

Turmap Information Technologies

# Mediplus PACS & RIS

## HL7 Conformance Statement



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## 1. Introduction

### 1.1. Content

This document specifies the electronic data exchange of Turmap Information System's products of Mediplus PACS&RIS using HL7 V2.5 standard.

**Important Note:** Specifications declared in this document are subject to change without any notification, please contact in advance for the latest.

### 1.2. Terms, Descriptions and Abbreviations

The terms, descriptions and the abbreviations used in this document are given below with their formal names.

PACS	Picture Archiving and Communication System
DICOM	Digital Imaging and Communications in Medicine
RIS	Radiological Information System
HL7	Health Level Seven
ADT	Admission – Discharge - Transfer
MWL	DICOM Modality Worklist
ORM	Order Request Message
ORU	Unsolicited Transmission of an Observation
TCP/IP	Transmission Control Protocol / Internet Protocol
MLLP	Minimal Lower Layer Protocol
IHE	Integrating the Healthcare Enterprise

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## 1.3. Supported Message List

<b>Message Definition</b>	<b>Message Type</b>	<b>Event Code</b>
Admit/Visit Notification	ADT	A01
Transfer a patient	ADT	A02
Discharge/end Visit	ADT	A03
Register a patient	ADT	A04
Pre-admit a patient	ADT	A05
Change an outpatient to an inpatient	ADT	A06
Change an inpatient to an outpatient	ADT	A07
Update Patient Info	ADT	A08
Cancel admit/visit notification	ADT	A11
Cancel Transfer	ADT	A12
Cancel discharge /end visit	ADT	A13
Delete a patient Record	ADT	A23
Cancel pre-admit	ADT	A38
Merge patient – Internal ID	ADT	A40
Request new appointment booking	SRM	S01
Request appointment rescheduling	SRM	S02
Request appointment Delete	SRM	S06
General Order Message	ORM	O01
unsolicited transmission of an observation message	ORU	R01
unsolicited transmission of an observation message Update	ORU	R02
Embedded query language query	EQQ	Q01
Virtual table query	VTQ	Q01

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## 2. Transportation Profile

### MLLP

As it is recommended in HL7 v. 2.5.1, Minimal Lower Layer Protocol (MLLP) is supported for Mediplus as transportation protocol. MLLP is a protocol that based on TCP/IP with OSI-7 layering. Due to the recommendations to provide background among layers, HL7 messages;

- Starts with **0x0B**.
- Ends with **0x1C** and **0x0D**.
- Each segment ends with **0x0D**.

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## 3. HL7 Messages

### 3.1. Introduction

Up to the HL7 V3.0 , all previous versions formed of segments.Each messgae has been described with message formulas

While it has been formulized

- The segments written without any prefix are mandatory
- The segmenst stated in [ ] are optional
- { }represents segment blocks

### 3.2. HL7 Message Grammers

The message grammers of the HL7 messages supported in Mediplus PACS&RIS are below;

#### ADT^A01

MSH Message Header  
EVN Event Type  
PID Patient Identification  
[PD1] Additional Demographics  
PV1 Patient Visit

#### ADT^A02

MSH Message Header  
EVN Event Type  
PID Patient Identification  
[PD1] Additional Demographics  
PV1 Patient Visit

#### ADT^A03

MSH Message Header  
EVN Event Type  
PID Patient Identification  
PV1 Patient Visit

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## ADT^A04

MSH Message Header  
EVN Event Type  
PID Patient Identification  
[PD1] Additional Demographics  
PV1 Patient Visit

## ADT^A05

MSH Message Header  
EVN Event Type  
PID Patient Identification  
[PD1] Additional Demographics  
PV1 Patient Visit

## ADT^A06

MSH Message Header  
EVN Event Type  
PID Patient Identification  
[PD1] Additional Demographics  
PV1 Patient Visit

## ADT^A07

MSH Message Header  
EVN Event Type  
PID Patient Identification  
[PD1] Additional Demographics  
PV1 Patient Visit

## ADT^A08

MSH Message Header  
EVN Event Type  
PID Patient Identification  
[PD1] Additional Demographics  
PV1 Patient Visit

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## ADT^A11

MSH Message Header  
EVN Event Type  
PID Patient Identification  
[PD1] Additional Demographics  
PV1 Patient Visit

