



# **Orders Technical Implementation Guide**

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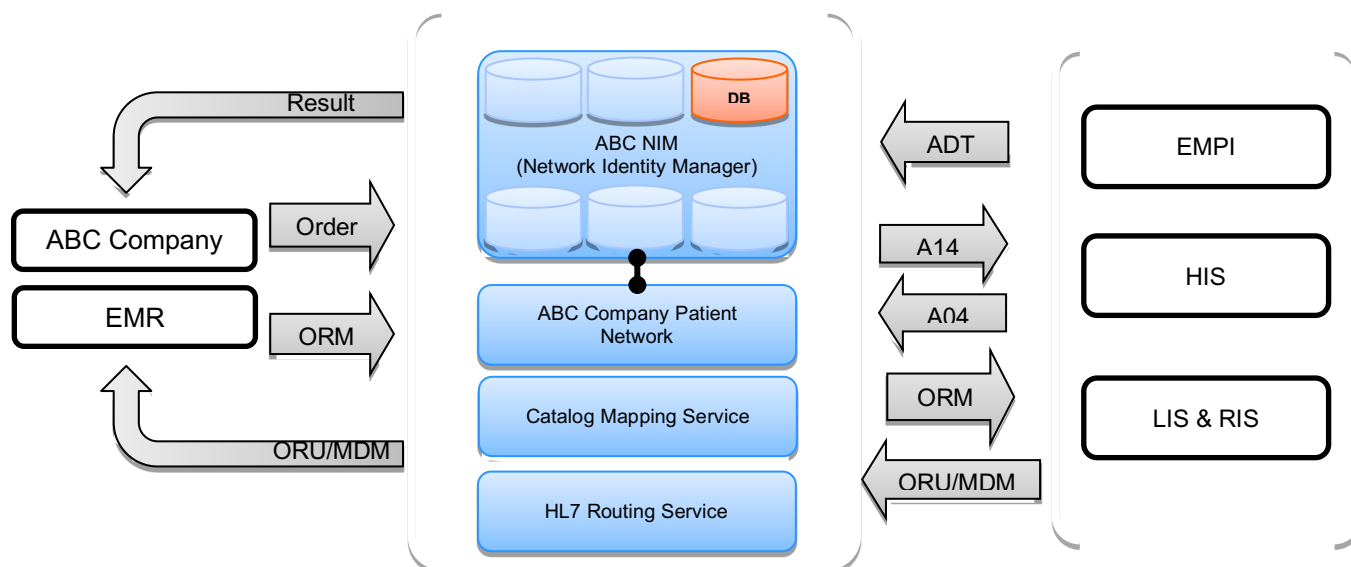
## 1. Introduction and Overview

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This document provides detailed technical implementation information for Hospitals and Health Systems deploying ABC Company's Connected Orders service. It also serves as a reference guide to assist Hospitals and Health Systems in evaluating the Connected Orders service prior to purchase. This document specifies installation and configuration requirements, HL7 message flows, and detailed field-level requirements. Where these requirements and a hospital's or health system's capabilities do not match, ABC Company Professional Services should be contact for further options.

## 2. How the Messages Flow

The following diagram illustrates Connected Orders service, consisting of the elements detailed below.



- ABC Company maintains a mirror of a partner's patient population via a real-time ADT feed from the partner's eMPI and HIS.
- ABC Company maintains a Master Orderable Catalog to which partner lab and radiology catalogs are mapped.
- Ordering physicians can create an electronic order in ABC Company and receive the corresponding result in ABC Company's Result Manager
- Connected Orders can also be supported with an EMR. Details of this functionality are available separately.
- ABC Company can request an account number for a known patient or a new patient record and account number, when necessary, from the HIS via an exchange of A14 (pending admit) and A04 (register patient) HL7 messages.
- ABC Company sends orders and accepts order status update messages from a Health System's order receiving facilities.

### 3. Cloverleaf® Secure Courier (CSC) Client Requirements

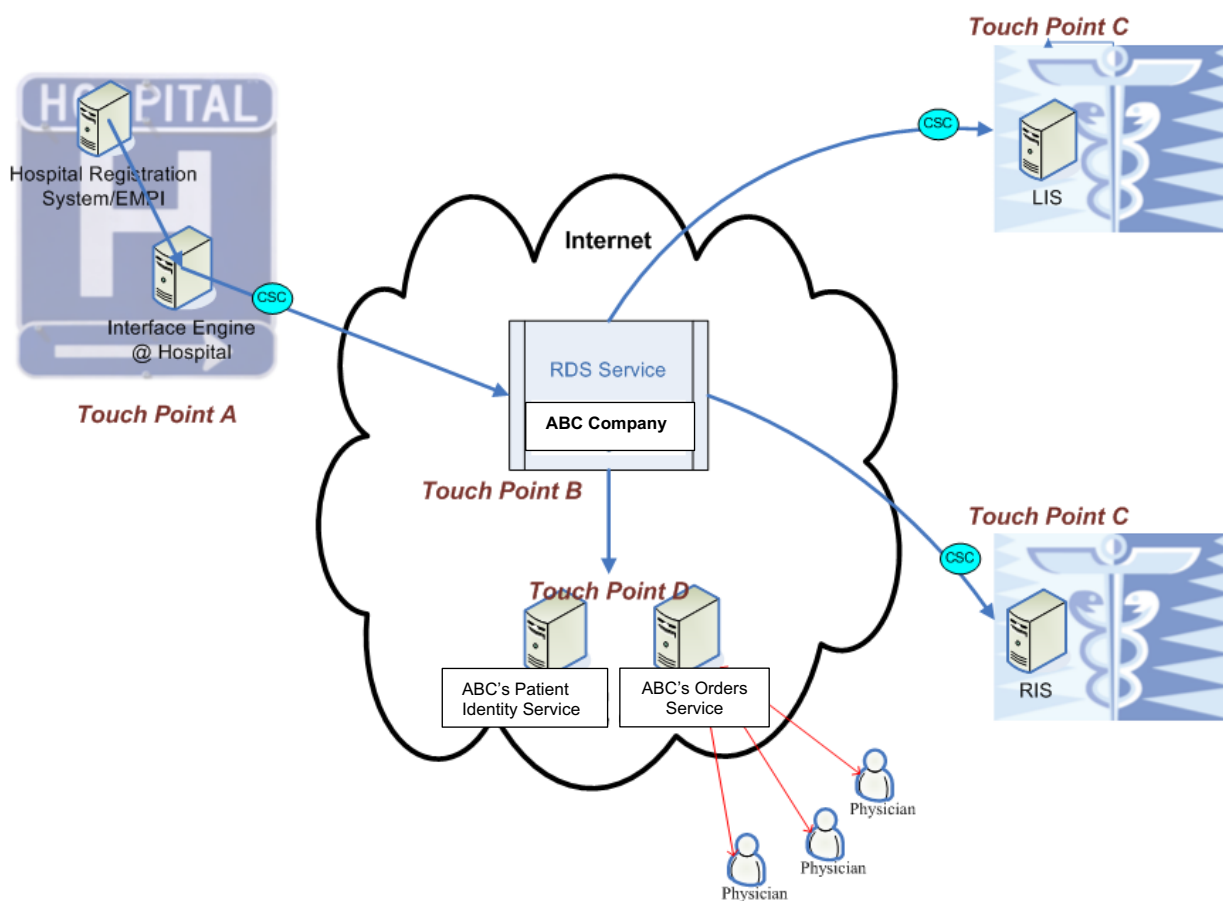
#### 3.1. Introduction

For connectivity purposes, ABC Company requires partners to install CSC Client to send and receive messages for the Connected Orders service. This section contains information about the Cloverleaf® Secure Courier (CSC) Client product.

