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HL7 Conformance Statement

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Contents

1 Introduction **16**

1.1 HL7v2 . . . 16
1.1.1 Transport Protocol: MLLP . . . 16
1.1.2 Security . . . 16
1.1.3 Message Encoding . . . 17
1.1.4 Data Types . . . 17
1.1.4.1 CWE – Coded with Exceptions . . . 17
1.1.4.2 CX – Extended Composite ID with Check Digit . . . 18
1.1.4.3 HD – Hierarchic Designator . . . 18
1.1.4.4 XAD – Extended Address . . . 18
1.1.4.5 XCN – Extended Composite ID Number And Name . . . 19
1.1.4.6 XPN – Extended Person Name . . . 20
1.1.4.7 XTN – Extended Telecommunication Number . . . 20
1.1.5 Common Segments . . . 21
1.1.5.1 MSH Segment . . . 21
1.1.5.2 EVN Segment . . . 24
1.1.5.3 PID Segment . . . 24
1.1.5.4 PV1 Segment . . . 27
1.1.5.5 MRG Segment . . . 28
1.1.5.6 IN1 Segment . . . 29
1.1.5.7 UAC Segment . . . 30
1.1.5.8 ROL Segment . . . 30
1.1.6 Responses . . . 31
1.2 HL7v3 . . . 33
1.2.1 Required Elements . . . 33
1.2.2 General Responses . . . 35
1.2.3 Notable XML Elements . . . 37
1.3 HL7 FHIR . . . 37
1.3.1 Resource Exchange Format . . . 38
1.3.2 Supported FHIR Versions . . . 39
1.3.2.1 Resource Maturity-Levels . . . 39
1.3.3 Resource Identity . . . 40
1.3.3.1 Resource Identifiers . . . 40
1.3.4 Resource Versioning . . . 40
1.3.5 Resource Relationships . . . 40
1.3.5.1 URLs in the Reference.reference Element . . . 40
1.3.5.2 Identifiers and Type Information in the identifier and type Elements 41
1.3.5.3 Contained Resources in the contained Element . . . 41
1.3.5.4 Recommendation . . . 42
1.3.6 Notes on FHIR Interactions . . . 43
1.3.6.1 Create . . . 43
1.3.6.2 Update . . . 44
1.3.6.3 Patch . . . 44
1.3.6.4 Delete . . . 44
1.3.6.5 Batch/Transaction . . . 44
1.3.6.6 Read . . . 45
1.3.6.7 Version-Specific Read . . . 45
1.3.6.8 Search . . . 45
1.3.6.9 Optimizing Feeds . . . 47

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1.3.6.10 Timezone Handling . . . 47
1.3.6.11 Custom Operation Outcome Codes . . . 47
1.3.6.12 Reverse Proxy Awareness . . . 47
1.3.6.13 Automated Resource De-Duplication . . . 48
1.3.6.14 Processing of Patient Resources . . . 49
1.3.6.15 Special Attributes and Extensions . . . 50
1.3.6.16 Mobile Access to Health Documents (MHD) Handling . . . 51
1.3.7 FHIR Operations . . . 51
1.3.7.1 Patient User Account Creation . . . 51
1.3.7.2 Patient User Account Deactivation . . . 52
1.3.7.3 Patient Match . . . 53
1.3.7.4 Patient Merge . . . 54
1.3.8 Extensions and Profiling . . . 54
1.3.9 Security . . . 54
1.3.9.1 HDR Registry Integration . . . 54
1.3.9.2 ACS Protecting HDR Resources . . . 55

2 Schedules and Appointments 56
2.1 HL7 FHIR . . . 56
2.1.1 Schedules and Slots . . . 56
2.1.1.1 Examples . . . 57
2.1.1.2 Slot Deletion . . . 58
2.1.2 Creation of Appointment Schedules . . . 58
2.1.2.1 Examples . . . 59
2.1.3 Appointment Creation and Management . . . 60
2.1.3.1 Examples . . . 61
2.1.4 Online Appointment (Virtual Visit) . . . 63
2.1.4.1 Examples . . . 63
2.1.5 Tasks . . . 65
2.1.5.1 Book Appointment Task . . . 68
2.1.5.2 Data Donation Task . . . 69
2.1.5.3 Form Task . . . 70
2.1.5.4 Information Sheet Task . . . 71
2.1.5.5 Read Task . . . 72
2.1.5.6 Upload Task . . . 72
2.1.6 Task Templates . . . 73
2.1.6.1 Book Appointment Task . . . 74
2.1.6.2 Form Task . . . 76
2.1.6.3 Read Task . . . 77
2.1.6.4 Upload Task . . . 78
2.2 HL7v2 . . . 79
2.2.1 Add Appointment . . . 79
2.2.1.1 Message Structure . . . 79
2.2.1.2 Field Overview . . . 79
2.2.2 Delete Appointment . . . 81

3 Document Administration 82
3.1 Submit Document . . . 83
3.1.1 Submit Document – HL7v2 . . . 83
3.1.1.1 Message Structure . . . 83
3.1.1.2 Field Overview . . . 84
3.1.1.3 HL7v2 Inbound Message Structure . . . 91

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Unrestricted.

3.1.1.4 HL7v2 Outbound Message Structure . . . 92
3.2 Append Document . . . 92
3.2.1 Append Document – HL7v2 . . . 92
3.2.1.1 Message Structure . . . 93
3.2.1.2 Field Overview . . . 93
3.3 Transform Document . . . 94
3.3.1 Transform Document – HL7v2 . . . 94
3.3.1.1 Message Structure . . . 94
3.3.1.2 Field Overview . . . 94
3.4 Replace Document . . . 95
3.4.1 Replace Document – HL7v2 . . . 95
3.4.1.1 Message Structure . . . 95
3.4.1.2 Field Overview . . . 96
3.5 Deprecate Document . . . 97
3.5.1 Deprecate Document – HL7v2 . . . 97
3.5.1.1 Message Structure . . . 97
3.5.1.2 Field Overview . . . 97

4 eHealth Stroke 98
4.1 HL7 FHIR . . . 98
4.1.1 Authorized Therapy . . . 98
4.1.2 Emergency Case . . . 102
4.1.3 FAST Assessment . . . 104
4.1.4 Glasgow Coma Scale (GCS) . . . 108
4.1.5 Imaging Notes . . . 112
4.1.6 Lysis Contraindications . . . 115
4.1.7 National Institutes of Health Stroke Scale (NIHSS) . . . 118
4.1.8 Next of Kin . . . 125
4.1.9 Onset Timer . . . 128
4.1.10 Order . . . 129
4.1.11 Pre-Stroke Modified Rankin Scale (Pre-Stroke mRS) . . . 132
4.1.12 Process Steps and Time Log . . . 135
4.1.13 Type of Stroke, Affected Areas, and Laterality . . . 136
4.1.14 Vital Signs . . . 142
4.1.14.1 Vital Signs Panel . . . 146
4.2 HL7v2 . . . 148
4.2.1 Order Imaging . . . 148

5 Encounter Administration 150
5.1 Admit Inpatient . . . 150
5.1.1 Admit Inpatient – HL7v2 . . . 150
5.1.1.1 Message Structure . . . 151
5.1.1.2 Field Overview . . . 151
5.1.2 Admit Inpatient – HL7v3 . . . 154
5.1.2.1 Message Structure . . . 154
5.1.2.2 Inbound Message Structure . . . 154
5.1.2.3 Outbound Message Structure . . . 155
5.2 Register Outpatient . . . 155
5.2.1 Register Outpatient – HL7v2 . . . 155
5.2.1.1 Message Structure . . . 155
5.2.1.2 Field Overview . . . 156
5.2.2 Register Outpatient – HL7v3 . . . 158

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Unrestricted.

5.2.2.1 Inbound Message Structure . . . 159
5.2.2.2 Outbound Message Structure . . . 159
5.3 Discharge Patient . . . 159
5.3.1 Discharge Patient – HL7v2 . . . 159
5.3.1.1 Message Structure . . . 160
5.3.1.2 Field Overview . . . 160
5.3.2 Discharge Patient – HL7v3 . . . 163
5.3.2.1 Inbound Message Structure . . . 163
5.3.2.2 Outbound Message Structure . . . 164
5.4 Cancel Admit Inpatient/Outpatient . . . 164
5.4.1 Cancel Admit Inpatient/Outpatient – HL7v2 . . . 164
5.4.1.1 Message Structure . . . 164
5.4.1.2 Field Overview . . . 165
5.4.2 Cancel Admit Inpatient/Outpatient – HL7v3 . . . 167
5.4.2.1 Inbound Message Structure . . . 167
5.4.2.2 Outbound Message Structure . . . 168
5.5 Cancel Discharge Patient . . . 168
5.5.1 Cancel Discharge Patient – HL7v2 . . . 168
5.5.1.1 Message Structure . . . 168
5.5.1.2 Field Overview . . . 169
5.5.2 Cancel Discharge Patient – HL7v3 . . . 171
5.5.2.1 Message Structure . . . 171
5.5.2.2 Inbound Message Structure . . . 171
5.5.2.3 Outbound Message Structure . . . 173
5.6 Transfer Patient . . . 173
5.6.1 Transfer Patient – HL7v2 . . . 173
5.6.1.1 Message Structure . . . 173
5.6.1.2 Field Overview . . . 174
5.6.2 Transfer Patient – HL7v3 . . . 176
5.6.2.1 Inbound Message Structure . . . 176
5.6.2.2 Outbound Message Structure . . . 178
5.7 Cancel Transfer Patient . . . 178
5.7.1 Cancel Transfer Patient – HL7v2 . . . 178
5.7.1.1 Message Structure . . . 178
5.7.1.2 Field Overview . . . 179
5.8 Change Outpatient To Inpatient . . . 181
5.8.1 Change Outpatient To Inpatient – HL7v2 . . . 181
5.8.1.1 Message Structure . . . 181
5.8.1.2 Field Overview . . . 182
5.8.2 Change Outpatient To Inpatient – HL7v3 . . . 184
5.8.2.1 Message Structure . . . 184
5.9 Change Inpatient To Outpatient . . . 185
5.9.1 Change Inpatient To Outpatient – HL7v2 . . . 185
5.9.1.1 Message Structure . . . 185
5.9.1.2 Field Overview . . . 186
5.9.2 Change Inpatient To Outpatient – HL7v3 . . . 188
5.9.2.1 Inbound Message Structure . . . 188
5.9.2.2 Outbound Message Structure . . . 188
5.10 Change Patient Identifier List . . . 188
5.10.1 Change Patient Identifier List – HL7v2 . . . 189
5.10.1.1 Message Structure . . . 189
5.10.1.2 Field Overview . . . 189

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Unrestricted.

5.11 Change Attending Doctor . . . 190
5.11.1 Change Attending Doctor – HL7v2 . . . 190
5.11.1.1 Message Structure . . . 190
5.11.1.2 Field Overview . . . 191
5.12 Cancel Change Attending Doctor . . . 193
5.12.1 Cancel Change Attending Doctor – HL7v2 . . . 193
5.12.1.1 Message Structure . . . 193
5.12.1.2 Field Overview . . . 194
5.13 Begin Leave of Absence . . . 197
5.13.1 Begin Leave of Absence – HL7v2 . . . 197
5.13.1.1 Message Structure . . . 197
5.13.1.2 Field Overview . . . 198
5.14 Cancel Begin Leave of Absence . . . 199
5.14.1 Cancel Begin Leave of Absence – HL7v2 . . . 199
5.14.1.1 Message Structure . . . 199
5.14.1.2 Field Overview . . . 200
5.15 End Leave of Absence . . . 202
5.15.1 End Leave of Absence – HL7v2 . . . 202
5.15.1.1 Message Structure . . . 202
5.15.1.2 Field Overview . . . 203
5.16 Cancel End Leave Of Absence . . . 205
5.16.1 Cancel End Leave Of Absence – HL7v2 . . . 205
5.16.1.1 Message Structure . . . 205
5.16.1.2 Field Overview . . . 206
5.17 Move Account Information . . . 207
5.17.1 Move Account Information – HL7v2 . . . 207
5.17.1.1 Message Structure . . . 207
5.17.1.2 Field Overview . . . 208
5.18 Update Encounter Event . . . 210
5.18.1 Update Encounter Event – HL7v2 . . . 210
5.18.1.1 Message Structure . . . 210
5.18.1.2 Field Overview . . . 211
5.19 Cancel Encounter Event . . . 212
5.19.1 Cancel Encounter Event – HL7v2 . . . 212
5.19.1.1 Message Structure . . . 212
5.19.1.2 Field Overview . . . 213
5.20 Merge Patients/Encounters . . . 215
5.20.1 Merge Patients/Encounters – HL7v2 . . . 215
5.20.1.1 Message Structure . . . 215
5.20.1.2 Field Overview . . . 216
5.21 Retrieve DICOM Studies – HL7v2 . . . 217

6 Forms 218
6.1 Supported Types and Their Mapping . . . 219
6.2 Data Extraction . . . 226
6.3 Translations of Forms . . . 234
6.4 Integrating Questionnaires . . . 237

7 Observations 238
7.1 Unsolicited Transmission of an Observation Message . . . 238
7.1.1 Message Structure . . . 238
7.1.1.1 Field Overview . . . 238

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Unrestricted.

8 Patient Administration 241
8.1 Create Patient . . . 241
8.1.1 Create Patient – HL7v2 . . . 241
8.1.1.1 Message Structure . . . 242
8.1.1.2 Field Overview . . . 243
8.1.2 Create Patient – HL7v3 . . . 245
8.1.2.1 Inbound Message Structure . . . 245
8.1.2.2 Outbound Message Structure . . . 247
8.2 Update Patient . . . 248
8.2.1 Update Patient – HL7v2 . . . 248
8.2.1.1 Message Structure . . . 248
8.2.1.2 Field Overview . . . 249
8.2.2 Update Patient – HL7v3 . . . 251
8.2.2.1 Inbound Message Structure . . . 251
8.2.2.2 Outbound Message Structure . . . 254
8.3 Merge Patients . . . 254
8.3.1 Merge Patients – HL7v2 . . . 254
8.3.1.1 Message Structure . . . 254
8.3.1.2 Field Overview . . . 255
8.3.2 Merge Patients – HL7v3 . . . 257
8.3.2.1 Inbound Message Structure . . . 257
8.3.2.2 Outbound Message Structure . . . 259
8.4 Link Patients . . . 259
8.4.1 Link Patients – HL7v2 . . . 259
8.4.1.1 Message Structure . . . 259
8.4.1.2 Field Overview . . . 260
8.5 Unlink Patients . . . 261
8.5.1 Unlink Patients – HL7v2 . . . 261
8.5.1.1 Message Structure . . . 261
8.5.1.2 Field Overview . . . 261
8.6 Master Patient Change . . . 262
8.6.1 XAD-PID Change Notification – HL7v2 . . . 262
8.6.1.1 Message Structure . . . 262
8.7 Query Patient IDs . . . 263
8.7.1 Query Patient IDs – HL7v2 . . . 264
8.7.1.1 Message Structure . . . 264
8.7.1.2 Field Overview . . . 265
8.7.2 Query Patient IDs – HL7v3 . . . 266
8.7.2.1 Inbound Message Structure . . . 266
8.7.2.2 Outbound Message Structure . . . 267
8.8 Query Patients . . . 270
8.8.1 Query Patients – HL7v2 . . . 271
8.8.1.1 Message Structure . . . 272
8.8.1.2 Field Overview . . . 273
8.8.2 Query Patients – HL7v3 . . . 275
8.8.2.1 Inbound Message Structure . . . 275
8.8.2.2 Outbound Message Structure . . . 276

9 Patient Chart 285
9.1 Filter . . . 285
9.2 Allergies . . . 285
9.3 Diagnoses . . . 287

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9.4 Laboratory Report . . . 288
9.5 Encounters . . . 288
9.6 Medications . . . 289
9.7 Physiological Parameters . . . 291
9.8 Procedures . . . 293
9.9 Vaccinations . . . 294

10 Laboratory Reports **297**
10.1 Filter . . . 297

11 Health-App Data **300**

12 Data Donation **304**
12.1 FHIR ResearchStudy . . . 304
12.2 FHIR Consent . . . 307
12.3 FHIR Bundle . . . 310

13 User Account Administration **313**
13.1 Deactivate User Account of a Patient . . . 313
13.1.1 Deactivate User Account of a Patient – HL7v2 . . . 313
13.1.1.1 Message Structure . . . 313
13.1.1.2 Field Overview . . . 314

14 ELGA **316**
14.1 ELGA-Specific Administrative Genders . . . 316

15 User-defined Tables **317**
15.1 MDM Tables . . . 317
15.1.1 Reference ID Type Codes . . . 317

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List of Figures

1 ACS Protecting HDR Resources 55

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List of Tables

1 Basic Message Structure 16
2 MSH Segment Structure 23
3 EVN Segment Structure 24
4 PID Segment Structure 26
5 PV1 Segment Structure 28
6 MRG Segment Structure 29
7 IN1 Segment Structure 29
8 UAC Segment Structure 30
9 ROL Segment Structure 31
10 Fields and Cardinality for Account Creation 51
11 Fields and Cardinality for Account Deactivation 53
12 FHIR Elements for the Schedule Resource 56
13 FHIR Elements for the Slot Resource 56
14 Actors in Schedules Creation 58
15 FHIR Elements for the Appointment Resource 60
16 Appointment.participant Elements 61
17 Display Logic for Address and Contact Details 61
18 Online-Specific Location Identifier 63
19 FHIR Elements for the Task Resource 66
20 FHIR Elements for the Task Resource - Input Field (Book Appointment Task) 68
21 FHIR Elements for the Focus Field (Data Donation Task) 69
22 FHIR Elements for the Focus Field (Form Task) 70
23 FHIR Elements for the Input Field (Read Task) 72
24 FHIR Elements for the Input Field (Upload Task) 72
25 Elements of ActivityDefinitions for Task Templates 74
26 Add Appointment Segments 79
27 Document Administration Supported Transactions 82
28 Message Structure Segments 83
29 Mapping from HL7 MDM message to XDS Data – SessionInfo 84
30 Mapping from HL7 MDM message to XDS Data – SubmissionInfo 85
31 Mapping from HL7 MDM message to XDS Data – DocumentMetadata 89
32 Mapping from HL7 MDM message to XDS Data – Document 91
33 Append Document Segments 93
34 Mapping from HL7 MDM message to XDS Data for Document Addendum 93

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35 Transform Document Segments . . . 94
36 Mapping from HL7 MDM message to XDS Data for Document Transform . . . 94
37 Replace Document Segments . . . 95
38 Mapping from HL7 MDM message to XDS Data for Document Replacement . . . 96
39 Deprecate Document Segments . . . 97
40 FHIR Elements for the ServiceRequest Resource Authorized Therapy . . . 98
41 FHIR Elements for the Encounter Resource Emergency Case . . . 102
42 FHIR Elements for the Questionnaire Resource FAST Assessment . . . 104
43 FHIR Elements for the Questionnaire Resource GCS . . . 108
44 FHIR Elements for the DiagnosticReport Resource Imaging Notes . . . 112
45 FHIR Elements for the Condition Resource Lysis Contraindications . . . 115
46 FHIR Elements for the Observation Resource NIHSS . . . 118
47 FHIR Elements for the Questionnaire Resource Next of Kin . . . 125
48 FHIR Elements for the Observation Resource Onset Timer . . . 128
49 FHIR Elements for the ServiceRequest Resource Order . . . 129
50 FHIR Elements for the Questionnaire Resource Pre-Stroke mRS . . . 132
51 FHIR Elements for the Task Resource Process Step . . . 135
52 FHIR Elements for the DiagnosticReport Resource Type of Stroke including Affected Areas and Laterality . . . 136
53 SNOMED CT Codes for Affected Area . . . 138
54 SNOMED CT Codes for Laterality . . . 138
55 SNOMED CT Codes for Diagnostic Report Conclusion . . . 138
56 FHIR Elements for the Observation Resource Vital Signs . . . 142
57 FHIR Elements for the Observation Resource Vital Signs Panel . . . 146
58 ORM Message Segments Overview . . . 148
59 Available HL7 Fields/Segments Concerning Encounter Properties . . . 150
60 Segments: Admit Inpatient . . . 151
61 Fields relevant for the Begin Inpatient Visit Transaction . . . 152
62 Begin Outpatient Visit Segments . . . 155
63 Fields relevant for the Begin Outpatient Visit Transaction . . . 157
64 End Patient Visit Segments . . . 160
65 Fields relevant for the End Patient Visit Transaction . . . 161
66 Cancel Patient Visit Segments . . . 164
67 Fields relevant for the Cancel Patient Visit Transaction . . . 166
68 Cancel End Patient Visit Segments . . . 168
69 Fields relevant for the Cancel End Patient Visit Transaction . . . 170

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Unrestricted.

