

AGFA HEALTHCARE HL7 Conformance Statement

→ **IMPAX 6.6.x Solution**

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1 INTRODUCTION

1.1 Revision Record

Revision Number	Date	Reason for Change
1.0	April 25th, 2014	Initial version IMPAX 6.6
1.1	February 4th, 2015	Update document for IMPAX 6.6.x

1.2 Purpose and Intended Audience of this Document

This document is a HL7 Conformance Statement for the HL7 Services associated with IMPAX 6.6.x Solution.

The user of this document is involved with system integration and/or software design. We assume that the reader is familiar with the terminology and concepts that are used in HL7 2.3.1 standard and the IHE Technical Framework.

Readers not familiar with HL7 terminology should first read the appropriate parts of the HL7 standard itself, prior to reading this conformance statement.

Although the use of this conformance statement in conjunction with the HL7 standard is intended to facilitate communication with IMPAX 6.6.x, it is not sufficient to guarantee, by itself, the inter-operation of the connection between IMPAX 6.6.x and the 3rd party HL7-based system.

The integration of any device into a system of interconnected devices goes beyond the scope of the HL7 standard and this conformance statement when interoperability is desired. The responsibility for analyzing the applications requirements and developing a solution that integrates the Agfa equipment with other vendors' systems is the user's responsibility and should not be underestimated.

1.3 Version Overview

This table provides an overview of the compatibility of IMPAX PACS version with IMPAX Connectivity Manager version. This Conformance Statement applies only for the IMPAX Connectivity Manager version 2.3 and 2.4.1.

		Connectivity Manager Version			
		2.3SU2	2.4.1	2.4.1SU1	
IMPAX Version	6.6	X	X	X	
	6.6.1	X		X	

By default, all HL7 data elements correspond to HL7 v2.3.1. Connectivity Manager supports HL7 2.4 messages as long as they are conform to what is documented in the HL7 conformance statement. However, CM does not use (or need) any new functionality that was introduced in HL7 v2.4.

In case PACS Broker is used with IMPAX instead of the Connectivity Manager component, please refer to the PACS Broker HL7 Conformance Statement (number 001238) located on <http://www.agfahealthcare.com/hl7>.

1.4 Acronyms and Abbreviations

Definitions, terms and abbreviations used in this document are defined within the HL7 standard. Abbreviations and terms are as follows:

ADT	Admission, Discharge, and Transfer message
AL1	Patient Allergy Information segment
CHCS	Composite Health Care System, the RIS used by the US Military
EVN	Event Type segment
HL7	Health Level 7
IHE	Integrating the Healthcare Enterprise
MFN	Master Files Change Notification
MRG	Merge Patient Information segment
MSH	Message Header segment
NTE	Notes and comments segment
OBR	Observation Request segment
OBX	Observation/Result segment
ORC	Common Order segment
ORM	Order Request message
ORU	Observation Results - Unsolicited message
PID	Patient ID segment
PV1	Patient Visit segment
QRD	Query Definition segment
RIS	Radiology Information System
SIU	Schedule Information Unsolicited

1.5 Related Documents

- HL7 Standard v2.3.1 - see www.hl7.org
- IHE Radiology Technical Framework Revision 10.0 – Final Text, February, 2011 – see www.ihe.net

2 INBOUND MESSAGES

2.1 Supported Trigger Events

2.1.1 Supported ADT Events

Inbound support for ADT triggers is implemented by a lookup table. This table may be edited to meet a site's needs.

Table 1 Supported ADT Events

Func Area	Event Code	ADT Trigger Event	Inbound Supported
ADT	A01	Admit a patient	Y
ADT	A02	Transfer a patient	Y
ADT	A03	Discharge a patient	Y
ADT	A04	Register a patient	Y
ADT	A05	Preadmit a patient	Y
ADT	A06	Transfer an outpatient to inpatient	Y
ADT	A07	Transfer an inpatient to outpatient	Y
ADT	A08	Update patient information	Y
ADT	A09	Patient departing	Y
ADT	A10	Patient arriving	Y
ADT	A11	Cancel admit	Y
ADT	A12	Cancel transfer	Y
ADT	A13	Cancel discharge	Y
ADT	A14	Pending admit	IHE:Y
ADT	A15	Pending transfer	
ADT	A16	Pending discharge	
ADT	A17	Swap patients	
ADT	A18	Merge patient information	Y
QRY	A19	Patient query	
ADT	A20	Nursing/Census application updates	
ADT	A21	Leave of absence – out (leaving)	
ADT	A22	Leave of absence – in (returning)	
ADT	A23	Delete a patient record	Y
ADT	A24	Link patient information	
ADT	A25	Cancel pending discharge	
ADT	A26	Cancel pending transfer	
ADT	A27	Cancel pending admit	
ADT	A28	Add person information	Y
ADT	A29	Delete person information	

