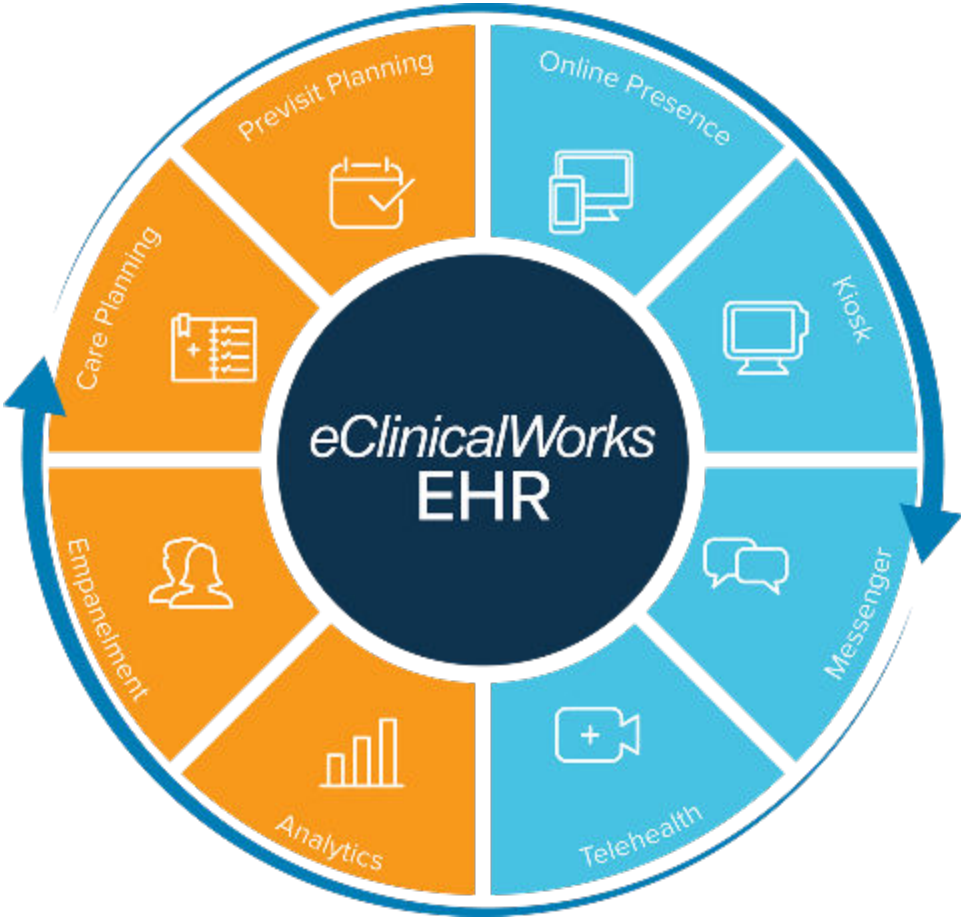


# eClinicalWorks

## HL7 RADIOLOGY ORDER SPECIFICATIONS

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August 2021



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# HL7 RADIOLOGY ORDERS SPECIFICATIONS

This document describes the HL7 Radiology Orders Specifications:

- Transaction Structure
- Message Delimiters
- Conventions
- Order Message Format (ORM^O01)
- MSH – Message Header Segment
- PID – Patient Identification
- PV1 – Patient Visit
- IN1 – Insurance Segment
- GT1 – Guarantor Segment
- ORC – Common Order Segment
- OBR – Observation Request Segment
- DG1 – Diagnosis Segment
- OBX – Observation Segment
- NTE – Notes and Comments

## Transaction Structure

The following table outlines the Transaction Structure section of the HL7 message:

Name	Description	Comments
MSH	Message Header (R)	This segment is always present in the ORM message
PID	Patient Identification (R)	There is only PID in the ORM message
PV1	Patient Visit (O)	There is only one PV1 in the ORM message
IN1	Insurance (O)	The primary insurance information will be in the first IN1 segment. This segment is present if required by the bill type, as follows: <ul style="list-style-type: none"><li>▪ <b>Patient Bill</b> - Not Required</li><li>▪ <b>Client Bill</b> - Not Required</li><li>▪ <b>Third-Party Bill</b> - Required</li></ul>