CSC Client is a Health Vision Product to allow connectivity between enterprises via the Internet. It is a non-intrusive, and cost-effective way for real-time secure exchange of electronic clinical information (i.e., laboratory and radiology orders) with ABC Company's CSC Server. It offers ongoing monitoring and maintenance of each connection.

#### 3.2. How CSC Works

The following diagram indicates CSC touch points:



## 4. Master Orderable Catalog Upload

ABC Company will maintain a Master Orderable Catalog, which will be used at the time of creating orders. External systems or receiving facilities may not understand ABC Company orderable. Therefore, in order to send orders, a partner specific catalog must be mapped to ABC Company's master catalog. Partner-specific orderable will be used on outbound orders. In the absence of partner-specific orderable, ABC Company Master Catalog will be used on the outbound orders. ABC Company will maintain the mappings. If there are additional orderable to be added or updated, partner must provide an updated file. ABC Company also supports incremental updates and will maintain a history of all catalog uploads.

### 4.1. File Format

Partner will need to provide ABC Company with lab and radiology orderable in Microsoft Excel format. ABC Company can provide an Excel file template to be populated (sample below). Up to 5000 orderable can be uploaded per file.

ABC Company Orderable Identifier	ABC Company Orderable Name	Partner Orderable Name	Partner Orderable Identifier	Laterality	AOE Script Name	Specimen Container Instruction	Specimen Storage Instruction	IsDeleted

### 4.2. Field Descriptions and Requirements

Field Name	Description	Comments	Max Length	Is Required?
ABC Company Orderable Identifier	ABC Company Master Catalog identifier	ABC Company will complete this information		Yes <i>Partner does not need to provide this information</i>
ABC Company Orderable Name	ABC Company Master Catalog name	ABC Company will fill this information		Yes <i>Partner does not need to provide this information</i>
Partner Orderable Name	Partner Orderable/Catalog name	Will be used in the outbound orders	255	Yes
ABC Company Orderable Identifier	Partner Orderable/Catalog identifier	Will be used in the outbound orders	50	Yes
Laterality	Laterality	Possible values are: 1-Left, 2-Right, 3-Bilateral		No
AOE Script Name	At order entry, name of the AOE to be asked at the time order creation.	Before uploading this file, AOE script must be uploaded into the ABC Company system.	40	No
Specimen Storage	Specimen Storage Instruction	Instruction for the ordering provider regarding the specimen	255	No

## 5. Asked at Order Entry (AOE) Upload

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Certain orderable require additional information to be captured and communicated to the lab. The Partner Orderable Catalog will indicate if an orderable requires additional information. If an orderable requires additional information, the Partner Orderable Catalog will indicate which questionnaire to expose to the user. These questionnaires are referred to as "Asked at Order Entry" (AOE) questions. Each lab's AOE for a given orderable may vary and this must be accounted for in the database. This section describes the known AOE questionnaires, and how they manifest themselves in the UI.

### 5.1. Known AOE

There are nine known AOE at this time:

1. Amniotic Fluid AFP (code: AFAPF)
2. Fasting Flag (code: FASTIN)
3. Blood Lead (code: LCMBLD)
4. Maternal Screen Only (code: MSONLY)
5. Maternal Screen with NT (code: MSSNT)
6. GYN Cytology (code: PAP)
7. Serum Integrated AFP (code: SERIN)
8. Source (code: SOURCE)
9. Total Volume (code: TOTVOL)

Please refer to the *Appendix A* in this document for field descriptions and segment requirements of the nine pre-populated AOE. Additionally, Appendix A includes a sample template for a new AOE.

### 5.2. AOE in Orders Workflow

Once an orderable is added to an order AND a facility has been chosen, the system will check to see if there is an associated AOE. If there is an AOE, user will be asked to answer the questions. The response will be sent as part of the outbound orders based on the AOE.

## 6. Network Identity Management (Real-time ADT Feed)

### 6.1. Introduction

ABC Company's Connected Orders service allows providers to send lab and/or radiology procedures to a hospital system for order/result processing. As a processing system typically requires than an inbound ORM include a account/visit number before it can be processed, ABC Company has configured a workflow of standard HL7 messages that triggers an account number be created by a hospital system's HIS and returned to ABC Company for inclusion in the ORM message.

In order to facilitate accurate patient identity matching, ABC Company will be maintaining a mirror of a partner's patient population, stored in our Network Identity Management solution, powered by Initiate. This patient population will be kept current by real-time ADT feeds from a partner's eMPI (where applicable) and HIS systems. A partner must enable a real-time ADT feed from all applicable systems.

### 6.2. ADT Message Types

The list below details which ADT message types are required and what action they will have on the Network Identity Management solution.

Message Type	Message Description	Action
ADT^A01	ADMIT/VISIT NOTIFICATION (EVENT A01)	Add/Update
ADT^A03	DISCHARGE/END VISIT (EVENT A03)	Add/Update
ADT^A04	REGISTER A PATIENT (EVENT A04)	Add/Update
ADT^A05	PRE-ADMIT A PATIENT (EVENT A05)	Add/Update
ADT^A08	UPDATE PATIENT INFORMATION (EVENT A08)	Add/Update Demographics
ADT^A11	CANCEL ADMIT / VISIT NOTIFICATION (EVENT A11)	Add/Update
ADT^A13	CANCEL DISCHARGE / END VISIT (EVENT A13)	Add/Update
ADT^A14	PENDING ADMIT (EVENT A14)	Add/Update
ADT^A23	DELETE A PATIENT RECORD (EVENT A23)	Add/Update
ADT^A24	LINK PATIENT INFORMATION (EVENT A24)	Link
ADT^A27	CANCEL PENDING ADMIT (EVENT A27)	Add/Update
ADT^A28	ADD PERSON OR PATIENT INFORMATION (EVENT A28)	Add/Update Demographics
ADT^A29	DELETE PERSON INFORMATION (EVENT A29)	Delete
ADT^A30	MERGE PERSON INFORMATION (EVENT A30)	Merge
ADT^A31	UPDATE PERSON INFORMATION (EVENT A31)	Add/Update Demographics
ADT^A37	UNLINK PATIENT INFORMATION (EVENT A37)	Unlink
ADT^A38	CANCEL PRE-ADMIT (EVENT A38)	Add/Update
ADT^A40	MERGE PATIENT - PATIENT IDENTIFIER LIST (EVENT A40)	Merge
ADT^A41	MERGE ACCOUNT - PATIENT ACCOUNT NUMBER (EVENT A41)	Merge
ADT^A42	MERGE VISIT - VISIT NUMBER (EVENT A42)	Merge
ADT^A43	MOVE PATIENT INFORMATION - PATIENT IDENTIFIER LIST (EVENT A43)	Move
ADT^A44	MOVE ACCOUNT INFORMATION - PATIENT ACCOUNT NUMBER (EVENT A44)	Move
ADT^A45	MOVE VISIT INFORMATION - VISIT NUMBER (EVENT A45)	Move
ADT^A47	CHANGE PATIENT IDENTIFIER LIST (EVENT A47)	Add/Update
ADT^A49	CHANGE PATIENT ACCOUNT NUMBER (EVENT A49)	Add/Update
ADT^A50	CHANGE VISIT NUMBER (EVENT A50)	Add/Update
ADT^A51	CHANGE ALTERNATE VISIT ID (EVENT A51)	Add/Update



## 7. Patient Registration Workflow

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### 7.1. Introduction

This section describes the ability in real-time to automatically perform either an outpatient registration or pre-admit in a partner's HIS system, which allows an LIS/RIS to process orders (General Order Message: ORM) received from ABC Company (ABC).

