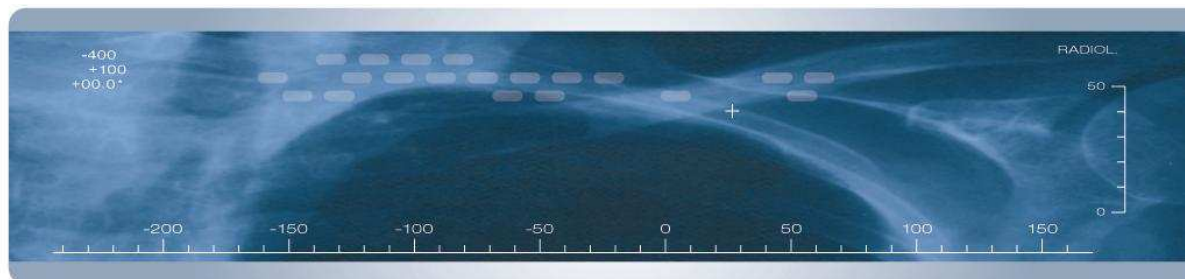


HL7 Interface Specification for Connecting an External System to medavis RIS

Version 1.7



Medical Information Systems

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2 General Information

The Health Level Seven (HL7) protocol in the German version 2.2, 2.3, 2.4 and 2.5 is used as the basis for the RIS/HIS communication. The processes described in this document refer to the medavis HL7 version 2.2.112.2. software release.

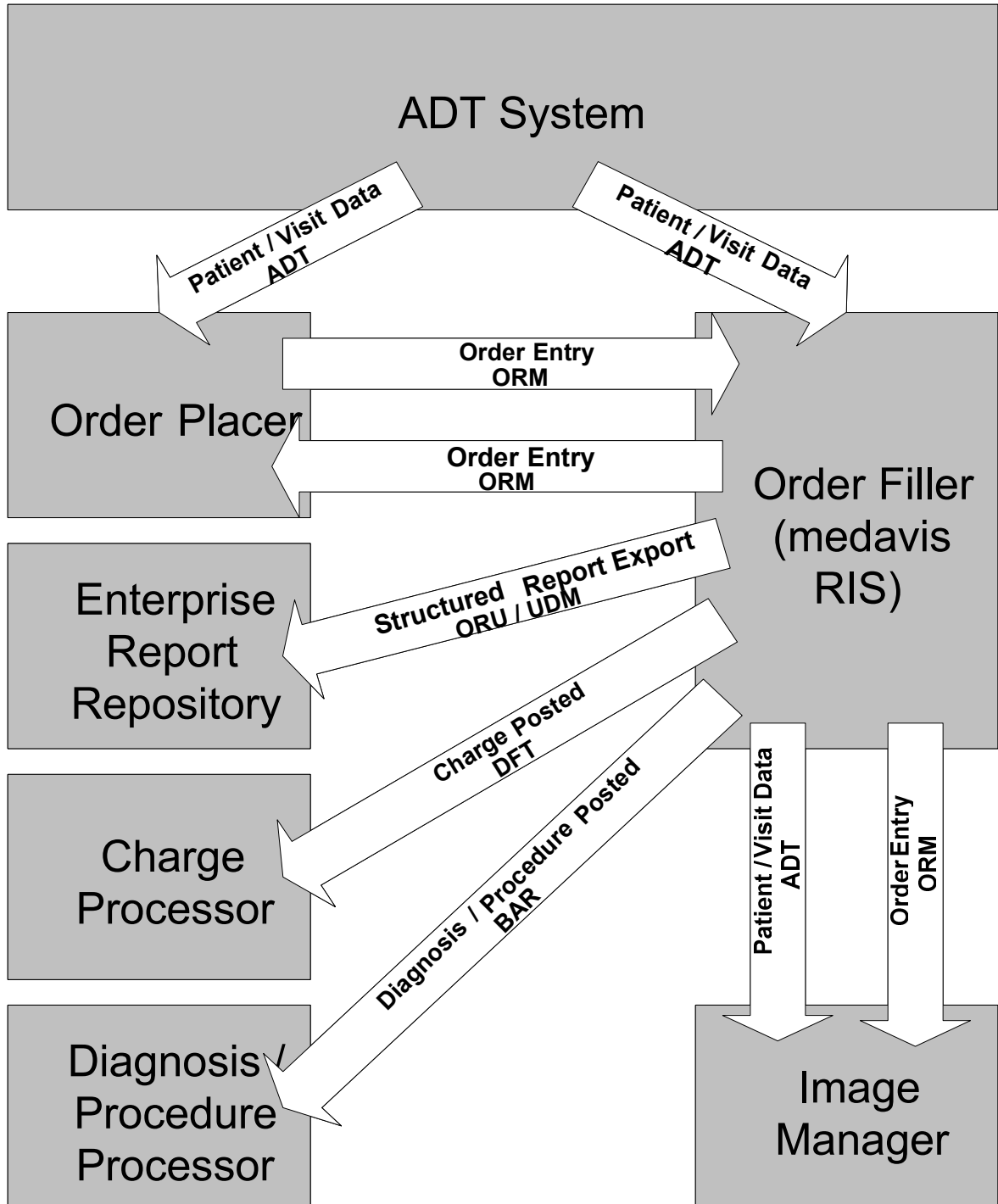
2.1 Actor Definitions

Actors are information systems or components of information systems that produce, manage, or act on information associated with operational activities in the enterprise. The following actors are referred to throughout the rest of this document.

- **ADT System**
A system responsible for adding and/or updating patient demographic and encounter information. In particular, it registers a new patient with the Order Placer and Department System.
- **Charge Processor**
Receives the posted charges and serves as a component of the financial system.
- **Order Filler/Department System Scheduler**
A department-based information system (medavis RIS) that provides functions related to the management of orders received from external systems or through the department system's user interface. Upon a defined workflow action, makes procedures available of charge posting. The action/event that actually causes charges to post is defined by the actor.
- **Enterprise Report Repository**
A system that receives Structured Report Export Transaction from the Report Manager and stores them.
- **Image Manager**
A system that provides functions related to safe storage and management of evidence objects. It supplies availability information for those objects to the Department System Scheduler
- **Order Placer**
A hospital or enterprise-wide system that generates orders for various departments and distributes those orders to the correct department.

2.2 Typical Framework

This diagram shows a typical interaction between actors:



3 HL7 Messages

medavis RIS supports the HL7 protocol's most important messages:

Messages from external systems to medavis RIS:

A01 – Admit a patient (outpatient visit)
 A02 – Transfer a patient
 A03 – Discharge a patient
 A04 – Register a patient (inpatient visit)
 A05 – Pre-admit a patient
 A06 – Change an outpatient to an inpatient
 A07 – Change an inpatient to an outpatient
 A08 – Update patient information
 A11 – Cancel admit/visit notification
 A12 – Cancel transfer
 A13 – Cancel discharge
 A23 – Delete a patient record
 A31 – Merge patient information – patient ID only
 A34 – Merge patient information – patient ID only
 A38 – Cancel pre-admit
 A42 – Case merge
 O01 – Request/cancel examination
 Q22 – Patient Demographics Query
 ZV1 – Patient Demographics and Visit Query

R01 – Report import

Messages from medavis RIS to external systems

A01 - Admit a patient
 A08 - Update patient information
 A23 - Delete a patient record
 A34 - Merge patient information – patient ID only
 P01 - Diagnoses/procedures (“Snapshot” mode)
 P03 - Post detailed financial transaction
 P12 - Diagnosis/procedures (“Action code/unique identifier” mode)
 Q05 - Report export
 R01 - Report export
 O01 - Acknowledge an examination request/transfer an examination status
 O01 - Create, modify, update and cancel examinations

Further HL7 messages are in preparation.

The HL7 messages are explained in the following chapters in a special syntax. Each segment is listed in the order it could appear in a message.

Curly brackets, { ... }, define a segment block which must occur at least once. Of course, a group can also consist of a segment. Square brackets [...] define an optional segment block which can occur. An optional, repetitive segment block is therefore identified by curly and square brackets, { [...] }. The declarations [{...}] and {[...]} are identical.

The segments marked in the tables in bold type are evaluated by the interface.

4 Data Transport Between medavis RIS and an External System

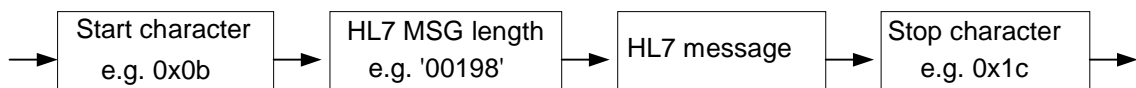
The link between medavis RIS and an external system can be implemented using a TCP/IP socket connection or a file transfer method. For the file transfer method, you can choose between the NFS, Samba and FTP protocols. To minimise the protocol overheads, a link using TCP/IP sockets is preferable.

4.1 TCP/IP Socket – Low Level Protocol

The set-up of a socket stream is modelled on the proposal made by the 'HL7 Implementation Support Guide App C.4'. A HL7 message is provided with a start and a stop character. The start and stop characters can be freely defined.



In addition, an extended LLP (Low Level Protocol) can be selected which is extended by the parameter 'message length'. This parameter has a freely definable length and is transferred right justified in ASCII format. Blank positions are filled with zeros. If possible this protocol should not be used, as it is not a HL7 standard.



4.2 File Transfer Method

HL7 messages are transferred in keeping with the semaphore concept. Conflicts may occur when transferring data between the systems. One possible conflict is that, when writing an HL7 file, the receiving system reads this file quicker than it is being written. The semaphore concept prevents simultaneous reading and writing of the same HL7 file.

4.2.1 Multi File Mode

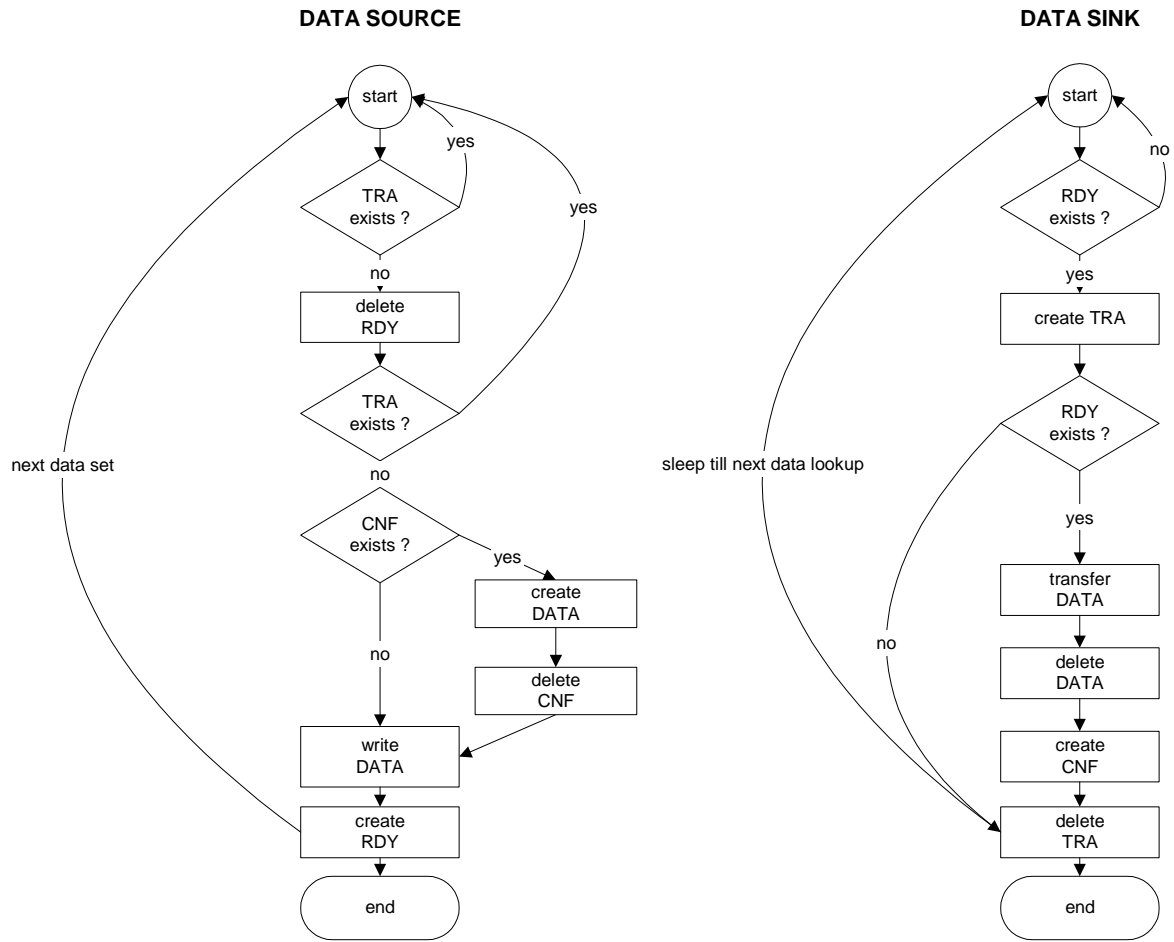
A semaphore file is created for every HL7 file which signals that the HL7 file may be read. The semaphore file can only be created once the HL7 file has been saved. The HL7 file and the semaphore file are deleted after processing by the receiving system.