GT1	Guarantor (O)	If present, there is only one GT1 segment in the ORM message
ORC	Common Order (R)	There is only one ORC in the ORM message by default
OBR	Observation Request (R)	Each OBR segment appears under the ORC segment
DG1	Diagnosis (O)	Diagnosis associated with the order is captured as one-to-many DG1 segments
OBX	Observation	
NTE	Notes	

## Message Delimiters

---

The following table outlines message delimiters:

Character Function	Character
Segment Terminator	<CR>LF
Field Separator	(pipe)
Component Separator	^ (caret)
Repetition Separator	~ (tilde)
Ampersand	&
Back Slash	\

## Conventions

---

The following table outlines conventions:

Character Function	Character
Required field – this will always be sent	R
Optional field – this will be sent if data is available	O
Not Supported	N

# Order Message Format (ORM^O01)

---

In the following hierarchy, braces ({} ) indicate where multiple items are allowed, and brackets ([]) indicate items that are optional.

## Hierarchy

### MSH Message Header

- PID Patient Identification
- PV1 Patient Visit Info
- {{IN1}} Insurance Information
- [GT1] Guarantor Information
- ORC Common Order
- {{DG1}} Visit-Level Diagnosis
- {{NTE}} Notes and Comments
- {
  - OBR Observation Request
  - {{DG1}} Order-Level Diagnosis
  - {[OBX]} Observation}

## Matching Criteria

- Patient's Date of Birth (in PID.07)
- Requisition number (in OBR.02)

## Capabilities

- Capable of displaying order status in the L Quick-Launch button and Lab/Rad Review window
- Capable of matching, using the eCW account number if the requisition number does not match
- Capable of creating a new entry in the compendium (new code and new name from OBR.04.0), if the vendor does not send the lab name in OBR.04
- Capable of creating a virtual order if no order match is found

# MSH – Message Header Segment

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

Field Name	Segment Name	Comment	Len	R/O
Segment Type ID	MSH.00	MSH	3	R
Encoding Characters	MSH.01	^~\&	4	R
Sending Application	MSH.02	Sending Application	50	R
Sending Facility	MSH.03	Sending Facility	50	R
Receiving Application	MSH.04	Receiving Application	50	R
Receiving Facility	MSH.05	Receiving Facility	50	R
Message Date and Time	MSH.06	Format: YYMMDDHHMMSS	12	R
Security	MSH.07	Not Supported		N
Message Type	MSH.08	ORM^O01		R
Message Control ID	MSH.09	A number that uniquely identifies the message	12	R
Processing ID	MSH.10	<ul style="list-style-type: none"><li>▪ <b>P</b> – Production</li><li>▪ <b>T</b> – Test</li></ul>	1	R
Version ID	MSH.11	2.X	8	R

## Sample Output

```
MSH|^~\&|ECW|TEST6600|1100|BN|201503021451||ORM^O01||P|2.3
```

# PID – Patient Identification

The Patient Identifier (PID) segment is used by all applications 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:

Field Name	Segment Name	Comment	Len	R/O
Segment Type ID	PID.00	PID	3	R
Sequence Number	PID.01	Serial Number starting from 1	4	R
Patient ID (Internal ID)	PID.02	Patient ID (Internal eCW ID)	20	R
Patient ID (External ID)	PID.03	Patient MRN	20	O
Alternate Patient ID	PID.04	eClinicalWorks Patient Account Number	20	O
Patient Name	PID.05	Last 60^First 60^MI 60	180	R
Mother's Maiden Name	PID.06	Not Supported		N
Date of Birth	PID.07	YYYYMMDD	8	R
Sex	PID.08	See Appendix A.1 – Sex		R
Patient Alias	PID.09	Not Supported		N
Race	PID.10	See Appendix A.2 – Race		O
Patient Address	PID.11	Addr1 60^Addr2 50^City 25^ State 10^Zip 12	161	O
Country Code	PID.12	Not Supported		N
Phone # - Home	PID.13	NNNNNNNNNN	10	O
Phone # - Business	PID.14	NNNNNNNNNN	10	O
Primary Language	PID.15	Not Supported		N
Marital Status	PID.16	See Appendix A.3 – Marital Status		O
Religion	PID.17	Not Supported		N
SSN # - Patient	PID.19	NNNNNNNNNN	9	O
Ethnicity	PID.22	Ethnicity	100	M