In this environment, the health system organization has partnered with ABC Company to allow affiliated providers to send lab and/or radiology procedures to the hospital system for order/result processing. Patient registration does not occur in the HIS and the first time the HIS may be aware of the patient is upon receipt of the inbound A14 message. Typically for orders, the processing system requires that the account/visit number is received on the inbound ORM before it can be processed. The patient must be registered in the HIS and have an active account number.

### 7.2. HIS Requirements

The HIS requirements are as follows:

1. HIS will add a parameter in the Patient Type to activate real-time Auto Promote for the sending application, ABC Company in this case.
2. HIS will receive the A14 pending admission message from ABC Company via the HL7 v2.5 interface and will auto promote the admission based on the expected admit date, time, and patient type. If an Enterprise Patient Identifier is required, it will request an identifier from that system or route the A14 to the EMPI for the Master Patient identifier first, then the HIS.
3. HIS will perform a pre-admission when the expected admit date/time is in the future or register the patient when the expected admit date/time is current date.
4. HIS will generate a "Register Patient" (A04) or "Pre-Admit Patient" (A05) message and send the message outbound to ABC Company containing ABC Company's temporary account in PV1.50, which is the correlation identifier.
5. Lab and/or radiology systems will receive and process inbound orders from ABC Company in the ORM message once the HIS account number is sent.

## 8. Pending Admit Message (A14) from ABC Company to HIS

### 8.1. Description

The HIS will be receiving an inbound A14 HL7 v2.5 from ABC Company with a Patient Type in PV1.18 and expected admit date/time in PV2.8. In addition, a correlation identifier will be valued in PV1.50, which is to be resent in the outbound A04 or A05. The A14 accomplishes two tasks: 1) create patient identifiers, if necessary and 2) create an account number that can be used in the ORM message.

ABC Company will initially perform a lookup of the patient in the Network Identity Management (NIM) service. If a match is found, it will use the person identifier as well as its corresponding patient identifiers in the A14. These identifiers are kept up to date in real time with the partner through backend processing via ADT messages. If no match is found, it is the responsibility of the HIS to create new patient identifiers and to create and link to an Enterprise Master Patient Index (EMPI), if an MPI system is present.

The HIS will define a unique patient type to use for the Realtime Auto Promote sequence. More than one patient type may be defined based on user preferences. If the admit date/time is for the current date, the HIS will perform Realtime Auto Promote, register the patient, and assign an account number. When the expected admit date/time is in the future, the HIS will process a pre-admission.

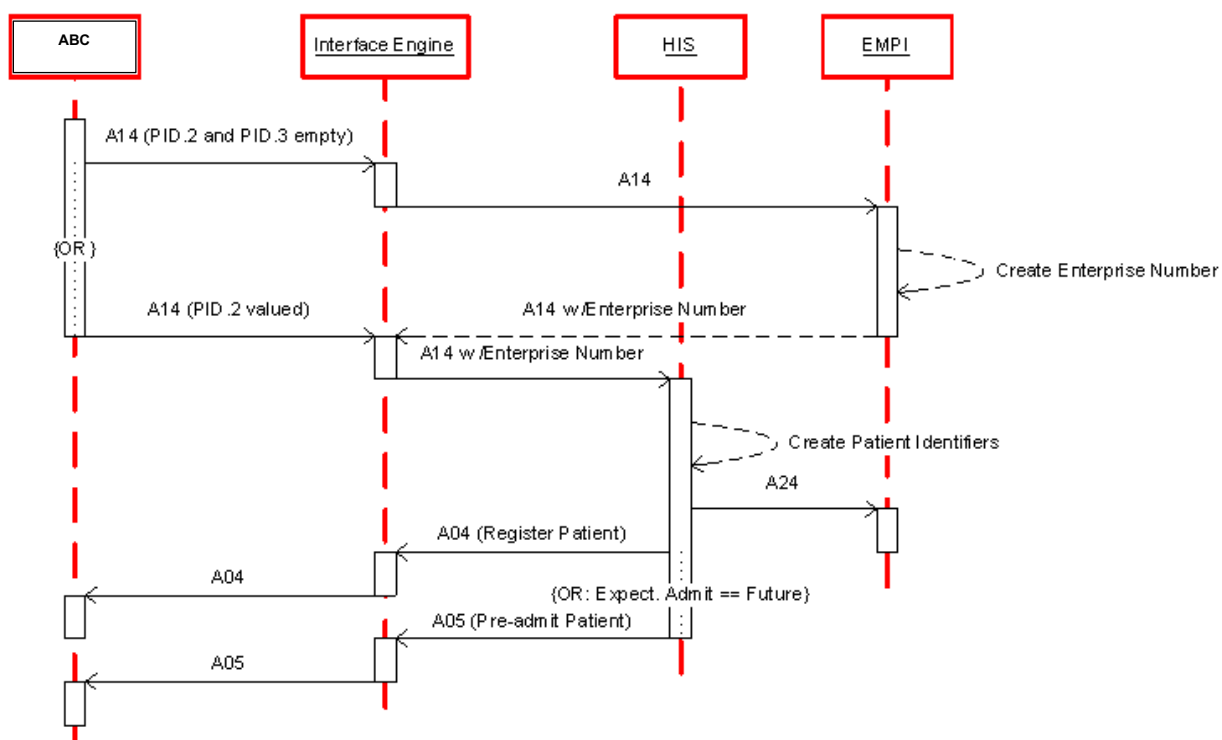


Figure 1: Creation of Identifiers

## 8.2. Requirements A14 – Pending Admit

### ADT^A14 ADT Message

Segment	Name	Required
MSH	Message Header	Y
[ { SFT } ]	Software Segment	
EVN	Event Type	Y
PID	Patient Identification	Y
[ PD1 ]	Additional Demographics	
[ { ROL } ]	Role	
[ { NK1 } ]	Next of Kin / Associated Parties	
PV1	Patient Visit	Y
[ PV2 ]	Patient Visit - Additional Info.	Y
[ { ROL } ]	Role	
[ { DB1 } ]	Disability Information	
[ { OBX } ]	Observation/Result	
[ { AL1 } ]	Allergy Information	
[ { DG1 } ]	Diagnosis Information	
[ DRG ]	Diagnosis Related Group	
[ [	--- PROCEDURE begin	
PR1	Procedures	
[ { ROL } ]	Role	
]	--- PROCEDURE end	
[ { GT1 } ]	Guarantor	
[ [	--- INSURANCE begin	
IN1	Insurance	
[ IN2 ]	Insurance Additional Info.	
[ { IN3 } ]	Insurance Additional Info - Cert.	
[ { ROL } ]	Role	
]	--- INSURANCE end	
[ ACC ]	Accident Information	
[ UB1 ]	Universal Bill Information	
[ UB2 ]	Universal Bill 92 Information	