Func Area	Event Code	ADT Trigger Event	Inbound Supported
ADT	A30	Merge person information	Y
ADT	A31	Update person information	Y
ADT	A32	Cancel patient arriving	
ADT	A33	Cancel patient departing	Y
ADT	A34	Merge patient information – patient ID only	Y
ADT	A35	Merge patient information – account number only	
ADT	A36	Merge patient information – patient ID and account	
ADT	A37	Unlink patient information	
ADT	A38	Cancel pre-admit	Y
ADT	A39	Merge person – external ID	
ADT	A40	Merge patient – internal ID	Y
ADT	A41	Merge account – patient account number	
ADT	A42	Merge visit – visit number	
ADT	A43	Move patient information – internal ID	
ADT	A44	Move account information – patient account number	
ADT	A45	Move visit information – visit number	
ADT	A46	Change external ID	
ADT	A47	Change internal ID	Y
ADT	A48	Change alternate patient ID	
ADT	A49	Change patient account number	
ADT	A50	Change visit number	
ADT	A51	Change alternate visit ID	

2.1.1.1 ADT Segments Processed

The following segments are processed when IMPAX 6.6.x receives an ADT message:

```

MSH
[ EVN ]
PID
PV1
[ AL1 ]
[ MRG ]
[ OBR ]*

```

* OBR is not a segment of HL7 ADT messages, however some fields in the OBR are mapped to internal, patient related attributes, which are part of all ADT and ORM processing.

2.1.2 Supported ORM Events

The ORM^O01 is the only code supported for order messages.

Table 2 Supported ORM Events

Func Area	Event Code	ORM Trigger Event	Inbound Supported
ORM	O01	General order message	Y

2.1.2.1 ORM Messages: Supported Control Codes and Order Statuses

For ORM messages the processing performed is determined by a combination of ORC(1,1) and ORC(5,1). If ORC(1,1) is set to "SC" for "Status Changed", then ORC(5,1) is used as the key to determine both the order status. Otherwise ORC(1,1) is used as the key. The following tables indicate what order control codes and order statuses are supported by default from ORC(1,1) and ORC(5,1). This support can be changed by configuration.

Table 3 Default Order Control Codes supported from ORC 1,1

Control Code (ORC-1) Value
NW
XO
CA
OC
DC
OD
SC

Table 4 Default Order Status Codes supported from ORC 5,1

Order Status (ORC-5) Value
DC
CM
IP
CA

2.1.2.2 ORM Segments Processed

The following segments are processed when IMPAX 6.6.x receives an ORM message:

MSH
PID
PV1
[AL1]
ORC
OBR
ZDS1

2.1.3 Supported ORU Events

The ORU^R01 is the only code supported for observation messages.

Table 5 Supported ORU Events

Func Area	Event Code	ORU Trigger Event	Inbound Supported
ORU	R01	Unsolicited transmission of an observation message	Y

The ORU can be converted to DICOM SR or DICOM encapsulated PDF as of CM 2.4.1 depending on the content of the OBX segment (consult the IMPAX 6.6 DICOM Conformance Statement on <http://www.agfahealthcare.com/dicom> for more detailed information on the DICOM SR or encapsulated PDF IOD details).

2.1.3.1 ORU Segments Processed

The following segments are processed when IMPAX 6.6.x receives an ORU message:

```

MSH
PID
[ PV1 ]
{
  [ ORC ]
  OBR
  {
    [ OBX ]
  }
}

```

2.1.4 Supported MFN Events

IMPAX 6.6.x only supports procedure master file notifications from CHCS.

Table 6 Supported MFN Events

Func Area	Event Code	MFN Trigger Event	Inbound Supported
MFN	M01	Procedure master file change notification	Y

2.1.4.1 MFN Segments Processed

The following segments are processed when IMPAX 6.6.x receives a MFN message:

```

MSH
MFI
MFE
ZM1
{
  [ ZNN ]
}
{
  [ ZRF ]
}

```

2.1.5 Supported SIU Events

Table 7 Supported SIU Events

Func Area	Event Code	SIU Trigger Event	Inbound Supported
SIU	S12	Notification of new appointment booking	Y
SIU	S13	Notification of appointment reschedule	Y
SIU	S14	Notification of appointment modification	Y
SIU	S15	Notification of appointment cancellation	Y
SIU	S26	Notification that patient didn't show up for scheduled appointment	Y

2.1.5.1 SIU Segments Processed

The following segments are processed when IMPAX 6.6.x receives an SIU message:

MSH
SCH
PID
PV1
[AL1]
[ORC]
[OBR]

2.2 Supported HL7 Attributes

The following sections indicate the default mapping of HL7 attributes to internal IMPAX 6.6.x data attributes.

2.2.1 MSH Segment Mappings

Table 8 MSH Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Field Separator	Yes	Yes	Usually " "
2	Encoding Characters	Yes	Yes	Usually "^~\&"
3	Sending Application	No	No	
4	Sending Facility	No	No	
5	Receiving Application	No	No	
6	Receiving Facility	No	No	
7	Date/time of Message	No	Yes	Date portion only (YYYYMMDD)
8	Security	No	No	
9	Message Type	Yes	Yes	ADT only, uses MSH 9,2 or EVN 1,1
10	Message Control ID	Yes	Yes	Generated by sending application
11	Processing ID	Yes	Yes	
12	Version ID	Yes	Yes	"2.3", "2.3.1", "2.4", "2.4.1"
13	Sequence Number	No	No	
14	Continuation Pointer	No	No	
15	Accept Acknowledgement Type	No	No	
16	Application Acknowledgement Type	No	No	
17	Country Code	No	No	
18	Character Set	No	Yes	If missing, will use character_encoding from configuration
19	Principal Language of Message	No	No	