70 Delegate Patient Visit Segments . . . 173
71 Fields relevant for the Transfer Patient Transaction . . . 175
72 Delegate Patient Visit Segments . . . 178
73 Fields relevant for theCancel Transfer Patient Transaction . . . 180
74 Change Outpatient To Inpatient Segments . . . 181
75 Fields relevant for the Change Outpatient To Inpatient Transaction . . . 183
76 Change Inpatient To Outpatient Segments . . . 185
77 Fields relevant for the Change Inpatient To Outpatient Transaction . . . 187
78 Change Patient Identifier List Segments . . . 189
79 Fields relevant for the Change Patient Identifier List Transaction . . . 190
80 Change Attending Doctor Segments . . . 190
81 Fields relevant for the Change Attending Doctor Transaction . . . 192
82 Cancel Change Attending Doctor Segments . . . 193
83 Fields relevant for the Cancel Change Attending Doctor Transaction . . . 196
84 Begin Leave of Absence Segments . . . 197
85 Fields relevant for the Begin Leave of Absence Transaction . . . 198
86 Cancel Begin Leave of Absence Segments . . . 199
87 Fields relevant for the Cancel Begin Leave of Absence Transaction . . . 201
88 End Leave of Absence Segments . . . 202
89 Fields relevant for the End Leave of Absence Transaction . . . 204
90 Cancel End Leave Of Absence Segments . . . 205
91 Fields relevant for the Cancel End Leave of Absence Transaction . . . 207
92 Move Account Information Segments . . . 207
93 Fields relevant for the Move Account Information Transaction . . . 209
94 Update Encounter Event Segments . . . 210
95 Fields relevant for the Update Encounter Event Transaction . . . 211
96 Cancel Encounter Event Segments . . . 212
97 Fields relevant for the Cancel Encounter Event Transaction . . . 214
98 Merge Patients/Encounters Segments . . . 215
99 Fields relevant for the Merge Patients/Encounters Transaction . . . 217
100 FHIR Elements for the Questionnaire Resource . . . 218
101 FHIR Elements for the QuestionnaireResponse Resource . . . 218
102 Supported Item Types and their Mapping . . . 219
103 Elements needed for the Observation-based Extraction . . . 226
104 Elements needed for the Definition-based Extraction . . . 226
105 FHIR Elements for the Multilingual Questionnaire Resource . . . 235

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Unrestricted.

106 ORU Message Segments Overview 238
107 Processable Observation Information in an ORU R01 Message 239
108 Available HL7 Fields/Segments Concerning Patient Properties 241
109 List of Segments – Create Patient 242
110 Fields Relevant for the Create Patient Transaction 244
111 List of Segments – Update Patient 248
112 Fields Relevant for the Update Patient Transaction 250
113 Merge Patient Segments 254
114 Fields Relevant for the Merge Patients Transaction 256
115 Link Patient Segments 259
116 Fields Relevant for the Link Patients Transaction 260
117 Unlink Patient Segments 261
118 Fields Relevant for the Unlink Patients Transaction 261
119 XAD-PID Change Segments 262
120 Query Patient ID Segments 264
121 Query Patient ID Responses 264
122 Fields Relevant for the Query Patient ID Transaction 265
123 Message Segment Overview 272
124 Patient Query Responses 272
125 List of data set in the QPD segment to query patients 274
126 FHIR Elements for the “Type” in the Allergies Widget 285
127 FHIR Elements for the “Reaction” in the Allergies Widget 286
128 FHIR Elements for the “Criticality” in the Allergies Widget 286
129 FHIR Elements for the “Institution” in the Allergies Widget 286
130 FHIR Elements for the “Date” in the Allergies Widget 286
131 FHIR Elements for the “Verification Status” in the Allergies Widget 286
132 FHIR Elements for the “Type” Column in the Diagnoses Widget 287
133 FHIR Elements for the “Institution” Column in the Diagnoses Widget 287
134 FHIR Elements for the “Date” Column in the Diagnoses Widget 287
135 FHIR Elements for the “Clinical status”, “Verification status” and “Severity” Columns in the Diagnoses Widget 287
136 FHIR Elements for the “Time Period” in the Encounters Widget 288
137 FHIR Elements for the “Status” in the Encounters Widget 288
138 FHIR Elements for the “Institution” in the Encounters Widget 288
139 FHIR Elements for the “Service Type” in the Encounters Widget 288
140 FHIR Elements for the “Type” Column in the Medications Widget 289

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141 FHIR Elements for the “Date” Column in the Medications Widget 289
142 FHIR Elements for the “Frequency” Column in the Medications Widget 289
143 FHIR Elements for the “Dose” Column in the Medications Widget 290
144 FHIR Elements for the “Route” Column in the Medications Widget 290
145 FHIR Elements for the “Institution” Column in the Medications Widget 290
146 FHIR Elements for the “Status” Column in the Medications Widget 291
147 FHIR Elements for the “Type” in the Physiological Parameters Widget 291
148 FHIR Elements to Identify the Patient in the Physiological Parameters Widget 291
149 FHIR Elements for the “Date & Time” in the Physiological Parameters Widget 291
150 FHIR Elements for the “Value” in the Physiological Parameters Widget 292
151 FHIR Elements for the “Institution” in the Physiological Parameters Widget 292
152 FHIR Elements for the “Status” in the Physiological Parameters Widget 292
153 FHIR Elements for the “Type” Column in the Procedures Widget 293
154 FHIR Elements for the “Institution” Column in the Procedures Widget 293
155 FHIR Elements for the “Date” Column in the Procedures Widget 293
156 FHIR Elements for the “Status” Column in the Procedures Widget 294
157 FHIR Elements for the “Perfomed by” Column in the Procedures Widget 294
158 FHIR Elements for the “Type” Column in the Vaccinations Widget 294
159 FHIR Elements for the “Institution” Column in the Vaccinations Widget 294
160 FHIR Elements for the “Date” Column in the Vaccinations Widget 295
161 FHIR Elements for the “Series” Column in the Vaccinations Widget 295
162 FHIR Elements for the “Target Disease” Column in the Vaccinations Widget 295
163 FHIR Elements for the “Dose” Column in the Vaccinations Widget 296
164 FHIR Elements for the “Component” Column Group in the Laboratory Reports 297
165 FHIR Elements for the “Component” Column Entry in the Laboratory Reports 297
166 FHIR Elements for the “Range” Column in the Laboratory Reports 298
167 FHIR Elements for the “Date” Column Header in the Laboratory Reports 298
168 FHIR Elements for the “Institution” Column Header in the Laboratory Reports 298
169 FHIR Elements for the “Value” Column in the Laboratory Reports 299
170 FHIR Elements for the “Out of Range Indicator” in the Laboratory Reports 299
171 FHIR Observation Resource for Health-App Data 300
172 LOINC Codes for Vital Signs 302
173 FHIR Elements for the ResearchStudy Resource 304
174 Consent for Data Donation 307
175 FHIR Bundle for Data Donation 310
176 List of Segments – Deactivate Patient 313

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177 Fields Relevant for the Deactivate Patient Transaction 314

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1 Introduction

This document is intended to provide a formal description of the conformity of eHealth Solutions with the standards HL7v2, HL7v3, and HL7 FHIR. It focuses on exceptions and customizations that do not comply with the HL7 standards, but are necessary for the proper functioning of eHealth Solutions.

The following chapters give an overview of the respective HL7 standard:

- HL7v2
- HL7v3
- HL7 FHIR

1.1 HL7v2

The primary goal of the eHealth Solutions HL7v2 interface is to facilitate communication with third-party systems in heterogeneous healthcare environments. The eHealth Solutions HL7v2 interface is designed according to the HL7 Messaging Standard, version 2.5. Nevertheless, eHealth Solutions is able to process HL7v2 messages that conform to the standard versions 2.2, 2.3.1, 2.4, 2.5, 2.6, 2.7, (that is, 2.3 is not supported). Segments and fields that are not recognized due to the use of a higher HL7v2 standard version are ignored. The following sections describe the relevant HL7v2 messages in detail. Messages and trigger events not listed in these sections are not supported by eHealth Solutions and will result in an error response.



Warning

When sending HL7v2 ADT messages to the PIXPDQ which are then forwarded to the ADT Interface on the Source, please pay attention to which data you submit. Ensure especially that you only submit *one* source patient identifier per request to the PIXPDQ and that it is the *correct* one respectively to the Source that is queried.

1.1.1 Transport Protocol: MLLP

The HL7v2 standard defines the Minimal Lower Layer Protocol (MLLP) as its message transport mechanism, the eHealth Solutions infrastructure uses this protocol to process both incoming and outgoing HL7 messages. The MLLP defines special start and stop bytes to demarcate HL7 messages in a TCP stream. The start byte is 0x0b (ASCII vertical tab character). The stop bytes are 0x1c (ASCII Field Separator Character) and 0x0d (ASCII Carriage Return), transmitted in sequence.

Table 1: Basic Message Structure

<VT>		<FS>	<CR>
(hex 0x0b)	HL7 message payload goes here	(hex 0x1c)	(hex 0x0d)

1.1.2 Security

HL7v2 in itself does not define any security measures, but in compliance to the IHE *Audit Trail and Node Authentication* (ATNA) Integration Profile HL7v2 communication must be secured. This is done by encrypting messages using the TLS protocol; mutual authentication of both sender (TLS client authentication) and receiver is also a mandatory part of this process. Encryption can be enabled in the HL7 connector configuration and requires a valid digital certificate to be provided in a Java Keystore File (*.jks). Administrators are strongly encouraged to disable unencrypted communication in productive systems, as HL7v2 messages in most cases contain personally identifiable information.

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1.1.3 Message Encoding

HL7v2 messages are encoded according to the standard ER7 (“Encoding Rules 7”) rules, which describe data segments, fields, components and subcomponents of variable length that are separated by special delimiter characters. ER7 defines the following default delimiter characters:

- Field Separator: |
- Component Separator: ^
- Subcomponent Separator: &
- Field Repetition Separator: ~
- Escape Character: \

Messages may specify custom delimiter characters in the MSH segment, though this is highly discouraged for interoperability reasons. The character immediately following the literal String “MSH” specifies the field separator. The rest of the delimiter characters are defined in MSH-2: component separator, repetition separator, escape character and subcomponent separator, in that respective order. The character encoding itself may be specified in MSH-18. This approach to specify the character encoding is obviously problematic, as the MSH segment needs to be parsed on a best-effort basis to read MSH-18, and then re-parsed using the character encoding found in MSH-18. For this reason, eHealth Solutions ignores MSH-18 and uses a static character encoding defined in the configuration.



Note

It is highly recommended to use UTF-8 to ensure the correct processing of messages. eHealth Solutions can be configured to honor MSH-18 if a statically configured character encoding cannot be used due to restrictions in the domain (e.g., multiple sending systems that each use a different character encoding). As outlined above, this approach is strongly discouraged.

1.1.4 Data Types

This section provides an overview of the most commonly used HL7v2 data types in eHealth Solutions. HL7 versions before 2.4 define very limiting restrictions on the maximum allowed length of many fields/components. As an example, the combined length of all patient identifiers (PID-3) must not exceed 20 characters, which makes it virtually impossible to use real-world identifiers. For this reason, eHealth Solutions is much more lenient when it comes to the maximum allowed length of components and subcomponents. This is true regardless of which HL7 version is used by the sending system. The following paragraphs always state the maximum allowed length of all components. Messages that exceed this maximum length will result in an error response.

- CWE – Coded with Exceptions
- CX – Extended Composite ID with Check Digit
- HD – Hierarchic Designator
- XAD – Extended Address
- XCN – Extended Composite ID Number And Name
- XPN – Extended Person Name
- XTN – Extended Telecommunication Number

1.1.4.1 CWE – Coded with Exceptions

All components of this type are optional and can hold up to and including 255 characters. CWE values without CWE-1 usually do not make sense, sending systems should thus avoid sending such values. Only the following CWE components are processed, all other components are ignored:

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- CWE-1: Identifier/Code
- CWE-2: Text
- CWE-3: Name of Coding System

Example 1: CWE – Administrative Gender

```
F^Female^Gender
```

1.1.4.2 CX – Extended Composite ID with Check Digit

The only required component of the CX type is CX-1. Feed messages additionally require a valid CX-4 component, e.g., for patient identifiers transmitted in PID-3. Only the following CX components are processed, all other components are ignored:

- CX-1: ID Number. This component can hold up to and including 255 characters.
- CX-4: Assigning Authority. This component is of the type HD (see below).
- CX-5: Identifier Type Code. Only values from HL7 table *0203 – Identifier Type* are allowed. Source patient identifiers must use "PI" as the identifier type code.

Example 2: CX – Source Patient Identifier

```
patientId3978^^^My Local Clinic&1.2.123.27.1974&ISO^PI
```

1.1.4.3 HD – Hierarchic Designator

In the HL7 standard, all components are optional, but eHealth Solutions requires a value for HD-2. All HD components can be processed:

- HD-1: Namespace ID. This component can hold up to and including 255 characters.
- HD-2: Universal ID. eHealth Solutions can only process universal IDs in the ISO OID format, other universal ID types are not supported. This component can hold up to and including 255 characters.
- HD-3: Universal ID Type. The only supported value is "ISO" (for ISO OIDs). Sending systems may leave this empty, in which case "ISO" will be assumed by the eHealth Solutions infrastructure.

Example 3: HD – Patient Assigning Authority

```
My Local Clinic&1.2.123.27.1974&ISO
```

1.1.4.4 XAD – Extended Address

All components of this type are optional and can hold up to and including 255 characters. Only the following XAD components are processed, all other components are ignored:

- XAD-1.1: Street or Mailing Address. This field should only be used if sending systems cannot transmit the street name and dwelling number in separate fields. The value in this field is thus used as a fallback if both XAD-1.2 and XAD-1.3 are empty.
- XAD-1.2: Street Name. This field should be preferred if sending systems can transmit street names and dwelling numbers in separate fields.
- XAD-1.3: Dwelling Number. This field should be preferred if sending systems can transmit street names and dwelling numbers in separate fields.

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- XAD-3: City
- XAD-4: State or Province.
- XAD-5: Zip or Postal Code.
- XAD-6: Country.
- XAD-7: Address Type. Only values from HL7 table *0190 – Address Type* are allowed. The address type *L (Legal Address)* has special meaning in eHealth Solutions: It denotes the main address of a person. A person may have only one main address.

Example 4: XAD – Structured Patient Address

```
&Main Street&17^^London^Greater London^SW1P 2LD^GB^L
```

Example 5: XAD – Unstructured Patient Address

```
Main Street 17^^London^Greater London^SW1P 2LD^GB^L
```

1.1.4.5 XCN – Extended Composite ID Number And Name

In the HL7 standard, all components are optional, but eHealth Solutions requires a value for both XCN-1 and XCN-9, otherwise the field value will be ignored. All components of this type can hold up to and including 255 characters. Only the following XCN components are processed, all other components are ignored:

- XCN-1: ID Number. This component must have a value, otherwise the entire XCN value will be ignored by eHealth Solutions.
- XCN-2-1: Surname.
- XCN-3: Given Name.
- XCN-4: Second and further given names.
- XCN-5: Suffix, e.g., "Jr".
- XCN-6: Prefix, e.g., "Mr".
- XCN-9: Assigning Authority. This component must have a valid HD value, otherwise the entire XCN value will be ignored by eHealth Solutions.
- XCN-10: Name Type Code. Only values from HL7 table *0200 – Name Type* are allowed. The only exception of this role is the "PN" name type, which is ignored by eHealth Solutions (the MPI generates its own phonetic names internally). The name type *L (Legal Name)* has special meaning in eHealth Solutions: It denotes the main name of a person (the name that is displayed in the user interface). A person may have only one main name.
- XCN-13: Identifier Type Code. Only values from HL7 table *0203 – Identifier Type* are allowed.
- XCN-21: Professional Suffix, e.g., "MD", "PhD".