Each HL7 file may only contain one HL7 message. The file name of the HL7 and the semaphore file must be made up of alphanumeric characters which are chronological to the HL7 message. The file suffix of the HL7 file is ".HL7" and the suffix for the semaphore file is ".SEM".

The HL7 message is saved in the file without a frame.

4.2.2 Single File Mode

All HL7 messages are written to a file with start and stop frames. The transfer procedure is similar to the Multi File Mode and is described in the next figure.



DATA = **D**ATA PACKAGE CONTAINING MESSAGES
 RDY = DATA PACKAGE **R**EADY FOR TRANSFER
 CNF = **C**ONFIRMATION LAST DATAPACKAGE RECEIVED
 TRA = **T**RANSFER OF DATA IN PROGRESS

4.3 Message Receipt and Acknowledgement

If a TCP/IP basis is used for linking, the following features must be noted for the acknowledgement. medavis RIS processes received HL7 messages immediately and instantly sends a positive acknowledgement, or a negative acknowledgement if they contain syntax errors. Each message sent through medavis RIS must be answered by an acknowledgement message. Delayed responses are not permitted.

5 Messages to medavis RIS

The following describes all HL7 messages used which can be processed by the medavis interface.

5.1 Registering an (Outpatient) Visit – ADT^A01

An ADT^A01 message causes medavis RIS to record new patient information. This message is usually sent by an ADT system. An ADT^A01 message is composed of the following segments:

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

The following segments are currently evaluated: MSH, PID, PV1, OBX, DG1, IN1 and IN2.

Example:

```
MSH|^~\|ADTSys|MEDAVIS|20010402053241|ADT^A01|7756|P|2.5||AL|NE
EVN|A01|20010402053241
PID|||43222^^^ASSAUT|102092893|Doe^John||19500214|M||Bakerstreet 50^^New
York^^12345^US||555-3245|german|VH|EV|||||D
PV1||I|INN1^^^IM|||||||11209393^^^ASSAUT|K|||||||806|||20010
402073000|||1120939
DG1|1||K92.2^Gastrointestinal haemorrhage, unspecified^I10
||20010402073500|AD|||||1.1|0004711
IN1|1|43798|6201379^^^NII|Insurance Name|||1|Ins.
Group|||20050431|M|||||20010420|||6201379^^0405^1000^1^|||||
43798|
```

5.2 Transferring a Patient – ADT^A02

medavis RIS is informed of the transfer of a patient via an ADT^A02 message. This message is usually sent by ADT system. medavis RIS identifies the patient information using the external patient ID (PID-3). An ADT^A02 message is therefore composed of the following segments:

ADT	ADT Message
MSH	Message Header
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
[{ DB1 }]	Disability Information
[{ OBX }]	Observation / Result

The following segments are currently evaluated: MSH, PID and PV1.

5.3 Discharging a Patient – ADT^A03

medavis RIS is informed of the discharge of a patient via an ADT^A03 message. This message is usually sent by an ADT system. The patient data is removed from the RIS database if there is no case or examination data for this patient and there are no requests. RIS identifies the patient data using the external patient ID (PID-3). An ADT^A03 message is therefore composed of the following segments:

ADT	ADT Message
MSH	Message Header
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
[{ DB1 }]	Disability Information
[{ DG1 }]	Diagnosis Information
[DRG]	Diagnosis Related Group
[{ PR1	Procedures
[{ ROL }]	Role
]]	
[{ OBX }]	Observation / Result

The following segments are currently evaluated: MSH, PID and PV1.

5.4 Outpatient Visit – ADT^A04

An ADT^A04 message causes medavis RIS to register a new patient visit. This message is usually sent by an ADT system. An ADT^A04 message is treated the same as an ADT^A01 message. The PV1-2 field is evaluated to differentiate between the type of admission/visit.

An ADT^A04 message is therefore composed of the following segments:

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

The following segments are currently evaluated: MSH, PID, PV1, OBX, DG1, IN1 and IN2.

5.5 Pre-admitting a Patient – ADT^A05

An ADT^A05 message causes medavis RIS to register a new patient visit's pre-admit data. This message is usually sent by an ADT system. An ADT^A05 message is treated like an ADT^A01 message. The PV1-2 field is evaluated to differentiate between the type of admission/visit.

An ADT^A05 message is therefore composed of the following segments:

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

The following segments are currently evaluated: MSH, PID, PV1, DG1 and IN1.

5.6 Changing from Outpatient to Inpatient – ADT^A06

An ADT^A06 message causes medavis RIS to change the type of patient visit from outpatient to inpatient. This message is usually sent by an ADT system. The PV1-2 field (contract code) is evaluated for the new type of visit.

ADT	ADT Message
MSH	Message Header
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
[MRG]	Merge Information
[{ NK1 }]	Next of Kin / Associated Parties
PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
[{ DB1 }]	Disability Information
[DRG]	Diagnosis Related Group
[{ OBX }]	Observation / Result
[{ AL1 }]	Allergy Information
[{ DG1 }]	Diagnosis Information
[DRG]	Diagnosis Related Group
[{ PR1	Procedures
[{ ROL }]	Role
]	
]	
[{ GT1 }]	Guarantor
[{ IN1	Insurance
[IN2]	Insurance Additional Information
[IN3]	Insurance Additional Information - Cert.
]	
]	
[ACC]	Accident Information
[UB1]	Universal Bill Information
[UB2]	Universal Bill 92 Information

The following segments are currently evaluated: MSH, PID, PV1

5.7 Changing from Inpatient to Outpatient – ADT^A07

An ADT^A07 message causes medavis RIS to modify the type of patient visit from inpatient to outpatient. This message is usually sent by an ADT system. The contact code from field PV1-2 is evaluated for the new type of visit. An ADT^A07 message is processed by the interface like an ADT^A06 message.

ADT	ADT Message
MSH	Message Header
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
[MRG]	Merge Information
[{ NK1 }]	Next of Kin / Associated Parties
PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
[{ DB1 }]	Disability Information
[DRG]	Diagnosis Related Group
[{ OBX }]	Observation / Result
[{ AL1 }]	Allergy Information
[{ DG1 }]	Diagnosis Information
[DRG]	Diagnosis Related Group
[{ PR1	Procedures
[{ ROL }]	Role
]	
]	
[{ GT1 }]	Guarantor
[{ IN1	Insurance
[IN2]	Insurance Additional Information
[IN3]	Insurance Additional Information - Cert.
]	
]	
[ACC]	Accident Information
[UB1]	Universal Bill Information
[UB2]	Universal Bill 92 Information

The following segments are currently evaluated: MSH, PID, PV1

5.8 Updating Patient Information – ADT^A08

medavis RIS is informed of the modification of patient data in the external system by an ADT^A08 message. This message is usually sent by an ADT system. medavis RIS identifies the patient data using the external patient ID (PID-3). An ADT^A08 message is therefore composed of the following segments:

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

The following segments are currently evaluated: MSH, PID, PV1, OBX, DG1 IN1, and IN2.

5.9 Cancelling a Patient Visit – ADT^A11

An ADT^A11 message causes medavis RIS to cancel a patient visit. This message is usually sent by an ADT system.

An ADT^A11 message is therefore composed of the following segments:

ADT	ADT Message
MSH	Message Header
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
[{ DB1 }]	Disability Information
[{ OBX }]	Observation / Result
[{ DG1 }]	Diagnosis Information

The following segments are currently evaluated: MSH, PID and PV1.

5.10 Cancelling a Patient Transfer – ADT^A12

A patient transfer (ADT^A02) can be cancelled by an ADT^A12 message. This message is usually sent by an ADT system. medavis RIS does not track the patient stay, but only saves the patient's current and previous locations. Therefore, it is only possible to cancel the last transfer.

An ADT^A12 message is therefore composed of the following segments:

ADT	ADT Message
MSH	Message Header
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
[{ DB1 }]	Disability Information
[{ OBX }]	Observation / Result
[DG1]	Diagnosis Information

The following segments are currently evaluated: MSH, PID, PV1

5.11 Cancelling a Patient Discharge – ADT^A13

A patient discharge (ADT^A03) can be cancelled by an ADT^A13 message. This message is usually sent by an ADT system. medavis RIS resets the discharge to an undefined time.

An ADT^A13 message is therefore composed of the following segments:

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

The following segments are currently evaluated: MSH, PID and PV1.

5.12 Deleting Patient Records – ADT^A23

Patient records can be deleted from medavis RIS with an ADT^A23 message. This message is usually sent by an ADT system. medavis RIS only deletes patient information if it contains no case or examination data. Open examination requests are also deleted. The patient information is identified by the external patient ID (PID-3). An ADT^A23 message is therefore composed of the following segments:

ADT	ADT Message
MSH	Message Header
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
[{ DB1 }]	Disability Information
[{ OBX }]	Observation / Result

The following segments are currently evaluated: MSH, PID and PV1.

5.13 Update Patient Information – ADT^A31

medavis RIS is informed of the modification of patient data in the external system by an ADT^A31 message. Usually, this message is used to update patient information on an MPI. It is similar to an A08 message. An ADT^A31 message is treated the same as an ADT^A08 message.

ADT	ADT Message
MSH	Message Header
[{ SFT }]	Software Segment (HL7 version 2.5 or higher)
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
[{ ROL }]	Role
[{ NK1 }]	Next of Kin / Associated Parties
PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
[{ ROL }]	Role
[{ DB1 }]	Disability Information
[{ OBX }]	Observation / Result
[{ AL1 }]	Allergy Information
[{ DG1 }]	Diagnosis Information
[DRG]	Diagnosis Related Group
[{ PR1	Procedure
{ ROL }	Role
}]	
[{ GT1 }]	Guarantor
[{ IN1	Insurance
[IN2]	Insurance Additional Information
[{ IN3 }]	Insurance Additional Information
}]	
[ACC]	Accident Information
[UB1]	Universal Bill Information
[UB2]	Universal Bill 92 Information

5.14 Merging Patient IDs – ADT^A34

Patient IDs can be merged using an ADT^A34. This message is usually sent by an ADT system. Patient data is identified using the PID-3 and MRG-1 fields. A new allocation of the same patient ID (MRG-1) is not permitted.