2.2.2 PID Segment Mappings

Table 9 PID Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Set ID – Patient ID	No	No	
2	Patient ID (External ID)	No	Yes	
3	Patient ID (Internal ID)	Yes	Yes	
4	Alternate Patient ID	No	Yes	

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
5	Patient Name	Yes	Yes	
6	Mother's Maiden Name	No	No	
7	Date of Birth	No	Yes	
8	Sex	No	Yes	M (Male), F (Female), O (Other), U (Unknown)
9	Patient Alias	No	Yes	
10	Race	No	Yes	Use PID 22 if absent
11	Patient Address	No	Yes	
12	Country Code	No	No	
13	Phone Number – Home	No	Yes	
14	Phone Number – Business	No	Yes	
15	Primary Language	No	No	
16	Marital Status	No	Yes	
17	Religion	No	Yes	
18	Patient Account Number	No	Yes	
19	SSN Number – Patient	No	No	
20	Driver's Lic Num – Patient	No	No	
21	Mother's Identifier	No	No	
22	Ethnic Group	No	Yes	Use if PID 10 is absent
23	Birth Place	No	No	
24	Multiple Birth Indicator	No	No	
25	Birth Order	No	No	
26	Citizenship	No	No	
27	Veterans Military Status	No	No	
28	Nationality	No	No	
29	Patient Death Date/Time	No	No	
30	Patient Death Indicator	No	No	

2.2.3 PV1 Segment Mappings

Table 10 PV1 Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Set ID - Patient Visit	No	No	
2	Patient Class	Yes	Yes	I (Inpatient), O (Outpatient), E (Emergency), P (Preadmit), R (Recurring), B (Obstetrics)
3	Assigned Patient Location	No	Yes	Use PV1 11 if absent
4	Admission Type	No	No	

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
5	Pre-admit Number	No	No	
6	Prior Patient Location	No	No	
7	Attending Doctor	No	Yes	
8	Referring Doctor	No	Yes	
9	Consulting Doctor	No	Yes	
10	Hospital Service	No	No	
11	Temporary Location	No	Yes	Used if PV1 3 is absent
12	Pre-admit Test Indicator	No	No	
13	Readmission Indicator	No	No	
14	Admit Source	No	No	
15	Ambulatory Status	No	Yes	B6 present
16	VIP Indicator	No	No	
17	Admitting Doctor	No	Yes	
18	Patient Type	No	No	
19	Visit Number	Yes	Yes	
20	Financial Class Eff. Date	No	No	
21	Charge Price Indicator	No	No	
22	Courtesy Code	No	No	
23	Credit Rating	No	No	
24	Contract Code	No	No	
25	Contract Effective Date	No	No	
26	Contract Amount	No	No	
27	Contract Period	No	No	
28	Interest Code	No	No	
29	Transfer to Bad Debt Code	No	No	
30	Transfer to Bad Debt Date	No	No	
31	Bad Debt Agency Code	No	No	
32	Bad Debt Transfer Amount	No	No	
33	Bad Debt Recovery Amt	No	No	
34	Delete Account Indicator	No	No	
35	Delete Account Date	No	No	
36	Discharge Disposition	No	No	
37	Discharged to Location	No	No	
38	Diet Type	No	No	
39	Servicing Facility	No	Yes	
40	Bed Status	No	No	
41	Account Status	No	No	
42	Pending Location	No	No	
43	Prior Temporary Location	No	No	
44	Admit Date/Time	No	Yes	
45	Discharge Date/Time	No	Yes	

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
46	Current Patient Balance	No	No	
47	Total Charges	No	No	
48	Total Adjustments	No	No	
49	Total Payments	No	No	
50	Alternate Visit ID	No	No	
51	Visit Indicator	No	No	
52	Other Healthcare Provider	No	No	

2.2.4 AL1 Segment Mappings

Table 11 AL1 Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Set ID - AL1	Yes		Set to 1,2,3...
2	Allergy Type	No	Yes	
3	Allergy Code/Description	Yes	Yes	
4	Allergy Severity	No	Yes	
5	Allergy Reaction	No	Yes	
6	Identification Date	No	Yes	

2.2.5 MRG Segment Mappings

This segment is only used in ADT Merge messages (A18, A30, A34, A40).

Table 12 MRG Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Prior Patient ID - Internal	Yes	Yes	
2	Prior Alternate Patient ID	No	No	
3	Prior Patient Acct Number	No	No	
4	Prior Patient ID - External	No	No	
5	Prior Visit Number	No	No	
6	Prior Alternate Visit ID	No	No	
7	Prior Patient Name	No	No	