## 8.3. Sample A14 from ABC Company

```

MSH|^~\&|ABC|A|ST7|A|20090727174000||ADT^A14|5279|P|2.2
EVN|A14|20090727174000
PID|1|HNE794318566^^^NE^PE|T3304539^^^ABC^MRT ||DOE^TOM||19700608|F|||19 NORTH
STREET^^SPARTANBURG^SC^29303^USA^H||(864)594-7655^PRN|^WPN||||626-80-5577|||||||N
PV1|1|P|^A|||8398^LAWRENCE^GRAHAM|||||||PRO|||||||S|||||||T3304539^^^ABC^ANT
PV2|||^TEST||||200907282230

```

The A14 pending admit message will contain the following segments: MSH, EVN, PID, PV1, PV2.

No guarantor information (GT1) will be sent in the A14 message.

No insurance information (IN1) will be sent in the A14 message.

Standard HL7 interface error processing will occur.

The following fields should be verified in the HL7.

## 9. ORM from ABC Company to Order Receiving System

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### 9.1. Transmission

All orders that are delivered to a receiving facility are grouped by PlacerGroupNumber and orderable type. The number of ORM messages created is dependent on a configurable value “MaxOrdersPerGroup” that is specified by the partner receiving the ORM message. This value controls the maximum number of orders that can be grouped in one ORM message. If the value specified is 1 an order group with 3 orders will be generated in 3 different ORM message.

**Example 1:** MaxOrdersPerGroup = 5

Order Entry

- Lipid Panel (Laboratory type) Facility A
- Complete Blood Count (Laboratory type) Facility A
- Chest CT (Imaging type) Facility A

Orders Registration Manager

- Two order groups will be available to Facility A even the orders are submitted in one order entry.
- Laboratory types are grouped together, and Imaging type is on another order group.

Transmission

- One ORM message with details for Lipid Panel & Complete Blood Count order is transmitted and one ORM message with details for Chest CT order is also transmitted.

**Example 2:** MaxOrdersPerGroup = 1

Order Entry

- Lipid Panel (Laboratory type) Facility A
- Complete Blood Count (Laboratory type) Facility A
- Chest CT (Imaging type) Facility A

Orders Registration Manager

- Two order groups will be available to Facility A even the orders are submitted in one order entry.
- Laboratory types are grouped together, and Imaging type is on another order group.

Transmission

- One ORM message with details for Lipid Panel order is transmitted, one ORM message with details for Complete Blood Count order is transmitted, and one ORM message with details for Chest CT order is also transmitted.
- Three different ORM message are generated for one order entry.

## 9.2. Example ORM Messages

### 9.2.1. HL7 Version

The HL7 version where ORM messages are delivered is 2.5. Partner that expects different version of HL7 to be delivered should coordinate with the ABC Company's Professional Services department for the ORM messages to be delivered on a specific HL7 version format.

### 9.2.2. Imaging Type Order

#### Single order ORM

```
MSH|^~\&|SAP|ABC COMPANY|MRM|FACX|20090928121843||ORM^O01|11853|D|2.5
PID|1|ABC60007^^^PASSPORT^HNE^FACX|ABC60007^^^ST1^MR^FACX~ABC60007^^^PASS
PORT^HNE^FACX||OUTPATIENT1^TOM||19630325|F|||IGLOO 100^^NORTH
POLE^KY^45833||(419) 555-9876^PRN^PH|||M^MARRIED||ABC60007
ORC|NW|431A07455111853^ABC||78D9294397A7496|||20090928121843|31232^SMITH^JOH
N||31232^SMITH^JOHN|FACX|7928378378^PRN^PH|||SPARTANBURG REGIONAL
HEALTH SYSTEM|||4|MRM^^^^^^^^FACX|||GOLF ROAD^^CHICAGO^IL^60610||
OBR|1|431A07455111853^ABC||2091^CHEST CT - LEFT|ROUTINE|||O||SEND WITH CC
PROVIDER||LEFT|31232^SMITH^JOHN|7928378378^PRN^PH|||^^^^ROUTINE|31232^SMI
TH^JOHN|||20090928121800
DG1|1|I9|121.6^^ICD9
```

#### Multiple order ORM

```
MSH|^~\&|8500|ABC COMPANY|SWIVEL|8880|20091002142247||ORM^O01|12496|D|2.5
PID|1|HNE02^^^PASSPORT^HNE^8880|8880^MGHS^^5D849584-263F-487B-897C-
1CAC8A5B9BE3^^^ABC
COMPANY^EX~MRN02^^^ST1^MR^8880~HNE02^^^PASSPORT^HNE^8880||SWIVEL^PT||198
70101|M||^60610||(934) 032-9432^PRN^PH|||U^UNKNOWN||ACC02
ORC|NW|614C301CCF12496^ABC||6727114D6117903|||20091002142247|MDSWIVEL^SWIV
EL^MEDICAL||MDSWIVEL^SWIVEL^MEDICAL|8880|7738882872^PRN^PH|||SWIVEL^SWIVE
L CHAIR FLOW|||4|SWIVEL CHAIR PRACITCE^^^^^^^^8880|SWIVEL CHAIR PRACTICE
ADDRESS^^CHICAGO^IL|7928887772^PRN^PH|ROLL ROAD^^CHIAGO^IL^60610||
OBR|1|614C301CCF12496^ABC||SWIVEL 21^ULTRASOUND PELVIC SCAN -
SWIVEL|ROUTINE|||O||BILATERAL|MDSWIVEL^SWIVEL^MEDICAL|7738882872^PRN^PH||
||||^^^^ROUTINE|||121.3^FASCIOLIASIS^ICD9|||20091002142200
DG1|1|I9|121.3^FASCIOLIASIS^ICD9
ORC|NW|A836B2A6D412497^ABC||6727114D6117903|||20091002142247|MDSWIVEL^SWIVE
L^MEDICAL||MDSWIVEL^SWIVEL^MEDICAL|8880|7738882872^PRN^PH|||SWIVEL^SWIVEL
CHAIR FLOW|||4|SWIVEL CHAIR PRACITCE^^^^^^^^8880|SWIVEL CHAIR PRACTICE
ADDRESS^^CHICAGO^IL|7928887772^PRN^PH|ROLL ROAD^^CHIAGO^IL^60610||
OBR|2|A836B2A6D412497^ABC||SWIVEL 17^HEAD CT -
SWIVEL|ROUTINE|||O||LEFT|MDSWIVEL^SWIVEL^MEDICAL|7738882872^PRN^PH|||^^^^
^^ROUTINE|||121.4^FASCIOLOPSIASIS^ICD9|||20091002142200
DG1|2|I9|121.4^FASCIOLOPSIASIS^ICD9
```