## Sample Output

```
PID|1|7779|||Test^Test^||19670502|F||White|123 HIGHWAY^^Westboro^MA^01581||5085085085||Married|||999999999
```



# PV1 – Patient Visit

The PV1 segment is used to communicate information on a visit-specific basis:

Field Name	Segment Name	Comment	Len	R/O
Segment Type ID	PV1.00	PV1	3	R
Sequence Number	PV1.01	Serial Number starting from 1	4	R
Patient Class	PV1.02	Not Supported		N
Assigned Patient Location	PV1.03	Not Supported		N
Admission Type	PV1.04	Not Supported		N
Pre-admit Number	PV1.05	Not Supported		N
Prior Patient Location	PV1.06	Not Supported		N
Attending Doctor	PV1.07	Provider Code 20^LastName 60^FirstName 60^MI 60	200	O
Referring Provider	PV1.08	Provider Code 20^LastName 60^FirstName 60^MI 60	200	O
Visit ID	PV1.19	Requisition Number	11	O

## Sample Output

```
PV1|1||110011|||C9999^TEST^DOCTOR^L|G8888^REF^PHY|||||||38808
```

## IN1 – Insurance Segment

The Insurance (IN1) segment contains insurance policy coverage information necessary to produce properly pro-rated patient and insurance bills. This segment is applicable only to the outbound order for insurance billing:

Field Name	Segment Name	Comment	Len	R/O
Segment Type ID	IN1.00	IN1	3	R
Sequence Number	IN1.01	Serial Number starting from 1	4	R
Insurance Plan ID	IN1.02	Not Supported		N
Insurance Company ID	IN1.03	Bill mnemonic (Carrier Code)	20	O
Insurance Company Name	IN1.04	Insurance Company Name	40	R
Insurance Company Address	IN1.05	Addr1 40^Addr2 50^City 15^State 15^Zip 10	130	R
Insurance Co. Contact Person	IN1.06	Not Supported		N
Insurance Co. Phone Number	IN1.07	NNNNNNNNNN	10	O
Group Number	IN1.08	Group Number	30	O
Group Name	IN1.09	Not Supported		N
Insured's Group Emp ID	IN1.10	Not Supported		N
Insured's Group Emp Name	IN1.11	Not Supported		N
Plan Effective Date	IN1.12	YYYYMMDD	8	O
Plan Expiration Date	IN1.13	YYYYMMDD	8	O
Authorization Information	IN1.14	Not Supported		N
Plan Type	IN1.15	Plan Type	3	O
Name of Insured	IN1.16	Last 60^First 60^MI 60	180	O
Insured's Relationship to Patient	IN1.17	See Appendix A.4 – Patient Relationship Mapping		R
Insured's Date of Birth	IN1.18	YYYYMMDD	8	R

Insured's Address	IN1.19	Addr1 60^Addr2 50^City 25^ State 10^Zip 12	157	R
Assignment of Benefits	IN1.20	Not Supported		N
Coordination of Benefits	IN1.21	Not Supported		N
Primary Payor	IN1.22	Not Supported		N
Notice of Admission Code	IN1.23	Not Supported		N
Notice of Admission Date	IN1.24	Not Supported		N
Report of Eligibility Flag	IN1.25	Not Supported		N
Report of Eligibility Date	IN1.26	Not Supported		N
Release Information Code	IN1.27	Not Supported		N
Pre-Admit Cert (PAC)	IN1.28	Not Supported		N
Field Name	Seg. Name	Comment	Len	R/O
Verification Date/Time	IN1.29	Not Supported		N
Verification By	IN1.30	Not Supported		N
Type of Agreement Code	IN1.31	Not Supported		N
Billing Status	IN1.32	Not Supported		N
Lifetime Reserve Days	IN1.33	Not Supported		N
Delay Before L. R. Day	IN1.34	Not Supported		N
Company Plan Code	IN1.35	Not Supported		N
Policy Number	IN1.36	Same as subscriber number	20	O
Bill Type	IN1.47	<ul style="list-style-type: none"> <li>▪ <b>P</b> - Patient Bill</li> <li>▪ <b>C</b> - Client Bill</li> <li>▪ <b>T</b> - Third party Bill</li> </ul>	1	O