Example 6: XCN – Physician Identifier And Name

```
1234^FamilyName^GivenName^H.^Jr.^Dr.^^^My Local Clinic&1.2.123.27.1974&ISO^L^^^DN^^^^^^^^MD
```

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1.1.4.6 XPN – Extended Person Name

All components of this type are optional and can hold up to and including 255 characters. Only the following XPN components are processed, all other components are ignored:

- XPN-1.1: Surname.
- XPN-2: Given Name.
- XPN-3: Second and further given names.
- XPN-4: Suffix, e.g., "Jr".
- XPN-5: Prefix, e.g., "Mr".
- XPN-7: Name Type Code. Only values from HL7 table *0200 – Name Type* are allowed. The only exception of this role is the "PN" name type, which is ignored by eHealth Solutions (the MPI generates its own phonetic names internally). The name type *L (Legal Name)* has special meaning in eHealth Solutions: It denotes the main name of a person (the name that is displayed in the user interface). A person may have only one main name.
- XPN-14: Professional Suffix, e.g., "MD", "PhD".

Example 7: XPN – Physician Name

```
FamilyName^GivenName^H.^Jr.^Dr.^^L^^^^^^^MD
```

1.1.4.7 XTN – Extended Telecommunication Number

Despite the name, this data type is used to represent various kinds of telecommunication addresses (e.g., email address, beeper number etc.). All components of this type are optional and can hold up to and including 255 characters, unless stated otherwise. Only the following XTN components are processed, all other components are ignored:

- XTN-1: Telephone Number. This component is deprecated and should not be used unless absolutely necessary. See the description of the fallback mechanism below.
- XTN-2: Telecommunication Use Code. eHealth Solutions restricts the allowed values to the following set, all other values are ignored: **ASN** (Answering Service), **WPN** (Business/Work), **EMR** (Emergency Contact), **PRN** (Primary Residence), **ORN** (Other Residence), **VHN** (Vacation Home), and **PRS** (Personal).
- XTN-3: Telecommunication Equipment Type. eHealth Solutions restricts the allowed values to the following set, all other values are ignored: **BP** (Beeper), **Internet** (Email Address), **FX** (Fax), **CP** (Mobile Phone) and **PH** (Phone). The value **PH** will be used if no value is specified by the sending system.
- XTN-4: Email Address. This field is only used if XTN-3 has the value **Internet**, it is ignored in all other cases.
- XTN-5: Country Code, e.g., "43". Only used if XTN-12 is empty, see the description of the fallback mechanism below.
- XTN-6: Area/City Code, e.g., "512". Only used if XTN-12 is empty, see the description of the fallback mechanism below.
- XTN-7: Local Number, e.g., "1234567". Only used if XTN-12 is empty, see the description of the fallback mechanism below.

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- XTN-8: Extension, e.g., “410”. Only used if XTN-12 is empty, see the description of the fallback mechanism below.
- XTN-9: Any Text, e.g., “only during office hours”. Only used if XTN-12 is empty, see the description of the fallback mechanism below.
- XTN-12: Unformatted Telephone Number. This is the preferred way of transmitting a telecommunication address, with the exception of email addresses that must be transmitted in XTN-4.

In the case of telephone numbers, eHealth Solutions uses the following fallback mechanism to parse received numbers:

- If present, use the unformatted telephone number from XTN-12. The internal telephone number representation used in eHealth Solutions is always in this unstructured format.
- Else use the structured telephone number from XTN-5, XTN-6, XTN-7, XTN-8 and XTN-9 – if any of those components has a value.
- Else use the deprecated unstructured telephone number from XTN-1.

Example 8: XTN – Landline Phone Number

```
^PRN^PH^^^^^^^^^^+43 512 1234567
```

Example 9: XTN – Email Address

```
^WPN^Internet^john.watson@mycompany.com
```

1.1.5 Common Segments

This section provides a detailed description of the HL7 segments that are supported by eHealth Solutions. Some segments are used in every HL7 message (e.g., MSH), whereas others are only used in specific contexts (e.g., TXA in document administration). The fields that are required in a given segment heavily depend on the transaction that is to be executed. Some segments, however, have static requirements that are the same for all transactions. These requirements are stated in the following sections:

- MSH Segment
- EVN Segment
- PID Segment
- PV1 Segment
- MRG Segment
- IN1 Segment
- UAC Segment
- ROL Segment

Please note that these listings will not be repeated in the detailed transaction descriptions due to brevity considerations. A reference to this chapter will be provided instead.

Order is important to both segments and fields inside the segment, since HL7 is order-sensitive. The HL7 Standard defines the ordering for all messages.

1.1.5.1 MSH Segment

Every HL7v2 message requires the MSH segment to be the first segment of the message. Additional segments may be required for individual messages, this is determined by the message type and trigger event defined in MSH-9.

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Table 2 shows a detailed field description of the MSH (Message Header) segment for all transactions.

Example 10 shows the correct message header of an HL7v2 message.

Example 10: HL7v2 Message Header

```
MSH|^~\&|Sending Application^1.1.2.1.1^ISO|Sending Facility^1.1.2^ISO|Receiving Application
    ^1.1.1.1.1^ISO|Receiving Facility^1.1.1^ISO|20141001233656||ADT^A01|1412199415701|P
    |2.5|||AL
```

Ensure that all required fields and components are specified.

Example 11 shows an incorrect HL7v2 message header with a missing `sendingFacility` field.

Example 11: Incorrect HL7v2 Message Header

```
MSH|^~\&|Sending Application^1.1.2.1.1^ISO||Receiving Application^1.1.1.1.1^ISO|Receiving
    Facility^1.1.1^ISO|20141001233656||ADT^A01|1412199415701|P|2.5|||AL
```

Example 12 shows an incorrect HL7v2 message header with missing identifier and ISO OID in the fields `sendingApplication`, `sendingFacility`, `receivingApplication` and `receivingFacility`.

Example 12: Incorrect HL7v2 Message Header

```
MSH|^~\&|Sending Application|Sending Facility|Receiving Application|Receiving Facility
    |20141001233656||ADT^A01|1412199415701|P|2.5|||AL
```

Incorrect messages with missing segments or elements cannot be processed and lead to an error, see Section 1.1.6.

- MSH-1 – Field Separator

  This field specifies the delimiter character that should be used to demarcate individual fields in the HL7 message. The field separator is the first single character that follows the literal string "MSH" at the very beginning of the message. The default and thus recommended field separator is the "|" (pipe) character.

- MSH-2 – Encoding Characters

  This field contains the following four delimiter characters in the given order: the component separator, repetition separator, escape character, and subcomponent separator. The default and thus recommended delimiter characters are: "^&~\"

- MSH-3 – Sending Application

  This is a required field. This field uniquely identifies the sending application among all other applications within the Affinity Domain. eHealth Solutions mandates that MSH-3-2 (Universal ID) contains a valid ISO OID. This implies that MSH-3-3 always must contain the value "ISO", which is the HL7 code for the ISO OID Universal ID Type.

- MSH-4 – Sending Facility

  This is a required field. This field uniquely identifies the sending facility within the Affinity Domain. In most use cases this field will contain the identifier of the organization that hosts the sending application (e.g., hospital, primary care center etc.). eHealth Solutions mandates that MSH-4-2 (Universal ID) contains a valid ISO OID. This implies that MSH-4-3 always must contain the value "ISO", which is the HL7 code for the ISO OID Universal ID Type.

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MSH-5 – Receiving Application

This is a required field. This field uniquely identifies the receiving application among all other applications within the Affinity Domain. eHealth Solutions mandates that MSH-5-2 (Universal ID) contains a valid ISO OID. This implies that MSH-5-3 always must contain the value "ISO", which is the HL7 code for the ISO OID Universal ID Type.

MSH-6 – Receiving Facility

This is a required field. This field uniquely identifies the receiving facility within the Affinity Domain. In most use cases this field will contain the identifier of the organization that hosts the receiving application (e.g., the central hospital in the Affinity Domain). eHealth Solutions mandates that MSH-6-2 (Universal ID) contains a valid ISO OID. This implies that MSH-6-3 always must contain the value "ISO", which is the HL7 code for the ISO OID Universal ID Type.

MSH-7 – Date/Time Of Message

This field contains the date/time that the sending system created the message. eHealth Solutions ignores this field, but it is required by the HL7 standard.

MSH-9 – Message Type

This field contains the message code (MSH-9-1), trigger event (MSH-9-2) and in some cases the message structure (MSH-9-3) of the message.

MSH-10 – Message Control ID

The unique ID of the message. This ID is used in the MSA segment of response messages to correlate the request with the response message.

MSH-11 – Processing ID

This field contains the processing mode of the message. eHealth Solutions ignores this field, but it is required by the HL7 standard. Sending systems should always use the value "P" (for "Production").

MSH-12 – Version ID

Defines the version of the HL7 standard that is used by this message. Among other things, this field has strong impact on the format of response messages. If unsure, sending systems should use version 2.5, as this gives access to the more modern error handling approach introduced in HL7 version 2.5.

MSH-18 – Character Set

Defines the character encoding of the message. This field is usually ignored, as specified in the "Message Encoding" section. If eHealth Solutions is configured to honor this field, only the first repetition will be evaluated.

Table 2: MSH Segment Structure

HL7 Path	Data Type	Repeatable	Presence
MSH-1 – Field Separator	ST	No	Required
MSH-2 – Encoding Characters	ST	No	Required
MSH-3 – Sending Application	HD	No	Required
MSH-4 – Sending Facility	HD	No	Required
MSH-5 – Receiving Application	HD	No	Required
MSH-6 – Receiving Facility	HD	No	Required
MSH-7 – Date/Time Of Message	TS	No	Not processed
MSH-9 – Message Type	MSG	No	Required
MSH-10 – Message Control ID	ST	No	Required
MSH-11 – Processing ID	PT	No	Required

Table 2: MSH Segment Structure

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Table 2: MSH Segment Structure

HL7 Path	Data Type	Repeatable	Presence
MSH-12 – Version ID	VID	No	Required
MSH-18 – Character Set	ID	Yes	Optional

1.1.5.2 EVN Segment

Table 3 shows a detailed field description of the EVN (Event Type) segment for all transactions. This segment contains additional information about the real-world event that triggered a HL7 message. Entries in fields which are not listed in the table will be ignored.

EVN-2 – Recorded Date/Time
: The date/time that the real-world event was recorded. eHealth Solutions ignores this field, but it is required by the HL7 standard.

EVN-5 – Operator ID
: The person that triggered the message. The value of this field is used in audit logs, it is thus recommended to always provide a meaningful value here. HL7 allows repetitions of this field, but eHealth Solutions only evaluates the first repetition.

EVN-7 – Event Facility
: The organization/facility where the real-world event occurred. This field can only be used if the message uses HL7 version 2.4 or newer. The field is only evaluated for patient and encounter feed messages. It provides a fallback value in case PID-34 does not specify a value.

Table 3: EVN Segment Structure

HL7 Path	Data Type	Repeatable	Presence
EVN-2 – Recorded Date/Time	TS	No	Not processed
EVN-5 – Operator ID	XNC	No	Optional
EVN-7 – Event Facility	HD	No	Optional; required in ELGA



Note

If the EVN-5-1 segment (User ID) is empty, the concatinated value of EVN-5-3 (First Name) and EVN-5-2-1 (Last Name) is used as a fallback user ID. Note that this behavior is not covered in the HL7 Standard.

1.1.5.3 PID Segment

Table 4 shows a detailed field description of the PID (Patient Identification) segment for all patient- and encounter-related transactions. For feed messages, eHealth Solutions imposes the following restrictions on the patient identifiers transmitted in PID-3:

- One of the identifiers must uniquely identify the patient within the entire Affinity Domain. eHealth Solutions uses the term *Source Patient Identifier* for this type of identifier. It is possible that multiple source patient identifiers are listed in PID-3, but this is not recommended. A single source patient identifier suffices.
- Additional identifiers may be listed, e.g., social security number, driver license number, national person identifier etc. In the real world, these identifiers also uniquely identify a patient. But from the perspective of the eHealth Solutions MPI, these identifiers do not qualify as source patient identifiers.

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For example, a patient may visit multiple healthcare providers in an Affinity Domain. The social security number will be the same for all providers, so it cannot be used to uniquely identify a patient that is transferred by a healthcare provider.

PID-3 – Patient Identifier List

The identifiers of the patient, e.g., source patient identifier, social security number, driver license number. At least one patient identifier must be present in this field for every HL7 message that contains a PID segment.

PID-5 – Patient Name List

The names of the patient. At least one patient name must be present in this field for every HL7 message that contains a PID segment.

PID-6 – Mother's Maiden Name

The birth name of the patient's mother. The HL7 standard allows repetitions of this field, but eHealth Solutions only evaluates the first repetition. Only subcomponent PID-6-1-1 (Last Name) is processed, all other components are ignored.

PID-7 – Date/Time of Birth

The birth date of the patient. It is usually sufficient to specify the birth date without the time components (hours, minutes etc.). If time components are transmitted, please make sure that they correspond to the local time of the sending system and not to UTC. Otherwise, eHealth Solutions's `PIXPDQ` will transform the value to the local time valid for the region in which the `PIXPDQ` is operated an the birth date will in some cases differ from the one sent.

PID-8 – Administrative Sex

The sex of the patient. Allowed values are defined in HL7 table *0001 – Administrative Sex*: **M** (Male), **F** (Female), **O** (Other), **U** (Unknown), **A** (Ambiguous), **N** (Not Applicable). eHealth Solutions will use **U** as a fallback if the sending system does not specify a value for this field or if the value is not recognized.

PID-11 – Patient Address List

The addresses of the patient, e.g., living address, work address etc.

PID-13 – Home Phone Number List

Despite the name, this field is not only used to specify telephone numbers, but can really be used to define all kinds of personal telecommunication addresses (e.g., cell phone number, e-mail address etc.) for the patient. The transmission of e-mail addresses requires special attention; please consult the XTN section in this document for further information. The telecommunication use code **PRN** is used as a fallback for all repetitions that do not specify a value in XTN-2.

PID-14 – Business Phone Number List

Despite the name, this field is not only used to specify telephone numbers, but can really be used to define all kinds of business-related telecommunication addresses (e.g., cell phone number, email address etc.) for the patient. The transmission of email addresses requires special attention, please consult the XTN section in this document for further information. The telecommunication use code **WPN** is used as a fallback for all repetitions that do not specify a value in XTN-2.

PID-15 – Primary Language

The native language of the patient. To ensure interoperability with other vendors it is recommended to use ISO table 639 codes as values of this field.

PID-16 – Marital Status

The marital status of the patient. Allowed values are defined in HL7 table *0002 – Marital Status*.

PID-17 – Religion

The religious affiliation of the patient. Allowed values are defined in HL7 table *0006 – Religion*.

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PID-18 – Patient Account Number

The patient account number of the patient. This field does not represent a patient identifier, it should not be confused with PID-3. Depending on the message type, this field can have several functions in eHealth Solutions: if the message is not an encounter message this field will be ignored; else if PV1-19 is empty the field will be used as the encounter identifier; else (PV1-19 has a value) the field will be used to group multiple patient encounters under one patient account. The "Move Patient Account" transaction can be used to move this encounter groups between patients. An encounter message is rejected if both PID-18 and PV1-19 are empty.

PID-24 – Multiple Birth Indicator

Indicates whether the patient is part of a multiple birth. Allowed values are **N** and **Y**. eHealth Solutions uses **N** if no value is specified in this field. This field will be ignored if PID-25 contains a value: **Y** is assumed in this case.

PID-25 – Birth Order

The birth order of the patient, if it was part of a multiple birth. Only positive natural numbers are allowed in this field.

PID-26 – Citizenships

The citizenship of the patient. To ensure interoperability with other vendors, it is recommended to use ISO table 3166 codes as values for this field.

PID-29 – Patient Death Date/Time

The death date of the patient. It is usually sufficient to specify the death date without the time components (hours, minutes etc.). When a value is given here, it will be validated against the birth date (PID-7) that necessarily has to contain an earlier date.

PID-30 – Patient Death Indicator

Indicates whether the patient has already died. Allowed values are **N** and **Y**. eHealth Solutions uses **N** if no value is specified in this field. This field will be ignored if PID-29 contains a value: **Y** is assumed in this case.

PID-31 – Identity Unknown Indicator

Indicates whether the patient's identity has been established sufficiently. A frequent use case for this field is a medical emergency where no identity document of the patient is at hand. Such patients are usually assigned temporary identifiers and dummy names. Possible values are **N** and **Y**. **N** is used as a default when the field is left empty.

PID-34 – Last Update Facility

This field is only evaluated for patient and encounter feeds: It represents the organization/facility that is sending the feed. It is recommended to use the same value that is used for the assigning authority of the source patient identifier (PID-3.4). This field is not mandatory, but eHealth Solutions requires a last update facility for patient feeds. EVN-7 and MSH-4 will be used as fallbacks if no value is specified here. Note that the PID-34 element has a special meaning when clients execute a Source Patient query, see Section 8.8.

Table 4: PID Segment Structure

HL7 Path	Data Type	Repeatable	Presence
PID-3 – Patient Identifier List	CX	Yes	Required
PID-5 – Patient Name List	XPN	Yes	Required
PID-6 – Mother's Maiden Name	XPN	No	Optional
PID-7 – Date/Time of Birth	TS	No	Optional
PID-8 – Administrative Sex	IS	No	Optional

Table 4: PID Segment Structure

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Table 4: PID Segment Structure

HL7 Path	Data Type	Repeatable	Presence
PID-11 – Patient Address List	XAD	Yes	Optional
PID-13 – Home Phone Number List	XTN	Yes	Optional
PID-14 – Business Phone Number List	XTN	Yes	Optional
PID-15 – Primary Language	CE	No	Optional
PID-16 – Marital Status	CE	No	Optional
PID-17 – Religion	CE	No	Optional
PID-18 – Patient Account Number	CX	No	Conditionally Required
PID-24 – Multiple Birth Indicator	ID	No	Optional
PID-25 – Birth Order	NM	No	Optional
PID-26 – Citizenships	CE	Yes	Optional
PID-29 – Patient Death Date/Time	TS	No	Optional
PID-30 – Patient Death Indicator	ID	No	Optional
PID-31 – Identity Unknown Indicator	ID	No	Optional
PID-34 – Last Update Facility	HD	No	Optional

1.1.5.4 PV1 Segment

Table 5 shows a detailed field description of the PV1 (Patient Visit) segment. This segment contains information about a patient's visit in a healthcare facility. eHealth Solutions commonly uses *patient encounter* as an alternative term for visits.

PV1-2 – Patient Class

The class/type of the patient in the context of the encounter. This field is required in the HL7 standard, so it is recommended to always provide a value here. eHealth Solutions treats the field as optional though, as the patient class can be determined by the message trigger event. The following patient classes are supported, all other values are ignored: **E** (Emergency), **I** (Inpatient), **N** (Not Applicable), **B** (Obstetrics), **O** (Outpatient), **P** (Pre-Admission), **R** (Recurring Patient) and **U** (Unknown).