### 9.2.3. Laboratory Type Order

#### Single order ORM

MSH|^~&|SAP|ABC COMPANY|HLAB|ABC  
COMPANY|20090930102705||ORM^O01|12371|D|2.5

PID|1|P12312312^^^PASSPORT^HNE^ABC COMPANY|P12312312^^^ABC  
COMPANY^EX~P12312312^^^ST1^MR^ABC  
COMPANY~P12312312^^^PASSPORT^HNE^ABC  
COMPANY||SMITH^JASON||19850820|M|||^^^60610||(383) 947-  
3289^PRN^PH|||S^SINGLE||E231231231

ORC|NW|A0FB409F4612371^ABC||0570B97F16E7809||||20090930102705|32^ADAIR^FRANK||  
32^ADAIR^FRANK|ABC COMPANY|7034092889^PRN^PH|||""|^SPARTANBURG REGIONAL  
HEALTH SYSTEM|||4|HLAB^^^^^^^^^ABC COMPANY|165 MARKET ST.^SAN  
FRANCISCO^CA|415-963-9988^PRN^PH|GOLF ROAD^^CHICAGO^IL^60610||

OBR|1|A0FB409F4612371^ABC||4500^CULTURE, URINE|STAT||20090930130000||||O||NANCY  
TEST2||L. KIDNEY FLUID&L. KIDNEY  
FLUID|32^ADAIR^FRANK|7034092889^PRN^PH|||||||^^^20090930130000^^STAT|15010^ABB  
EY^ELLIOT~5234^MAUTZ^JENNIFER|||234.8^CA IN SITU NEC^ICD9||||20090930102700

DG1|1|I9|234.8^CA IN SITU NEC^ICD9

**Multiple order ORM**

MSH|^~&|8500|ABC COMPANY|SWIVEL|8880|20091002141706||ORM^O01|12492|D|2.5

PID|1|HNE02^^^PASSPORT^HNE^8880|8880^MGHS^^5D849584-263F-487B-897C-  
1CAC8A5B9BE3^^^ABC  
COMPANY^EX~MRN02^^^ST1^MR^8880~HNE02^^^PASSPORT^HNE^8880||SWIVEL^PT||198  
70101|M|||^^^60610||(934) 032-9432^PRN^PH|||U^UNKNOWN||ACC02

ORC|NW|A47FD69F4F12492^ABC||6EE7F83A4657900||||20091002141706|MDSWIVEL^SWIV  
EL^MEDICAL||MDSWIVEL^SWIVEL^MEDICAL|8880|7738882872^PRN^PH|||""|^SWIVEL^SWIVE  
L CHAIR FLOW|||4|SWIVEL CHAIR PRACITCE^^^^^^^^^8880|SWIVEL CHAIR PRACTICE  
ADDRESS^^CHICAGO^IL|7928887772^PRN^PH|ROLL ROAD^^CHIAGO^IL^60610||

OBR|1|A47FD69F4F12492^ABC||SWIVEL 2^CBC WITH DIFF -  
SWIVEL|ROUTINE|||||O|||||MDSWIVEL^SWIVEL^MEDICAL|7738882872^PRN^PH|||||||^^^R  
OUTINE||||123.9^CESTODE INFECTION NOS^ICD9||||20091002141700

DG1|1|I9|123.9^CESTODE INFECTION NOS^ICD9

ORC|NW|F3D646531412493^ABC||6EE7F83A4657900||||20091002141706|MDSWIVEL^SWIVE  
L^MEDICAL||MDSWIVEL^SWIVEL^MEDICAL|8880|7738882872^PRN^PH|||""|^SWIVEL^SWIVEL  
CHAIR FLOW|||4|SWIVEL CHAIR PRACITCE^^^^^^^^^8880|SWIVEL CHAIR PRACTICE  
ADDRESS^^CHICAGO^IL|7928887772^PRN^PH|ROLL ROAD^^CHIAGO^IL^60610||

OBR|2|F3D646531412493^ABC||SWIVEL 3^CHEM20 -  
SWIVEL|ROUTINE|||||O|||||MDSWIVEL^SWIVEL^MEDICAL|7738882872^PRN^PH|||||||^^^R  
OUTINE||||121.4^FASCILOPSIASIS^ICD9||||20091002141700

DG1|2|I9|121.4^FASCILOPSIASIS^ICD9

### 9.3. Message Segments Layout

HL7 ORM^O01 messages with ORC-1 Order Control Code = NW will be sent from ABC Company whenever Receiving Facility User transmits an Order from Orders Manager.

Each Orderable/Test corresponds to a pair of ORC-OBR pair.

Each ORM message supports single and multiple Orderable(s) in a group of Orders. This is a partner configurable.

#### New Order:

Segment	Name	Required
MSH	Message Header	Y
{{ NTE }}	Notes and Comments (for Header)	-
[	--- PATIENT begin	
PID	Patient Identification	Y
[ PD1 ]	Additional Demographics	N
{{ NTE }}	Notes and Comments (for Patient ID)	-
[	--- PATIENT_VISIT begin	
PV1	Patient Visit	N
[ PV2 ]	Patient Visit- Additional Info	N
]	--- PATIENT_VISIT end	
{{	--- INSURANCE begin	
IN1	Insurance	N
[ IN2 ]		N
[ IN3 ]		N
}}		
[ GT1 ]	Guarantor	N
{{ AL1 }}	Allergy Information	N
]	-- PATIENT end	
{	--- ORDER begin	
ORC	Common Order	Y
[	--- ORDER_DETAIL begin	
<OBR	Order Detail Segment OBR, etc.	Y
RQD		-
RQ1		-
RXO		-
ODS		-
ODT>		-
{{ NTE }}	Notes and Comments (for Detail)	-
[ CTD ]	Contact Data	-
{{ DG1 }}	Diagnosis	Y
{{	--- OBSERVATION begin	
OBX	Observation/Result	-
{{ NTE }}	Notes and Comments (for Results)	-
}}	--- OBSERVATION end	
]	--- ORDER_DETAIL end	

\* [] stands for optional elements

{ } stands for repeating elements.

\*\* Required – Y means compulsory for both Integrated and Non-Integrated Mode

N means not present in Non-Integrated Mode except IN1 (present if patient has non-zero number of health plans). For Integrated Mode, these segments will be present if they exist in A04/05 response message.