### Sample Output

```
IN1|1||^12345|Aetna|Po Box 5055^^Sugar Land^TX^77487-5055|||3464575687
|||||HM|Carr^Clay|2|19550101|123 ABC Street^^Westborough^MA^01231
|||||||||||||||||X5749867456|||||||||T
```

## GT1 – Guarantor Segment

The Guarantor (GT1) segment contains guarantor (e.g., the person or the organization with financial responsibility for payment of a patient account) data for patient and insurance billing applications. This segment is applicable only to the outbound order for patient and insurance billing:

Field Name	Segment Name	Comment	Len	R/O
Segment Type ID	GT1.00	GT1	3	R
Sequence Number	GT1.01	Serial Number starting from 1	4	R
Guarantor Number	GT1.02	Not Supported		N
Guarantor Name	GT1.03	Last 60^First 60^MI 60	180	R
Guarantor Spouse Name	GT1.04	Not Supported		N
Guarantor Address	GT1.05	Addr1 60^Addr2 50^City 25^ State 10^Zip 12	161	R
Guarantor Phone Number - Home	GT1.06	NNNNNNNNNN	10	R
Guarantor Phone Number - Business	GT1.07	Not Supported		N
Guarantor Date of Birth	GT1.08	YYYYMMDD	8	O
Guarantor Sex	GT1.09	See Appendix A.1 – Sex		R
Guarantor Type	GT1.10	Not Supported		N
Guarantor Relationship	GT1.11	See Appendix A.4 – Patient Relationship Mapping	2	R
Guarantor SSN	GT1.12	NNNNNNNNNN	9	O
Guarantor Date - Begin	GT1.13	Not Supported		N
Guarantor Date - End	GT1.14	Not Supported		N
Guarantor Priority	GT1.15	Not Supported		N
Guarantor Employer Name	GT1.16	Not Supported		N

## Sample Output

```
GT1|1||TEST^TEST||123 ABC Street^^Westborough^MA^01231 |3546576887||
19550101|M||2||||
```

## ORC – Common Order Segment

The Common Order (ORC) segment is used to transmit fields that are common to all the orders (all types of services that are requested). The ORC segment is required in the ORM message:

Field Name	Segment Name	Comment	Len	R/O
Segment Type ID	ORC.00	ORC	3	R
Order Control	ORC.01	Hardcoded values can only be configured from the list below: <ul style="list-style-type: none"> <li>▪ SC (Schedule Change)</li> <li>▪ CA (Cancel)</li> <li>▪ NW (New)</li> <li>▪ RS (Reschedule)</li> <li>▪ CM (Complete)</li> <li>▪ DT (Dictated)</li> <li>▪ RP (Performed)</li> <li>▪ HD (Pending)</li> </ul>	2	R
		<b>IMPORTANT!</b> Interface statuses can be received in ORC.01 or OBR.25		
Place Order Number	ORC.02	Requisition Number	11	R
Filler Order Number	ORC.03	Not Supported		N
Placer Group Number	ORC.04	Not Supported		N
Order Status	ORC.05	Not Supported		N
Response Flag	ORC.06	Not Supported		N
Quantity/Timing	ORC.07	Not Supported		N
Parent	ORC.08	Not Supported		N
Date/Time of Transaction	ORC.09	YYYYMMDDHHMMSS	14	R
Entered By	ORC.10	Not Supported		N
Verified By	ORC.11	Not Supported		N