2.2.6 ORC Segment Mappings

Table 13 ORC Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Order Control	Yes	Yes	Refer to 2.1.2.1
2	Placer Order #	Yes	Yes	ORC 2,1; if absent OBR 2,1. ORC 2,2 or OBR 2,2 or configuration setting: default_assigning_authority
3	Filler Order #	Yes	Yes	ORC 3,1 or OBR 3,1 if absent ORC 3,2 or OBR 3,2 or configuration setting: default_assigning_authority
4	Placer Group #	No	Yes	ORC 4,1 ORC 4,2 or configuration setting: default_assigning_authority
5	Order Status	Yes	Yes	Refer to 0
6	Response Flag	No	No	
7	Quantity/Timing	No	Yes	Use OBR 27 if absent
8	Parent	No	No	
9	Date/Time of Transaction	No	Yes	
10	Entered By	No	Yes	ORC 10,2-4 (name only)
11	Verified By	No	No	
12	Ordering Provider	No	Yes	
13	Enterer's Location	No	Yes	
14	Call Back Phone Number	No	Yes	
15	Order Effective Date/Time	No	Yes	
16	Order Control Reason	No	No	
17	Entering Organization	No	Yes	
18	Entering Device	No	No	
19	Action By	No	No	

2.2.7 OBR Segment Mappings

Table 14 OBR Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Set ID - Observation Request	No		Set to 1,2,3...
2	Placer Order #	Yes	Yes	OBR 2,1 if ORC 2,1 is absent; OBR 2,2 if ORC 2,2 is absent
3	Filler Order #	Yes	Yes	OBR 3,1 if ORC 3,1 is absent
4	Universal Service ID	Yes	Yes	Components 1,2,3 of OBR 4

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
5	Priority	No	Yes	Used if OBR 27,6 is absent
6	Requested Date/Time	No	Yes	Used if OBR 27,4 is absent.
7	Observation Date/Time	No	No	
8	Observation End Date/Time	No	No	
9	Collection Volume	No	No	
10	Collector Identifier	No	No	
11	Specimen Action Code	No	No	
12	Danger Code	No	Yes	
13	Relevant Clinical Inf.	No	Yes	
14	Specimen Rec'd Date/Time	No	No	
15	Specimen Source	No	No	
16	Ordering Provider family	No	Yes	Components 2,3,4 of OBR 16
17	Order Callback Phone No.	No	No	
18	Placer Field 1	No	Yes	See NOTE 1 IHE: OBR 18; if absent ORC 2,1; if absent OBR 2,1
19	Placer Field 2	No	Yes	Use if OBR 24 is absent (See NOTE 1)
20	Filler Field 1	No	Yes	See NOTE 1 IHE: OBR 20; if absent ORC 3,1; if absent OBR 3,1
21	Filler Field 2	No	No	
22	Result Rpt/Status Change - Date/Time	No	Yes	OBR 22,1
23	Charge To Practice	No	No	If ORC 5 is 'MV'
24	Diagnostic Serv Sect Id	No	Yes	Use OBR 19 if absent
25	Result Status	No	Yes	Use OBR 25,1 if OBX 11,1 is absent. TRANSCRIBED (R, P, C), APPROVED (F)
26	Parent Result	No	No	
27	Quantity/Timing	No	Yes	Used if ORC 7 is absent
28	Result Copies To	No	No	
29	Parent Number	No	No	
30	Transportation Mode	No	Yes	
31	Reason For Study	No	Yes	OBR 31,1
32	Principal Result Interpreter	No	Yes	Components 2,3,4 or OBR 32.
33	Assistant Result Interpreter	No	No	
34	Technician		Yes	Components 2,3,4 of OBR 34
35	Transcriptionist	No	Yes	OBR 35,1
36	Scheduled Date/Time	No	Yes	Used if OBR 27,4 is absent.
37	Number of Sample Containers	No	No	

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
38	Transport Logistics of Collected Sample	No	No	
39	Collector's Comment	No	No	
40	Transport Arrangement Responsibility	No	No	
41	Transport Arranged	No	No	
42	Escort Required	No	No	
43	Planned Patient Transport Comment	No	No	

Note 1:

IMPAX 6.6.x maps certain attributes differently when configured for IHE compatibility. The items marked with this note are IHE defaults that differ from non-IHE defaults.

2.2.8 OBX Segment Mappings**Table 15 OBX Attribute Support in IMPAX 6.6.x**

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Set ID – OBX	No		Set to 1,2,3...
2	Value Type	No	No	
3	Observation identifier	No	Yes	If OBX 3,2 is "IMP" use OBX 5,1 for impressions. If OBX 3,2 is "GDT" use OBX 5,1 for interpretation text. These attribute values gather across all of the OBX segments in a message.
4	Observation Sub-ID	No	No	
5	Observation Value	No	Yes	If OBX 5,2 indicates the mime type application/pdf, the report data stored in OBX 5,5 will be interpreted using the encoding specified by OBX 5,4. The solution only supports Base64 for OBX 5,4. E.g. OBX 1 ED LECT1^GDT ^application/pdf^^ Base64^JVBERi0xLjANCjEgMCAv....
6	Units	No	No	
7	References Range	No	No	
8	Abnormal Flags	No	No	
9	Probability	No	No	
10	Nature of Abnormal Test	No	No	
11	Observation Result Status	No	Yes	OBX 11,1 or OBR 25,1 if absent. TRANSCRIBED (R, P, C), APPROVED (F)

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
12	Date Last Obs Normal Values	No	No	
13	User Defined Access Checks	No	No	
14	Date/Time of the Observation	No	Yes	
15	Producer's ID	No	No	
16	Responsible Observer	No	Yes	
17	Observation Method	No	No	