An ADT^A34 message is therefore composed of the following segments:

ADT	ADT Message
MSH	Message Header
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
MRG	Merge Information

The following segments are currently evaluated: MSH, PID and MRG.

5.15 Cancelling a Pre-admit – ADT^A38

An ADT^A38 message causes medavis RIS to cancel a pre-admit. This message is usually sent by an ADT system. An ADT^A38 message is treated as an ADT^A11 message.

An ADT^A38 message is therefore composed of the following segments:

ADT	ADT Message
MSH	Message Header
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
PV1	Patient Visit
[PV2]	Patient Visit – Additional Information
[{ DB1 }]	Disability Information
[{ OBX }]	Observation / Result
[{ DG1 }]	Diagnosis Information
[DRG]	Diagnosis Related Group

The following segments are currently evaluated: MSH, PID and PV1.

5.16 Case Merge - ADT^A42

Patient episodes can be merged using an ADT^A42. This message is usually sent by an ADT system. The episodes are identified using the PV1.19 and the MRG.1 fields. All the available data for the episode which will not remain, will now belong to the remaining episode e.g. order, examination, etc.

An ADT^A42 message is therefore composed of the following segments:

ADT^A42^ADT_A39	ADT Message
MSH	Message Header
EVN	Event Type
{PID	Patient Identification
[PD1]	Additional Demographics
MRG	Merge Information
[PV1] }	Patient Visit

5.17 External Service Request – ORM^O01

A service request is made via an ORM^O01 message. This message is usually sent by an Order Placer. All order positions in a message are grouped to one order. This order can consist of several order positions/examinations. The subsequent modification of an order, which has already been scheduled, is not possible. The complete deletion of an order is possible by sending the placer group number, without any placer order number, as long as this has not been edited or acknowledged by RIS. Otherwise, the message receives a negative acknowledgement. The medavis RIS request catalogue must be compared to the requesting system before the interface communication is started. All examinations are made available to the external system. An automatic comparison of the request catalogue is not currently possible!

When an ORM^O01 message is received, it is only checked for its syntax. The order positions, however, are not yet scheduled. An order confirmation takes place, in the reverse direction, with the same O01 messages.

The message transfer is carried out in this way because it is assumed that an order in medavis RIS, with regard to the examinations and appointment preferences, is still to be modified.

In the further development of the HL7 standard, the ORM^O01 message type has, among other things, been extended.

For transferring a diagnosis and other order details, please refer to the table below.

Order Detail	POS.	TABLE	Description / Example
Other risk factors	OBR-12		Free text
Clinical Relevant Information	OBR-13		Free text
Type of transport	OBR-30	0124	
Reason for study	OBR-31		Free text
Diagnosis	DG1		DG1 1 K92.2^Gastrointestinal haemorrhage, unspecified^I10 19981123152300 AD 1.1 0004711
Status of pregnancy	OBX	0532	OBX 1 CE ^PREGNANCY STATUS^LN Y
Week of pregnancy	OBX	532	OBX 1 CE ^PREGNANCY STATUS^LN 25 Y
Status of diabetes	OBX	0532	OBX 1 CE ^DIABETES STATUS^LN N
Metformingabe	OBX	0532	OBX 1 CE ^METFORMINGABE^LN Y Y
Pace maker	OBX	0532	OBX 1 CE ^PACE MAKER^LN Y
MRSA	OBX	0532	OBX 1 CE ^MRSA^LN Y
Hepatitis	OBX	0532	OBX 1 CE ^HEPATITIS^LN Y
Norovirus	OBX	0532	OBX 1 CE ^NOROVIRUS^LN Y
Meningitis	OBX	0532	OBX 1 CE ^MENINGITIS^LN Y
ESBL	OBX	0532	OBX 1 CE ^ESBL^LN Y
METAL IMPLANT	OBX	0532	OBX 1 CE ^METAL IMPLANT^LN Y
Anamnesis	OBX		Free text OBX 1 TX ^HISTORY OF PRESENT ILLNESS^LN Unknown anamnesis
Reason for Study	OBX		Free text OBX 1 TX ^MEDQUEST^LN Unknown reason
Fachkundenachweis	OBX	0532	OBX 1 CE ^FACHKUNDENACHWEIS^LN
Creatinine value	OBX		OBX 1 NM ^CREATININE^LN 0.600000
HIV risk	OBX	0532	OBX 1 CE ^HIV^LN N
Hb	OBX	0532	OBX 1 NM ^HB^LN 9.5
INR	OBX	0532	OBX 1 NM ^INR^LN 11
Weight (kg)	OBX	0532	OBX 1 NM ^GEWICHT^LN 66
Size	OBX	0532	OBX 1 NM ^GROESSE^LN 166
Quick	OBX		OBX 1 NM ^QUICK^LN 104.000000
PTT	OBX		OBX 1 NM ^PTT^LN 29.000000
Thrombo	OBX		OBX 1 NM ^THROMBO^LN 184000.000000
TSH	OBX		OBX 1 NM ^TSH^LN 0.590000
T3	OBX		OBX 1 NM ^T3^LN 0
T4	OBX		OBX 1 NM ^T4^LN 0
Thyroid hyper function	OBX	0532	OBX 1 CE ^THYROID HYPER FUNCTION^LN N
Restricted renal function	OBX	0532	OBX 1 CE ^RESTRICTED RENAL FUNCTION^LN N

Contrast agent allergy	OBX	0532	OBX 1 CE ^CONTRAST MEDIA ALLERGY^LN N
Taking AE-inhibitors medication	OBX	0532	OBX 1 CE ^TAKING AE INHIBITORS^LN N
Taking thyroid medication	OBX	0532	OBX 1 CE ^TAKING THYROID MEDICATION^LN N
Comment			OBR / NTE pair

A ORM^O01 message is therefore composed of the following segments:

ORM	General Order Message
MSH	Message Header
[{ NTE }]	Notes and Comments (for Header)
[PID	Patient Identification
[PD1]	Additional Identification
[{ NTE }]	Notes and Comments (for Patient ID)
[PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
]	
[{ IN1	Insurance
[IN2]	Insurance Additional Information
[IN3]	Insurance Additional Information - Cert.
]]	Disability Information
[GT1]	Guarantor
[{ AL1 }]	Allergy Information
]	
{ ORC	Common Order
[OBR	Order Detail Segment
[{ NTE }]	Notes and Comments (for Detail)
[{ DG1 }]	Diagnosis
[{ OBX	Observation / Result
[{ NTE }]	Notes and Comments (for Results)
]]	
]	
{ [CTI] }	Clinical Trial Identification
[BLG]	Billing Segment
}	

The following segments are currently evaluated: MSH, PID, PV1, IN1, IN2, ORC, OBR, NTE, OBX and DG1.

Example:

```
MSH|^~\&|extSys|medavis RIS||20081124184044|ORM^O01|242|P|2.5||AL|NE
PID||432353|5423523^^^ASSAUT|Doe^John||19400316|M||Bakerstreet 15^^New
York^^12345^US|09182119|555-1234||NV|RK||||New York||US
PV1||I|3^024^2^IN5|N|||||||44821^^^ASSAUT|||||||931004||||199
81120102600||||44821
ORC|NW|110228^SYS||15405044^SYS|10||^20081125183500^R||20081124183517|UNIUSER||9
99^uni-user
OBR|1|110228^SYS||ctknee^CT Knee^KAT-
MEDAVIS|110228||||Warning|Comment||^LEFT||ap|||||CART|Reason of
study|
ORC|NW|110229^SYS||15405044^SYS|10||^20081125183500^R||20081124183517|UNIUSER||9
99^uni-user
OBR|2|110229^SYS||ctleg^CT Leg^KAT-
MEDAVIS|110229||||Warning|Comment||^LEFT||ap|||||CART|Reason of
study|
OBX|1|NM|^CREATININE^LN||0.600000||||R
OBX|2|NM|^TSH^LN||0.590000||||R
DG1|1|K92.2^Gastrointestinal haemorrhage, unspecified^I10
||19981123152300|AD|||||1.1|0004711
```


MSH	Message Header
QPD	Query Parameter Definition Segment
RCP	Response Control Parameters
[DSC]	Continuation Pointer

Example:

```
MSH|^~\&|IMPORTER|IMPORTER|MEDAVIS|RIS|20090730173450||QBP^Q22|1248968090280|P|2.5|
||AL|NE||8859/1
QPD|RY_PDQ_1001^Query By Name^MEDAVIS|MEDAVIS PDQ Query|@PID.5.1.1^Doe
RCP|I
```

Possible Reply:

```
MSH|^~\&|MEDAVIS|RIS|IMPORTER|IMPORTER|20090730173450||RSP^K22|1248968090280|P|2.5|
||AL|NE||8859/1
MSA|AA|1248968090280
QAK|@PID.5.1.1^test|OK
QPD|RY_PDQ_1001^Query By Name^MEDAVIS|MEDAVIS PDQ Query|@PID.5.1.1^test
PID|||1001362||Doe^John||19810101|U|||^^^^^DE
PID|||1001368||Doe^Catherine||19810921|M|||^^^^^DE
```

5.20 Patient Demographics and Visit Query – QBP^ZV1

In addition to the Patient Demographics Query, this message type submits a query for a combination of patient and episode.

In the RCP segment it is possible to query the following fields (in addition to the aforementioned PID-fields): PV1.2, PV1.3, PV1.7, PV1.8, PV1.9, PV1.10, PV1.17, PV1.19 (and any possible combinations), and to set the number of datasets to be submitted per continuation. The DSC segment enables a continuation pointer to be submitted. It is only of interest from the first continuation on.

Warning: This message type is not a part of the official HL7 standard. It is an IHE (Integrating the Healthcare Enterprises) extension.

A QBP^ZV1 message is therefore composed of the following segments:

QBP^ZV1^QBP_ZV1	Query By Parameter
MSH	Message Header
QPD	Query Parameter Definition Segment
RCP	Response Control Parameters
[DSC]	Continuation Pointer

6 Messages from medavis RIS to an external system

The following describes all messages which can be sent by medavis RIS.