PV1-3 – Assigned Patient Location

The location of the patient in the context of the encounter. eHealth Solutions only processes PV1-3-4 (Facility), all other components are ignored. This field is optional for most transactions.

PV1-6 – Prior Patient Location

The location of the patient prior to the current encounter event. This field is mandated by some IHE patient encounter transactions, but eHealth Solutions does not process it.

PV1-7 – Attending Doctor

The doctor that treats the patient in the context of the encounter. The HL7 standard allows repetitions of this field, but eHealth Solutions only processes the first repetition.

PV1-8 – Referring Doctor

The doctor that referred the patient to the current healthcare facility (see PV1-3). The HL7 standard allows repetitions of this field, but eHealth Solutions only processes the first repetition.

PV1-15 – Ambulatory Status

The ambulatory status and special requirements (e.g., wheelchair accessibility) of the patient. Allowed

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values are defined in HL7 table *0009 – Ambulatory Status*.

PV1-19 – Visit Number

The unique identifier of the patient encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. It is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). It should be noted that this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole.

PV1-44 – Admit Date/Time

The timestamp of the inpatient admission or registration at the healthcare facility (for ambulatory encounters). This timestamp is mandatory for each HL7 message that starts a new patient encounter, but is ignored in all subsequent messages that pertain to the same encounter. It is thus not possible to change the encounter start timestamp at a later point in time.

PV1-45 – Discharge Date/Time

The timestamp of the patient discharge. This timestamp is mandatory for each HL7 message that ends/finalizes a patient encounter, but is ignored in all other messages that pertain to the same encounter.

Table 5: PV1 Segment Structure

HL7 Path	Data Type	Repeatable	Presence
PV1-2 – Patient Class	IS	No	Optional
PV1-3 – Assigned Patient Location	PL	No	Conditionally Required
PV1-6 – Prior Patient Location	PL	No	Optional
PV1-7 – Attending Doctor	XCN	No	Conditionally Required
PV1-8 – Referring Doctor	XCN	No	Optional
PV1-15 – Ambulatory Status	IS	Yes	Optional
PV1-19 – Visit Number	CX	No	Conditionally Required
PV1-44 – Admit Date/Time	TS	No	Conditionally Required
PV1-45 – Discharge Date/Time	TS	No	Conditionally Required

1.1.5.5 MRG Segment

Table 6 shows a detailed field description of the MRG (Merge Patient Information) segment for all transactions that require it. This segment contains information about an obsolete/prior patient record. eHealth Solutions uses the term *recessive patient* for this patient record.

MRG-1 – Prior Patient Identifier List

The patient identifiers of the obsolete/prior patient. This field is the functional equivalent of PID-3, but for the obsolete instead of the active patient. It is highly recommended to only list the single source patient identifier of the obsolete patient here, all other identifiers (e.g., social security number etc.) should be left out.

MRG-3 – Prior Patient Account Number

The patient account number of the obsolete/prior patient.

MRG-7 – Prior Patient Name List

The names of the obsolete/prior patient. eHealth Solutions uses this field for logging purposes only, it may be left out completely.

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Table 6: MRG Segment Structure

HL7 Path	Data Type	Repeatable	Presence
MRG-1 – Prior Patient Identifier List	CX	Yes	Required
MRG-3 – Prior Patient Account Number	CX	No	Optional
MRG-7 – Prior Patient Name List	XPN	Yes	Optional

1.1.5.6 IN1 Segment

Table 7 shows a detailed field description of the IN1 (Insurance Segment) segment for all patient- and encounter-related transactions. This segment contains information about the patient's insurance policies, it is always optional.

- IN1-1 – Set ID
  The unique ID of this segment. Multiple IN1 segments may be specified per message, each segment is assigned a unique set ID. Set IDs are consecutive integers, the first occurrence of the IN1 segment has set ID "1".
- IN1-2 – Insurance Plan ID
  The unique identifier of the insurance plan. eHealth Solutions only processes IN1-2-1 (ID number), all other components are ignored. The insurance plan identifier can hold up to and including 255 characters.
- IN1-3 – Insurance Company ID
  The unique identifier of the company that issued the insurance plan. The HL7 standard allows repetitions of this field, but eHealth Solutions only processes the first repetition.
- IN1-4 – Insurance Company Name
  The name of the company that issued the insurance plan. eHealth Solutions only processes IN1-4-1 (Organization Name), all other components are ignored. The insurance company name can hold up to and including 255 characters. The HL7 standard allows repetitions of this field, but eHealth Solutions only processes the first repetition.
- IN1-5 – Insurance Company Address
  The address of the insurance company.
- IN1-36 – Policy Number
  The insured's policy number for unique identification of the patient's plan.
- IN1-49 – Insured's ID Number
  The ID of the insured as issued by the healthcare institution.

Table 7: IN1 Segment Structure

HL7 Path	Data Type	Repeatable	Presence
IN1-1 – Set ID	SI	No	Required
IN1-2 – Insurance Plan ID	CE	No	Required
IN1-3 – Insurance Company ID	CX	No	Required
IN1-4 – Insurance Company Name	XON	No	Optional

Table 7: IN1 Segment Structure

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Table 7: IN1 Segment Structure

HL7 Path	Data Type	Repeatable	Presence
IN1-5 – Insurance Company Address	XAD	Yes	Optional
IN1-36 – Policy Number	ST	No	Optional
IN1-49 – Insured's ID Number	CX	Yes	Optional

1.1.5.7 UAC Segment

The UAC (User Authentication Credential) segment is optional and non-repeating. However, once the segment is used, the fields marked with *Required* are mandatory. In the message hierarchy, the UAC segment occurs immediately after the SFT segment (software version ID), or, if this segment is not present, immediately after the MSH segment. More specific information on the use of the UAC segment can be found in the description of the relevant transactions.

Table 8 shows the field description of the UAC (User Authentication Credential) segments relevant for eHealth Solutions. eHealth Solutions ignores entries that are not contained in the following list.

UAC-1-1 - Identifier
: Type of the data submitted in field UAC-2-5. eHealth Solutions limits it to JWT in the context of Patient Administration and to SAML in the context of Document Administration. The field UAC-1-1 is required if the UAC segment is submitted.

UAC-2-2 - Type Of Data
: The field UAC-2-2 is required if the UAC segment is submitted. However, eHealth Solutions does not process it.

UAC-2-4 - Encoding
: The type of encoding of the data specified in field UAC-2-5. The following options are available: Base64 or A / plain (plain is not recommended). The field UAC-2-4 is required if the UAC segment is submitted.

UAC-2-5 - Data
: Data to be sent. eHealth Solutions limits it to JWT in the context of Patient Administration and to SAML in the context of Document Administration. The field UAC-2-5 is required if the UAC segment is submitted.

Table 8: UAC Segment Structure

HL7 Path	Data Type	Repeatable	Presence
UAC-1-1 - Identifier	ST	No	Required
UAC-2-2 - Type Of Data	ID	No	Required; Not processed
UAC-2-4 - Encoding	ID	No	Required
UAC-2-5 - Data	ST	No	Required

1.1.5.8 ROL Segment

The ROL (Role) segment transmits information about persons being involved in the clinical process. It is optional and repeatable. Once the ROL segment is used, the fields marked with *Required* are mandatory.

The positional location of the ROL segment in ADT messages indicates the relationship.

- If the segment is used after the IN3 segment, and the role-ROL value is either PP (Primary Care Provider) or FHCP (Family Health Care Professional), PP or FHCP refers to the health plan.

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- If the segment is used after the PID segment, and the role-ROL value is PP or FHCP, PP or FHCP refers to the person.
- If the segment is used following the PV2 segment, and the role-ROL value is PCP or FHCP, PP or FHCP refers to the patient visit.

More specific information on the use of the ROL segment can be found in the description of the relevant transactions.

Table 9 shows the field description of the ROL segments relevant for eHealth Solutions. eHealth Solutions ignores entries that are not contained in the following list.

ROL-2 - Action Code
: This field reveals the intent of the message.

ROL-3 - Role-ROL
: This field indicates the functional involvement with the activity being transmitted.

ROL-4 - Role Person
: This field identifies the person acting in this role. This can either be done by the identifier or the name.

Table 9: ROL Segment Structure

HL7 Path	Data Type	Repeatable	Presence
ROL-2 - Action Code	ID	No	Required
ROL-3 - Role-ROL	CE	No	Required
ROL-4 - Role Person	XCN	Indefinitely	Required

1.1.6 Responses

The HL7 standard uses the term *Acknowledgement* for response messages. Each request message is acknowledged by a corresponding response message. Response messages usually only contain a success indicator and, in the case of error responses, additional error information. The sole exception to this rule of thumb are query responses, which additionally contain the results of the query. HL7 versions up to and including 2.4 only provide very limited error reporting: It is not possible to return custom, application-specific error codes to the sending system. This severely limits a sender's capability to automatically react to predefined, recognized error cases. It is thus recommended that sending systems use HL7 version 2.5 or higher, which enables them to receive and process eHealth Solutions application error codes. The following example illustrates both a success and error acknowledgement for legacy HL7v2 versions (2.4 and older):

Example 13: Success Acknowledgement – Version 2.4 and older

```
MSH|^~\&|ITH MPI^1.1.1.1.1^ISO|ITH Community^1.1.1^ISO|My Sending Application^1.1.2.1.1^ISO|
    My Local Clinic^1.1.2^ISO|20180626112015.613+0200||ACK^A01^ACK|7a0a01fe-5d3c-4cfc-9855-
    186139f40b4e|P|2.3.1||||||UNICODE UTF-8
MSA|AA|fdfe7eeb-a8da-4d31-9e7f-407b4922c24d||||0
```

Example 14: Error Acknowledgement – Version 2.4 and older

```
MSH|^~\&|ITH MPI^1.1.1.1.1^ISO|ITH Community^1.1.1^ISO|My Sending Application^1.1.2.1.1^ISO|
    My Local Clinic^1.1.2^ISO|20180626112015.613+0200||ACK^A01^ACK|7a0a01fe-5d3c-4cfc-9855-
    186139f40b4e|P|2.3.1||||||UNICODE UTF-8
MSA|AE|52de5e91-a118-4f9c-be8f-56270171dbd6|A patient was expected, but no patient is
    defined in the request!|||207
ERR|^^^207
```

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In the above examples, MSA-1 contains the acknowledgement code that indicates overall success or failure of the request. eHealth Solutions only supports the original acknowledgement mode, which implies that only the following acknowledgement codes will be returned:

- AA: Application Accept. This code indicates that the request succeeded.
- AE: Application Error. This code indicates a request that failed due to the receiving system detecting or causing an error. The vast majority of error situations result in this acknowledgement code.
- AR: Application Reject. This code indicates a message that has been rejected. This acknowledgment code is usually returned for errors in the underlying messaging infrastructure (timeout, unsupported message type etc.).

MSA-2 mirrors the message control ID of the request message that is being acknowledged; this field thus directly relates to MSH-10 of the request message. As shown in the example, MSH-3 contains the human-readable error message. The ERR segment is very limited and only contains the HL7 error code, in the case of the example "207" (Application Internal Error). This situation changes in case HL7v2.5 or newer is used, as shown in the following examples:

Example 15: Success Acknowledgement – Version 2.5 and newer

```
MSH|^~\&|ITH MPI^1.1.1.1.1^ISO|ITH Community^1.1.1^ISO|My Sending Application^1.1.2.1.1^ISO|
    My Local Clinic^1.1.2^ISO|20180626112015.613+0200||ACK^A01^ACK|7a0a01fe-5d3c-4cfc-9855-
    186139f40b4e|P|2.5||||||UNICODE UTF-8
MSA|AA|fdfe7eeb-a8da-4d31-9e7f-407b4922c24d||||0
```

Example 16: Error Acknowledgement – Version 2.5 and newer

```
MSH|^~\&|ITH MPI^1.1.1.1.1^ISO|ITH Community^1.1.1^ISO|My Sending Application^1.1.2.1.1^ISO|
    My Local Clinic^1.1.2^ISO|20180626112015.613+0200||ACK^A01^ACK|7a0a01fe-5d3c-4cfc-9855-
    186139f40b4e|P|2.5||||||UNICODE UTF-8
MSA|AE|4b87d88f-dd97-42f3-9df3-725cf73114df
ERR|||207|E|F-M-MPI-31004^^HL70533|||An invalid social security number was detected in the
    request!
ERR|||207|E|F-M-MPI-30001^^HL70533|||The validation of inbound request data failed due to
    missing required information.
```

The only field that changes for success acknowledgements is the HL7 version ID, MSH-12. On the other hand, substantial structural changes exist for error acknowledgements:

- The MSA segment does not contain the HL7 error code and the error message anymore.
- Multiple ERR segments can be present in the response. Each ERR segment represents a distinct error or warning that has been generated by eHealth Solutions.
- ERR-3 now contains the HL7 error code, in the example above "207" (Application Internal Error).
- ERR-4 contains the problem severity. eHealth Solutions only uses the **W** (Warning) and **E** (Error) severity values.
- ERR-5 contains the application error code. This codes conform to a proprietary format defined by eHealth Solutions, their form and purpose is explained in detail in the eHealth Solutions *Error Codes*.
- ERR-8 contains the human-readable error message.

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1.2 HL7v3

1.2.1 Required Elements

eHealth Solutions adheres strictly to the HL7 Standard. **The order of elements in HL7v3 is critical.**

Example 17: W3C SOAP Envelope

```
<?xml version="1.0" encoding="UTF-8"?><soapenv:Envelope xmlns:soapenv="http://www.w3.org
    /2003/05/soap-envelope">
  <soapenv:Header xmlns:wsa="http://www.w3.org/2005/08/addressing">
    <wsa:To>http://localhost:1380/PIXPDQ/services/PIXPDQV3ManagerService</wsa:To>
    <wsa:MessageID>urn:uuid:ec9d096b-6261-4bf3-baaa-3f4ddda5e9d2</wsa:MessageID>
    <wsa:Action soapenv:mustUnderstand="1">urn:hl7-org:v3:PRPA_IN201301UV02</wsa:Action>
    <wsa:ReplyTo soapenv:mustUnderstand="1">
      <wsa:Address>http://www.w3.org/2005/08/addressing/anonymous</wsa:Address>
    </wsa:ReplyTo>
  </soapenv:Header>
  <soapenv:Body>
    <!-- INSERT HL7 Message Here -->
  </soapenv:Body>
</soapenv:Envelope>
```

The following elements belong in the message header, in this specific order:

1. hl7v3:id
2. hl7v3:creationTime
3. hl7v3:interactionId
4. hl7v3:processingCode
5. hl7v3:processingModeCode
6. hl7v3:acceptAckCode
7. hl7v3:receiver
8. hl7v3:receiver.device
9. hl7v3:receiver.device.id
10. hl7v3:receiver.device.asAgent
11. hl7v3:receiver.device.asAgent.representedOrganization
12. hl7v3:receiver.device.asAgent.representedOrganization.id
13. hl7v3:sender
14. hl7v3:sender.device
15. hl7v3:sender.device.id
16. hl7v3:sender.device.asAgent
17. hl7v3:sender.device.asAgent.representedOrganization
18. hl7v3:sender.device.asAgent.representedOrganization.id

Example 18: HL7v3 Message Header

Note that all messages share the same structure, but with different content.

```
<ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="2.16.840.1.113883.1.6.1" extension="1453941234159"/>
<ns1:creationTime xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:TS"
    value="20160127193359"/>
<ns1:interactionId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
    root="2.16.840.1.113883.1.6" extension="PRPA_IN201301UV02"/>
<ns1:processingCode code="P"/>
<ns1:processingModeCode code="T"/>
<ns1:acceptAckCode code="AL"/>
<ns1:receiver typeCode="RCV">
  <ns1:device classCode="DEV" determinerCode="INSTANCE">
    <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.3.6.1.4.1.21367.13.30.237"/>
    <ns1:asAgent classCode="AGNT">
```

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```
        <ns1:representedOrganization classCode="ORG" determinerCode="INSTANCE">
        <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.1.1.1.1"/>
      </ns1:representedOrganization>
    </ns1:asAgent>
  </ns1:device>
</ns1:receiver>
<ns1:sender typeCode="SND">
  <ns1:device classCode="DEV" determinerCode="INSTANCE">
    <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.3.6.1.4.1.21367.13.10.218"/>
    <ns1:asAgent classCode="AGNT">
        <ns1:representedOrganization classCode="ORG" determinerCode="INSTANCE">
        <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.1.1.1.2"/>
      </ns1:representedOrganization>
    </ns1:asAgent>
  </ns1:device>
</ns1:sender>
```



Note

The interactionId's extension field changes in the header for each function. This corresponding extension is listed in each payload example.

Example 19 shows the required elements and attributes in the message header of an HL7v3 message.

Example 19: HL7v3 Message Header - Required Elements and Attributes

```
<ns1:receiver typeCode="RCV">
  <ns1:device classCode="DEV" determinerCode="INSTANCE">
    <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.3.6.1.4.1.21367.13.30.237"/>
    <ns1:asAgent classCode="AGNT">
        <ns1:representedOrganization classCode="ORG" determinerCode="INSTANCE">
        <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.1.1.1.1"/>
      </ns1:representedOrganization>
    </ns1:asAgent>
  </ns1:device>
</ns1:receiver>
<ns1:sender typeCode="SND">
  <ns1:device classCode="DEV" determinerCode="INSTANCE">
    <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.3.6.1.4.1.21367.13.10.218"/>
    <ns1:asAgent classCode="AGNT">
        <ns1:representedOrganization classCode="ORG" determinerCode="INSTANCE">
        <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.1.1.1.2"/>
      </ns1:representedOrganization>
    </ns1:asAgent>
  </ns1:device>
</ns1:sender>
```

The example message uses the following OIDs:

- `1.3.6.1.4.1.21367.13.10.218` - the OID of the sending application/software system.
- `1.1.1.1.2` - the OID of the sending organization/institution.
- `1.3.6.1.4.1.21367.13.30.237` - the OID of the receiving application/software system.

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- `1.1.1.1.1` - the OID of the receiving organization/institution.

Ensure that all required elements and attributes are specified.

Example 20 shows an incorrect HL7v3 message header where no information about `device` or `id` is provided.

Example 20: Incorrect HL7v3 Message Header

```
<ns1:sender typeCode="SND">
</ns1:sender>
```

Example 21 shows an incorrect HL7v3 message header with missing `typeCode` of the sender.

Example 21: Incorrect HL7v3 Message Header