2.2.9 MFI Segment Mappings

Table 16 MFI Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Master File Identifier	No	Yes	If MFI 1,1 is "6" use "PRA". If MFI 1,1 is "3" use "STF". Otherwise use MFI 1. Replace "\" with "^".
2	Master File Application Identifier	No	Yes	
3	File-Level Event Code	No	Yes	If MFI 3,1 is "REP" use "UPD", otherwise use MFI 3,1
4	Entered Date/Time	No	Yes	
5	Effective Date/Time	No	Yes	
6	Response Level Code	No	Yes	

2.2.10 MFE Segment Mappings

Table 17 MFE Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Record-Level Event Code	No	Yes	If MFE 1,1 is "MDL" use "MDC". If MFE 1,1 is "MAC" use "MAD". Otherwise use MFE 1,1.
2	MFN Control ID	No	Yes	
3	Effective Date/Time	No	Yes	
4	Primary Key Value – MFE	No	Yes	MFE 4,1 + "^" + MFE 4,2
5	Primary Key Value Type	No	No	

2.2.11 SCH Segment Mappings

Table 18 SCH Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Placer Appointment ID	Yes	Yes	Use SCH 1 if both ORC 2,1 and OBR 2,1 are absent
2	Filler Appointment ID	Yes	Yes	Use SCH 2,1 if both ORC 3,1 and OBR 3,1 are absent
3	Occurrence Number	Yes	Yes	Use SCH 3 if PID 3,1 is absent
4	Placer Group Number	No	Yes	
5	Schedule ID	No	No	
6	Event Reason	No	No	
7	Appointment Reason	No	Yes	
8	Appointment Type	No	Yes	
9	Appointment Duration	No	No	
10	Appointment Duration Units	No	No	
11	Appointment Timing Quality	No	Yes	
12	Placer Contact Person	No	No	
13	Placer Contact Phone Number	No	No	
14	Placer Contact Address	No	No	
15	Placer Contact Location	No	No	
16	Filler Contact Person	No	No	
17	Filler Contact Phone Number	No	No	
18	Filler Contact Address	No	No	
19	Filler Contact Location	No	No	
20	Entered by Person	No	No	
21	Entered by Phone Number	No	No	
22	Entered by Location	No	No	
23	Parent Placer Appointment ID	No	No	
24	Parent Filler Appointment ID	No	No	
25	Filler Status Code	No	No	

2.2.12 ZDS Segment Mappings

Table 19 ZDS Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
1,1	Reference Pointer	No	Yes	Maps from DICOM Study Instance UID (0020,000D)
1,2	Application ID	No	No	
1,3	Type of Data	No	No	
1,4	Subtype	No	No	

2.2.13 ZM1 Segment Mappings

Table 20 ZM1 Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Radiology Procedure Name	No	Yes	Replace “\” with “^”.
2	Radiology Procedure Code	No	Yes	
3	Imaging Type	No	Yes	Replace “\” with “^”.
4	Procedure Portability Indicator	No	Yes	
5	Current Procedure Terminology Code	No	Yes	Replace “\” with “^”.
6	Procedure Type	No	Yes	Refer to Table 21 ZM1 Modality Type lookup value defaults
7	Procedure Bilateral	No	Yes	
8	Number of Film Exposures	No	Yes	
9	Appointment Required	No	Yes	

Table 21 ZM1 Modality Type lookup value defaults

Value of ZM1 3,1	Resulting modality
1	CR
2	NM
3	US
4	MR
5	CT
6	RT
7	RF
8	RF
Empty	OT

2.2.14 ZNN Segment Mappings

Table 22 ZNN Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Radiology Room	No	Yes	Replace “\” with “^”. Separate values from each segment with a “~”.

2.2.15 ZRF Segment Mappings

Table 23 ZRF Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Film Size	No	Yes	Replace “\” with “^”. Separate values from each segment with a “~”.
2	Film Used	No	Yes	Separate values from each segment with a “~”.

2.3 Acknowledgements

The HL7 mapping returns a **NAK** if the incoming message cannot be processed. If the reason is the message type is not mapped, the Acknowledgment Code is set to “**AR**”. Any other parsing error returns an Acknowledgment Code of “**AE**”.

3 OUTBOUND MESSAGES

3.1 General Processing Rules

The default outbound mapping is generally the inverse of the HL7 inbound mapping.

3.2 Outbound Message Types Supported

3.2.1 HL7 Message Type, Event Mappings

The following table lists all of the default outbound HL7 messages supported. There is no single set of mappings that will service all IMPAX 6.6.x installations, so this table will likely be edited when the device is installed. The default mappings are the inverse of the inbound HL7 to IMPAX 6.6.x.

Table 24 Outbound HL7 Message Types

HL7 message type	HL7 Trigger
ADT	A01
ADT	A02
ADT	A03
ADT	A05
ADT	A08
ADT	A11
ADT	A18
ADT	A23
ADT	A33
ADT	A38
ORM	O01
ORU	R01
MFN	M01

3.2.2 Segments Processed

The following table lists the segments that are processed for each HL7 message type within the default HL7 Out TCL scripts.