- means not supported

## 9.4. Message Segments Field Layout

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

HL7 Attribute Table - MSH - Message Header

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
1	1	ST	R		Field Separator	" "
2	4	ST	R		Encoding Characters	@'^~\&"
3	227	HD	R		Sending Application	Integrated Mode - = ABC  Non-Integrated Mode - Partner Pipe Configurable via rTools say SAP
4	227	HD	R		Sending Facility	Integrated Mode – Populated from A04/A05  Non-Integrated Mode - Partner Pipe Configurable via rTools say ABC
5	227	HD	R		Receiving Application	Integrated and Non-Integrated Modes - Partner Pipe Configurable via rTools say MRM
6	227	HD	R		Receiving Facility	Integrated Mode - Partner Pipe Configurable via rTools say FACX  Non-Integrated Mode – External Value of Receiving Facility Practice say FACX
7	14	TS	R		Date/Time of Message	Integrated Mode – Populated from A04/A05 Non-Integrated Mode – Last Modified Date of Order (If multiple ones exists, first one is taken)
8	40	ST	O		Security	Integrated Mode – Populated from A04/A05 Non-Integrated Mode – Not Supported
9	15	MSG	R		Message Type	"ORM^O01"



SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
11	3	PT	R		Processing ID	Integrated Mode – Populated from A04/A05  Non-Integrated Mode - Partner Pipe Configurable via rTools  Used to decide how to process the message. One of the three possible values: “D” Debugging “P “ Production “T” Testing
12	60	VID	R		Version ID	Integrated Mode – = 2.5  Non-Integrated Mode - Partner Pipe Configurable via rTools (=2.5)
13		NM	-		Sequence Number	
14		ST	-		Continuation Pointer	
15	2	ID	O		Accept Acknowledgment Type	Integrated Mode – = “AL”  Non-Integrated Mode – Not Supported
16		ID	-		Application Acknowledgment Type	
17		ID	-		Country Code	
18		ID	-		Character Set	
19		CE	-		Principal Language Of Message	
20		ID	-		Alternate Character Set Handling Scheme	
21		EI	-		Message Profile Identifier	

**PID - Patient Identification Segment**

For Integrated Mode, PID segment is populated with PID from A04/05 response.

HL7 Attribute Table - PID - Patient Identification

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
1	4	SI	O		Set ID - PID	= 1
2	20	CX	O		Patient ID	Non-Integrated Mode – Contains the Patient Enterprise Id, if Partner Pipe is configured via rTools to contain PatientEnterpriseId as one of the PatientIdType PID2.1 ID Number – e.g HNE PID2.4 Assigning Authority & PID2.5 Identifier Type Code – Partner Pipe Configurable via rTools PID2.6 Assigning Facility - External Value of Receiving Facility Practice E.g. P12312312^^^PASSPORT^HN E^ABC COMPANY
4	20	CX	-		Alternate Patient ID - PID	
5	250	XP	R	Y	Patient Name	Consists of Patient's First Name and Last Name E.g. SMITH^JASON
6	250	XP	-		Mother's Maiden Name	
7	26	TS	-		Date/Time of Birth	Patient's Birth Date. Doesn't include time part E.g. 19850820
8	1	IS	R		Administrative Sex	Patient's Gender. Supported Values – Male = M Female = F Unknown = U Unspecified = O
9	250	XP	-	Y	Patient Alias	
10	250	CE	O	Y	Race	Supported Values – PID10 Text, Identifier  Asian – A^A African American – B^B Caucasian – C^C Hispanic – H^H Native American – I^I Other – O^O Race not indicated – X^X
12	4	IS	-		County Code	Patient's Home Phone #
13	250	XTN	O		Phone Number - Home	PID13.1 Telephone Number – Ordering Provider's Phone #

						PID13.2 Telecommunication Use Code = PRN PID13.3 Telecommunication Equipment Type = PH E.g. (419) 555-9876^PRN^PH
14	250	XTN	-		Phone Number - Business	
15	250	CE	-		Primary Language	
16	250	CE	R		Marital Status	Patient's Marital Status. Supported Values – (Identifier, Text)  M, Married S, Single D, Divorced U, Unknown
17	250	CE	O		Religion	
18	250	CX	R		Patient Account Number	PID18.1 ID – Patient's Account Number
19	16	ST	-		SSN Number - Patient	
20	25	DLN	-		Driver's License Number - Patient	
21	250	CX	-	Y	Mother's Identifier	
22	250	CE	-	Y	Ethnic Group	
23	250	ST	-		Birth Place	
24	1	ID	-		Multiple Birth Indicator	
25	2	NM	-		Birth Order	
26	250	CE	-	Y	Citizenship	
27	250	CE	-		Veterans Military Status	
28	250	CE	-		Nationality	
29	26	TS	-		Patient Death Date and Time	
30	1	ID	-		Patient Death Indicator	
31	1	ID	-		Identity Unknown Indicator	
32	20	IS	-	Y	Identity Reliability Code	
33	26	TS	-		Last Update Date/Time	
34	241	HD	-		Last Update Facility	
35	250	CE	-		Species Code	
36	250	CE	-		Breed Code	
37	80	ST	-		Strain	
38	250	CE	-	2	Production Class Code	
39	250	CWE	-	Y	Tribal Citizenship	

## ORC - Common Order Segment

HL7 Attribute Table – ORC – Common Order

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
1	2	ID	R		Order Control	= NW New order/service
3	22	EI	-		Filler Order Number	
4	15	EI	R		Placer Group Number	ORC4.1 – Entity Identifier – System Generated 15 chars long Alphanumeric string
5	2	ID	-		Order Status	
6	1	ID	-		Response Flag	
7	200	TQ	-		Quantity/Timing	
8	200	EIP	-		Parent	
9	14	TS	R		Date/Time of Transaction	Last Modified Date of Order (If multiple ones exists, first one is taken) Last Modified Date of Order (If multiple ones exists, first one is taken)
10	250	XCN	R	N	Entered By	Submitter of Order ORC10.1 ID Number – External Value corresponding to Submitter's Provider ID [for Provider] or Submitter's Internal Login ID [for Staff] E.g. 32^ADAI^FRANK
11	250	XCN	-		Verified By	
12	250	XCN	R	N	Ordering Provider	ORC12.1 ID Number – External Value corresponding to Ordering Provider's Provider ID E.g. 32^ADAI^FRANK
13	80	PL	R		Enterer's Location	ORC13.1 Point of Care – External Value corresponding to Ordering Practice's Practice ID
14	250	XTN	R	N	Call Back Phone Number	ORC14.1 Telephone Number – Ordering Provider's Phone # ORC14.2 Telecommunication Use Code = PRN ORC14.3 Telecommunication Equipment Type = PH E.g. 7034092889^PRN^PH
15	26	TS	-		Order Effective Date/Time	
16	250	CE	R		Order Control Code Reason	Set to empty string
17	250	CE	O		Entering Organization	Health System/Organization of Order Submitter (ORC10)

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
						ORC17.1 Identifier – External Value corresponding to Health System's ID (Optional) ORC17.2 Text – Health System's Name
18	250	CE	-		Entering Device	
19	250	XCN	-		Action By	
20	250	CE	R		Advanced Beneficiary Notice Code	= 4 Advanced Beneficiary Notice has not been signed
21	250	XON	R	N	Ordering Facility Name	Ordering Practice  ORC21.1 Organization Name – Practice Name ORC21.10 Organization Identifier – External Value corresponding to Practice ID E.g. MRM^^^^^^^^FACX
22	250	XAD	O	N	Ordering Facility Address	Address of Ordering Practice E.g. GOLF ROAD^^CHICAGO^IL^60610
23	250	XTN	O	N	Ordering Facility Phone Number	ORC23.1 Telephone Number – Ordering Practice's Phone # ORC23.2 Telecommunication Use Code = PRN ORC23.3 Telecommunication Equipment Type = PH E.g. 7034092889^PRN^PH
24	250	XAD	O	Y	Ordering Provider Address	Address of Ordering Provider E.g. GOLF ROAD^^CHICAGO^IL^60610
25	250	CWE	-		Order Status Modifier	
26	60	CWE	-		Advanced Beneficiary Notice Override Reason	
27	26	TS	-		Filler's Expected Availability Date/Time	
28	250	CWE	-		Confidentiality Code	
29	250	CWE	-		Order Type	
30	250	CNE	-		Enterer Authorization Mode	