```
<ns1:sender>
<ns1:device classCode="DEV" determinerCode="INSTANCE">
<ns1:id xmlns:xsi="http://www.w3.org/2001/-XMLSchemainstance" xsi:type="ns1:II" root
="1.3.6.1.4.1.21367.13.10.218"/>
</ns1:device>
</ns1:sender>
```

Incorrect messages with missing segments or elements cannot be processed and lead to an error, see Section 1.2.2.

1.2.2 General Responses

eHealth Solutions will provide acknowledgement response messages for three situations:

CA
: "Commit Accepted". The message has been accepted.

CE
: "Commit Error". The message contains an error.

CR
: "Commit Rejected". The message is fine, but could not be processed for some reason.

Example 22: Acknowledgement Response Message "Commit Accepted"
See this line: `|<ns1:typeCode code="CA"/>|`

```
<ns1:MCCI_IN000002UV01 xmlns:ns1="urn:hl7-org:v3" ITSVersion="XML_1.0">
  <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.2.3.4.5" extension="1461835574470.635724"/>
  <ns1:creationTime xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:TS"
    value="20160428112614"/>
  <ns1:versionCode code="V3PR1"/>
  <ns1:interactionId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
     root="2.16.840.1.113883" extension="MCCI_IN000002UV01"/>
  <ns1:processingCode code="P"/>
  <ns1:processingModeCode code="T"/>
  <ns1:acceptAckCode code="NE"/>
  <ns1:receiver typeCode="RCV">
    <ns1:device classCode="DEV" determinerCode="INSTANCE">
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.2.3.4.5.1000"/>
    </ns1:device>
  </ns1:receiver>
  <ns1:receiver typeCode="RCV">
```

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```
    <ns1:device classCode="DEV" determinerCode="INSTANCE">
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.2.3.4.5.1000"/>
    </ns1:device>
  </ns1:receiver>
  <ns1:sender typeCode="SND">
    <ns1:device classCode="DEV" determinerCode="INSTANCE">
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="2.1.12"/>
    </ns1:device>
  </ns1:sender>
  <ns1:acknowledgement>
    <ns1:typeCode code="CA"/>
    <ns1:targetMessage>
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="2.16.840.1.113883.1.6.1" extension="1461835565496"/>
    </ns1:targetMessage>
  </ns1:acknowledgement>
</ns1:MCCI_IN000002UV01>
```

Example 23: Acknowledgement Response Message “Commit Error”

See this line: `|<ns1:typeCode code="CE"/>|`

```
<?xml version="1.0"?>
<ns1:MCCI_IN000002UV01 xmlns:ns1="urn:hl7-org:v3" ITSVersion="XML_1.0">
  <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.2.3.4.5" extension="1586154786483.1019"/>
  <ns1:creationTime xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:TS"
    value="20200406083306"/>
  <ns1:versionCode code="V3PR1"/>
  <ns1:interactionId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
     root="2.16.840.1.113883" extension="MCCI_IN000002UV01"/>
  <ns1:processingCode code="P"/>
  <ns1:processingModeCode code="T"/>
  <ns1:acceptAckCode code="NE"/>
  <ns1:receiver typeCode="RCV">
    <ns1:device classCode="DEV" determinerCode="INSTANCE">
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.2.142780932110"/>
      <ns1:asAgent classCode="AGNT">
        <ns1:representedOrganization classCode="ORG" determinerCode="INSTANCE">
          <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
    root="1.1.1.1.1"/>
        </ns1:representedOrganization>
      </ns1:asAgent>
    </ns1:device>
  </ns1:receiver>
  <ns1:sender typeCode="SND">
    <ns1:device classCode="DEV" determinerCode="INSTANCE">
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.2.106696345355"/>
      <ns1:asAgent classCode="AGNT">
        <ns1:representedOrganization classCode="ORG" determinerCode="INSTANCE">
          <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
    root="1.1.1.1.1"/>
        </ns1:representedOrganization>
      </ns1:asAgent>
    </ns1:device>
  </ns1:sender>
  <ns1:acknowledgement>
    <ns1:typeCode code="CE"/>
    <ns1:targetMessage>
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
```

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```
    ="2.16.840.1.113883.1.6.1" extension="2075a4fb-969b-42b6-b495-11c68e24584d"/>
    </ns1:targetMessage>
    <ns1:acknowledgementDetail typeCode="E">
      <ns1:code code="F-M-MPI-31002"/>
      <ns1:text xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:ED">No
    source patient identifiers were specified for the patient! At least one source patient
    identifier is required for the patient feed.</ns1:text>
    </ns1:acknowledgementDetail>
  </ns1:acknowledgement>
</ns1:MCCI_IN000002UV01>
```

This line `|<ns1:code code="F-M-MPI-31002"/>|` indicates the error code. See the eHealth Solutions *Error Codes* document for further details.

1.2.3 Notable XML Elements

RegistrationEvent.Custodian.assignedEntity.id
: This XML element fulfills the same function as the PID-34 segment in HL7v2: It provides information on the last facility that performed an update of a given patient. This facility may or may not be the same facility that issued the Source Patient identifiers of said patient. If clients do not specify a Last Update Facility, the sending device OID (`sender.device.asAgent.representedOrganization.id.root`) is used as a fall-back. These elements have a special meaning when clients execute a Source Patient query, see Section 8.8.

1.3 HL7 FHIR

The Health Data Repository (HDR) is a fully-featured FHIR server that supports `FHIR Release 4` (`FHIR R4`). A basic understanding of the FHIR Specification is required before reading this chapter. All relevant information can be found in the official FHIR documentation, see `http://hl7.org/fhir/`. The following references in this chapter on the FHIR Specification refer to the Release 4 documentation.

This chapter constitutes the FHIR Implementation Guide for eHealth Solutions, see `https://wiki.hl7.org/FHIR_Implementation_Guides` for a general information about FHIR Implementation Guides. Situations where this guide or the behavior exhibited by the HDR contradict the FHIR Specification are considered to be bugs. These bugs will be fixed even if such a fix introduces a breaking change to the public FHIR interface.

The Health Data Repository is a repository for arbitrary FHIR resources that can be manipulated via the `FHIR REST API`. In a standard installation all R4 resources defined by HL7 are supported. A complete list of supported resources can be found in the FHIR Specification chapter "Resource Index". FHIR gives implementers some flexibility in regard to which aspects of the FHIR Specification are implemented. The following chapters describe in detail which aspects are implemented by eHealth Solutions.

The following notation variants are used within this chapter:

Square brackets `[,]`
: Used to indicate placeholders for required elements in all subsequent examples.

Curly brackets `{,}`
: Indicate placeholders for optional elements.

`[base]`
: Refers to the base URL of the HDR.
(for example, `https://myfhirserver.com/fhir`).

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1.3.1 Resource Exchange Format

The HDR supports the JSON format for resource exchange (see chapter "JSON Representation of Resources" of the FHIR Specification) and the XML format. RDF (Turtle) format is not supported. FHIR-compliant clients must specify the resource type when exchanging resources with the HDR via the REST API. For resources sent by the client to the HDR the exchange format must be specified in the HTTP `Content-Type` header.

The following `media-type` values are accepted in the `Content-Type` header:

application/fhir + json
: This is the preferred method to specify JSON as the exchange format since STU3, as defined in the FHIR Specification chapter "Content Types and encodings".

application/json + fhir
: Deprecated since STU3 but still accepted by the HDR.

application/json
: Another alternative to specify JSON as the exchange format. Less specific than the above media-type declarations.

application/json-patch+json
: Required for the patch interaction (see Section 1.3.6.3). Not allowed for all other interactions.

If unsure, clients should stick to the FHIR Specification and specify `application/fhir+json` for JSON resources. Sending any other media type in the `Content-Type` header will result in an error message in the `OperationOutcome` resource with the following HTTP code: `400 - Bad Request`.

Clients can specify which resource-exchange format should be used for responses generated by the HDR. FHIR defines two alternative ways to specify the expected response's resource format:

1. Using the HTTP `Accept` header.
2. Using the `_format` request parameter (see chapter "General parameters").

The following `media-type` values are accepted by the HDR for the HTTP `Accept` header:

application/fhir + json
: This is the preferred method to specify JSON as the expected response format since STU3, as defined by the FHIR Specification in chapter "Content Types and encodings".

application/json + fhir
: Deprecated since STU3 but still accepted by the HDR.

application/json
: Another alternative to specify JSON as the exchange format. Less specific than the above media-type declarations.

If unsure, clients should stick to the FHIR specification and specify `application/fhir+json` for JSON responses. As a fallback, the HDR also sends responses with the `application/fhir+json` media type when the client specifies an unsupported media type in the `Accept` header.

In some deployment scenarios it may be the case that intermediate HTTP proxies remove or alter the content of the `Accept` header. In this situation clients can specify the `_format` parameter to indicate the desired response media type. The following values are accepted for the `_format` parameter:

- application/fhir+json
- application/json+fhir
- application/json
- json

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A valid `_format` parameter overrules the `Accept` header if both are present in a request. In case the `_format` parameter is invalid but a valid `Accept` header is present in the request, the `Accept` header is used to determine the desired response media type. If neither the `_format` parameter nor the `Accept` header is present or if both are invalid, the HDR uses the `application/fhir+json` media type as the response format.



Note

To ensure maximum interoperability in all deployment scenarios it is recommended to always specify both the `Accept` header and the `_format` parameter, using the same value for both request elements.

1.3.2 Supported FHIR Versions

There exist multiple versions of the FHIR Specification. Compatibility and migration between different versions are a complex topic, please refer to the FHIR Specification chapter "Rules for Inter-version change" for more details. The HDR supports FHIR `Release 4 (R4)`. Future versions of this specification will be supported in a timely manner once they are released by HL7.



Note

We highly recommend customers to stick to a single supported version whenever possible, due to the aforementioned complexities when supporting multiple FHIR versions on a server. The HDR will support multiple versions (at the moment only Release 4 is supported) of the FHIR Specification on the same server instance.

1.3.2.1 Resource Maturity-Levels

HL7 assigns a maturity level to each defined resource type. This maturity level indicates how stable the definition of the resource type is. Some definitions, e.g., the `Patient` resource type, are already considered stable, whereas others are highly experimental and not yet ready for widespread use. FHIR transparently documents this maturity level, see chapter "Maturity Levels".

For a list which maturity levels have been assigned to the resource types, see chapter "Resource Index".

Maturity Levels and Versions Supported by the HDR

The HDR supports resource types of any maturity level, including maturity level 0 (*Draft*). However, the FHIR Specification guarantees forward compatibility only for normative resource-types. See chapter "Rules for Inter-version change" for further details on this topic. Therefore, we strongly recommend to use only normative resource-types in productive use.



Note

Non-normative resource-types might be altered with breaking structural changes, or even removed entirely in future versions of the FHIR Specification. This can severely harm a customer's ability to migrate existing resources to a newer version of the standard.

Customers can keep working with the FHIR version currently in use even if newer standard versions are released. Currently, the HDR supports FHIR version R4.

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1.3.3 Resource Identity

Each resource is uniquely identified by its **logical id** (See FHIR Specification chapter "Logical ID"). Clients can supply their own logical ids in `create` interactions by using HTTP PUT. If the client does not pass a logical id, the server will generate a UUID.

Once assigned, the logical id of a resource instance never changes. Every resource instance returned by the HDR contains a unique logical id. The only exception are `OperationOutcome` resources: these are transient, they only exist for the lifetime of a single interaction and thus have no logical id (see chapter "Logical ID").

1.3.3.1 Resource Identifiers

Several resource types also allow to hold one or more identifiers. Whereas the identifiers do not necessarily stay the same throughout the lifetime of a resource, the **use** of each identifier shall be stable.

1.3.4 Resource Versioning

In addition to the logical id, each individual FHIR resource in the HDR has a **version** that changes whenever the content of the resource changes. The resource version is provided in the `meta.versionId` property of the resource. As it is the case with logical ids, resource versions are solely assigned by the HDR. Clients have no possibility to assign their own version ids.

The support of resource versioning also impacts the format of the HTTP `Location` header that is returned in create interaction responses.

The HTTP `Location` header always has the following format:
`[base]/[resource-type]/[logical id]/_history/[version id]`

Example 24: HTTP `Location` header

```
https://myfhirserver.com/fhir/Patient/123/_history/1
```

See chapter "Resource Metadata" of the FHIR Specification for further details.

The HDR uses monotonically-increasing numeric version ids that are unique in the scope of a given logical resource id, but are not globally unique. The first version of any resource has the version id `1`. The HDR retains previous/deprecated resource versions.

The resource version is also used to detect concurrent updates of different clients on the same resource, thus implementing an optimistic locking approach for resource updates. Clients can only delete the current version of a resource but not deprecated resource versions (see chapter "delete" of the FHIR Specification).

1.3.5 Resource Relationships

Each FHIR resource can have **relationships** to other resource instances by explicitly expressing this relationships as references, i.e. using the `reference` data type. For more information, please see the FHIR Specification chapter "Resource References".

There are many ways to express references, as described in the following sections.

1.3.5.1 URLs in the Reference.reference Element

This is the preferred way of expressing references. Reference URLs can be:

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absolute
: Absolute URLs must start with either `http://` or `https://`. It is not possible to add a reference to `_history`. The `_history/[version id]` syntax is allowed, but it is cut off on persisting.
Not accepted: URNs (e.g., OIDs and UUIDs), see Section 1.3.5.4.

relative
: Relative either to the HDR `base URL` (for interactions that transmit a single resource) or relative to the `Bundle.entry.fullUrl` property in case a bundle is processed.

canonical
: Canonical URLs can only reference resources that have an `url` property, e.g., "CodeSystem", "ValueSet". Canonical URLs are the preferred way to reference such resources, because they are the most stable URLs in any FHIR environment.

  For example: The same "ValueSet" resource may exist in multiple FHIR servers, having a unique resource identity in each server. However the `url` property of said "ValueSet" will have the same stable value in all FHIR servers.

  The `|[version]` suffix that may be present in canonical URLs is not supported when using canonical URLs in a reference.

1.3.5.2 Identifiers and Type Information in the identifier and type Elements

This referencing option is typically used with business identifiers that uniquely identify the object represented by the resource in the real world, e.g., a patient's social security number or an XDS-document unique id. This option is used by non-FHIR client systems, e.g., a laboratory system that sends observations via HL7v2 ORU messages that are transformed into FHIR by an intermediate proxy system.

Logical references should be used sparingly and ideally only in case the referenced resource has no direct FHIR representation, e.g., national patient-identification-systems based on the IHE PIX/PDQ profiles or healthcare providers managed by an IHE HPD.

By default, the HDR supports resolving of logical references to actual URL references. This behavior can be disabled at runtime if needed (see Section 1.3.5.4).

1.3.5.3 Contained Resources in the contained Element

Contained resources are (potentially incomplete) resources that are contained verbatim in the parent resource, using the `DomainResource.contained` element of the parent resource. These contained resources can be used as the target of a reference in the parent resource and are usually indicated by the presence of a # character in the reference URL. Contained resources cannot exist independently of their parent resource; their lifecycle is tied to the parent resource.

FHIR strongly discourages the use of contained resources for content that can exist without a parent resource. Contained resources do not have an identity of their own and therefore cannot be managed independently of their parent resource. There are two more reasons why contained resources should be avoided at all costs:

- They cause a strongly denormalized data model.
  For example: Storing an "Observation" that directly contains its "Patient" subject leads to high data duplication. The contained "Patient" might or might not already exist as a standalone patient in the HDR.
- It is impossible to search for contained resources. In the above example, you cannot find the "Observation" by using patient demographics as query criteria.

For more information, please see the FHIR Specification chapter "Contained Resources".

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Note

eHealth Solutions follows the FHIR recommendation. Customers are strongly advised not to use contained resources.

1.3.5.4 Recommendation

FHIR recommends using relative URLs when "*trading across closed ecosystem boundaries*" (FHIR Specification Release 4, chapter "Literal References"). The eHealth Solutions HDR follows this recommendation also for another reason: absolute URLs in response messages need special processing when being deployed behind a reverse HTTP proxy (see chapter Section 1.3.6.12). Therefore, the HDR performs the following steps for every reference in all inbound resources:

- for relative URLs

  Check if the referenced resource exists in the HDR. If the existence check fails, the entire interaction fails with the HTTP error code `400 - Bad Request`. An `OperationOutcome` resource is provided to identify the problem.

- for absolute URLs

  No action is performed if the URL does not point to a resource on the current HDR instance. Otherwise, the HDR converts the URL relative to the base URL and performs the same resolving logic as described in the action point for relative URLs.

- for canonical URLs

  No action is performed.

- for references to a contained resource

  No action is performed and the contained resource is stored as-is.

- for logical references

  In case reference resolving is disabled, logical references are just accepted exactly as sent by the client and no validation occurs. If reference resolving is enabled, the `Reference.type` is mandatory. The resolving process works as follows:

  - **The accompanying `Reference.reference` element also contains a value**
    No action is performed and the logical reference is accepted as-is.
  - **The `Reference.type` element contains a value**
    - If the target resource can be resolved but the type is not allowed in this location, the interaction fails with the HTTP status error code: `422 - Unprocessable Entity`.
    - If the target resource can be resolved and the type is allowed in this location, the reference is resolved.
  - **The `Reference.type` element contains no value**
    If the type of a reference is missing, the resource resolving fails with the HTTP status error code: `400 - Bad Request`.

  When reference resolving is successful, the resolved literal reference is set in the `Reference.reference` element represented as a relative URI. The `Reference.identifier` and `Reference.type` elements are still retained as they were sent by the client.

  Reference resolving may fail, because either no matching resource or multiple matching resources are found. In both cases, the logical reference is accepted as-is, the interaction is **not** aborted. The sole exception to this rule are references to `Patient` resources: failure to resolve a `Patient` reference aborts the interaction with the HTTP error code `400 - Bad Request`. An `OperationOutcome` resource is provided to identify the problem.

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For the reasons stated above, it is strongly recommended to always provide a value in the `Reference.type` element whenever the `Reference.identifier` element is used. Otherwise, information about which type of resource is being referenced is lost, making reference resolving impossible whenever multiple target types are allowed for the reference.

> **Example 25:**
> `Observation.subject` may reference a patient, group, device or location. The submission of "123" in the `Reference.identifier.value` element in combination with an empty `Reference.type` element does not indicate which of the four possible target resource types is referenced. Therefore, resolving the reference is not possible. For more information regarding `Observation.subject`, please see the FHIR Specification chapter "Observation.subject".

Summarizing, the following points can be emphasized:

- It is strongly recommended that clients use relative or absolute URLs to reference resources. Only URLs to resources on the same HDR instance are checked for existence, and are therefore the only available option to enforce the referential integrity of the FHIR data model on the HDR.
- URLs pointing to external resources are accepted and not checked, which may create a false sense of certainty regarding referential integrity. The referenced external resource may be deleted without the HDR ever knowing about it. Holding a subset of resources externally also drastically limits the search capabilities of the HDR due to reasons like incompatible interface technologies or authentication barriers.
- An alternative are logical references with reference resolving enabled, though this approach too has problems with weak referential integrity.

1.3.6 Notes on FHIR Interactions

This section describes the interaction behavior that FHIR defines as optional, and consequently, the concrete implementation options that were chosen for the HDR. Additionally, a more advanced HDR-specific behavior that is not part of the FHIR Specification is described and some of the less known interaction options that can significantly improve FHIR-based workflows are explained. The reference checking mechanism described in Section 1.3.5.4 applies to all `create`, `update`, `patch` and `batch`/`transaction` interactions.

1.3.6.1 Create

The `create` interaction is implemented as described in the FHIR Specification chapter "create". The HDR also supports the `conditional create` interaction (see chapter "Conditional create").

Particularly pay attention to the HTTP response codes when using conditional creates: the