6.1 Acknowledgement of an External Service Request/Examination Status Transfer ORM^O01

The scheduled service request or the transfer of an examination status is carried out by RIS with an ORM^O01 message. This message is usually sent to an Order Placer or to an Image Manager. Only one order examination is transferred per message. Depending on the installation, a ZDS segment can be added to the message in addition to the HL7 standard. The ZDS segment contains data on the studies saved in the PACS (StudyInstanceUID), if a PACS connection to medavis RIS exists. An ORM^O01 message is therefore composed of the following segments:

ORM	General Order Message
MSH	Message Header
[{ SFT }]	Software Segment (HL7 version 2.5 or higher)
[{ NTE }]	Notes and Comments (for Header)
[PID	Patient Identification
[PD1]	Additional Identification
[{ NTE }]	Notes and Comments (for Patient ID)
[PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
]	
[{ IN1	Insurance
[IN2]	Insurance Additional Information
[IN3]	Insurance Additional Information - Cert.
]]	Disability Information
[GT1]	Guarantor
[{ AL1 }]	Allergy Information
]	
{ ORC	Common Order
[OBR	Order Detail Segment
[{ NTE }]	Notes and Comments (for Detail)
[{ DG1 }]	Diagnosis
[{ OBX	Observation / Result
[{ NTE }]	Notes and Comments (for Results)
]]	
]	
{ [CTI] }	Clinical Trial Identification
[BLG]	Billing Segment
}	
[ZDS]	Additional identification information

Example:

```
MSH|^~\&|medavis RIS|extSys|20081124110728|ORM^O01|18|P|2.5||AL|NE
PID||101435^^^MEDAVIS^PT|14301421^^^ASSAUT^PI|22999|Doe^John^^^|19560406|M||Baker
street 14 ^^New York^^12345^US|||german
PV1||I|CH^22^2^CH|||2^RefPhys|||22999^^^ASSAUT^VN|||
|20081124100901|||V
ORC|SC|49629^extSys|40764^MEDAVIS|15404276^extSys|SC||1^once^^20081124110725^200811
24111725^R||132^Assistant medical technician^Mrs.^^^^^^^PN|||555-1234
OBR|1|49629^extSys|40764^MEDAVIS|ctknee^CT
Knee^MEDAVIS|||20081124110725|20081124111725|||^^^LEFT|||ap|CT1|||CT|O||1^on
ce^^20081124110725^20081124111725^R||WALK|Reason of Study|13&Physician&Clara&&&Dr.
med.|12&First Physician&John&&&Dr. med|Technician,
Mrs.||20081124110000|||N|^^^CT1|ctknee^CT Knee^MEDAVIS|||ctknee^CT Knee^MEDAVIS
ZDS|1.2.276.0.37.1.3.199907^^Application^Dicom
```

6.2 Admitting Patients – ADT^A01

The subsystem can be informed of a new patient case recorded in medavis RIS by an ADT^A01 message. This message is usually sent to an Image Manager.

An ADT^A01 message is therefore composed of the following segments:

ADT	ADT Message
MSH	Message Header
[{ SFT }]	Software Segment (HL7 version 2.5 or higher)
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
[{ NK1 }]	Next of Kin / Associated Parties
PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
[{ DB1 }]	Disability Information
[{ OBX }]	Observation / Result
[{ AL1 }]	Allergy Information
[{ DG1 }]	Diagnosis Information
[DRG]	Diagnosis Related Group
[{ PR1	Procedures
[{ ROL }]	Role
]]	
[{ GT1 }]	Guarantor
[{ IN1	Insurance
[IN2]	Insurance Additional Information
[IN3]	Insurance Additional Information - Cert.
]]	
[ACC]	Accident Information
[UB1]	Universal Bill Information
[UB2]	Universal Bill 92 Information

6.3 Modifying Patient Data – ADT^A08

An ADT^A08 message informs of patient data which has been edited in medavis RIS. This message is usually sent to an Image Manager. An ADT^A08 message is therefore composed of the following segments:

ADT	ADT Message
MSH	Message Header
[{ SFT }]	Software Segment (HL7 version 2.5 or higher)
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
[{ NK1 }]	Next of Kin / Associated Parties
PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
[{ DB1 }]	Disability Information
[{ OBX }]	Observation / Result
[{ AL1 }]	Allergy Information
[{ DG1 }]	Diagnosis Information
[DRG]	Diagnosis Related Group
[{ PR1	Procedures
[{ ROL }]	Role
]	
[{ GT1 }]	Guarantor
[{ IN1	Insurance
[IN2]	Insurance Additional Information
[IN3]	Insurance Additional Information - Cert.
]	
[ACC]	Accident Information
[UB1]	Universal Bill Information
[UB2]	Universal Bill 92 Information

6.4 Delete a Patient Record – ADT^A23

An ADT^A23 message informs of patient data which has been deleted from medavis RIS. This message is usually sent to an Image Manager. An ADT^A23 message is therefore composed of the following segments:

ADT	ADT Message
MSH	Message Header
[{ SFT }]	Software Segment (HL7 version 2.5 or higher)
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
[{ DB1 }]	Disability Information
[{ OBX }]	Observation / Result

6.5 Merging Patient IDs – ADT^A34

An ADT^A34 message informs of patient data which has been merged in medavis RIS. This message is usually sent to an Image Manager. Only the medavis RIS patient IDs which have been merged are important here.

An ADT^A34 message is therefore composed of the following segments:

ADT	ADT Message
MSH	Message Header
[{ SFT }]	Software Segment (HL7 version 2.5 or higher)
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
MRG	Merge Information

6.6 Transferring Financial Data/Material Use – DFT^P03

The DFT^P03 message transfers financial data. This message is usually sent to a Charge Processor. A DFT^P03 message is therefore composed of the following segments:

DFT	Detail Financial Transaction
MSH	Message Header
[{ SFT }]	Software Segment (HL7 version 2.5 or higher)
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
[{ DB1 }]	Disability Information
[{ OBX }]	Observation / Result
{ FT1	Financial Transaction
[{ PR1	Procedure
[{ ROL }]	Role
]	
[ORC]	Common Order (specific to above FT1) (v2.4 and later)
[OBR]	Order Detail Segment (v2.4 and later)
}	
[{ DG1 }]	Diagnosis
[DRG]	Diagnosis Related Group
[{ GT1 }]	Guarantor
[{ IN1	Insurance
[IN2]	Insurance Additional Information
[IN3]	Insurance Additional Information - Cert.
]	
]	
[ACC]	Accident Information

Example Rad. service:

```
MSH|^~\&|medavis RIS||extSys||20081124111210||DFT^P03|30|P|2.5|||AL|NE
EVN|P03|19981124111210
PID||52345^^^MEDAVIS^PT|5414354^^^ASSAUT^PI||Doe^John^^^||19701025|M|||Bakerstreet
34^^New York^^12345^US||555-1234||german
PV1||I|P1^22^4^CHI2|||6^RefPhys^Mr.|||||3424222^^^ASSAUT^VN|||||
|||||20081123101200|20081124101000|||||V
FT1|1|341||20081123185428||2|5010^^GOAE|||180||20.52|||||4323|3223||300864
```

Example Tech. service:

```
MSH|^~\&|medavis RIS||extSys||19981124111210||DFT^P03|30|P|2.2|||AL|NE
EVN|P03|19981124111210
PID||52345^^^MEDAVIS^PT|5414354^^^ASSAUT^PI||Doe^John^^^||19701025|M|||Bakerstreet
34^^New York^^12345^US||555-1234||german
PV1||I|P1^22^4^CHI2|||6^RefPhys^Mr.|||||3424222^^^ASSAUT^VN|||||
|||||20081123101200|20081124101000|||||V
FT1|1|342||20081123173728||2|kon100^Contrast 100^med-
mat||100|m1|||||4323|3223||300864
```

6.7 Transferring Diagnoses/Procedures –BAR^P01/BAR^P12

The BAR^P01 or BAR^P12 message transfers diagnoses and procedures. This message is usually sent to a system which will process this data.

6.7.1 Message type BAR^P01 "Snapshot" mode

All diagnoses and procedures belonging to a hospital visit are transferred to the external system. The same message updates the diagnoses and procedures. Old diagnoses and procedures positions become invalid.

A BAR^P01 message is composed of at least the following segments:

BAR	Add Billing Account
MSH	Message Header
[{ SFT }]	Software Segment (HL7 version 2.5 or higher)
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Identification
{ PV1	Patient Visit
[PV2]	Patient Visit - Additional Information
[{ DB1 }]	Disability Information
[{ OBX }]	Observation / Result
[{ AL1 }]	Allergy Information
[{ DG1 }]	Diagnosis
[DRG]	Diagnosis Related Group
[{ PR1	Procedure
[{ ROL }]	Role
[ORC]	Common Order (Customisable by medavis)
[OBR]	Order Detail Segment (Customisable by medavis)
}]	
[{ GT1 }]	Guarantor
[{ NK1 }]	Next of Kin / Associated Parties
[{ IN1	Insurance
[IN2]	Insurance Additional Information
[IN3]	Insurance Additional Information - Cert.
}]	
[ACC]	Accident Information
[UB1]	Universal Bill Information
[UB2]	Universal Bill 92 Information
}	

Example:

```
MSH|^~\&|medavis RIS||BillSys||20081124111210||BAR^P01|30|P|2.5||AL|NE
EVN|P01|19981124111210
PID||52345^^^MEDAVIS^PT|5414354^^^ASSAUT^PI||Doe^John^^^|19701025|M||Bakerstreet
34^^New York^^12345^US||555-1234|german
PV1||I|P1^22^4^CHI2|||||6^RefPhys^Mr.|||||||3424222^^^ASSAUT^VN|||||||
|||||||20081123101200|20081124101000|||||V
DG1|1||S90.1V^Contusion of toe(s) without damage to
nail^I10||19981123140000|BD|||||||1^Saubermann^Susi^^^Dr.
PR1|332^17|2008|3-209^Computertomography (CT), contrast: other contrast
Computertomography^2008||20081123140000||20|||||1^Doctor^Jim^^^Dr.^^^^^PN
```

6.7.2 Message type BAR^P12 "action code/unique identifier" mode :

Only the book/cancel transaction of a diagnosis or procedure is transferred to the external system.

BAR	Add Billing Account
MSH	Message Header
[{ SFT }]	Software Segment (HL7 version 2.5 or higher)
EVN	Event Type
PID	Patient Identification
PV1	Patient Visit
[ORC]	Common Order (Customisable by medavis)
[OBR]	Order Detail Segment (Customisable by medavis)
[{ DG1 }]	Diagnosis
[DRG]	Diagnosis Related Group
[{ PR1	Procedure
[{ ROL }]	Role
}]	

Example::

```
MSH|^~\&|medavis RIS||BillSys||200811241209210||BAR^P12|30|P|2.5|||AL|NE
EVN|P12|19981124120910
PID||52345^^^MEDAVIS^PT|5414354^^^ASSAUT^PI|Doe^John^^^|19701025|M|||Bakerstreet
34^^New York^^12345^US|555-1234|german
PV1||I|P1^22^4^CHI2|||6^RefPhys^Mr.|||||3424222^^^ASSAUT^VN|||||
|||||20081123101200|20081124101000|||||V
PR1|332^17|2008|3-209^Computertomography (CT), contrast: other contrast
Computertomography^2008||20081123140000||20|||1^Doctor^Jim^^^Dr.^^^^^PN|||||46
3^unt_an2diag|A
```

6.8 Transferring Reports – UDM^Q05/ORU^R01

Reports can be transferred in three different message formats. The UDM^Q05, ORU^R01 and ORU^R01 (IHE definitions) are available for this. Both preliminary and final reports are transferred. Usually this message is sent to an Enterprise Report Repository. The report text is converted customised in the following formats ANSI, OEM or RTF. Subsequent changes to a report are noted and transferred.