Table 25 HL7 Out Segments Processed

HL7 Message Type	Segments Produced
ADT	MSH PID PV1 [AL1]
ADT Merge messages add:	MRG
ORM	MSH PID PV1 [AL1] ORC OBR ZDS1
ORU	MSH PID PV1 [AL1] { ORC OBR { [OBX] } }
MFN	MSH MFI MFE ZM1 { [ZNN] } { [ZRF] }

By default, all HL7 data elements correspond to HL7 v2.3.1. Connectivity Manager supports HL7 2.4 messages as long as they are conform to what is documented in the conformance statement. However, CM does not use (or need) any new functionality that was introduced in HL7 v2.4.

3.3 ADT (Admission, Discharge, and Transfer)

3.3.1 MSH Segment

Table 26 Outbound MSH Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
1	Field Separator	Yes	Yes	(1) Always " "
2	Encoding Characters	Yes	Yes	(1) Always "^~\&"
3	Sending Application	No	Yes	(2) device configuration
4	Sending Facility	No	Yes	(2) device configuration
5	Receiving Application	No	Yes	(2) device configuration
6	Receiving Facility	No	Yes	(2) device configuration
7	Date/time of Message	No	Yes	Date/Time message sent
8	Security	No		
9	Message Type	Yes	Yes	(3) See comment below
10	Message Control ID	Yes	Yes	(4) Generated number
11	Processing ID	Yes	Yes	(5) 'P'
12	Version ID	Yes	Yes	(5) '2.3.1'
13	Sequence Number	No	No	
14	Continuation Pointer	No	No	
15	Accept Acknowledgment Type	No	No	
16	Application Acknowledgment Type	No	No	
17	Country Code	No	No	
18	Character Set	No	Yes	Uses lookup table
19	Principal Language of Message	No	No	

- (1) The field separator and encoding characters cannot be changed through script or grammar changes.
- (2) These attributes come from the *configuration* object and can be set when the device is configured using the service tool.
- (3) This field's value comes from a lookup that maps an internal event type to the HL7 type and event code. If this lookup fails, no more mapping occurs and no HL7 message is generated. If the lookup succeeds, the result is potentially refined by another lookup using a second internal attribute.
- (4) The message control ID is a sequential number. When the device starts, the initial value of the control ID is set to the number of seconds since January 1, 1970.
- (5) These two values are constants found in the mapping table used to generate the MSH segment and can be changed by editing the grammar.

3.3.2 PID Segment

Table 27 Outbound PID Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
1	Set ID - Patient ID	No	No	
2	Patient ID (External ID)	No	No	
3	Patient ID (Internal ID)	Yes	Yes	
4	Alternate Patient ID	No	Yes	
5	Patient Name	Yes	Yes	
6	Mother's Maiden Name	No	No	
7	Date of Birth	No	Yes	Date, time; right-filled with 0's as needed.
8	Sex	No	Yes	M (Male), F (Female), O (Other), U (Unknown)
9	Patient Alias	No	Yes	
10	Race	No	Yes	
11	Patient Address	No	Yes	
12	Country Code	No	No	
13	Phone Number -	No	Yes	
14	Phone Number - Business	No	Yes	
15	Primary Language	No	No	
16	Marital Status	No	Yes	A (Separated), D (Divorced), M (Married), S (Single), W (Widowed)
17	Religion	No	Yes	
18	Patient Account Number	No	Yes	
19	SSN Number - Patient	No	No	
20	Driver's Lic Num - Patient	No	No	
21	Mother's Identifier	No	No	
22	Ethnic Group	No	No	
23	Birth Place	No	No	
24	Multiple Birth Indicator	No	No	
25	Birth Order	No	No	
26	Citizenship	No	No	
27	Veterans Military Status	No	No	
28	Nationality	No	No	
29	Patient Death Date/Time	No	No	
30	Patient Death Indicator	No	No	

3.3.3 PV1 Segment

Table 28 Outbound PV1 Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
1	Set ID - Patient Visit	No	No	
2	Patient Class	Yes	Yes	Required for ADTs, not ORMs. I (Inpatient), O (Outpatient), E (Emergency), P (Preadmit), R (Recurring), B (Obstetrics)
3	Assigned Patient Location	No	Yes	
4	Admission Type	No	No	
5	Pre-admit Number	No	No	
6	Prior Patient Location	No	No	
7	Attending Doctor	No	Yes	
8	Referring Doctor	No	Yes	
9	Consulting Doctor	No	Yes	
10	Hospital Service	No	No	
11	Temporary Location	No	No	
12	Pre-admit Test Indicator	No	No	
13	Readmission Indicator	No	No	
14	Admit Source	No	No	
15	Ambulatory Status	No	Yes	If and only if pregnancy_status is true, set to B6.
16	VIP Indicator	No	No	
17	Admitting Doctor	No	Yes	
18	Patient Type	No	No	
19	Visit Number	No	Yes	
20	Financial Class Eff. Date	No	No	
21	Charge Price Indicator	No	No	
22	Courtesy Code	No	No	
23	Credit Rating	No	No	
24	Contract Code	No	No	
25	Contract Effective Date	No	No	
26	Contract Amount	No	No	
27	Contract Period	No	No	
28	Interest Code	No	No	
29	Transfer to Bad Debt Code	No	No	
30	Transfer to Bad Debt Date	No	No	