```
200 - OK
```

status code indicates that the interaction was ignored and no new resource has been created. Resource creation is only indicated by HTTP status code

```
201 - Created
```

and the accompanying `Location` response header.

Note that resources concerning patients are handled as described in Section 1.3.6.14.

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1.3.6.2 Update

The `update` interaction is implemented as described in the FHIR Specification chapter "update". The HDR also supports the "Update as Create" option and thus permits clients to specify their own Resource ids in `update` interactions.

In contrast to previous HL7 standards, FHIR describes a stateful messaging protocol. Updates and deletes of resources require knowledge of the logical Resource id. This is a problem for stateless clients, for example, translation engines that convert HL7v2 messages to FHIR interactions.

Stateless clients can use the `conditional update` option, see the FHIR Specification chapter "Conditional update" for details. This is the preferred way for both creating and updating resources for a stateless HDR client. If no matches are found and no logical id is provided, the HDR creates a new resource. In case a single match is found and no logical id is provided (for example, for stateless clients) the HDR updates the single matching resource.

Note that resources concerning patients are handled as described in Section 1.3.6.14.

1.3.6.3 Patch

The FHIR `patch` interaction (see chapter "patch" of the FHIR Specification for further details) is only supported for JSON patches, and is not supported for patient resources if the configuration **Enable Patient Feed To MPI** is enabled. The only exception is a patch on the fields `/extension` or `/meta/extension`. Note that patching extensions that are handled by the MPI might lead to an undesired outcome upon the next MPI update event, and thus this is highly discouraged! It is recommended to update the respective source patient data that holds the wrong information instead.

The following extensions are handled by the MPI:

- Patient Importance
- Patient Mother's Maiden Name
- Patient Religion
- Patient Citizenship

1.3.6.4 Delete

The `delete` interaction is implemented as described in the FHIR Specification chapter "delete". Deletion of a resource will only delete the most recent version of the resource (see Section 1.3.4). Deprecated versions of the resource are still retained.

The HDR also supports the `conditional delete` interaction as described in the FHIR Specification chapter "Conditional delete". The `multi-delete` option is not supported, though, it is only possible to delete a single resource at a time.

1.3.6.5 Batch/Transaction

Both the `batch` and `transaction` interactions are implemented as described in the FHIR Specification chapter "batch/transaction". Please note that nested `batch`/`transaction` interactions (batches/transactions submitted as part of a "parent" batch/transaction) are not supported. A `transaction` bundle can only contain basic REST request entries. FHIR operations as part of a transaction are not supported. An additional restriction on `transaction` interactions is that `Patient`-related requests cannot be rolled back in case of an error. The HDR is usually integrated with the MPI (see Section 1.3.6.14) which does not support patient rollbacks. Moreover, `batch` and `transaction` interactions are not supported for patient resources if the configuration **Enable Patient Feed To MPI** is enabled.

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In general, it is not recommended to include idempotent interactions (read, version-specific read, search) in a transaction bundle, as idempotent interactions do not require atomicity guarantees or rollback functionality. `conditional create`, `update`, and `delete` interactions are supported in a `batch` interaction.

1.3.6.6 Read

The `read` interaction is implemented as described in the FHIR Specification chapter "read". An interesting and highly efficient alternative to a HTTP GET read is the HTTP HEAD method (see the FHIR Specification chapter "Support for HEAD"). This method should be preferred for use cases that only need to determine the existence of a given resource but are not concerned with the actual content of the resource.

1.3.6.7 Version-Specific Read

The `version-specific read` interaction is implemented as described in the FHIR Specification chapter "vread". The same efficient approach for checking the existence of a specific resource version that is defined for the `read` interaction (the HEAD request method) is also available for version-specific reads.

While it is possible to retrieve deprecated/historic versions of a resource, it is impossible to update/delete said versions. `Update/Delete` interactions always only operate on the most recent/current resource version.

1.3.6.8 Search

The FHIR Specification provides a comprehensive set of rules and guidelines that indicate how `search` interactions on FHIR resources should be implemented by a FHIR server. The full specification can be found in chapter "Search". As stated in the referenced chapter, implementers need only to implement the amount of complexity that they require for their implementations. This section describes which parts of the search specification are implemented on the HDR.

Search Parameters

Most of the parameters specified in the "Search Parameter Registry" are supported. The following restrictions apply:

- All common search parameters are supported except for the following ones: `_list`, `_has` and `_type`. By default, `_content` is supported only for `Patient`-resources.

  Note

  It is not recommended to enable full-text search support for arbitrary resource types as this requires a lot of memory and may consequently compromise the system.

- All resource type-specific parameters defined in the Search Parameter Registry are supported.
- All "search parameter types" except the `special` type are supported.
- All "modifiers" except for `above`, `below`, `in`, `not-in` and `identifier` are supported.
- All "prefixes" are supported.
- Querying a reference that includes a resource version (that is the `_history/[version id]` syntax) is not supported. Only version-agnostic references can be queried.
- `_include` and `_revinclude` only include resources that are referenced via literal relative references (for example, "Observation/123"), see chapter Section 1.3.5.4 for details on reference types.

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All other reference types (for example, logical references) are ignored and not included in the search result.

- When combining both the `_include` and `_elements` parameters in a search interaction all reference elements that are necessary to resolve the included resources are implicitly added to the `_elements` list.
- "Chained parameters" and "reverse chaining" are supported. An upper limit of 100 matching resources is applied to all chained parameters to prevent overloading the HDR with poorly formulated chained queries.
- "Composite search parameters" are supported.

Full-Text Search

Both full-text search parameters (`_text` and `_content`) are supported. Both parameters accept values that adhere to the following format:

- Text tokens are case-insensitive and complete, i.e. the following tokens return the same results (all resources that contain any variant of "test" as a property value):
  - `[base]/Patient?_content=TEST`
  - `[base]/Patient?_content=test`
- Wildcard searches can be used to find resources that partially match a given search term.
  For example, the following search returns all patients that are called "Bert" as well as "Bernard":
  - `[base]/Patient?_content=ber*`
- The parentheses `( )` and the operators `AND`, `OR` and `NOT` (operators are case-sensitive) can be used to build more complex search criteria that are similar to propositional logic expressions, for example, `[base]/Patient?_content=(ber* OR adam) AND NOT steve`.

Search Result Parameters

This parameters can be used to modify the response of a `search` interaction, see chapter "Managing Returned Resources" of the FHIR Specification. The following search result parameters are supported:

- Sorting by resource-elements, that can also be used as search-parameters, is supported with the "_sort" parameter.
- The "_count" parameter is supported to limit the size of the returned search result. It is highly recommended to always specify a reasonable limit for the result size. Paged search results always include the appropriate `next`/`previous` links to facilitate the result fetching.
- Both `_include` and `_revinclude` are supported. Note that specifying either of the two parameters may lead to undesired results if they are combined with the `_count` parameter: the count refers only to the "root" resource specified in the query not to resources included via `_include`/`_revinclude`. These latter resources are always loaded without limit.
- `_summary` is supported.
- `_elements` is supported and should always be applied when only a subset of resource properties is required for a search result.



Note

Search bundles returned by the Health Data Repository never contain a `total` element.

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1.3.6.9 Optimizing Feeds

A very common `feed` use case is creating/updating/patching a resource followed by a subsequent query to retrieve the resource as it has been created/modified on the server.

Clients can handle this use case within a single request by specifying the value `return=representation` for the HTTP `Prefer` header (see the FHIR Specification chapter "create/update/patch/transaction"). This instructs the HDR to return the entire resource as it currently exists in the interaction response.

Another possible option is to use `return=OperationOutcome` as header value. This will cause the HDR to always return `OperationOutcome` resources, regardless of the outcome of the interaction. This may help integrating with the HDR in those cases where uniform response handling is desired by clients, as the default behavior for successful feed interactions is to only return HTTP headers without a body.

1.3.6.10 Timezone Handling

FHIR is quite flexible in processing date/times: the timezone information is optional for all relevant FHIR data types except the `instant` data type.

If clients do not explicitly specify a timezone for a given FHIR element, the HDR assumes this date/time to be specified in Coordinated Universal Time (UTC). This basic assumption is applied for all FHIR interactions, i.e. feed and search interactions are handled the same.

For consistency reasons clients are strongly advised to

- always explicitly provide timezone information for date/time values.
- use the same timezone consistently for all resource types. Failure to do so causes inconsistent search results for time-based queries.

1.3.6.11 Custom Operation Outcome Codes

FHIR allows implementers to return custom operation outcome codes in the details element. The HDR defines its own set of operation outcome codes.

Due to the fact that the HDR is optionally integrated with other eHealth Solutions services (e.g., the Access Control System), it is possible that additional operation outcome codes generated by these services are returned to the client.

1.3.6.12 Reverse Proxy Awareness

For security reasons, load balancing or high availability the HDR may be deployed behind a reverse HTTP proxy. While being usually beneficial for the mentioned reasons, reverse proxies provide a problem when dealing with absolute HTTP URLs in responses: client systems do not contact the HDR directly, they contact the reverse proxy. In other words, from a client's point of view the reverse proxy *IS* the FHIR endpoint.

This is also the main reason why the HDR favors relative URLs wherever possible. Unfortunately, FHIR imposes the use of absolute URLs in some parts of its REST API:

1. in the value of the HTTP `Location` header.
2. in all paging links in search response `Bundles`.
3. in all `Bundle.entry.fullUrl` elements.

Customers should configure their reverse HTTP proxies to include the HTTP `Forwarding` headers described in this section to allow the HDR to build valid absolute URLs that are understood by external clients. The alternatives are listed in order of preference if more than one header alternative is available. The first matching HTTP header will be used to construct the corresponding part of the returned absolute URLs.

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A special alternative is the "Forwarded" header that allows to specify both protocol and host in a single header value. For the protocol the following alternative headers can be used:

- X-Forwarded-Proto
  with values `https` or `http`
- X-Forwarded-Protocol
  with values `https` or `http`
- X-Url-Scheme
  with values `https` or `http`
- Front-End-Https
  with values `on` or `off`
- X-Forwarded-Ssl
  with values `on` or `off`

The following alternative to the `Forwarded` header may be specified for the host:

- `X-Forwarded-Host`

No widely accepted header exists for specifying a custom URL path mapping. For this purpose the HDR supports the following two alternatives:

- `X-Forwarded-Prefix`
- `X-Forwarded-PathBase`

Example 26:
If a client request to `https://fhirproxy.org:1234/fhir/r4/Patient/123` should be mapped to the endpoint `https://myfhirserver.com:1043/fhir/Patient/123`, the following HTTP headers must be forwarded by the reverse proxy:

```
Forwarded: host=fhirproxy.org:1234;proto=https
X-Forwarded-Prefix: /fhir
```

Public FHIR URLs must always contain the FHIR version identifier, i.e. the `r4` in the above URL `https://fhirproxy.org:1234/fhir/r4` is mandatory to process the request correctly.

1.3.6.13 Automated Resource De-Duplication



Note

This chapter describes additional functionalities provided by eHealth Solutions. These functionalities are not part of the FHIR specification.

FHIR allows the concept of business identifiers for many of its resource types. Resource types that support business identifiers define these identifiers in the `[Resource Type].identifier` element. Examples are the `Patient.identifier` element that holds a social security number or the `Observation.identifier` element containing a unique identifier assigned by a laboratory system.

The standard does however not impose any requirement on FHIR servers to ensure uniqueness of such identifiers. This means that in standard FHIR it is very well possible to have multiple patients that all share the same "unique" identifier.

As this situation is not very desirable to many customers, the HDR provides the possibility to automatically detect if a resource with a given `identifier` already exists. This detection functionality works across all `create`, `update`, `patch`, and `batch` interactions for resources that contain a value in the `identifier` element.

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More specifically, the HDR processes such resources as follows:

For Create Interactions
: If another resource with the same `identifier` already exists, no action is taken and the resource is not updated.

For Update and Patch Interactions
: If another resource with the same `identifier` already exists, the interaction is aborted with the HTTP error code (`400 - Bad Request`).

For Batch Interactions
: The de-duplication logic described above is applied to each individual batch entry.

The resource de-duplication feature is enabled by default but can be disabled in the configuration. Please note that it is always safe to disable de-duplication, whereas enabling it in a long-running HDR installation most probably has the undesired effect of many denied feed interactions. These occur because many duplicate resources are likely to have been created before the de-duplication feature was enabled by the customer/administrator.

1.3.6.14 Processing of Patient Resources



Note

This chapter describes additional functionalities provided by eHealth Solutions. Therefore, they are not part of the FHIR Specification.

With its default configuration the HDR includes the PIXPDQ to process `Patient` resources. These are thus handled differently than other resource types. If not desired, the behavior described in this section can be switched off via the HDR configuration.

The PIXPDQ and the HDR use different data models such that the following prerequisites need to be enforced for `create` and `update` transactions.

- For resources that reference other resources from the Compartement Patient, the following applies:
  - They require the corresponding profile:
    `https://ehs.at/fhir/StructureDefinition/Ehs<ResourceType>`

    For example, a resource of type `Observation` needs the profile `https://ehs.at/fhir/StructureDefinition/EhsObservation`.
  - They require the following extension for all FHIR references pointing to a patient:
    `https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier`
- The following applies for `Patient` resources and `update` transactions:
  - They require the extension:
    `https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier`

Refer to Example 27 for an example of how to specify the required profile and extension in a FHIR resource. `Create` and `update` requests are handled as follows:

1. The HDR forwards the requests to the PIXPDQ.
2. The PIXPDQ performs the actual creation and update of the master and source patients.
3. The PIXPDQ returns the master patient to the HDR.
4. The HDR only stores complete master patients.

Note that, in general, the PIXPDQ returns the master patient to which the sent source patient was linked before an `update` transaction. However, the following special scenarios can occur:

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- Unlink: The source patient is unlinked from the old master patient and linked to another master patient. The old master patient is returned. The new master patient containing the change needs to be explicitly queried.
- XAD-PID change without deletion: The source patient is unlinked from the old master patient and linked to another master patient. The new master patient containing the change needs to be explicitly queried.
- XAD-PID change with deletion: The source patient is unlinked from the old master patient and linked to another master patient. No source patient is left on the old master patient which is therefore deleted. Status 301 is returned. The `Location` header contains the relative path to the new master patient.

The fact that the HDR only stores master patients should not adversely affect client systems. In most cases, the only visible effect is the existence of additional business identifiers in `Patient.identifier` but it is also possible that patient demographics like the birth date are corrected by the PIXPDQ.

Example 27: Profile and Extension in FHIR Resource

```
"resourceType": "Observation",
"status": "final",
"meta": {
    "profile": {
        "https://ehs.at/fhir/StructureDefinition/EhsObservation"
    }
},
...
"subject": {
    "reference": "Patient/123",
    "extension": [
        {
            "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
            "valueIdentifier": {
                "system": "urn:oid:1.1.1.4",
                "value": "123456789"
            }
        }
    ]
}
```

Case Insensitive Handling of Identifiers

If case insensitive handling of identifiers is enabled in the configuration, eHealth Solutions recommends to disable the "Strict Patient Identifier Deduplication" checkbox in the HDR configuration (see the eHealth Solutions *Configuration Instructions*) and to set `identifier.use`, the purpose of the case insensitive identifier, to something different than "official" in FHIR `Patient` resources.

1.3.6.15 Special Attributes and Extensions

This section describes extensions as well as attributes used in a particular way by eHealth Solutions.

Attributes

meta.source

The `meta.source` attribute identifies an institution or system that maintains ownership and responsibility of the resource. It is mandatory for institution-based access control. If the `meta.source` attribute is missing, access control on the level of institutions is not possible. For general information on this attribute, please refer to the FHIR Specification chapter "Resources - Detailed Description".

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Extensions

patient-citizenship
: The patient's legal status as described in the FHIR Specification chapter "Extension: citizenship".

patient-mothersMaidenName
: The mother's maiden name as described in the FHIR Specification chapter "Extension: mothersMaidenName".

patient-importance
: The patient's importance as described in the FHIR Specification chapter "Extension: importance".

patient-religion
: The patient's professed religious affiliations as described in the FHIR Specification chapter "Extension: religion".

1.3.6.16 Mobile Access to Health Documents (MHD) Handling

The FHIR Facade implements the `IHE MHD` with XDS binding. According to the FHIR Specification, it is not possible to separate the `ITI-66` and `ITI-67` transactions from vanilla FHIR queries (for example, `/fhir/r4`). Therefore, the FHIR Facade provides a separate endpoint to be able to comply with this specification.

To initiate the MHD profile handling on the FHIR Facade, requests need to be suffixed by "mhd" (for example, `/fhir/r4/mhd`). If the FHIR Facade is called without the "mhd" suffix, the query is routed to the HDR, where a regular FHIR search will be conducted.

1.3.7 FHIR Operations

This section describes custom operations as described in the FHIR Specification chapter "Operations". Operations extend the basic FHIR interactions to define custom operations and to provide unique functionalities where required.

1.3.7.1 Patient User Account Creation

The `createaccount` operation is necessary to create Liferay user accounts for patients via FHIR. This operation can be used via the following POST request:

```
POST FhirFacade/[fhir-version]/Patient/$createaccount
```

The body of the POST request has to contain a FHIR `Parameters` resource. The patient for whom an account shall be created is specified via a `Patient` resource. Note that an account can only be created if a valid e-mail address for the patient exists.

Refer to Table 10 for information on the required elements and their cardinality and to Example 28 for a sample `Parameters` resource. Information on the JWT token that is used for user authentication can be found in the description of the *Automation Service* in eHealth Solutions *Interface Manual*.

Table 10: Fields and Cardinality for Account Creation

Name	Cardinality	Type	Comment
Parameters	1..1	Resource	
parameter	1..1	BackboneElement	
name	1..1	string	
Patient	1..1	Resource	This resource specifies the patient for whom an account shall be created.
identifier	1..1	Identifier	

Table 10: Fields and Cardinality for Account Creation

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Table 10: Fields and Cardinality for Account Creation

Name	Cardinality	Type	Comment
system	0..1	uri	Namespace for the identifier value. It is recommended to add this field together with the next one.
value	0..1	string	Unique patient identifier. It is recommended to add this value together with the field above.
name	1..*	HumanName	Only one name field is processed. If available, `official` name is used. Otherwise the name coming first in the alphabet is used.
family	1..1	string	
given	1..1	string	First name
telecom	1..*	ContactPoint	An e-mail address is mandatory. Otherwise the user account cannot be created.
system	1..1	code	Set to `email`.
value	1..1	string	E-mail address

Example 28: Parameters Resource for Account Creation

```
{
  "resourceType": "Parameters",
  "parameter": [
    {
      "name": "patient",
      "resource": {
        "resourceType": "Patient",
        "identifier": [
          {
            "system": "urn:oid:1.1.1.1.2",
            "value": "1.4.5.6.121"
          }
        ]
        "name": [
          {
            "family": "Chalmersli",
            "given": [
              "Peter",
              "John"
            ]
          }
        ]
        "telecom": [
          {
            "system": "email",
            "value": "somemail@somecompany.com"
          }
        ]
      }
    }
  ]
}
```

1.3.7.2 Patient User Account Deactivation

The `deactivateaccount` operation allows to deactivate Liferay user accounts for patients via FHIR. This operation can be used via the following POST request:

```
POST FhirFacade/[fhir-version]/Patient/$deactivateaccount
```

The body of the POST request has to contain a FHIR `Parameters` resource. The patient whose account shall be deactivated is specified via a `Patient` resource. Refer to Table 11 for information on the required

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elements and their cardinality and to Example 29 for a sample `Parameters` resource. Information on the JWT token that is used for user authentication can be found in the description of the *Automation Service* in eHealth Solutions *Interface Manual*.

Table 11: Fields and Cardinality for Account Deactivation

Name	Cardinality	Type	Comment
Parameters	1..1	Resource	
parameter	1..1	BackboneElement	
name	1..1	string	
Patient	1..1	Resource	This resource specifies the patient whose account shall be deactivated.
identifier	1..1	Identifier	
system	0..1	uri	Namespace for the identifier value. It is strongly recommended to add this field together with the next one. Otherwise the correct user account might not be found.
value	0..1	string	Unique patient identifier. It is strongly recommended to add this value together with the field above. Otherwise the correct user account might not be found.
name	1..*	HumanName	Only one name field is processed. If available, `official name` is used. Otherwise the name coming first in the alphabet is used.
family	1..1	string	
given	1..1	string	First name

Example 29: Parameters Resource for Account Deactivation

```
{
  "resourceType": "Parameters",
  "parameter": [
    {
      "name": "patient",
      "resource": {
        "resourceType": "Patient",
        "identifier": [
          {
            "system": "urn:oid:1.1.1.1.2",
            "value": "1.4.5.6.121"
          }
        ],
        "name": [
          {
            "family": "Chalmersli",
            "given": [
              "Peter",
              "John"
            ]
          }
        ]
      }
    }
  ]
}
```

1.3.7.3 Patient Match

eHealth Solutions supports the following parameters of the `patient match` operation:

- `count`
- `onlySingleMatch`

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1.3.7.4 Patient Merge

The `patient merge` operation is implemented as described in HL7 "Merge Operation"[1]. Please note that only the request parameters `source-patient-identifier` and `target-patient-identifier` are supported. Patient merge processing is always synchronous. Asynchronous merge execution is not supported. The recessive patient is deleted if the patient merge was successful. All literal references to the corresponding recessive patient are replaced with literal references to the target patient.

A "Provenance resource" is not created.

1.3.8 Extensions and Profiling

A comprehensive amount of resources is defined in the FHIR Specification. For situations where this base resources or the contained data elements are not sufficient, FHIR extensions and FHIR profiles can be used for the following purposes:

- To change the cardinality of existing elements (see the FHIR Specification chapter "Changing Cardinality").
- To change or extend the terminologies used in coded elements. Please note that this modification of terminologies is not allowed for every coded element. See the FHIR Specification chapter "Binding Definitions" for further details.
- To add new elements to existing resources. This is done via the FHIR extensions mechanism.
- To change the semantic meaning of an existing element. This is done via FHIR modifier extensions (see the FHIR Specification chapter "Modifier Extensions").

The HDR supports additionally to the base FHIR R4 Specification the configuration of custom FHIR profiles. The description of the exact mechanism of adding/removing custom profiles is not part of this Implementation Guide.

For client systems it is important to know that profiled resources must reference the URL of the profile they conform to in the `meta.profile` resource element.

Example 30:
Example of an `Observation` that claims conformance to the "US Core Laboratory Result Observation" profile:

```
{
    "resourceType" : "Observation",
    "meta" : {
        "profile" : [ "http://hl7.org/fhir/us/core/StructureDefinition/us-core-observation-
    lab" ]
    },
    ...
}
```

1.3.9 Security

1.3.9.1 HDR Registry Integration

In very specific installation scenarios, a second (responding) *FHIR Facade* can be integrated with the HDR Registry. In this scenario, the second (responding) *FHIR Facade* is the receiver of the special `encrypted-search` FHIR operation that is described in the following chapter.

[1] version 54, 28.01.2021

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Encrypted Search

The *FHIR Facade* can respond to FHIR searches with encrypted bundle responses:

1. The client requests an `encrypted-search` on the initiating FHIR Facade.
2. The initiating FHIR Facade sends a special `HdrEnc` token containing a public key to the HDR Registry.
3. The HDR Registry queries each configured responding FHIR Facade and passes the original public key.
4. The responding FHIR Facade updates all literal references within each resource of the search result to hold a value similar to the following to enable `encrypted-read` operations:
   - Original reference value: `Patient/example`
   - Updated reference value: `http://initiatingFhirFacade:1180/FhirFacade/r4/aHR0cDovL3JlY2VpdmluZ0ZoaXJGYWNhZGU6MTM4MC9GaGlyRmFjYWRlL3I0/Patient/example/$encrypted-read`
5. The responding FHIR Facade creates a key pair, encrypts the bundle response with the public key and places the private key for decryption into a JSON Web Encryption (JWE). The JWE is encrypted with the public key of the initiating FHIR Facade.
6. The initiating FHIR Facade decrypts the JWE with the private key matching the public key in the `HdrEnc` token, extracts the encrypted private key and decrypts the actual bundle response.

This process ensures that neither the HDR Registry nor any other service on the *Community Node* can read the responses of the individual HDRs.

1.3.9.2 ACS Protecting HDR Resources

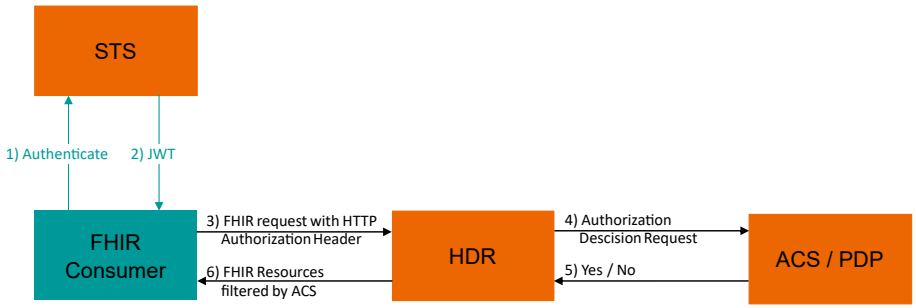
All resources on the HDR are subject to access control, with the exception of capability statements. Resource types are currently mapped to class codes by configuration.

For authentication a JSON Web Token (JWT) is required. As the *ACS* is role based, the `subjectRole` claim in the JWT is important.

If the FHIR Consumer already has a valid SAML 2.0 assertion, the JWT can be obtained via the STS (see chapter STS in the eHealth Solutions *System Documentation* for more information on the STS).

Otherwise, please refer to the sections "OAuth2/PKCE Authentication" (under *Application Node*) and "Data Gateway/JSON Web Token" (under *Community Node*) in the eHealth Solutions *System Documentation* for more details on how these JWTs look like and how they can be obtained.

Figure 1: ACS Protecting HDR Resources



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2 Schedules and Appointments

The **Appointment Schedules** application allows healthcare providers to create schedules and slots for appointments.

Appointments is an application that allows the patient to view, book, and manage appointments for certain services.

This section offers the information required to add and manage schedules and appointments via HL7 FHIR (see Section 2.1) or HL7v2 (Section 2.2).

2.1 HL7 FHIR

2.1.1 Schedules and Slots

To allow the booking of appointments either by the patient directly in the eHealth Solutions *Patient Portal* or by a FHIR client, FHIR schedules and FHIR slots need to be provided.

Patients can book appointments for services and at healthcare providers that are specified by the available FHIR schedules.

Table 12 and Table 13 give an overview of all the elements required by eHealth Solutions. Refer to the official FHIR documentation for general information on Schedules and Slots. Examples for the JSON schemas of these resources can be found in Section 2.1.1.1.

Appointments that can be created by a patient in the eHealth Solutions *Patient Portal* are based on FHIR slots. Refer to Section 2.1.3 for information on FHIR appointments.

Refer to Section 2.1.4 for information on how to create schedules for online appointments.

Table 12: FHIR Elements for the Schedule Resource

Element	Required	Comment
resourceType	yes	Set it to “Schedule”.
identifier	yes	
active	yes	Set to “true”.
serviceType	yes	
specialty	yes	
actor	yes	› One actor with the type “Practitioner” is required. This actor can represent either a physician (individual healthcare provider) or an institution providing the service. › In addition, an actor with the type “Location” can be added. This actor represents an organization and, if present, may be used to override the contact information used in the appointment (see Table 17 for details). The identifiers of the actors added to the appointment must be defined in the *HPD* under the identifier type `OID`. › Refer to Section 2.1.4 for information on how to set the type “Location” for online appointments.
planningHorizon	yes	To avoid problems with daylight saving time UTC should be used.
comment	yes	Enter a description of the service. It will be displayed after the patient has selected the service from the healthcare provider’s list of services.

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Table 13: FHIR Elements for the Slot Resource

Element	Required	Comment
resourceType	yes	Set it to “Slot”.
identifier	yes	
serviceType	no	
specialty	no	
schedule	yes	Specify the schedule the slot belongs to.
status	yes	› Initially set it to “free” if the slot shall be bookable. › The slot status will change in the process of booking an appointment. It needs to be set back to “free” if an appointment is canceled.
start	yes	To avoid problems with daylight saving time UTC should be used.
end	yes	To avoid problems with daylight saving time UTC should be used.

2.1.1.1 Examples

Example 31: JSON Schema for the Schedule Resource

```
{
    "resourceType": "Schedule",
    "identifier": [
        {
            "system": "http://example.org/scheduleid",
            "value": "92f93e0d-14d1-4653-aea2-8392df4800bc"
        }
    ],
    "active": true,
    "serviceType": [
        {
            "coding": [
                {
                    "code": "211",
                    "display": "Magnetic Resonance Imaging (MRI)"
                }
            ]
        }
    ],
    "specialty": [
        {
            "coding": [
                {
                    "code": "394586005",
                    "display": "Radiology"
                }
            ]
        }
    ],
    "actor": [
        {
            "type": "Practitioner",
            "identifier": {
                "value": "hpd:uid:1.1.1.16489512155"
            },
            "display": "Firstname Lastname"
        },
        {
            "type": "Location",
            "identifier": {
                "system": "urn:oid:1.1.1",
                "value": "1.1.1.1.21.01158"
```

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```
            },
            "display": "Hospital Medical"
        }
    ],
    "planningHorizon": {
        "start": "2023-01-01T00:00:00Z",
        "end": "2023-12-31T23:59:59Z"
    },
    "comment": "The information added here will be displayed after service has been selected
    ."
}
```

Example 32: JSON Schema for the Slot Resource

```
{
    "resourceType": "Slot",
    "identifier": [
        {
            "system": "http://example.org/slotid",
            "value": "fe1db177-85f2-4f63-b1d1-81b20ec223fd"
        }
    ],
    "schedule": {
        "type": "Schedule",
        "identifier": [
            {
                "value": "92f93e0d-14d1-4653-aea2-8392df4800bc"
            }
        ]
    },
    "status": "free",
    "start": "2023-10-10T09:00:31.451Z",
    "end": "2023-10-10T10:00:31.451Z",
    "comment": "Text added here will be ignored."
}
```

2.1.1.2 Slot Deletion

When a slot is deleted in the user interface, this slot is not completely removed, just the status is changed to “entered-in-error”.

2.1.2 Creation of Appointment Schedules

Appointment Schedules use the `Schedule` FHIR resource (refer to the official FHIR documentation for general information on Schedules). Table 14 is describing the differences of the schedule creation depending on the login with or without an institution and schedule owner.

Refer to section Section 2.1.4 for detailed information and examples of online schedules and appointments.

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Table 14: Actors in Schedules Creation

Login	Schedule owner	actor.Practitioner	actor.Location	For online appointments only: actor.Location.Identifier
With Institution	Entire institution	Organization	Address and contact information of the institution are used	“value”:“VirtualVisitScheduleLocationId” used as online appointment identifier
With Institution	Individual	Individual healthcare provider	Address and contact information of the institution are used	“value”:“VirtualVisitScheduleLocationId” used as online appointment identifier
Independent	Individual	Individual healthcare provider	Not available, address and contact information taken from individual healthcare provider	Online appointments not possible for independent user

2.1.2.1 Examples

Example 33: Part of JSON Schema for a Schedule with Institution Login and Institution Owner

```
"actor": [
      {
          "reference": "Practitioner/a7359fd6-8390-4468-beb9-2cc54e6d7dea",
          "type": "Practitioner",
          "identifier": {
              "system": "urn:oid:1.1.1",
              "value": "1.1.1.2.98111"
          },
          "display": "Hospital Medical"
      },
      {
          "reference": "Location/ed612d1b-759a-4b73-a0ed-3a457c02a4d3",
          "type": "Location",
          "identifier": {
              "system": "urn:oid:1.1.1",
              "value": "1.1.1.2.98111"
          },
          "display": "Hospital Medical"
      }
]
```

Example 34: Part of JSON Schema for a Schedule with Institution Login and Individual Owner

```
"actor": [
      {
          "reference": "Practitioner/907a5bb9-183f-46dd-8293-4c5eebe229e5",
          "type": "Practitioner",
          "identifier": {
              "system": "urn:oid:1.1.1",
              "value": "1.5.1.6"
          },
          "display": "Firstname Lastname"
      },
      {
          "reference": "Location/ed612d1b-759a-4b73-a0ed-3a457c02a4d3",
          "type": "Location",
          "identifier": {
              "system": "urn:oid:1.1.1",
              "value": "1.1.1.2.98111"
          },
```

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```
            "display": "Hospital Medical"
        }
]
```

Example 35: Part of JSON Schema for a Schedule with Independent Login and Individual Owner

```
"actor": [
        {
            "reference": "Practitioner/907a5bb9-183f-46dd-8293-4c5eebe229e5",
            "type": "Practitioner",
            "identifier": {
                "system": "urn:oid:1.1.1",
                "value": "1.5.1.6"
            },
            "display": "Firstname Lastname"
        }
],
```

2.1.3 Appointment Creation and Management

Appointments can be added either by the patient directly in the eHealth Solutions *Patient Portal* or by a FHIR client. eHealth Solutions uses FHIR appointments which in general require FHIR schedules and slots to be available. Refer to Section 2.1.1 for information on how to set up schedules and slots.

Note that for a FHIR client it is also possible to add an appointment that does not refer to a given slot. In this case the FHIR client has to ensure that all required information is added to the `Appointment` resource in order for it to be displayed correctly in the eHealth Solutions *Patient Portal*.

Table 15 and Table 16 contain information on which elements are needed in the `Appointment` resource. Refer to the official FHIR documentation for general information on Appointments. Examples of JSON schemas can be found in Section 2.1.3.1.

It is possible to add tasks to appointments. Refer to Section 2.1.5 for information on how to achieve this.

Refer to Section 2.1.4 for information on how to create online appointments.

Table 15: FHIR Elements for the Appointment Resource

Element	Required	Comment
resourceType	yes	Set it to “Appointment”.
identifier	yes	
status	yes	› Set it to “booked” or “canceled” to accept or decline an appointment that has been booked by a patient via the eHealth Solutions *Patient Portal*. › Set it to “booked” if the appointment is created by a FHIR client.
serviceType	yes	Should only contain one `ServiceType`.
specialty	yes	
start	yes	To avoid problems with daylight saving time UTC should be used.
end	yes	To avoid problems with daylight saving time UTC should be used.
slot	optional	› If the appointment shall be added to an existing slot, the slot must be referenced here. Furthermore the corresponding `slot.status` needs to be set to “busy” if the appointment is created by the FHIR client. › To cancel an appointment added by a patient via the eHealth Solutions *Patient Portal* the corresponding `slot.status` needs to be set to “free”.

Table 15: FHIR Elements for the Appointment Resource

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Element	Required	Comment
participant	yes	A separate participant element needs to be provided for the healthcare provider, the location, and the patient. Refer to Table 16 for additional information.
comment	optional	Text added here will be displayed in the appointment's details.

Table 16: Appointment.participant Elements

	Healthcare Provider	Location	Patient	Comment
type	Coding. Set `code` to "PPRF"	Leave empty	Leave empty	It is recommended to use exactly one primary performer (see Table 12).
actor	`type`: **Practitioner** `identifier`: needs to be defined in the *HPD* `identifier type`: OID `display`: See 'Comment'	`type`: **Location** `identifier`: needs to be defined in the *HPD* `identifier type`: OID `display`: See 'Comment'	`type`: **Patient** `identifier`: needed	› If the participant is a healthcare provider or a location, text specified with `display` will be shown in case the healthcare provider or the location cannot be resolved. › Address and contact details shown to the patient follow the logic explained in Table 17 and Example 37. › Refer to Section 2.1.4 for information on how to set the type "Location" for online appointments.
status	`accepted`	`accepted`	`accepted`	› Set it to "accepted" or "declined" for all participants to accept or decline an appointment that has been booked by a patient via the eHealth Solutions *Patient Portal*. › In case the appointment is created by the FHIR client, this status needs to be set to "accepted".

Table 17: Display Logic for Address and Contact Details

Type: Practitioner	Type: Location	Address taken from	Contact Details taken from
Organization	Organization	Location	Practitioner (fallback to Location if not available for Practitioner). See Example 37
Organization	-	Practitioner	Practitioner (no fallback)
Individual Healthcare Provider	Organization	Location	Location (fallback to Practitioner if not available for Location)
Individual Healthcare Provider	-	Practitioner	Practitioner (no fallback)

2.1.3.1 Examples

Example 36: JSON Schema for the Appointment Resource