6.8.1 Message type: UDM^Q05: (discontinued):

A UDM^Q05 message is composed of the following segments:

UDM	Unsolicited Display Message
MSH	Message Header
[{ SFT }]	Software Segment (HL7 version 2.5 or higher)
URD	Results/Update Definition
[URS]	Results/Update Selection Criteria
{ DSP }	Display Data
[DSC]	Continuation Pointer

Example:

```
MSH|^~\&|medavis RIS||extSys||19981124110723||UDM^Q05|17|P|2.2|||AL|NE
URD|19981124075600|R|6800999||100598-1^100764^109629||T
URS|NOT CH||19981124110723|rhws|Report 'Thoracic spine' of 24.11.1998||REP
DSP|1||Radiological                Drs. med. X and Y
DSP|2||Group Practice              71 Main St., 76133 Karlstow
DSP|3||Karlstow                    Phone: 0123 / 456789
DSP|4||
DSP|5||
DSP|6||Emergency Outpatient        *U0987654321*
DSP|7||Surgery
DSP|8||In-house
DSP|9||
DSP|10||
DSP|11||Karlstow, 22.11.1998 / cr
DSP|12||
DSP|13||
DSP|14||
DSP|15||Thank you for referring your patient to us.
DSP|16||
DSP|17||Doe, John
DSP|18||Date of Birth: 12.05.1930
DSP|19||Resident in: 76133 Karlstow
DSP|20||
DSP|21||Clinical details:
DSP|22||
DSP|23||Cervical spine whiplash trauma
DSP|24||
DSP|25||Cervical spine in 2 planes from 22.11.1998:
DSP|26||
DSP|27||No evidence of fracture, no structural laxness or even subluxation or
DSP|28||luxation, no mentionable neg. posture, no degenerat. changes,
DSP|29||no narrowing of space between intervertebral discs. In as far as can be
DSP|30||judged also perfect proportions on atlant doxial joint.
DSP|31||
DSP|32||
DSP|33||Yours sincerely
DSP|34||
DSP|35||
DSP|36||
DSP|37||
DSP|38||Dr. med. X. Y.
```

6.8.2 Message type: ORU^R01 (unstructured report):

An ORU^R01 message is therefore composed of the following segments:

ORU	Observation Results (Unsolicited)
MSH	Message Header
[{ SFT }]	Software Segment (HL7 version 2.5 or higher)
{ [PID]	Patient Identification
[PD1]	Additional Demographics
[{ NTE }]	Notes and Comments
[PV1]	Patient Visit
[PV2]	Patient Visit - Additional Information
}	
{ [ORC]	Common Order
OBR	Observation Report ID
{ [NTE] }	Notes and Comments
{ [OBX]	Observation / Result
{ [NTE] }	Notes and Comments
}	
{ [CTI] }	Clinical Trial Identification
}	
}	
[DSC]	Continuation Pointer

Example:

```
MSH|^~\&|medavis RIS||OP_SYS||20021010101844||ORU^R01|4|P|2.5|||AL|NE|
PID||52345^^^MEDAVIS^PT|5414354^^^ASSAUT^PI||Doe^John^^^|19701025|M|||Bakerstreet
34^^New York^^12345^US|555-1234|german
PV1||I|P1^22^4^CHI2|||6^RefPhys^Mr.|||||3424222^^^ASSAUT^VN|||||
|||20081123101200|20081124101000|||||V
ORC|SC|49629^extSys|40764^MEDAVIS|15404276^extSys|IP||1^once^^20081124110725^200811
24111725^R|||132^Assistant medical technician^Mrs.^^^^^^^PN|||555-1234
OBR|1|49629^extSys|40764^MEDAVIS|ctknee^CT
Knee^MEDAVIS|||20081124110725|20081124111725|||||^LEFT|||ap|CT1|||CT|F||1^on
ce^^20081124110725^20081124111725^R|||WALK|Reason of Study|13&Physician&Clara&&Dr.
med.|12&First Physician&John&&Dr. med|Technician,
Mrs.||20081124110000|||N|^CT1|ctknee^CT Knee^MEDAVIS|||ctknee^CT Knee^MEDAVIS
OBX|1|TX|223^ctknee|1964|Radiological|Drs. med. Joe and Smith|||||F
OBX|2|TX|223^ctknee|1964|Group Practice|71 Main St, 76133 Karlstown|||||F
OBX|3|TX|223^ctknee|1964|Karlstown|Phone: 0123 / 456789|||||F
OBX|4|TX|223^ctknee|1964|||||F
OBX|5|TX|223^ctknee|1964|Emergency Outpatient|||||F
OBX|6|TX|223^ctknee|1964|Surgery|||||F
OBX|7|TX|223^ctknee|1964|In-house|||||F
OBX|8|TX|223^ctknee|1964|||||F
OBX|9|TX|223^ctknee|1964|Karlstown, 10.10.2002 / cr|||||F
OBX|10|TX|223^ctknee|1964|||||F
OBX|11|TX|223^ctknee|1964|Thank you for referring your patient to us.|||||F
OBX|12|TX|223^ctknee|1964|||||F
OBX|13|TX|223^ctknee|1964|Doe, John|||||F
OBX|14|TX|223^ctknee|1964|Date of Birth 25.10.1970|||||F
OBX|15|TX|223^ctknee|1964|Resident in: 12345 New York|||||F
OBX|16|TX|223^ctknee|1964|||||F
OBX|17|TX|223^ctknee|1964|Clinical details:|||||F
OBX|18|TX|223^ctknee|1964|||||F
OBX|19|TX|223^ctknee|1964|Trauma|||||F
OBX|20|TX|223^ctknee|1964|||||F
OBX|21|TX|223^ctknee|1964|Computerthomography of knee|||||F
OBX|22|TX|223^ctknee|1964|||||F
OBX|23|TX|223^ctknee|1964|No evidence of fracture|||||F
OBX|24|TX|223^ctknee|1964|||||F
OBX|25|TX|223^ctknee|1964|Yours sincerely|||||F
OBX|26|TX|223^ctknee|1964|||||F
OBX|27|TX|223^ctknee|1964|Dr. med. Clara Physician|||||F
```


7 Segment Definitions

The following describes all segments used in the medavis interface. Fields marked in the table in bold type are evaluated by the interface. If fields are repeated, only the first field is evaluated.

7.1 MSH – Message Header Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	1	ST	R			00001	Field separator	Constant:
2	4	ST	R			00002	Encoding characters	Constant: ^~\&
3	180	HD	R2			00003	Sending application	
4	180	HD	O			00004	Sending facility	
5	180	HD	O			00005	Receiving application	
6	180	HD	O			00006	Receiving facility	
7	26	TS	O			00007	Date/time of message	Format: YYYYMMDDHHNNS
8	40	ST	O			00008	Security	
9	7	CM	R		0076 0003	00009	Message type	
10	20	ST	R			00010	Message control ID	
11	3	PT	R		0103	00011	Processing ID	
12	8	ID	R		0104	00012	Version ID	
13	15	NM	O			00013	Sequence number	
14	180	ST	O			00014	Continuation pointer	
15	2	ID	O		0155	00015	Accept acknowledgement type	
16	2	ID	O		0155	00016	Application acknowledgement type	
17	2	ID	O			00017	Country code	
18	6	ID	O	Y/3	0211	00692	Character set	
19	60	CE	O			00693	Principal language of message	

7.2 MSA – Message Acknowledgement Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	2	ID	R		0008	00018	Acknowledgement code	
2	20	ST	R			00010	Message Control ID	(obtained from MSH-10)
3	80	ST				00020	Text Message	
4	15	NM				00021	Expected Sequence Number	
5	1	ID			0102	00022	Delayed Acknowledgement type	
6	100	CE				00023	Error Condition	

7.3 EVN – Event Type Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	3	ID	B		0003	00099	Event Type Code	(MSH-9.2)
2	26	TS	R			00100	Date/Time of Event	(MSH-7)
3	26	TS	O			00101	Date/Time Planned Event	
4	3	IS	O		0062	00102	Event Reason Code	
5	60	XCN	O		0188	00103	Operator ID	
6	26	TS	O			01278	Event Occurred	

7.4 PID – Patient Identification Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	4	SI	O			00104	Set ID - Patient ID	
2	20	CX	O			00105	Patient ID (External ID)	Deprecated since HL7 version 2.4
3	20	CX	R	Y		00106	Patient identifier list (Internal ID)	(Patient ID of the ADT's) Assigning Authority in PID-3.4
4	20	CX	O	Y		00107	Alternate Patient ID	
5	48	XP	R	Y		00108	Patient Name	
6	48	XP	O			00109	Mother's Maiden Name	
7	26	TS	O			00110	Date of Birth	Format: YYYYMMDD
8	1	IS	O		0001	00111	Sex	
9	48	XP	O	Y		00112	Patient Alias	
10	1	IS	O		0005	00113	Race	Not used
11	106	XAD	O	Y		00114	Patient Address	
12	4	IS	B			00115	County code	
13	40	XTN	O	Y		00116	Phone Number - Home	
14	40	XTN	O	Y		00117	Phone Number - Business	
15	60	CE	O		0296	00118	Language - Patient	
16	1	IS	O		0002	00119	Marital Status	
17	3	IS	O		0006	00120	Religion	
18	20	CX	O			00121	Patient Account Number	
19	16	ST	O			00122	SSN Number - Patient	
20	25	DLN	O			00123	Driver's Lic Num - Patient	Not used
21	20	CX	O	Y		00124	Mother's Identifier	
22	3	IS	O		0189	00125	Ethnic Group	
23	60	ST	O			00126	Birth Place	
24	2	ID	O		0136	00127	Multiple Birth Indicator	
25	2	NM	O			00128	Birth Order	
26	4	IS	O	Y	0171	00129	Citizenship	(country code)
27	60	CE	O		0172	00130	Veterans Military Status	Patient's job/profession
28	80	CE	O			00739	Nationality	
29	26	TS	O			00740	Patient Death Date and Time	
30	1	ID	O		0136	00741	Patient Death Indicator	

7.5 PV1 – Patient Visit Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	4	SI	O			00131	Set ID - Patient Visit	Transaction number
2	1	IS	R		0004	00132	Patient Class	(Type of billing)
3	80	PL	R2			00133	Assigned Patient Location	(Dept., ward, room, bed)
4	2	IS	O		0007	00134	Admission Type	
5	20	CX	O			00135	Preadmit Number	
6	80	PL	O			00136	Prior Patient Location	(when transferred)
7	60	XCN	O	Y	0010	00137	Attending Doctor	
8	60	XCN	O	Y	0010	00138	Referring Doctor	
9	60	XCN	O	Y	0010	00139	Consulting Doctor	
10	3	IS	O		0069	00140	Hospital Service	Type of treatment intended
11	80	PL	O			00141	Temporary Location	
12	2	IS	O		0087	00142	Preadmit Test Indicator	Ref. to exam. prog. which must be carried out before the patient is admitted
13	2	IS	O		0092	00143	Readmission indicator	
14	3	IS	O		0023	00144	Admit Source	
15	2	IS	O	Y	0009	00145	Ambulatory Status	
16	2	IS	O		0099	00146	VIP Indicator	
17	60	XCN	O	Y	0010	00147	Admitting Doctor	
18	2	IS	O		0018	00148	Patient Type	
19	20	CX	R2			00149	Visit Number	Assigning Authority in PV1-19.4
20	50	FC	O	Y	0064	00150	Financial Class	Type of payment (code 4 GSG)
21	2	IS	O		0032	00151	Charge Price Indicator	Health-plan patient/Self-pay patient
22	2	IS	O		0045	00152	Courtesy Code	Not used
23	2	IS	O		0046	00153	Credit Rating	Not used
24	2	IS	O	Y	0044	00154	Contract Code	Type of billing
25	8	DT	O	Y		00155	Contract Effective Date	Type of billing valid from
26	12	NM	O	Y		00156	Contract Amount	Billing amount
27	3	NM	O	Y		00157	Contract Period	Period of validity for billing
28	2	IS	O		0073	00158	Interest Code	Not used
29	1	IS	O		0110	00159	Transfer to Bad Debt Code	Not used
30	8	DT	O			00160	Transfer to Bad Debt Date	Not used
31	10	IS	O		0021	00161	Bad Debt Agency Code	Not used
32	12	NM	O			00162	Bad Debt Transfer Amount	Not used
33	12	NM	O			00163	Bad Debt Recovery Amount	Not used
34	1	IS	O		0111	00164	Delete Account Indicator	Not used
35	8	DT	O			00165	Delete Account Date	Not used
36	3	IS	O		0112	00166	Discharge Disposition	
37	25	CM	O		0113	00167	Discharged to Location	
38	2	IS	O		0114	00168	Diet Type	
39	2	IS	O		0115	00169	Servicing Facility	Default Cost Unit
40	1	IS	B		0116	00170	Bed Status	Not used
41	2	IS	O		0117	00171	Account Status	
42	80	PL	O			00172	Pending Location	
43	80	PL	O			00173	Prior Temporary Location	
44	26	TS	O			00174	Admit Date/Time	Alternative PV1-19.7
45	26	TS	O			00175	Discharge Date/Time	Alternative PV1-19.8
46	12	NM	O			00176	Current Patient Balance	Not used
47	12	NM	O			00177	Total Charges	Not used
48	12	NM	O			00178	Total Adjustments	Not used
49	12	NM	O			00179	Total Payments	Not used
50	20	CX	O		0192	00180	Alternate Visit ID	
51	1	IS	O		0326	01226	Visit Indicator	Medical/billing-oriented message
52	60	XCN	O	Y	0010	01224	Other Healthcare Provider	