**OBR - Observation Request Segment**

HL7 Attribute Table – OBR – Observation Request

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
1	4	SI	R		Set ID – OBR	For the first order transmitted, the sequence number shall be 1; for the second order, it shall be 2; and so on.
2	15	EI	R		Placer Order Number	OBR2.1 – Entity Identifier – System Generated 15 chars long Alphanumeric string  OBR2.2 – Namespace ID - = ABC
3	22	EI	-		Filler Order Number	
4	250	CE	R		Universal Service Identifier	OBR4.1 Identifier – Orderable Code  OBR4.2 Text – Orderable Name  E.g. 2091^CHEST CT - LEFT
5	2	ID	R		Priority – OBR	Supported Values – STAT, ASAP, ROUTINE
6	26	TS	-		Requested Date/Time	
7	26	TS	O		Observation Date/Time #	Specimen Collection DateTime  (For laboratory tests when specimen is collected.)
8	26	TS	-		Observation End Date/Time #	
9	20	CQ	O		Collection Volume *	For laboratory tests, the collection volume is the volume of a specimen.  OBR9.1 Quantity OBR9.2 Units
10	250	XCN	-		Collector Identifier *	
11	1	ID	R		Specimen Action Code *	= O Specimen obtained by service other than Lab
12	250	CE	-		Danger Code	
13	300	ST	O		Relevant Clinical Information	Additional Notes
14	26	TS	-		Specimen Received Date/Time *	
16	250	XCN	O	Y	Ordering Provider	OBR16.1 ID Number – External Value corresponding to Ordering Provider's Provider ID

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
						E.g. 32^ADAIR^FRANK Same as ORC12
17	250	XTN	O	Y/2	Order Callback Phone Number	OBR17.1 Telephone Number – Ordering Provider's Phone # OBR17.2 Telecommunication Use Code = PRN OBR17.3 Telecommunication Equipment Type = PH E.g. 7034092889^PRN^PH Same as ORC14
18	60	ST	-		Placer Field 1	
19	60	ST	-		Placer Field 2	
20	60	ST	-		Filler Field 1 +	
21	60	ST	-		Filler Field 2 +	
22	26	TS	-		Results Rpt/Status Chng - Date/Time +	
23	40	MOC	-		Charge to Practice +	
24	10	ID	-		Diagnostic Serv Sect ID	
25	1	ID	-		Result Status +	
26	400	PRL	-		Parent Result +	
28	250	XCN	O	Y	Result Copies To	List of CC'ed Providers. ID Number is the external value of corresponding Provider ID.
29	200	EIP	-		Parent	
30	20	ID	-		Transportation Mode	
31	250	CE	R	Y	Reason for Study	List of ICD9 Codes associated with the Orderable. Same as DG1  OBR31.1 – Identifier – ICD9 Code OBR31.2 – Text – ICD9 Code Description OBR31.3 – Name of Coding System = ICD9 Eg: - 234.8^CA IN SITU NEC^ICD9
32	200	NDL	-		Principal Result Interpreter +	
33	200	NDL	-	Y	Assistant Result Interpreter +	
34	200	NDL	-	Y	Technician +	
35	200	NDL	-	Y	Transcriptionist +	
36	14	TS	R		Scheduled Date/Time +	Date/time the filler scheduled an observation.
37	4	NM	-		Number of Sample Containers *	

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
38	250	CE	-	Y	Transport Logistics of Collected Sample *	
39	250	CE	-	Y	Collector's Comment *	
40	250	CE	-		Transport Arrangement Responsibility	
41	30	ID	-		Transport Arranged	
42	1	ID	-		Escort Required	
43	250	CE	-	Y	Planned Patient Transport Comment	
44	250	CE	-		Procedure Code	
45	250	CE	-	Y	Procedure Code Modifier	
46	250	CE	-	Y	Placer Supplemental Service Information	
47	250	CE	-	Y	Filler Supplemental Service Information	
48	250	CWE	-		Medically Necessary Duplicate Procedure Reason.	
49	2	IS	-		Result Handling	



**DG1 - Diagnosis Segment**

Multiple ICD9 Codes are supported per Orderable/Test/ORC-OBR Pair. Thus, there will be a DG1 segment corresponding to each ICD9 Code.

HL7 Attribute Table - DG1 – Diagnosis

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
1	4	SI	R		Set ID - DG1	This field contains the number that identifies this transaction. For the first occurrence of the segment the sequence number shall be 1, for the second occurrence it shall be 2, etc.
2	2	ID	R		Diagnosis Coding Method	= I9
3	250	CE	R	N	Diagnosis Code - DG1	DG1.3.1 – Identifier – ICD9 Code DG1.3.2 – Text – ICD9 Code Description DG1.3.3 – Name of Coding System = ICD9 Eg: - 234.8^CA IN SITU NEC^ICD9
4	40	ST	-		Diagnosis Description	
5	26	TS	-		Diagnosis Date/Time	
6	2	IS	-		Diagnosis Type	
7	250	CE	-		Major Diagnostic Category	
8	250	CE	-		Diagnostic Related Group	
9	1	ID	-		DRG Approval Indicator	
10	2	IS	-		DRG Grouper Review Code	
11	250	CE	-		Outlier Type	
12	3	NM	-		Outlier Days	
13	12	CP	-		Outlier Cost	
14	4	ST	-		Grouper Version And Type	
15	2	ID	-		Diagnosis Priority	
16	250	XCN	-		Diagnosing Clinician	
17	3	IS	-		Diagnosis Classification	
18	1	ID	-		Confidential Indicator	
19	26	TS	-		Attestation Date/Time	
20	427	EI	-		Diagnosis Identifier	
21	1	ID	-		Diagnosis Action Code	

\* Required – Y means compulsory

- means not supported

\*\*RP/# - N means Not Repeated [For each ICD9 Code there will be a corresponding DG1 segment]

## 10. Inbound ORM Status Update from LIS / RIS

ORM messages from ABC Company's partner that are in response to an order transmitted by ABC Company. Placer order number and Placer group number are required for all inbound messages to be processed.

### 10.1. Sample ORM Status Update Message

The HL7 version expected by ABC Company is 2.5. Partners using different versions of HL7 should coordinate with the ABC Company's Professional Services department for conversion of inbound messages to the HL7 version 2.5.