## ADT^A12

MSH Message Header  
EVN Event Type  
PID Patient Identification  
[PD1] Additional Demographics  
PV1 Patient Visit

## ADT^A13

MSH Message Header  
EVN Event Type  
PID Patient Identification  
[PD1] Additional Demographics  
PV1 Patient Visit

## ADT^A23

MSH Message Header  
EVN Event Type  
PID Patient Identification  
[PD1] Additional Demographics  
PV1 Patient Visit

## ADT^A38

MSH Message Header  
EVN Event Type  
PID Patient Identification  
[PD1] Additional Demographics  
PV1 Patient Visit

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## ADT^A40

MSH Message Header  
EVN Event Type  
PID Patient Identification  
[PD1] Additional Demographics  
PV1 Patient Visit

## SRM^S01

MSH Message Header  
ARQ Appointment Request Information  
PID Patient Identification  
[ PV1 ] Patient Visit  
[ { DG1 } ] Diagnosis  
RGS Resource Group  
AIS Appointment Information Service

## SRM^S02

MSH Message Header  
ARQ Appointment Request Information  
PID Patient Identification  
[ PV1 ] Patient Visit  
[ { DG1 } ] Diagnosis  
RGS Resource Group  
AIS Appointment Information Service

## SRM^S06

MSH Message Header  
ARQ Appointment Request Information  
PID Patient Identification  
RGS Resource Group  
AIS Appointment Information Service

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## ORM^O01

```
MSH
[ { NTE } ]
[ PATIENT
PID
[PD1 ]
[ {NTE } ]
[ PATIENT VISIT
PV1
[PV2 ]
]
[ INSURANCE
IN1
[IN2 ]
[ {IN3 } ]
]
[GT1 ]
[ {AL1 } ]
]
{ ORDER
ORC
[ ORDER DETAIL
OBR
[ {NTE } ]
[ {DG1 } ]
[ OBSERVATION
OBX
[ {NTE } ]
]
]
[ {CTI } ]
[BLG ]
}
```

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## ORR^O02

MSH Message Header  
MSA Patient Information  
[ ERR ] Patient Visit  
[RESPONSE  
[PATIENT  
PID  
[ {NTE} ]  
]  
{ORDER  
ORC  
OBR  
[ {NTE} ]  
[ {CTI} ]  
}  
]

## ORU^R01

MSH Message Header  
PID Patient Information  
[ PV1 ] Patient Visit  
OBR Observations Report ID  
OBX Observation Result

## EQQ^Q01

MSH Message Header  
EQL EQL Definition

## VTQ^Q01

MSH Message Header  
VTQ VTQ Definition  
[ RDF ] Table Row Definition

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## 4. HL7 Message Segments

### 4.1. Notes on table structure

The segments used in Mediplus PACS&RIS HL7 messaging are listed below in form of table. If we describe the columns in order.

SEQ – Sequence of field

LEN – Maximum number of character

DT - Data Type

OPT – Optionality , those fields ‘R’ are the required fields to be in message by HL7 standards.

RP – Repeatable

TBL – If the value of this field is assigning from a user defined table.

ITEM- Unique reference number of field in HL7

MEDIPLUS – this is not a column of standard HL7 segment table, which is added by us. ‘\*’ (star) sign represents that those fields in segment are supported by Mediplus PACS&RIS applications.

### 4.2. Segments

#### MSH

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME	MEDIPLUS
1	1	ST	R			00001	Field Separator	*
2	4	ST	R			00002	Encoding Characters	*
3	180	HD	O			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	*

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8	40	ST	O			00008	Security	
9	7	CM	R			00009	Message Type	*
10	20	ST	R			00010	Message Control ID	*
11	3	PT	R			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 Acknowledgment Type	
16	2	ID	O		0155	00016	Application Acknowledgment 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	

### EVN

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME	MEDIPLUS
1	3	ID	B		0003	00099	Event Type Code	*
2	26	TS	R			00100	Recorded Date/Time	*
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	

### PID

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME	MEDIPLUS
1	4	SI	O			00104	Set ID - Patient ID	*
2	20	CX	O			00105	Patient ID (External ID)	
3	20	CX	R	Y		00106	Patient ID (Internal ID)	*
4	20	CX	O	Y		00107	Alternate Patient ID - PID	
5	48	XPN	R			00108	Patient Name	*
6	48	XPN	O			00109	Mother's Maiden Name	*
7	26	TS	O			00110	Date/Time of Birth	*
8	1	IS	O		0001	00111	Sex	*
9	48	XPN	O	Y		00112	Patient Alias	
10	1	IS	O		0005	00113	Race	