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
31	Bad Debt Agency Code	No	No	
32	Bad Debt Transfer Amount	No	No	
33	Bad Debt Recovery Amt	No	No	
34	Delete Account Indicator	No	No	
35	Delete Account Date	No	No	
36	Discharge Disposition	No	No	
37	Discharged to Location	No	No	
38	Diet Type	No	No	
39	Servicing Facility	No	Yes	
40	Bed Status	No	No	
41	Account Status	No	No	
42	Pending Location	No	No	
43	Prior Temporary Location	No	No	
44	Admit Date/Time	No	Yes	Date, time right filled with 0's as needed.
45	Discharge Date/Time	No	Yes	Date, time right filled with 0's as needed.
46	Current Patient Balance	No	No	
47	Total Charges	No	No	
48	Total Adjustments	No	No	
49	Total Payments	No	No	
50	Alternate Visit ID	No	No	
51	Visit Indicator	No	No	
52	Other Healthcare Provider	No	No	

3.3.4 AL1 Segment

Table 29 AL1 Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
1	Set ID - AL1	Yes		Generated 1,2,3...
2	Allergy Type	No	Yes	
3	Allergy Code/Description	Yes	Yes	
4	Allergy Severity	No	Yes	
5	Allergy Reaction	No	Yes	
6	Identification Date	No	Yes	

3.3.5 MRG Segment

Table 30 MRG Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
1	Prior Patient ID - Internal	Yes	Yes	
2	Prior Alternate Patient ID	No	No	
3	Prior Patient Acct Number	No	No	
4	Prior Patient ID - External	No	No	
5	Prior Visit Number	No	No	
6	Prior Alternate Visit ID	No	No	
7	Prior Patient Name	No	No	

This segment is only used in Merge messages.

3.4 Order Entry

3.4.1 Order Mappings

For order messages, a lookup of the order control and order status values is attempted based on internal order status attributes. The first lookup that produces a non-empty string is used for the ORC(1,1) or ORC(5,1) value. If none of these lookups results in a non-empty string, no HL7 message is generated.

3.4.2 ORC Segment

Table 31 ORC Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
1	Order Control	Yes	Yes	Check first, see Section 3.4.1
2	Placer Order #	No	Yes	
3	Filler Order #	No	Yes	
4	Placer Group #	No	Yes	
5	Order Status	No	Yes	
6	Response Flag	No	No	
7	Quantity/Timing	No	Yes	
8	Parent	No	Yes	
9	Date/Time of Transaction	No	Yes	Date, time right filled with 0's as needed.
10	Entered By	No	Yes	
11	Verified By	No	No	
12	Ordering Provider	No	Yes	
13	Enterer's Location	No	Yes	
14	Call Back Phone Number	No	Yes	
15	Order Effective Date/Time	No	Yes	Date, time right filled with 0's as needed.
16	Order Control Reason	No	No	
17	Entering Organization	No	Yes	
18	Entering Device	No	No	
19	Action By	No	No	

3.4.3 OBR Segment

Table 32 OBR Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
1	Set ID - Observation Request	No	No	'1'
2	Placer Order #	No	Yes	
3	Filler Order #	No	Yes	
4	Universal Service ID	Yes	No	There are several sources for this field. This is the default in the outbound mapping and should be changed as needed.
5	Priority	No	No	
6	Requested Date/Time	No	No	
7	Observation Date/Time	No	No	
8	Observation End Date/Time	No	No	
9	Collection Volume	No	No	
10	Collector Identifier	No	No	
11	Specimen Action Code	No	No	
12	Danger Code	No	Yes	
13	Relevant Clinical Inf.	No	Yes	
14	Specimen Rec'd Date/Time	No	No	
15	Specimen Source	No	No	
16	Ordering Provider family	No	Yes	
17	Order Callback Phone No.	No	No	
18	Placer Field 1	No	No	
19	Placer Field 2	No	No	
20	Filler Field 1	No	No	
21	Filler Field 2	No	No	
22	Result Rpt/Status Change - Date/Time	No	No	
23	Charge To Practice	No	No	
24	Diagnostic Serv Sect Id	No	Yes	
25	Result Status	No	No	

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
26	Parent Result	No	No	
27	Quantity/Timing	No	Yes	
28	Result Copies To	No	No	
29	Parent Number	No	No	
30	Transportation Mode	No	Yes	
31	Reason For Study	No	Yes	
32	Principal Result Interpreter	No	No	
33	Assistant Result Interpreter	No	No	
34	Technician	No	Yes	
35	Transcriptionist	No	No	
36	Scheduled Date/Time	No	Yes	Date, time right filled with 0's as needed.
37	Number of Sample Containers	No	No	
38	Transport Logistics of Collected Sample	No	No	
39	Collector's Comment	No	No	
40	Transport Arrangement Responsibility	No	No	
41	Transport Arranged	No	No	
42	Escort Required	No	No	
43	Planned Patient Transport Comment	No	No	

3.5 Master File Notifications

3.5.1 MFI Segment

Table 33 MFI Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
1	Master File Identifier	No	Yes	
2	Master File Application Identifier	No	Yes	
3	File-Level Event Code	No	Yes	
4	Entered Date/Time	No	Yes	
5	Effective Date/Time	No	Yes	
6	Response Level Code	No	Yes	

3.5.2 MFE Segment

Table 34 MFE Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
1	Record-Level Event Code	No	Yes	
2	MFN Control ID	No	Yes	
3	Effective Date/Time	No	Yes	
4	Primary Key Value – MFE	No	Yes	
5	Primary Key Value Type	No		