#### Status Update Message from LIS

```
MSH|^~\&|SWIVEL|8880|8500|ABC COMPANY|20090909130907||ORM^O01|7679|D|2.5
PID|1|SWIVEL^^^PASSPORT^HNE^8880|SWIVEL^^^ST1^MR~SWIVEL^^^PASSPORT^HNE||SWIVEL^
PT||19870101|M|||^^^60610||(934) 032-9432^PRN^PH|||U^UNKNOWN||SWIVEL
ORC|OC|756CC0DEF2E7679^ABC|18c96096-e795-46d2-b31a-
d9a895a6db6c|AB30AF7A6594955|CA|||20090909210907|MDSWIVEL^SWIVEL^MEDICAL||MDSWIVE
L^SWIVEL^MEDICAL|8880|7738882872^PRN^PH|||4|SWIVEL CHAIR
PRACITCE^^^^^^8880||ROLL ROAD^^CHIAGO^IL^60610
OBR|1|756CC0DEF2E7679^ABC||00001^CANDY
CT|ROUTINE||||O|||RIGHT|MDSWIVEL^SWIVEL^MEDICAL|7738882872^PRN^PH|||||||||2009090
9130900
```

### 10.2. Message Segments Layout

#### MSH - message header segment

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

HL7 Attribute Table - MSH - Message Header

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
1	1	ST	R		Field Separator	" "
2	4	ST	R		Encoding Characters	@^~\&"
3	227	HD	R		Sending Application	Partner Pipe Configurable via rTools
4	227	HD	R		Sending Facility	Partner Pipe Configurable via rTools
5	227	HD	R		Receiving Application	Partner Pipe Configurable via rTools
6	227	HD	O		Receiving Facility	
7	14	TS	O		Date/Time of Message	
8	40	ST	-		Security	
9	15	MSG	R		Message Type	Partner Pipe Configurable via rTools E.g. "ORM^O01"

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
10	Integrated Mode = 20  Non-Integrated Mode = 10	ST	O		Message Control ID	
11	3	PT	-		Processing ID	
12	60	VID	R		Version ID	= 2.5
13		NM	-		Sequence Number	
14		ST	-		Continuation Pointer	
15	2	ID	-		Accept Acknowledgment Type	
16		ID	-		Application Acknowledgment Type	
17		ID	-		Country Code	
18		ID	-		Character Set	
19		CE	-		Principal Language Of Message	
20		ID	-		Alternate Character Set Handling Scheme	

\* Required

R means compulsory

O means optional

- means not supported

## ORC - Common Order Segment

ABC Company will correlate the ORM responses to Orders in ABC Company based on Placer Order Number (ORC2/OBR2) and Placer Group Number (ORC4)

Status of an Order in ABC Company is determined based on ORC5 Order Status and ORC1 Control Code. ORC5 takes precedence over ORC1.

Order Statuses and Corresponding ORC1 and ORC5 Values –

Order Status	ORC5	ORC1
In Progress	IP, O, S, N, P, L, T, I, G	XO, SN, NA, SC
Received by Facility	R	
Results to Follow	CM, V, D	RE
Cancelled	CA	OC

HL7 Attribute Table – ORC – Common Order

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
1	2	ID	O		Order Control	Supported Control Codes – XO SN NA CH SC RE OC
2	15	EI	R		Placer Order Number	ORC2.1 – Entity Identifier – 15 chars long Alphanumeric string ORC2.2 – Namespace ID - = <b>ABC</b>
3	22	EI	O		Filler Order Number	
4	15	EI	R		Placer Group Number	ORC4.1 – Entity Identifier – 15 chars long Alphanumeric string
5	2	ID	O		Order Status	Supported Values – IP O S N P L T I G R CM V D CA
6	1	ID	-		Response Flag	
7	200	TQ	-		Quantity/Timing	
8	200	EIP	-		Parent	
9	14	TS	-		Date/Time of Transaction	

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
10	250	XCN	-	N	Entered By	
11	250	XCN	-		Verified By	
12	250	XCN	-	N	Ordering Provider	
13	80	PL	-		Enterer's Location	
14	250	XTN	-		Call Back Phone Number	
15	26	TS	-		Order Effective Date/Time	
16	250	CE	O		Order Control Code Reason	
17	250	CE	-		Entering Organization	
18	250	CE	-		Entering Device	
19	250	XCN	-		Action By	
20	250	CE	-		Advanced Beneficiary Notice Code	
21	250	XON	-	N	Ordering Facility Name	
22	250	XAD	-	N	Ordering Facility Address	
23	250	XTN	-	N	Ordering Facility Phone Number	
24	250	XAD	-	Y	Ordering Provider Address	
25	250	CWE	-		Order Status Modifier	
26	60	CWE	-		Advanced Beneficiary Notice Override Reason	
27	26	TS	-		Filler's Expected Availability Date/Time	
28	250	CWE	-		Confidentiality Code	
29	250	CWE	-		Order Type	
30	250	CNE	-		Enterer Authorization Mode	

\* Required – R means compulsory

O means optional

- means not supported

**OBR - Observation Request Segment**

HL7 Attribute Table – OBR – Observation Request

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
1	4	SI	O		Set ID – OBR	
2	15	EI	R		Placer Order Number	OBR2.1 – Entity Identifier – System Generated 15 chars long Alphanumeric string OBR2.2 – Namespace ID - = <b>ABC</b>
3	22	EI	-		Filler Order Number	
4	250	CE	-		Universal Service Identifier	
5	2	ID	-		Priority – OBR	
6	26	TS	-		Requested Date/Time	
7	26	TS	-		Observation Date/Time #	
8	26	TS	-		Observation End Date/Time #	
9	20	CQ	-		Collection Volume *	
10	250	XCN	-		Collector Identifier *	
11	1	ID	-		Specimen Action Code *	
12	250	CE	-		Danger Code	
13	300	ST	-		Relevant Clinical Information	
14	26	TS	-		Specimen Received Date/Time *	
15	300	SPS	-		Specimen Source	
16	250	XCN	-	Y	Ordering Provider	
17	250	XTN	-	Y/2	Order Callback Phone Number	
18	60	ST	-		Placer Field 1	
19	60	ST	-		Placer Field 2	
20	60	ST	-		Filler Field 1 +	
21	60	ST	-		Filler Field 2 +	
22	26	TS	-		Results Rpt/Status Chng - Date/Time +	
23	40	MOC	-		Charge to Practice +	
24	10	ID	-		Diagnostic Serv Sect ID	
25	1	ID	-		Result Status +	
26	400	PRL	-		Parent Result +	
27	200	TQ	-	N	Quantity/Timing	
28	250	XCN	-	Y	Result Copies To	
29	200	EIP	-		Parent	
30	20	ID	-		Transportation Mode	
31	250	CE	-	Y	Reason for Study	

SEQ	LEN	DT	OPT	RP/#	ELEMENT NAME	NOTES
32	200	NDL	-		Principal Result Interpreter +	
33	200	NDL	-	Y	Assistant Result Interpreter +	
34	200	NDL	-	Y	Technician +	
35	200	NDL	-	Y	Transcriptionist +	
36	14	TS	-		Scheduled Date/Time +	
37	4	NM	-		Number of Sample Containers *	
38	250	CE	-	Y	Transport Logistics of Collected Sample *	
39	250	CE	-	Y	Collector's Comment *	
40	250	CE	-		Transport Arrangement Responsibility	
41	30	ID	-		Transport Arranged	
42	1	ID	-		Escort Required	
43	250	CE	-	Y	Planned Patient Transport Comment	
44	250	CE	-		Procedure Code	
45	250	CE	-	Y	Procedure Code Modifier	
46	250	CE	-	Y	Placer Supplemental Service Information	
47	250	CE	-	Y	Filler Supplemental Service Information	
48	250	CWE	-		Medically Necessary Duplicate Procedure Reason.	
49	2	IS	-		Result Handling	

\* Required –

R means compulsory

O means optional

- means not supported