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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	Primary Language	
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	CM	O			00123	Driver's License Number - Patient	
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	*
27	60	CE	O		0172	00130	Veterans Military Status	*
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	

### PV1

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME	MEDIPLUS
1	4	SI	O			00131	Set ID - PV1	*
2	1	IS	R		0004	00132	Patient Class	*
3	80	PL	O			00133	Assigned Patient Location	*
4	2	IS	O		0007	00134	Admission Type	*
5	20	CX	O			00135	Preadmit Number	*
6	80	PL	O			00136	Prior Patient Location	
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	
11	80	PL	O			00141	Temporary Location	
12	2	IS	O		0087	00142	Preadmit Test Indicator	

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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	O			00149	Visit Number	*
20	50	CM	O	Y	0064	00150	Financial Class	
21	2	IS	O		0032	00151	Charge Price Indicator	
22	2	IS	O		0045	00152	Courtesy Code	
23	2	IS	O		0046	00153	Credit Rating	
24	2	IS	O	Y	0044	00154	Contract Code	
25	8	DT	O	Y		00155	Contract Effective Date	
26	12	NM	O	Y		00156	Contract Amount	
27	3	NM	O	Y		00157	Contract Period	
28	2	IS	O		0073	00158	Interest Code	
29	1	IS	O		0110	00159	Transfer to Bad Debt Code	
30	8	DT	O			00160	Transfer to Bad Debt Date	
31	10	IS	O		0021	00161	Bad Debt Agency Code	
32	12	NM	O			00162	Bad Debt Transfer Amount	
33	12	NM	O			00163	Bad Debt Recovery Amount	
34	1	IS	O		0111	00164	Delete Account Indicator	
35	8	DT	O			00165	Delete Account Date	
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	
40	1	IS	B		0116	00170	Bed Status	
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	
45	26	TS	O			00175	Discharge Date/Time	
46	12	NM	O			00176	Current Patient Balance	
47	12	NM	O			00177	Total Charges	
48	12	NM	O			00178	Total Adjustments	
49	12	NM	O			00179	Total Payments	

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50	20	CX	O		0192	00180	Alternate Visit ID	
51	1	IS	O		0326	01226	Visit Indicator	
52	60	XCN	O	Y	0010	01224	Other Healthcare Provider	

### PD1

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME	MEDIPLUS
1	2	IS	O	Y	0223	00755	Living Dependency	
2	2	IS	O		0220	00742	Living Arrangement	
3	90	XON	O	Y		00756	Patient Primary Facility	
4	90	XCN	O	Y		00757	Patient Primary Care Provider Name & ID No.	
5	2	IS	O		0231	00745	Student Indicator	
6	2	IS	O		0295	00753	Handicap	
7	2	IS	O		0315	00759	Living Will	
8	2	IS	O		0316	00760	Organ Donor	
9	2	ID	O		0136	00761	Separate Bill	
10	2	CX	O	Y		00762	Duplicate Patient	
11	1	IS	O		0125	00743	Publicity Indicator	
12	1	ID	O		0136	01283	Protection Indicator	

### OBR

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME	MEDIPLUS
1	4	SI	C			00237	Set ID – OBR	
2	75	EI	C			00216	Placer Order Number	
3	75	EI	C			00217	Filler Order Number +	*
4	200	CE	R			00238	Universal Service ID	*
5	2	ID	B			00239	Priority	*
6	26	TS	B			00240	Requested Date/time	
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 *	