3.5.3 ZDS Segment

Table 35 ZDS Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1,1	Reference pointer	No	Yes	ZDS 1,1 is the Study Instance UID

3.5.4 ZM1 Segment

Table 36 ZM1 Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
1	Radiology Procedure Name	No		
2	Radiology Procedure Code	No	Yes	
3	Imaging Type	No	Yes	
4	Procedure Portability Indicator	No	Yes	
5	Current Procedure Terminology Code	No	Yes	
6	Procedure Type	No	Yes	
7	Procedure Bilateral	No	Yes	
8	Number of Film Exposures	No	Yes	
9	Appointment Required	No	Yes	

3.5.5 ZNN Segment

Table 37 ZNN Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
1	Radiology Room	No	Yes	

3.5.6 ZRF Segment

Table 38 ZRF Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
1	Film Size	No	Yes	
2	Film Used	No	Yes	

4 QUERIES

4.1 Query

IMPAX 6.6.x translates an internal report/ result query message into an HL7 QRY^Q01 message. This is an “original mode” query.

4.1.1 Query–MSH Segment

IMPAX 6.6.x creates the MSH segment of this message in the same manner as for other outbound messages. See 3.3.1, MSH Segment.

4.1.2 Query–QRD Segment

The following table describes how IMPAX 6.6.x creates the QRD segment of the query message.

Table 39 QRD Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping from IMPAX Attribute(s) (Yes/No)	Comments
1	Query Date/Time	Yes	Yes	Current date and time
2	Query Format Code	Yes	Yes	'R' (record-oriented)
3	Query Priority	Yes	Yes	'I' (immediate)
4	Query ID	Yes	Yes	Generated
5	Deferred Response Type	No	No	
6	Deferred Response Date/Time	No	No	
7	Quantity Limited Request	Yes	Yes	99^RD (99 records)
8	Who Subject Filter	Yes	Yes	patient_id
9	What Subject Filter	Yes	Yes	RES (result)
10	What Department Data Code	Yes	Yes	accession_number
11	What Data Code Value Qual.	No	No	
12	Query Results Level	No	No	

4.2 Response to Query

IMPAX 6.6.x maps the query results into internal attributes as described in the following tables. Fields that are not used have been omitted.

4.2.1 Response to Query—MSH Segment

Table 40 Response to Query--MSH Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
18	Character Set	No	Yes	MSH 18,1; if absent use character_encoding from configuration

4.2.2 Response to Query—QRD Segment

Table 41 Response to Query--QRD Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
10	What Department Data Code	Yes	Yes	if ORC 3,1 absent and OBR 3,1 absent

4.2.3 Response to Query—PID Segment

Table 42 Response to Query--PID Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
3	Patient ID (Internal ID)	Yes	Yes	
4	Alternate Patient ID	No	Yes	
5	Patient Name	Yes	Yes	
7	Date of Birth	No	Yes	Date, right-filled with 0's as needed.
8	Sex	No	Yes	
9	Patient Alias	No	Yes	

4.2.4 Response to Query—PV1 Segment

Table 43 Response to Query--PV1 Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
8	Referring Doctor	No	Yes	

4.2.5 Response to Query—OBR Segment

Table 44 Response to Query--OBR Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
3	Filler Order #	Yes	Yes	OBR 3,1 if ORC 3,1 is absent OBR 3,2 if ORC 3,2 is absent
4	Universal Service ID	Yes	Yes	OBR 4,2
13	Relevant Clinical Inf.	No	Yes	If OBR 1,1 is absent then if OBR 13,1 is not empty use OBR 13,1 + '-' + all NTE 3,1 where NTE 1,1 = '2'
22	Result Rpt/Status Change - Date/Time	No	Yes	
25	Result Status	No	Yes	Use OBR 25,1 if OBX 11,1 is absent. TRANSCRIBED (R, P, C), APPROVED (F)
31	Reason For Study	No	Yes	OBR 31,1; if absent see OBR 13
32	Principal Result Interpreter	No	Yes	
35	Transcriptionist	No	Yes	

4.2.6 Response to Query—NTE Segment

Table 45 Response to Query--NTE Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
1	Set ID - NTE	No	Yes	If NTE 1,1 = '2' then NTE 3,1 may be part of reason_for_study. See OBR 13.
3	Comment	No	Yes	

4.2.7 Response to Query—ORC Segment

Table 46 Response to Query--ORC Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
3	Filler Order #	Yes	Yes	OBR 3,1 if ORC 3,1 is absent OBR 3,2 if ORC 3,2 is absent

4.2.8 Response to Query—OBX Segment

Table 47 Response to Query--OBX Attribute Support in IMPAX 6.6.x

Seq	HL7 Field Name	Value Required	Default Mapping to IMPAX Attribute(s) (Yes/No)	Comments
3	Observation Identifier	No	Yes	if OBX 3,2='IMP', use OBX 5,1 for interpretation_text; if absent use ZIR.
5	Observation Value	No	Yes	
11	Observation Result Status	No	Yes	OBX 11,1; if absent OBR 25,1
14	Date/Time of the Observation	No	Yes	OBX 14,1, right-filled with zeroes as needed.
16	Responsible Observer	No	Yes	OBX 16,1