7.6 IN1 – Insurance Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	4	SI	R			00426	Set ID insurance	Transaction number
2	60	CE	R		0072	00368	Insurance plan ID	Tariff code of cost unit (insurance number) is used if IN1-49 not set.
3	59	CX	R	Y		00428	Insurance company ID	Institute code/number of cost unit
4	130	XON	R2	Y		00429	Insurance company name	
5	106	XAD	O	Y		00430	Insurance company address	
6	48	XPN	O	Y		00431	Insurance co. Contact pers	
7	40	XTN	O	Y		00432	Insurance co phone number	
8	12	ST	R2			00433	Group number	Mapping takes place only with following ID: 1 = health-plan/BG, 2 = private, 3 = self-pay
9	130	XON	R2	Y		00434	Group name	Type of cost unit
10	12	CX	O	Y		00435	Insured's group emp ID	Not used
11	130	XON	O	Y		00436	Insured's group emp Name	Not used
12	8	DT	O			00437	Plan effective date	Start date of health insurance card
13	8	DT	O			00438	Plan expiration date	Expiry date of health insurance card
14	55	CM	O			00439	Authorization information	File reference of cost transfer
15	3	IS	O		0086	00440	Plan type	Insurance status (M / F / R)
16	48	XPN	O	Y		00441	Name of insured	
17	2	IS	O		0063	00442	Insured's relationship to patient	
18	26	TS	O			00443	Insured's date of birth	
19	106	XAD	O	Y		00444	Insured's address	
20	2	IS	O		0135	00445	Assignment of benefits	
21	2	IS	O		0173	00446	Coordination of benefits	
22	2	ST	O			00447	Coord of ben. Priority	
23	2	ID	O		0136	00448	Notice of admission code	
24	8	DT	O			00449	Notice of admission date	
25	2	ID	O		0136	00450	Rpt of eligibility code	Cost transfer feature (GSG)
26	8	DT	O			00451	Rpt of eligibility date	Date of cost transfer
27	2	IS	O		0093	00452	Release information code	
28	15	ST	O			00453	Pre admit cert (PAC)	
29	26	TS	O			00454	Verification date/time	Date/time insurance card last verified
30	60	XCN	O			00455	Verification by	Verified by
31	2	IS	O		0098	00456	Type of agreement code	Not used
32	2	IS	O		0022	00457	Billing status	
33	4	NM	O			00458	Lifetime reserve days	Not used
34	4	NM	O			00459	Delay before L. R. day	Not used
35	8	IS	O			00460	Company plan code	Insurance card data ICNo.^Ins.no.^validto^Status^Status suppl.^KT subgroup Example: 6201379^^0405^1000^1^ IN1-35.1 is used if IN1-2 not set. IN1-35.2 is used if IN1-15 not set. IN1-35.3 is used if IN1-13 not set.
36	15	ST	O			00461	Policy number	
37	12	CP	O			00462	Policy deductible	
38	12	CP	B			00463	Policy limit amount	No longer used (see IN2-29)
39	4	NM	O			00464	Policy limit days	
40	12	CP	B			00465	Room rate semi private	No longer used
41	12	CP	B			00466	Room rate private	No longer used
42	60	CE	O		0066	00467	Insured's employment status	
43	1	IS	O		0001	00468	Insured's sex	
44	106	XAD	O	Y		00469	Insured's employer address	
45	2	ST	O			00470	Verification status	Not used
46	8	IS	O		0072	00471	Prior insurance plan ID	
47	3	IS	O		0309	01227	Coverage Type	
48	2	IS	O		0310	00753	Handicap Code	
49	12	CX	O	Y		01230	Insured's ID Number	Insurance number

7.7 MRG – Merge Patient Information Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	20	CX	R	Y		00211	Prior Patient ID - Internal	
2	20	CX	O	Y		00212	Prior Alternate Patient ID	
3	20	CX	O			00213	Prior Patient Account Number	
4	20	CX	O			00214	Prior Patient ID - External	
5	20	CX	O			01279	Prior Visit Number	
6	20	CX	O			01280	Prior Alternate Visit ID	
7	48	XPN	O			01281	Prior Patient Name	

7.8 QRD - Original-style Query Definition Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	26	TS	R			00025	Query Date/Time	
2	1	ID	R		0106	00026	Query Format Code	R - for patient data D - for reports
3	1	ID	R		0091	00027	Query Priority	constant 'I'
4	10	ST	R			00028	Query ID	
5	1	ID			0107	00029	Deferred Response Type	(to QRD 6)
6	26	TS				00030	Deferred Response Date/Time	
7	10	CQ	R		0126	00031	Quantity Limited Request	Maximum length of response With patient query = ,1^RD'
8	20	ST	R	Y		00032	Who Subject Filter	Search term - Person (Patient ID)
9	3	ID	R	Y	0048	00033	What Subject Filter	Search term - Information category APN - patient data RES - results
10	20	ST	R	Y		00034	What Department Data Code	Search term - objects (Order Filler ID)
11	20	ST		Y		00035	What Data Code Value Qual.	Search term - Object range
12	1	ID			0108	00036	Query Results Level	

7.9 DSP – Display Data Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	4	SI				00061	Set ID - Display Data	Transaction number
2	4	SI				00062	Display Level	Block number
3	300	TX	R			00063	Data Line	(Formatting as per default)
4	2	ST				00064	Logical Break Point	
5	20	TX				00065	Result ID	

7.10 ORC – Common Order Control

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	2	ID	R		0119	00215	Order Control	
2	22	EI	C			00216	Placer Order Number	Order no. of person/dept. placing the order
3	22	EI	C			00217	Filler Order Number	Processing number of service dept. filling the order
4	22	EI	R2			00218	Placer Group Number	Clear order group no.
5	2	ID	O		0038	00219	Order Status	
6	1	ID	O		0121	00220	Response Flag	Scope of desired result message
7	200	TQ	O			00221	Quantity/Timing	Quantity^Interval^Duration^Start Date/Time^End Date/Time^Priority
8	200	CM	O			00222	Parent	Reference to main order
9	26	TS	O			00223	Date/Time of Transaction	
10	120	XCN	R2			00224	Entered By	
11	120	XCN	O			00225	Verified By	alternative ORC-10
12	120	XCN	O			00226	Ordering Provider	alternative ORC-11
13	80	PL	O			00227	Enterer's Location	
14	40	XTN	O	Y/2		00228	Call Back Phone Number	
15	26	TS	O			00229	Order Effective Date/Time	
16	200	CE	O			00230	Order Control Code Reason	Reason for cancellation
17	60	CE	O			00231	Entering Organization	
18	60	CE	O			00232	Entering Device	
19	120	XCN				00233	Action by	

7.11 OBR - Observation Request Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	4	SI	C			00237	Set ID Observation Request	
2	22	EI	C			00216	Placer Order Number	Order no. of person/dept. placing the order
3	22	EI	C			00217	Filler Order Number	Processing number of service dept. filling the order
4	200	CE	R			00238	Universal Service ID	
5	2	ID	B			00239	Priority - NOT USED in 2.2	No longer used
6	26	TS	B			00240	Requested Date/time - NOT USED	No longer used
7	26	TS	C			00241	Observation Date/Time	
8	26	TS	O			00242	Observation End Date/Time	
9	20	CQ	O			00243	Collection Volume	
10	60	XCN	O	Y		00244	Collector Identifier	
11	1	ID	O		0065	00245	Specimen Action Code *	
12	60	CE	O			00246	Danger Code	Warning for contagious materials
13	300	ST	O			00247	Relevant Clinical Info.	Comment for order
14	26	TS	C			00248	Specimen Received Date/Time *	
15	300	CM	O		0070	00249	Specimen Source *	Examination option (type of material / type of specimen) Body Site in OBR-15.5
16	80	XCN	O	Y		00226	Ordering Provider	
17	40	XTN	O	Y/2		00250	Order Callback Phone Number	
18	60	ST	O			00251	Placer field 1	Accession number (free text 1 for service placer) Option for order
19	60	ST	O			00252	Placer field 2	free text 2 for service placer
20	60	ST	O			00253	Filler Field 1	free text 1 for service filler
21	60	ST	O			00254	Filler Field 2	free text 2 for service filler
22	26	TS	C			00255	Results Rpt/Status Chng - Date/Time +	
23	40	CM	O			00256	Charge to Practice	Service amount/service code
24	10	ID	O		0074	00257	Diagnostic Serv Sect ID	Detailed specification of service section
25	1	ID	C		0123	00258	Result Status +	
26	400	CM	O			00259	Parent Result	
27	200	TQ	O	Y		00221	Quantity/Timing	Quantity^Interval^Duration^Start Date/Time^End Date/Time^Priority
28	150	XCN	O	Y/5		00260	Result Copies To	
29	150	CM	O			00261	Parent Number	
30	20	ID	O		0124	00262	Transportation Mode	(Patient)
31	300	CE	O	Y		00263	Reason for Study	Reason for Study
32	200	CM	O			00264	Principal Result Interpreter +	Principal Result Interpreter
33	200	CM	O	Y		00265	Assistant Result Interpreter	First Result Interpreter
34	200	CM	O	Y		00266	Technician +	Medical Assistant
35	200	CM	O	Y		00267	Transcriptionist +	
36	26	TS	O			00268	Scheduled Date/Time	Scheduled Date/Time
37	4	NM	O			01028	Number of Sample Containers	
38	60	CE	O	Y		01029	Transport Logistics of Collected Sample	
39	200	CE	O	Y		01030	Collector's Comment	
40	60	CE	O			01031	Transport Arrangement Responsibility	
41	30	ID	O		0224	01032	Transport Arranged	
42	1	ID	O		0225	01033	Escort Required	
43	200	CE	O	Y		01034	Planned PatientTransport Comment	