Ordering Provider	ORC.12	Provider code 20^LastName 60^FirstName 60^MI 60	200	O
-------------------	--------	--	-----	---

**Note:** The Common Order (ORC) can be grouped with each OBR.

## Sample Output

### Normal Order:

```
ORC|NW|38808|||201503021451|||C9999^TEST^TEST^L
```

### Canceled Order:

```
ORC|CA|38808|||201503021451|||C9999^TEST^TEST^L
```

**Note:** All sets of HL7 segments are configured twice; once for the normal orders and again for the canceled orders.

## OBR – Observation Request Segment

At least one OBR segment is transmitted for each Order Code associated with any PID segment. This segment is mandatory in ORM messages:

Field Name	Segment Name	Comment	Len	R/O
Segment Type ID	OBR.00	OBR	3	R
Sequence Number	OBR.01	Serial Number starting from 1	4	R
Placer Order Number	OBR.02	Requisition Number	35	R
Filler Order Number	OBR.03	Not Supported		N
Observation Battery Identifier	OBR.04	Code 60^ProcedureName 255	315	R
Priority	OBR.05	<ul style="list-style-type: none"> <li>▪ <b>0</b> - Regular</li> <li>▪ <b>1</b> - Stat</li> </ul>	1	O
Requested Date/Time	OBR.06	Not Supported		N
Observation/Specimen Collection Date/Time #	OBR.07	Order date and time	14	R
Observation End Date/Time #	OBR.08	Not Supported		N
Collection Volume	OBR.09	Not Supported		N
Collector Identifier	OBR.10	Not Supported		N

Specimen Action Code	OBR.11	Not Supported		N
Danger Code	OBR.12	Not Supported		N
Relevant Clinical Information	OBR.13	Not Supported		N
Specimen Received Date/Time	OBR.14	Not Supported		N
Specimen Source	OBR.15	Not Supported		N
Ordering Provider	OBR.16	Provider Code 20^LastName 60^FirstName 60^MI 60	200	R
Ordering Provider's Phone Number	OBR.17	Not Supported		N
Alternate Specimen ID	OBR.18	Not Supported	40	N
Fasting	OBR.19	<ul style="list-style-type: none"> <li>▪ 0 - Non-Fasting</li> <li>▪ 1 - Fasting</li> </ul>	1	O
Rad Category	OBR.20	Exact Rad category name in EMR	20	O
Specimen Collected	OBR.21	Not Supported		
Order Control	OBR.25	<p>Hardcoded values can only be configured from the list below:</p> <ul style="list-style-type: none"> <li>▪ SC (Schedule Change)</li> <li>▪ CA (Cancel)</li> <li>▪ NW (New)</li> <li>▪ RS (Reschedule)</li> <li>▪ CM (Complete)</li> <li>▪ DT (Dictated)</li> <li>▪ RP (Performed)</li> <li>▪ HD (Pending)</li> </ul> <p><b>IMPORTANT!</b> Interface statuses can be received in ORC.01 or OBR.25</p>	2	R
Priority/Stat	OBR.27	<ul style="list-style-type: none"> <li>▪ 0 - Regular</li> <li>▪ 1 - Stat</li> </ul>	1	O
CC copies to	OBR.28	CC List ~ separated Provider Code 20^LastName 60^FirstName 60^MI 60	200+	O

## Sample Output

### Normal Order:

```
OBR|1|38808||CT-Abdomen^CT Abdomen|||201402260900|||C9999^Test^Test  
|||||0|C9998^Test1^Test1~ C9988^Test2^Test2
```

### Canceled Order:

```
OBR|1|38808||CT-Abdomen^CT Abdomen|||201402260900|||C9999^Test^Test  
|||||X|||0|C9998^Test1^Test1~ C9988^Test2^Test2
```

## DG1 – Diagnosis Segment

The Diagnosis (DG1) segment contains patient diagnosis information and is present on ORM messages if associated with the test. It allows identification of multiple diagnosis segments grouped beneath a single OBR segment:

Field Name	Segment Name	Comment	Len	R/O
Segment Type ID	DG1.00	DG1	3	R
Sequence Number	DG1.01	Serial Number starting from 1	4	R
Diagnosis Coding Method	DG1.02	I10	3	R
Diagnosis Code	DG1.03	Diagnosis Code	60	R
Diagnosis Name	DG1.04	Diagnosis Description	60	R

## Sample Output

```
DG1|1|ICD|7806|FEVER
```

## OBX – Observation Segment

This segment is optional. Enquire at Order Entry Questions in the order, as they are typically captured as OBX segments:

Field Name	Segment Name	Comment	Len	R/O
Segment Type ID	OBX.00	OBX	3	R
Sequence Number	OBX.01	Serial Number starting from 1	4	R



Field Name	Segment Name	Comment	Len	R/O
Type Value	OBX.02	<b>ST</b> – Standard Text	2	R
Observation Identifier	OBX.03	Question code 20^Question 50	70	R
Answer	OBX.05	Answer 50 ^ Answer Code (optional and for drop-down list only) 20	70	R

## Sample Output

OBX|1|ST|9^Mode of Transportation||Ambulatory

## NTE – Notes and Comments

---

The Notes and Comments (NTE) segment contains notes and comments for the ORM messages and is optional:

Field Name	Segment Name	Comment	Len	R/O
Segment Type ID	NTE.00	NTE	3	R
Sequence Number	NTE.01	Serial Number starting from 1	4	R
Source of Comment	NTE.02	Not Supported		N
Comment	NTE.03	Comment	255	R

## Sample Output

NTE | 1 | |NON-FASTING

# APPENDIX A: MAPPINGS

## Appendix A.1 – Sex

---

Sex Information
Female
Male
Unknown

## Appendix A.2 – Race

---

Race Information
American Indian or Alaska Native
Asian
Native Hawaiian
Black or African American
White
Hispanic
Other Race

## Appendix A.3 – Marital Status

---

Marital Status
Single
Married
Divorced
Widowed
Legally Separated

Unknown
---------

Partner
---------

## Appendix A.4 – Patient Relationship Mapping

---

Code	Description
1	Self
2	Spouse
3	Natural Child – Insured/Guarantor has Financial Responsibility
4	Natural Child – Insured/Guarantor does not have Financial Responsibility (includes legally adopted child)
5	Step Child
6	Foster Child
7	Ward of the Court
8	Employee
9	Unknown – Patient’s relationship to the insured/guarantor is other than any listed
10	Handicapped Dependent
11	Organ Donor
12	Cadaver Donor
13	Grandchild
14	Niece/Nephew
15	Injured Plaintiff
16	Sponsored Dependent
17	Minor Dependent of a Minor Dependent
18	Parent
19	Grandparent
99	Other

# APPENDIX B: SAMPLE OUTPUT

The following section includes sample output messages.

## ORM Message – Radiology

```
MSH|^~\&||RAD|RAD||20140204095304||ORM^O01|XY26389 |T|2.3|
PID|1|9147||9179|TEST11^TEST11^||20050101|female|||2 Race
Dr^.^Westborough^MA^01581|||||26389||PV1|||||WSAM^Willis^Sam^T|^|^|
||||26389 |
```

```
ORC|DT|||DT|^|20140204095304||77777777^Willis^Sam^T^U~1212467890
^Willis^Sam^T^N
```

```
OBR|1|26389||PELVIS^US PELVIC||20140204095200|||||WSAM^Willis^Sam
|||||DT||0
DG1|1||78930|Abdomen enlarged|
```

Order Date	Coll Date	Patient	Labs/Imaging/Procedures	Reason	Interface Status
02/03/2014	02/03/2014	test11, test11	AMYLASE		Cancel
02/03/2014	02/04/2014	test11, test11	US PELVIC		Dictated

Order Date	Performed Date	Result	Interface Status
02/03/2014	02/04/2014		Dictated

# APPENDIX C: DOCUMENTATION TERMS AND CONDITIONS

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