT		
IVALAT DEFORMITIES	NM		
IVALAT T4 DEFORMITY	TX		
IVALAT T5 DEFORMITY	TX		
IVALAT T6 DEFORMITY	TX		
IVALAT T7 DEFORMITY	TX		
IVALAT T8 DEFORMITY	TX		

Discrete Value Type	HL7 Value Type	Units	Abnormal Flags
IVALAT T9 DEFORMITY	TX		
IVALAT T10 DEFORMITY	TX		
IVALAT T11 DEFORMITY	TX		
IVALAT T12 DEFORMITY	TX		
IVALAT L1 DEFORMITY	TX		
IVALAT L2 DEFORMITY	TX		
IVALAT L3 DEFORMITY	TX		
IVALAT L4 DEFORMITY	TX		
Patient			
PAT HEIGHT	NM	cm	
PAT WEIGHT	NM	kg	
PAT AGE	NM	yr	
PAT MENOPAUSE AGE	NM	yr	
PAT ETHNICITY	TX		
Wholebody Ruler			
WBRULER ID	TX		
WBRULER LENGTH	NM	cm	
BMD Bilateral Hip			
BMDBHIP SCAN DATE	DT		
BMDBHIP TOTAL MEAN BMD	NM	g/cm2	
BMDBHIP TOTAL MEAN TSCORE	NM		
BMDBHIP TOTAL MEAN ZSCORE	NM		
BMDBHIP TOTAL MEAN CLASSIFICATION	TX		
BMD Dual Hip			
BMDDHIP NECK MEAN BMD	NM	g/cm2	
BMDDHIP NECK MEAN TSCORE	NM		
BMDDHIP NECK MEAN ZSCORE	NM		
BMDDHIP NECK MEAN CLASSIFICATION	TX		
BMDDHIP TROCHANTER MEAN BMD	NM	g/cm2	
BMDDHIP TROCHANTER MEAN TSCORE	NM		
BMDDHIP TROCHANTER MEAN ZSCORE	NM		
BMDDHIP TROCHANTER MEAN CLASSIFICATION	TX		
BMDDHIP INTERTROCH MEAN BMD	NM	g/cm2	
BMDDHIP INTERTROCH MEAN TSCORE	NM		
BMDDHIP INTERTROCH MEAN ZSCORE	NM		
BMDDHIP INTERTROCH MEAN CLASSIFICATION	TX		
BMDDHIP WARDS MEAN BMD	NM	g/cm2	
BMDDHIP WARDS MEAN TSCORE	NM		
BMDDHIP WARDS MEAN ZSCORE	NM		
BMDDHIP WARDS MEAN CLASSIFICATION	TX		
BMDDHIP TOTAL MEAN BMD	NM	g/cm2	
BMDDHIP TOTAL MEAN TSCORE	NM		
BMDDHIP TOTAL MEAN ZSCORE	NM		
BMDDHIP TOTAL MEAN CLASSIFICATION	TX		
SE Femur			
IVALFEMUR SCAN TYPE	TX		
IVALFEMUR SCAN ID	TX		
IVALFEMUR SCAN DATE	DT		
IVALFEMUR RULER A	NM	mm	
IVALFEMUR RULER B	NM	mm	
IVALFEMUR RULER C	NM	mm	
IVALFEMUR RULER D	NM	mm	
IVALFEMUR RULER E	NM	mm	
IVALFEMUR RULER F	NM	mm	
IVALFEMUR ANNOTATION 1	TX		
IVALFEMUR ANNOTATION 2	TX		
IVALFEMUR COMMENT	TX		
IVARFEMUR SCAN TYPE	TX		
IVARFEMUR SCAN ID	TX		
IVARFEMUR SCAN DATE	DT		
IVARFEMUR RULER A	NM	mm	
IVARFEMUR RULER B	NM	mm	
IVARFEMUR RULER C	NM	mm	
IVARFEMUR RULER D	NM	mm	