7.12 OBX - Observation/Result Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	4	SI	R			00569	Set ID - Observational Simple	ID transaction number
2	2	ID	R		0125	00570	Value Type	Result format
3	80	CE	O			00571	Observation Identifier	Name of observation Service number^service name^service catalogue
4	20	ST	O			00572	Observation Sub-ID	Differentiation of observation results (The document ID is set for reports)
5			C/R			00573	Observation Value	
6	60	CE	O			00574	Units	
7	60	ST	O			00575	References Range	
8	10	ID	O		0078	00576	Abnormal Flags	
9	5	NM	O	Y/5		00577	Probability	
10	5	ID	O		0080	00578	Nature of Abnormal Test	
11	2	ID	R/NA			00579	Observ Result Status	
12	26	TS	C			00580	Date Last Obs Normal Values	
13	20	ST	C			00581	User Defined Access Checks	
14	26	TS	O			00582	Date/Time of the Observation	
15	60	CE	C			00583	Producer's ID	
16	60	XCN	O			00584	Responsible Observer	
17	60	CE	O	Y		00936	Observation Method	

7.13 NTE - Notes and Comments Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	4	SI				00096	Set ID - Notes and Comments	Transaction number
2	8	ID			0105	00097	Source of Comment	
3	65536	FT		Y		00098	Comment	

7.14 URD - Results/Update Definition Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	26	TS				00045	R/U Date/Time	Time of report or update
2	1	ID			0109	00046	Report Priority	
3	20	ST	R	Y		00047	R/U Who Subject Definition	Persons to whom the report or the update refers (case number/admit number)
4	3	ID		Y	0048	00048	R/U What Subject Definition	Information category
5	20	ST		Y		00049	R/U What Department Code	Object of report or update, DOC_ID^UNT_PA_ID^ORD_UNT_ordernumber_ Ext (in a collective report, the order position numbers are added to the DOC:ID (e.g. "82453- 2"))
6	20	ST		Y		00050	R/U Display/Print Locations	
7	1	ID			0108	00051	R/U Results Level	Constant 'T' for results

7.15 URS - Unsolicited Selection Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	20	ST	R	Y		00052	R/U Where Subject Definition	Dept. to which the report or update refers
2	26	TS				00053	R/U When Data Start Date/Time	
3	26	TS				00054	R/U When Data End Date/Time	
4	20	ST		Y		00055	R/U What User Qualifier	(Observation abbreviation)
5	20	ST		Y		00056	R/U Other Results Subject Definition	(Report title)
6	12	ID		Y	0156	00057	R/U Which Date/Time Qualifier	Events to which the report refers
7	12	ID		Y	0157	00058	R/U Which Date/Time Status Qualifier	Status of report or modification PRE -> preliminary REP -> concluded
8	12	ID		Y	0158	00059	R/U Date/Time Selection Qualifier	Scope of report
9	60	TQ	O			00695	R/U Quantity/Timing Qualifier	

7.16 FT1 - Financial Transaction Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	4	SI	O			00355	Set ID financial transaction	Transaction number
2	12	ST	O			00356	Transaction ID	Booking no./Receipt no./Invoice no.
3	10	ST	O			00357	Transaction batch ID	Batch / accounting coder
4	26	TS	R			00358	Transaction Date	Receipt/Service/Invoice date
5	26	TS	O			00359	Transaction Posting date	
6	8	IS	R		0017	00360	Transaction Type	
7	80	CE	R		0132	00361	Transaction Code	Service code/text
8	40	ST	B			00362	Transaction Description	
9	40	ST	B			00363	Transaction Description alternate	(should no longer be used)
10	6	NM	O			00364	Transaction Quantity	No. of services/no. of points
11	12	CP	O			00365	Transaction Amount extended	Amount (total)
12	12	CP	O			00366	Transaction Amount unit	Unit price/point value
13	60	CE	O		0049	00367	Department Code	
14	60	CE	O		0072	00368	Insurance Plan ID	Tariff code of cost unit
15	12	CP	O			00369	Insurance Amount	Payment amount
16	80	PL	O			00133	Assigned Patient Location	
17	1	IS	O		0024	00370	Fee Schedule	No longer used (see FT1-7)
18	2	IS	O		0018	00148	Patient Type	Type of patient (PPR)
19	60	CE	O	Y	0051	00371	Diagnosis Code	
20	120	XCN	O	Y	0084	00372	Performed by Code	
21	120	XCN	O			00373	Ordered by Code	
22	12	CP	O			00374	Unit Cost	Accounting factor
23	22	EI	O			00217	Filler Order Number	
24	120	XCN	O			00765	Entered By Code	
25	80	CE	O		0088	00393	Procedure Code	
26	250	CE	O	Y	0340	01316	Procedure Code Modifier	(HL7 v2.4 and later)
27	250	CE	O		0339	01310	Advanced Beneficiary Code	(HL7 v2.5 and later)
28	250	CWE	O		0476	01646	Medically Necessary Duplicate Procedure Reason	(HL7 v2.5 and later)
29	250	CNE	O			01845	NDC Code	(HL7 v2.5 and later)
30	250	CX	O			01846	Payment Reference ID	(HL7 v2.5 and later)

7.17 DG1 – Diagnosis Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	4	SI	R			00375	Set ID diagnosis	Transaction number Order Filler ID^Diagnosis ID
2	2	ID	(B) R		0053	00376	Diagnosis coding method	
3	60	CE	O		0051	00377	Diagnosis code	
4	40	ST	B			00378	Diagnosis description	
5	26	TS	O			00379	Diagnosis date/time	
6	2	IS	R		0052	00380	Diagnosis/DRG type	Diagnosis type (UD)
7	60	CE	B		0118	00381	Major diagnostic category	Not used
8	60	CE	B		0055	00382	Diagnostic related group	Not used
9	2	ID	B		0136	00383	DRG approval indicator	Not used
10	2	IS	B		0056	00384	DRG grouper review code	Not used
11	60	CE	B		0083	00385	Outlier type	Not used
12	3	NM	B			00386	Outlier days	Not used
13	12	CP	B			00387	Outlier cost	Not used
14	4	ST	B			00388	Grouper version and type	Not used
15	2	NM	B			00389	Diagnosis Priority	(1-main diagnosis, 2..n further diagnoses)
16	60	XCN	O	Y		00390	Diagnosing Clinician	
17	3	IS	O		0228	00766	Diagnosis Classification	
18	1	ID	O		0136	00767	Confidential Indicator	
19	26	TS	O			00768	Attestation Date/Time	Not used
20	250	EI	C			01850	Diagnosis Identifier	"Unique ID" (HL7 v2.5 and later)
21	1	ID	C		0206	01894	Diagnosis Action Code	(HL7 v2.5 and later)

7.18 PR1 – Procedures Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	4	SI	R			00391	Set ID procedure	Transaction number Order Filler ID^Diagnosis ID
2	2	IS	(B) R		0089	00392	Procedure coding method	
3	80	CE	R		0088	00393	Procedure code	
4	40	ST	B			00394	Procedure description	
5	26	TS	R			00395	Procedure date/time	Date and time of procedure
6	2	IS	R		0230	00396	Procedure type	
7	4	NM	O			00397	Procedure minutes	
8	120	XCN	B	Y	0010	00398	Anesthesiologist	
9	2	IS	O		0019	00399	Anesthesia code	
10	4	NM	O			00400	Anesthesia minutes	
11	120	XCN	B	Y	0010	00401	Surgeon	Not used (use field 12)
12	230	XCN	B	Y	0010	00402	Procedure Practitioner	
13	60	CE	O		0059	00403	Consent code	
14	2	NM	O			00404	Procedure priority	
15	80	CE	O			00772	Associated Diagnosis Code	
16	250	CE	O	Y	0340	01316	Procedure Code Modifier	(HL7 v2.4 and later)
17	20	IS	O		0416	01501	Procedure DRG Type	(HL7 v2.4 and later)
18	250	CE	O	Y	0417	01502	Tissue Type Code	(HL7 v2.4 and later)
19	441	EI	C			01848	Procedure Identifier	"Unique ID" (HL7 v2.5 and later)
20	81	ID	C		0206	01849	Procedure Action Code	(HL7 v2.5 and later)

7.19 ZDS – Study Instance UID Segment

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	200	RP	R			Z0001	Study Instance UID	StudyInsUID^^Application^Dicom

7.20 SFT – Software Segment (since HL7 version 2.5)

SEQ	LEN	DT	R/O	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
1	567	XON	R			01834	Software Vendor Organization	"medavis"
2	15	ST	R			01835	Software Certified Version or Release Number	For Example: "2.1.110.3"
3	20	ST	R			01836	Software Product Name	"medavis HL7"
4	20	ST	R			01837	Software Binary ID	
5	1024	TX	O			01838	Software Product Information	
6	26	TS	O			01839	Software Install Date	

8 Table Definition

User-defined table 0001 - Sex

Attribute value	Description	
F	Female	
M	Male	
O	Other	
U	Unknown	

Table 0003 - Event type

Attribute value	Description	Explanation
A01	ADT/ACK - Admit/visit notification	(Inpatient) admittance
A02	ADT/ACK - Transfer a patient	
A03	ADT/ACK - Discharge/end visit	
A04	ADT/ACK - Register a patient	Patient registration (outpatient)
A05	ADT/ACK - Pre-admit a patient	Pre-admit a patient
A06	ADT/ACK - Change an outpatient to an inpatient	
A07	ADT/ACK - Change an inpatient to an outpatient	
A08	ADT/ACK - Update patient information	
A11	ADT/ACK - Cancel admit/visit notification	Cancel A01 and A04
A12	ADT/ACK - Cancel transfer	Cancel A02
A13	ADT/ACK - Cancel discharge/end visit	Cancel A03
A19	QRY/ADR - Patient query	
A23	ADT/ACK - Delete a patient record	
A34	ADT/ACK - Merge patient information - patient ID only	
A38	ADT/ACK - Cancel pre-admit	Cancel A05
A42	ADT/ACK - Case merge	
O01	ORM - Order message (also RDE, RDS, RGV, RAS)	
O02	ORR - Order response (also RRE, RRD, RRG, RRA)	
P01	BAR/ACK - Add patient accounts	Open a patient account
P03	DFT/ACK - Post Financial Data	
P12	BAR/ACK - Diagnosis/Procedures "Action code/unique identifier" Mode)	Update a patient account
Q05	UDM/ACK - Unsolicited display update message	Immediate screen display (express message)
R01	ORU/ACK - Unsolicited transmission of an observation message	Unrequested transfer of a report

Table 0008 - Acknowledgement code

Attribute value	Description	Explanation
AA	Original mode: Application Accept	Accepted by application
AA	Enhanced mode: Application Acknowledgement: Accept	new: Accepted by application
AE	Original mode: Application Error	Transfer error
AE	Enhanced mode: Application Acknowledgement: Error	New: Application error
AR	Original mode: Application Reject	Rejected by application
AR	Enhanced mode: Application Acknowledgement: Reject	New: Rejected by application
CA	Enhanced mode: Accept Acknowledgement: Commit Accept	Transfer accepted (Commit)
CE	Enhance mode: Accept Acknowledgement: Commit Error	Transfer error
CR	Enhanced mode: Accept Acknowledgement: Commit Reject	Transfer rejected

Table 0017 – Transaction type

Attribute value	Description	Explanation
2		Book (Final invoice)
5		Cancel

Table 0038 – Order status

Attribute value	Description	Explanation
CM	Order is completed	
IP	In process, unspecified	
SC	In process, scheduled	

Table 0048 – What subject filter

Attribute value	Description	Explanation
APN	Patient name lookup	
RES	Result	

Table 0074 – Diagnostic service section ID

Attribute value	Description	Explanation
CT	Cat scan	
NMR	Nursing service resonance	
NMS	Nuclear medicine scan	
RX	Radiograph	
US	Radiology ultrasound	

Table 0076 - Message type

Attribute value	Description	Explanation
ADR	ADT response	
ACK	General acknowledgement message	
ADT	ADT message	
BAR	Add/change billing account	
DFT	Detail financial transaction	
ORM	Order message	
ORR	Order acknowledgement message	
ORU	Observ result/unsolicited	
QRY	Query, original Mode	
UDM	Unsolicited display message	