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11	1	ID	O		0065	00245	Specimen Action Code *	
12	60	CE	O			00246	Danger Code	
13	300	ST	O			00247	Relevant Clinical Info.	*
14	26	TS	C			00248	Specimen Received Date/Time *	
15	300	CM	O		0070	00249	Specimen Source *	
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	*
19	60	ST	O			00252	Placer field 2	*
20	60	ST	O			00253	Filler Field 1 +	*
21	60	ST	O			00254	Filler Field 2 +	*
22	26	TS	C			00255	Results Rpt/Status Chng - Date/Time +	
23	40	CM	O			00256	Charge to Practice +	
24	10	ID	O		0074	00257	Diagnostic Serv Sect ID	
25	1	ID	C		0123	00258	Result Status +	
26	400	CM	O			00259	Parent Result +	
27	200	TQ	O	Y		00221	Quantity/Timing	
28	150	XCN	O	Y/5		00260	Result Copies To	
29	150	CM	O			00261	Parent	
30	20	ID	O		0124	00262	Transportation Mode	
31	300	CE	O	Y		00263	Reason for Study	*
32	200	CM	O			00264	Principal Result Interpreter +	
33	200	CM	O	Y		00265	Assistant Result Interpreter +	
34	200	CM	O	Y		00266	Technician +	
35	200	CM	O	Y		00267	Transcriptionist +	
36	26	TS	O			00268	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 Patient Transport Comment	

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### OBX

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME	MEDIPLUS
1	10	SI	O			00569	Set ID – OBX	*
2	2	ID	C		0125	00570	Value Type	*
3	590	CE	R			00571	Observation Identifier	*
4	20	ST	C			00572	Observation Sub-ID	
5	65536 [ The length of the observation value field is variable, depending upon value type. See OBX-2-value type .]	*	C	Y [ May repeat for multipart, single answer results with appropriate data types, e.g., CE, TX, and FT data types.]		00573	Observation Value	*
6	60	CE	O			00574	Units	
7	10	ST	O			00575	References Range	
8	5	ID	O	Y/5	0078	00576	Abnormal Flags	
9	5	NM	O			00577	Probability	
10	2	ID	O	Y	0080	00578	Nature of Abnormal Test	
11	1	ID	R		0085	00579	Observ Result Status	*
12	26	TS	O			00580	Date Last Obs Normal Values	
13	20	ST	O			00581	User Defined Access Checks	
14	26	TS	O			00582	Date/Time of the Observation	*
15	60	CE	O			00583	Producer's ID	
16	80	XCN	O			00584	Responsible Observer	
17	60	CE	O	Y		00936	Observation Method	

### ARQ

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME	MEDIPLUS
1	1	ST	R			00001	Field Separator	*
2	4	ST	R			00002	Encoding Characters	*
3	227	HD	O		0361	00003	Sending Application	

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4	227	HD	O		0362	00004	Sending Facility	
5	227	HD	O		0361	00005	Receiving Application	
6	227	HD	O		0362	00006	Receiving Facility	
7	26	TS	R			00007	Date/Time Of Message	*
8	40	ST	O			00008	Security	
9	15	MSG	R			00009	Message Type	*
10	20	ST	R			00010	Message Control ID	*
11	3	PT	R			00011	Processing ID	*
12	60	VID	R			00012	Version ID	*
13	15	NM	O			00013	Sequence Number	
14	180	ST	O			00014	Continuation Pointer	
15	2	ID	O		0155	00015	Accept Acknowledgment Type	
16	2	ID	O		0155	00016	Application Acknowledgment Type	
17	3	ID	O		0399	00017	Country Code	
18	16	ID	O	Y	0211	00692	Character Set	
19	250	CE	O			00693	Principal Language Of Message	
20	20	ID	O		0356	01317	Alternate Character Set Handling Scheme	
21	427	EI	O	Y		01598	Message Profile Identifier	

### RGS

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME	MEDIPLUS
1	4	SI	R			01203	Set ID - RGS	*
2	3	ID	C		0206	00763	Segment Action Code	
3	250	CE	O			01204	Resource Group ID	*

### VTQ

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME	MEDIPLUS
1	32	ST	O			00696	Query Tag	*
2	1	ID	R		0106	00697	Query/Response Format Code	*
3	60	CE	R			00698	VT Query Name	*
4	60	CE	R			00699	Virtual Table Name	*
5	256	QSC	O	Y		00700	Selection Criteria	*

### RDF

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SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME	MEDIPLUS
1	3	NM	R			00701	Number of Columns per Row	*
2	40	RCD	R	Y		00702	Column Description	*

### 5. REFERENCES

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- [ 2] H.K. Huang, “PACS and Imaging Informatics ” , 2 0 04
- [ 3] Dr . David Harvey, 2 0 04 , “Understanding the role of IHE in PACS
- [4] “What is HL7 ” , ht t p: / /www. hl7. o r g/