Discrete Value Type	HL7 Value Type	Units	Abnormal Flags
IVARFEMUR RULER E	NM	mm	
IVARFEMUR RULER F	NM	mm	
IVARFEMUR ANNOTATION 1	TX		
IVARFEMUR ANNOTATION 2	TX		
IVARFEMUR COMMENT	TX		
BMD LSC			
BMDLSC REGION	TX		
BMDLSC VALUE	NM	g/cm2	
BMDLSC IS HOLX VALUE	TX		
BMDLSC ADJ VALUE	NM	g/cm2	
Pediatric			
PEDI MEASURE	TX		
PEDI RESULT	NM	var[13]	
PEDI ZSCORE	NM		
PEDI AGEMATCHED	NM	%	
PEDI BONEAGE	NM	yr	
PEDI FOOTNOTE	TX		

[8] OBX-4 contains the Row ID associated with discrete values that can have multiple instances in a report (such as in a BMD ROC table). Each row of values will have the same Row ID in the Observation Sub-ID field OBX-4. For example, all OBX segments containing data from the 1st row of a BMD ROC table will have a value of '1' in OBX-4 and all OBX segments containing data from the 2nd row will have a value of '2'. OBX-4 will not be used for discrete values that can only have a single instance per report.

[9] OBX-5 contains the Discrete Value formatted to conform to the HL7 Value Type in OBX-2.

[10] OBX-6 contains the measurement units for the Discrete Value in OBX-5. See Note [7]. Some fields may have measurement units that are configurable.

[11] OBX-8 contains a list abnormal flags associated with the Discrete Value in OBX-5. If there is more than one flag then each flag is delimited by the standard HL7 repetition separator '~'. See Note [7].

[12] For studies that include a spine scan with reporting on region L2-L4 enabled, the L2-L4 results will be reported in the following discrete value types:

```
BMDEXTSPINE L2L3L4 AREA
BMDEXTSPINE L2L3L4 BMC
BMDEXTSPINE L2L3L4 BMD
BMDEXTSPINE L2L3L4 TSCORE
BMDEXTSPINE L2L3L4 ZSCORE
BMDEXTSPINE L2L3L4 PEAKREF
BMDEXTSPINE L2L3L4 AGEMATCHED
```

[13] The units for this field are dependent on the measure being reported.

Sample OBX segments:

```
OBX|1|NM|BMD SPINE L1 BMD||1.033|g/cm2||P
OBX|2|NM|BMD SPINE L1 TSCORE||1|||P
OBX|3|NM|BMD SPINE L1 ZSCORE||2.4|||P
OBX|4|NM|BMD SPINE L1 PEAKREF||112|||P
OBX|5|NM|BMD SPINE L1 AGEMATCHED||134|||P
OBX|6|NM|BMD SPINE L2 BMD||0.997|g/cm2||P
OBX|7|NM|BMD SPINE L2 TSCORE||-0.3|||P
OBX|8|NM|BMD SPINE L2 ZSCORE||1.3|||P
```

```
OBX|9|NM|BMD SPINE L2 PEAKREF||97|||P
OBX|10|NM|BMD SPINE L2 AGEMATCHED||116|||P
OBX|11|TX|BMDROC REGION|1|Total Hip(Right)||||||P
OBX|12|DT|BMDROC DATE|1|20010806|||||P
OBX|13|NM|BMDROC AGE|1|58|yr|||||P
OBX|14|NM|BMDROC BMD|1|0.882|g/cm2|||||P
OBX|15|NM|BMDROC TSCORE|1|-0.5|||||P
OBX|16|NM|BMDROC VSBASELINE|1|0.013|%|||||P
OBX|17|NM|BMDROC VSPREVIOUS|1|0.020|%|||||P
OBX|18|DT|BMDROC DATE|2|20010802|||||P
OBX|19|NM|BMDROC AGE|2|58|yr|||||P
OBX|20|NM|BMDROC BMD|2|0.862|g/cm2|||||P
...
```