Table 86 – Plan ID

Attribute value	Explanation
M	Insured as member
F	Insured as family member
R	Insured as pensioner

Table 0106 - Query/response format code

Attribute value	Description	Explanation
D	Response is in display format	
R	Response is in record-oriented format	

Table 0106 - Quantity limited request

Attribute value	Description	Explanation
RD	Records	

Table 0119 - Order control codes and their meaning

Value	Description	Originator
NW	New order	P
CA	Cancel order request	P
OC	Order cancelled	F
RU	Replaced unsolicited	F
XO	Change order request	P
XX	Order changed, unso.	F
RE	Observations to follow	P,F
SC	Status changed	F,P
SN	Send order number	P

Table 0123 - Result status

Attribute value	Description	Explanation
C	Correction to results	Corrected
F	Final results; results stored and verified. Can only be changed with a corrected result.	Final
I	No results available; specimen received, procedure incomplete	In Progress
O	Order received; specimen not yet received	Waiting
P	Preliminary: A verified early result is available, final results not yet obtained	Preliminary
R	Results stored; not yet verified	
S	No results available; procedure scheduled, but not done	Scheduled

Table 0124 - Transportation mode

Attribute value	Description	Explanation
CART	Cart - patient travels on cart or gurney	
PORT	The examining device goes to patient's location	
WALK	Patient walks to diagnostic service	
WHLC	Wheelchair	
INTENSIVE	Intensive-care patient travels on a gurney	
INTEANAES	Intensive-care and anaesthesia patient travels on a gurney	

Table 0125 - Value type

Attribute value	Description	Explanation
FT	Formatted Text (Display)	
NM	Numeric	
TX	Text Data (Display)	

Table 0136 - Yes/No indicator

Attribute value	Description	Explanation
Y	Yes	
N	No	

Table 0137 - Mail claim party

Attribute value	Description	Explanation
P	Patient	
E	Employer	
I	Social health insurance	
O	Other	
G	Guarantor	

Table 0206 - Segment action code

Attribute value	Description	Explanation
A	Add/Insert	
D	Delete	
U	Update	

Table 0225 - Escort required

Attribute value	Description	Explanation
N	Not Required	
R	Required	
U	Unknown	

Table 0340 - Procedure code modifier

Attribute value	Description	Explanation
TC	Technical Billing	
26	Professional Billing	

Table 0532 - Expanded Yes/No indicator

Attribute value	Description	Explanation
ASKU	Asked but unknown	
N	No	
NA	Not applicable	
NASK	Not asked	
NAV	Temporarily unavailable	
NI	No information	
UNK	Not present	
Y	Yes	

9 Data type Definitions

Data Type Category/Data type	Data Type Name	Notes/Format
<i>Alphanumeric</i>		
ST	String	
TX	Text data	
FT	Formatted text	
<i>Numerical</i>		
CQ	Composite quantity with units	<quantity (NM)> ^ <units (CE)>
MO	Money	<quantity (NM)> ^ <denomination (ID)>
NM	Numeric	
SI	Sequence ID	
SN	Structured numeric	<comparator> ^ <num1 (NM)> ^ <separator/suffix> ^ <num2 (NM)>
<i>Identifier</i>		
ID	Coded values for HL7 tables	
IS	Coded value for user-defined tables	
HD	Hierarchic designator	<namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)> Used only as part of EI and other data types.
EI	Entity identifier	<entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>
RP	Reference pointer	<pointer (ST)> ^ <application ID (HD)> ^ <type of data (ID)> ^ <subtype (ID)>
PL	Person location	<point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>
PT	Processing type	<processing ID (ID)> ^ <processing mode (ID)>
<i>Date/Time</i>		
DT	Date	YYYY[MM[DD]]
TM	Time	HH[MM[SS.S[S[S[S]]]]][+/-ZZZZ]
TS	Time stamp	YYYY[MM[DD[HHMM[SS.S[S[S[S]]]]]]][+/-ZZZZ] ^ <degree of precision>
<i>Code Values</i>		
CE	Coded element	<identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>
CF	Coded element with formatted values	<identifier (ID)> ^ <formatted text (FT)> ^ <name of coding system (ST)> ^ <alternate identifier (ID)> ^ <alternate formatted text (FT)> ^ <name of alternate coding system (ST)>
CK	Composite ID with check digit	<ID number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)>
CN	Composite ID number and name	<ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <source table (IS)> ^ <assigning authority (HD)>
CX	Extended composite ID with check digit	<ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <Effective Date(DT)> ^ <Expiration Date(DT)> ^ <Assigning Jurisdiction(CWE)> ^ <Assigning Agency or Department(CWE)>
XCN	Extended composite ID number and name	In version 2.3, use instead of the CN data type. <ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>
<i>Generic</i>		
CM	Composite	No new CM's are allowed after HL7 version 2.2. Hence there are no new CM's in version 2.3.
<i>Demographics</i>		

Data Type Category/Data type	Data Type Name	Notes/Format
AD	Address	<street address (ST)> ^ < other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)>
PN	Person name	<family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)>
TN	Telephone number	[NN] [(999)]999-9999[X999999][B999999][C any text]
XAD	Extended address	In version 2.3, replaces the AD data type. <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)>
XPN	Extended person name	In version 2.3, replaces the PN data type. <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <name type code (ID) >
XON	Extended composite name and ID number for organizations	<organization name (ST)> ^ <organization name type code (IS)> ^ <ID number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)>
XTN	Extended telecommunications number	In version 2.3, replaces the TN data type. [NNN] [(999)]999-9999 [X999999] [B999999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>
<i>Specialty/Chapter Specific</i>		
<i>Waveform</i>		
CD	Channel definition	<channel identifier (*)> ^ <channel number (NM)> & <channel name (ST)>> ^ <electrode names (*)> ^ <channel sensitivity/units (*)> ^ <calibration parameters (*)> ^ <sampling frequency (NM)> ^ <minimum/maximum data values (*)>
MA	Multiplexed array	For waveform data only, see Chapter 7, Section 7.15.2. <sample 1 from channel 1 (NM)> ^ <sample 1 from channel 2 (NM)> ^ <sample 1 from channel 3 (NM)> ... ~ <sample 2 from channel 1 (NM)> ^ <sample 2 from channel 2 (NM)> ^ <sample 2 from channel 3 (NM)> ... ~
NA	Numeric array	<value1 (NM)> ^ <value2 (NM)> ^ <value3 (NM)> ^ <value4 (NM)> ^ ...
ED	Encapsulated data	Supports ASCII MIME-encoding of binary data. <source application (HD) > ^ <main type of data (ID)> ^ <data subtype (ID)> ^ <encoding (ID)> ^ <data (ST)>
<i>Price data</i>		
CP	Composite price	In version 2.3, replaces the MO data type. <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Data Type Category/Data type	Data Type Name	Notes/Format
<i>Patient Administration/Financial Information</i>		
FC	Financial class	<financial class (ID)> ^ <effective date (TS)>
<i>Extended Queries</i>		
QSC	Query selection criteria	<name of field (ST)> ^ <relational operator (ID)> ^ <value (ST)> ^ <relational conjunction (ID)>
QIP	Query input parameter list	<field name (ST) > ^ <value1 (ST) & value2 (ST) & value3 (ST) ...>
RCD	Row column definition	<HL7 item number (ST)> ^ <HL7 data type (ST)> ^ <maximum column width (NM)>
<i>Master Files</i>		
DLN	Driver's license number	<license number (ST)> ^ <issuing state, province, country (IS)> ^ <expiration date (DT)>
JCC	Job code/class	<job code (IS)> ^ <job class (IS)>
VH	Visiting hours	<start day range (ID)> ^ <end day range (ID)> ^ <start hour range (TM)> ^ <end hour range (TM)>
<i>Medical Records/Information Management</i>		
PPN	Performing person time stamp	<ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ < date/time action performed (TS)>
<i>Time Series:</i>		
DR	Date/time range	Scheduling Chapter Only: <range start date/time (TS)> ^ <range end date/time (TS)>
RI	Repeat interval	Scheduling Chapter Only: <repeat pattern (IS)> ^ <explicit time interval (ST)>
SCV	Scheduling class value pair	Scheduling Chapter Only: <parameter class (IS)> ^ <parameter value (IS)>
TQ	Timing/quantity	<quantity (CQ)> ^ <interval (*)> ^ <duration (*)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ID)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing (*)> <i>medavis RIS:</i> <ul style="list-style-type: none"> ▪ <i>quantity: always '1'</i> ▪ <i>interval: always 'once'</i> ▪ <i>priority:</i> <ul style="list-style-type: none"> <i>A As soon as possible (a priority lower than stat) (RIS: 1st level)</i> <i>R Routine (RIS : no emergency)</i> <i>S Stat (do immediately) (RIS: 3rd level)</i> <i>T Timing critical (RIS: emergency)</i> <i>2 2nd level(RIS: 2nd level)</i>

10 National Extensions

This chapter describes the national needs of the healthcare system which will differ from locale to locale. Some examples of national extensions are:

- Insurance data
- Billing data

10.1 German Extensions

This chapter describes the German extensions.

10.1.1 Insurance information

The HL7 standard does not support the German health insurance card, by default. The German HL7 user group has developed a solution to this problem, which is supported by the medavis HL7.

The health insurance information on a card will be transmitted with an IN1 and IN2 segment and should be used for all types of insurance data.

Please note, the field IN1-3 is a repeatable field and each field's identifier type code must be set.

The following fields must be filled:

POS	LEN	DT	RP#	TBL#	ITEM	ELEMENT NAME	Explanation
IN-1	4	SI			00426	Set ID insurance	Transaction number
IN-3	5	CX	Y		00428	Insurance company ID	Insurance company number
IN-3	7	CX	Y		00428	Insurance company ID	Insurance company number
IN-4	28	XON	Y		00429	Insurance company name	Insurance company name
IN-15.1	4	IS		0086	00440	Plan type	Insurance status
IN-15.2	3	IS		0086	00440	Plan type	Status supplement
IN-16	90	XPN	Y		00441	Name of insured	
IN-18	26	TS			00443	Insured's date of birth	
IN-19	65	XAD	Y		00444	Insured's address	
IN-29	26	TS			00454	Verification date/time	Date/time insurance card last verified
IN-49.1	12	CX	Y		01230	Insured's ID Number	Insurance number
IN-49.8	12	DT	Y		01230	Insured's ID Number	Expiration Date of insurance health card
IN2-5				0137		Mail Claim Party	Type of insurance relationship

Example:

```

...
IN1|||4345345^^^NII~32453^^^NIIP|AOK|||||||1^1|Hamilton^Harry||19740824|
71 Main St^Kalrstown^^76133^|||
|||||||||||||||||||||||1407752067^^^^^^200406|
IN2|||||I|
...

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medavis at a glance

medavis, founded in 1997 in Karlsruhe (Germany), provides sophisticated software for Radiology. Our core products are RIS and PACS.

As a reputable supplier of radiology IT solutions, we cover the entire workflow, from scheduling through to issuing the report. We therefore combine ease of use and efficiency with a seamless integration into enterprise-wide IT structures.

medavis provides a complete range of services, from development, installation and training, right through to ongoing customer care. Our expertise enables us to cooperate with other healthcare system providers of all sizes - to the customers' benefit.

Besides our international network of partners, medavis Shanghai was founded in China in 2003, providing additional support for our customers and partners.

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