```
{
    "resourceType": "Appointment",
    "identifier": [
        {
            "system": "http://example.org/appointmentid",
            "value": "0afc7df0-70b6-4de6-851b-718792b53c7a"
```

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```
        }
    ],
    "status": "proposed",
    "serviceType": [
        {
            "coding": [
                {
                    "code": "211",
                    "display": "Magnetic Resonance Imaging (MRI)"
                }
            ]
        }
    ],
    "specialty": [
        {
            "coding": [
                {
                    "code": "394586005",
                    "display": "Radiology"
                }
            ]
        }
    ],
    "start": "2023-10-10T09:00:31.451Z",
    "end": "2023-10-10T10:00:31.451Z",
    "minutesDuration": 60,
    "slot": [
        {
            "type": "Slot",
            "identifier": {
                "system": "http://example.org/slotid",
                "value": "fe1db177-85f2-4f63-b1d1-81b20ec223fd"
            }
        }
    ],
    "comment": "The information has been copied from schedule comment field",
    "participant": [
        {
            "type": [
                {
                    "coding": [
                        {
                            "code": "PPRF",
                            "display": "primary performer"
                        }
                    ]
                }
            ],
            "actor": {
                "type": "Practitioner",
                "identifier": {
                    "value": "hpd:uid:1.1.1.16489512155"
                },
                "display": "Firstname Lastname"
            },
            "status": "needs-action"
        },
        {
            "actor": {
                "type": "Location",
                "identifier": {
                    "system": "urn:oid:1.1.1",
                    "value": "1.1.1.1.21.01158"
                },
                "display": "Hospital Medical"
```

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```
            },
            "status": "needs-action"
        },
        {
            "actor": {
                "type": "Patient",
                "identifier": {
                    "system": "urn:oid:1.1.1",
                    "value": "629a38e4-cbc2-4b6f-9452-502d694b9e98"
                }
            },
            "status": "needs-action"
        }
    ]
}
```

Example 37: Contact Details (Table 17)

If the `Practitioner` is an organization and the `Location` is provided, the address is taken from the `Location` and the contact details, if available, are taken from the `Practitioner`. If more than one actor with the type `Practitioner` (organization or individual healthcare provider) is added to the appointment, only the first individual healthcare provider is considered by the *Appointments* application. In the case that no individual healthcare provider is found, the first organization is considered.

2.1.4 Online Appointment (Virtual Visit)

To create online appointments the type `Location` in schedules and appointments needs to be set accordingly. Refer to Section 2.1.1 and Section 2.1.3 for information on the general setup of schedules and appointments. Table 18 explains the setting for the `Location` and examples of JSON schemas can be found in Section 2.1.4.1.

Table 18: Online-Specific Location Identifier

Type	Identifier	Description
Location	"value": "VirtualVisitScheduleLocationId"	Online-specific identifier for `schedule` and `appointment`

2.1.4.1 Examples

Example 38 and Example 39 show JSON schemas of FHIR resources of the online `Schedule` and online `Appointment`, respectively.

Example 38: JSON Schema for the Online Schedule

```
{
  "resourceType": "Schedule",
  "id": "93eb1a1d-6018-49a3-9d76-2f01071d3182",
  "meta": {
      "versionId": "1",
      "lastUpdated": "2024-08-12T08:52:35.099+00:00"
  },
  "identifier": [
      {
          "value": "49a0b2c3-7cd4-477f-b231-5b790648e9c0"
      }
  ],

  ...
```

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```
  "actor": [
      {
          "type": "Location",
          "identifier": {
              "value": "VirtualVisitScheduleLocationId"
          }
      },
      {
          "type": "Practitioner",
          "identifier": {
              "system": "urn:oid:1.1.1",
              "value": "1.1.1.1.1.88888"
          },
          "display": "Firstname Lastname"
      },
      {
          "type": "Location",
          "identifier": {
              "system": "urn:oid:1.1.1",
              "value": "1.1.1.2.98111"
          },
          "display": "Hospital Medical"
      }
  ],
  "planningHorizon": {
      "start": "2024-08-12T08:52:02+00:00",
      "end": "2024-08-16T21:59:59+00:00"
  },
  "comment": "comment"
```

Example 39: JSON Schema for the Online Appointment

```
{
  "resourceType": "Appointment",
  "id": "6327ed29-88b5-4cfd-95c0-599f6d3e6fd1",
  "meta": {
      "versionId": "1",
      "lastUpdated": "2024-08-12T12:57:41.803+00:00"
  },
  "identifier": [
      {
          "system": "urn:oid:1.4.4.4",
          "value": "8eb8465b-23dd-4061-9b6e-d19215aa8b19"
      }
  ],

  ...

  "participant": [
      {
          "actor": {
              "type": "Location",
              "identifier": {
                  "value": "VirtualVisitScheduleLocationId"
              }
          },
          "status": "needs-action"
      },
      {
          "type": [
              {
                  "coding": [
                      {
```

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```
                        "code": "PPRF",
                        "display": "primary performer"
                    }
                ]
            }
        ],
        "actor": {
            "type": "Practitioner",
            "identifier": {
                "system": "urn:oid:1.1.1",
                "value": "1.1.1.1.1.88888"
            },
            "display": "Firstname Lastname"
        },
        "status": "needs-action"
    },
    {
        "actor": {
            "type": "Location",
            "identifier": {
                "system": "urn:oid:1.1.1",
                "value": "1.1.1.2.98111"
            },
            "display": "Hospital Medical"
        },
        "status": "needs-action"
    },
    {
        "actor": {
            "type": "Patient",
            "identifier": {
                "system": "urn:oid:1.1.1",
                "value": "77d7f4b6-288f-474e-a00d-16ec6ba21b79"
            }
        },
        "status": "needs-action"
    }
]
```

2.1.5 Tasks

FHIR `Task` resources are used to create tasks for patients to be fulfilled prior to an appointment or even before the appointment request is accepted by the healthcare provider. Refer to the official FHIR documentation for general information on `Tasks`.

Tasks can be created manually via the user interface in the *Physician Portal* or by using task templates from `ActivityDefinitions`, which allows automatic assignment to an appointment matching the parameters. For details and code examples for these `ActivityDefinitions` refer to Section 2.1.6.

In case you want to add a task for which no template is provided in an `ActivityDefinition`, you can add it directly to the HDR. Table 19 contains information on the relevant FHIR elements. Example 40 shows how a FHIR `task` (in this case, an upload task) to be added to the HDR should look like and Example 41 shows the completed version of the same task.

FHIR `Task` resources can also be used to create tasks that are not related to any specific appointment. Patients are asked to complete this kind of appointment-independent task on the **Tasks** card on the portal's **Home** screen.

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Note

Details and examples provided under Section 2.1.5 apply to appointment-independent tasks as well. The only exception is the field `basedOn`, which relates a task to a specific appointment and is therefore not required for appointment-independent tasks.

Table 19: FHIR Elements for the Task Resource

Name	Cardinality	Comment
resourceType	1..1	Set it to "Task".
description	0..1	Can be used to provide additional information to the patient.
identifier	1..1	
basedOn	1..1	Specify the appointment the task belongs to.
status	1..1	Set it to "ready".
intent	1..1	Set it to "proposal" for optional tasks or to "unknown" for all other tasks.
code	1..1	Set "coding.code" depending on the respective task (for example, "upload").
owner	1..1	Specify to the patient for whom the task is intended.
focus	0..1	Set type and reference. See the examples for the different types of tasks for additional information.
input	0..*	Specify to a value in the *Terminology Server*. See the sections on the different types of tasks for additional information.
restriction	0..1	Specify the date when a task needs to be completed. It is recommended to set the due date to one millisecond before midnight on the respective day.

Example 40: `Task to be Added to the HDR`

```
{
    "resourceType": "Task",
    "description": "Upload the laboratory results of your last thyroid exam.",
    "identifier": [
        {
            "system": "urn:oid:1.3.6.1.4.1.36124.50.10",
            "value": "4af76a04-68d0-4447-9be6-642485503bd7"
        }
    ],
    "basedOn": [
        {
            "type": "Appointment",
            "identifier": {
                "system": "urn:oid:1.3.6.1.4.1.36124.50.10",
                "value": "0021884119124"
            }
        }
    ],
    "status": "ready",
    "intent": "unknown",
    "code": {
        "coding": [
            {
                "code": "upload"
            }
        ]
    },
    "owner": {
        "type": "Patient",
        "identifier": {
            "system": "urn:oid:1.1.1",
            "value": "392d2de4-3c3f-49bf-8d9c-4633dd8698e1"
        }
```

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```
    },
    "input": [
    {
      "type": {
        "coding": [
          {
            "code": "34759-1",
            "system": "http://loinc.org",
            "display": "Laboratory Report"
          }
        ]
      },
      "valueString": "Laboratory report"
    },
    "restriction": {
      "period": {
        "end": "2024-12-29T23:59:59Z"
      }
    }
  ]
}
```

Example 41: Completed Task to be Added to the HDR

```
{
    "resourceType": "Task",
    "description": "Upload the laboratory results of your last thyroid exam.",
    "identifier": [
        {
            "system": "urn:oid:1.3.6.1.4.1.36124.50.10",
            "value": "4af76a04-68d0-4447-9be6-642485503bd8"
        }
    ],
    "basedOn": [
        {
            "type": "Appointment",
            "identifier": {
                "system": "urn:oid:1.3.6.1.4.1.36124.50.10",
                "value": "0021884119124"
            },
            "reference": "Appointment/4"
        }
    ],
    "status": "completed",
    "intent": "unknown",
    "code": {
        "coding": [
            {
                "code": "upload"
            }
        ]
    },
    "authoredOn": "2023-11-07T12:10:14.286+01:00",
    "owner": {
        "type": "Patient",
        "identifier": {
            "system": "urn:oid:1.1.1",
            "value": "392d2de4-3c3f-49bf-8d9c-4633dd8698e1"
        },
        "reference": "Patient/1309"
    },
     "input": [
    {
```

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```
      "type": {
        "coding": [
          {
            "code": "34759-1",
            "system": "http://loinc.org",
            "display": "Laboratory Report"
          }
        ]
      },
      "valueString": "Laboratory report"
    }
  ]
    "output": [
        {
            "type": {
                "text": "uuid"
            },
            "valueString": "516161546135"
        }
    ],
    "meta": {
        "versionId": "1",
        "lastUpdated": "2023-03-22T10:54:55.147Z",
        "source": "1.1.1.2.2.1"
    },
    "id": "55"
}
```


2.1.5.1 Book Appointment Task

In order to initiate a task to book an appointment, `code.coding.code` must be set to "book". The `basedOn` field contains a reference to the original appointment the task is linked to. An empty `basedOn` field indicates an appointment-independent task. Once the task has been completed, the `focus` field contains a reference to the appointment created with this task. For **Book Appointment** tasks the `input` field is mandatory, see table Table 20. Refer to the general part of Section 2.1.5 for more details on the `Task` resource.

Table 20: FHIR Elements for the Task Resource - Input Field (Book Appointment Task)

Name	Cardinality	Type	Comment
input	1..*	BackboneElement	Can include more than one entry (for example, `type.text` "serviceType", `type.text` "specialty").
type	1..1	CodeableConcept	
text	1..1	string	Set it to "serviceType".
valueCoding	1..1	Coding	
system	1..1	uri	Select a `codingScheme` available in the *Terminology Server*.
code	1..1	code	Code from the `codingScheme` specified under `system`.
display	1..1	string	Set the display name for the `codingScheme` specified under `system`. If the entered "serviceType" is not available, the "DisplayName" will be shown in the frontend.
type	0..1	CodeableConcept	
text	1..1	string	Set it to "specialty".
valueCoding	0..1	Coding	
system	1..1	uri	Select a `codingScheme` available in the *Terminology Server*.
code	1..1	code	Code from the `codingScheme` specified under `system`.
display	1..1	string	Set the display name for the `codingScheme` specified under `system`.

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Example 42 shows the input field for a **Book Appointment** task.

Example 42: `Input` Field for a Book Appointment Task

```
...
     "input": [
        {
          "type": {
            "text": "serviceType"
          },
          "valueCoding": {
            "system": "http://loinc.org",
            "code": "333",
            "display": "Shows the Service Type of the appointment"
          }
        },
        {
          "type": {
            "text": "specialty"
          },
          "valueCoding": {
            "system": "http://loinc.org",
            "code": "394586005",
            "display": "Shows the Specialty of the appointment"
          }
        }
...
```

2.1.5.2 Data Donation Task

In order to initiate a task for data donation, `code.coding.code` must be set to "donate". For the **Data Donation** task the `focus` field is mandatory, see table Table 21.



Note

Although it is possible to create data donation tasks related to an appointment, this kind of task will usually be created as an appointment-independent task.

Refer to Section 12.1 for information on how to add the research study the task is relying on.

Table 21: FHIR Elements for the Focus Field (Data Donation Task)

Name	Cardinality	Type	Comment
focus	1..1	Reference	
reference	1..1	string	Add the resource reference to retrieve the desired research study.
type	1..1	uri	Set it to "ResearchStudy".
display	0..1	string	

Example 43 shows the required fields for a **Data Donation** task.

Example 43: Data Donation Task

```
{
    "resourceType": "Task",
    "id": "44eea43a-5997-4c45-8f27-14e8ebd197e4",
    "meta": {
        "versionId": "1",
        "lastUpdated": "2025-04-18T13:17:15.814+01:00"
    },
```

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```
    "identifier": [
        {
            "value": "6609b089-03bf-45c8-baf0-32acb382202e"
        }
    ],
    "status": "ready",
    "intent": "proposal",
    "code": {
        "coding": [
            {
                 "code": "donate"
            }
        ]
    },
    "authoredOn": "2025-05-13T15:21:33+01:00",
    "owner": {
        "reference": "Patient/491e1831-cea6-429c-ae67-15545737657c",
        "type": "Patient",
        "identifier": {
            "system": "urn:oid:1.1.1",
            "value": "6a8b6124-1d03-4614-9ac9-69887e613097"
        }
    },
    "focus": {
        "reference": "ResearchStudy/b3ffc5d8-efb2-47a4-b586-2c32f76e594e",
        "type": "ResearchStudy",
        "display": "Name or Purpose of the Data Donation project"
    }
}
```


2.1.5.3 Form Task

In order to initiate a task to fill out a form, `code.coding.code` must be set to “questionnaire”. For the **Form** task the `focus` field is mandatory, see table Table 22.

Table 22: FHIR Elements for the Focus Field (Form Task)

Name	Cardinality	Type	Comment
focus	1..1	Reference	
reference	1..1	string	Add the resource to retrieve the desired form.
type	1..1	uri	Set the field to “Questionnaire”

Example 44 shows the focus field for a **Form** task.

Example 44: Focus Field for a Form Task


```
{
    "resourceType": "Task",
    "code": {
      "coding": [
        {
          "code": "questionnaire"
        }
      ]
    },
    "focus": {
      "reference": "Questionnaire/31c74fbe-c2a5-4a70-b1dc-4b7bba3b7545"
      "type": "Questionnaire"
    }
}
```


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2.1.5.4 Information Sheet Task

Tasks to read and complete **Information Sheets** (forms) from the external web application *Thieme E-ConsentPro* are integrated into the eHealth Solutions *Patient Portal*. These tasks received from E-ConsentPro are converted to eHealth-specific FHIR tasks (see Example 45).

Example 45: Information Sheet Task


```
{
    "resourceType": "Task",
    "id": "1fbdb97a-fffb-4a36-a8c7-d06841e0e31b",
    "meta": {
        "versionId": "1",
        "lastUpdated": "2026-01-09T06:50:52.721+00:00",
        "profile": [
          "https://ehs.at/fhir/StructureDefinition/EhsTask"
        ]
    },
    "identifier": [
        {
            "system": "http://thieme-compliance.de/fhir/sid/CloudAssignmentId",
            "value": "498fa583-6083-33ff-a48b-fa1461d41859"
        }
    ],
    "status": "ready",
    "intent": "order",
    "code": {
        "coding": [
            {
                "code": "thieme"
            }
        ]
    },
    "authoredOn": "2026-01-09T07:50:52+01:00",
    "owner": {
        "extension": [
            {
                "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
                "valueIdentifier": {
                    "system": "urn:oid:1.1.1",
                    "value": "3419ffef-d90e-4057-a8a0-9c0e17284f92"
                }
            }
        ],
        "reference": "Patient/011a1161-6c59-4450-8fc5-ff3e6573dad6",
        "type": "Patient"
        "identifier": {
            "use": "official",
            "type": {
                "coding": [
                    {
                        "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
                        "code": "PI"
                    }
                ]
            },
            "system": "urn:oid:1.1.1",
            "value": "3419ffef-d90e-4057-a8a0-9c0e17284f92"
        }
    }
}
```


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2.1.5.5 Read Task

In order to initiate a task to read a text provided via a URL, `code.coding.code` must be set to “read”. For the **Read** task the `input` field is mandatory, see table Table 23.

Table 23: FHIR Elements for the Input Field (Read Task)

Name	Cardinality	Type	Comment
input	1..1	BackboneElement	
type	1..1	CodeableConcept	
coding	1..1	Coding	
display	1..1	string	Enter the title of the task.
valueString	1..1	string	Enter the URL of the document to be read.

Example 46 shows the input field for a **Read** task.

Example 46: `Input` Field for a Read Task

```
...
     "input": [
    {
      "type": {
        "coding": [
          {
            "display": "Title of the text to be read."
          }
        ]
      },
      "valueString": "https://our_info_page.com"
    }
  ]
...
```



Note

- In the installation of our application at the customer’s site, the Content Security Policy (CSP) must be set up to allow the display of the required info page (URL) in the read task. Additionally, the CSP of that info page must permit embedding into our application.
- Our application is designed to allow 400 % zoom. Therefore, it is the customer’s responsibility to make sure that the info page is displayed correctly at this magnification.

2.1.5.6 Upload Task

In order to initiate a task to upload a specific document, `code.coding.code` must be set to “upload”. For the **Upload** task the `input` field is mandatory, see table Table 24.

Table 24: FHIR Elements for the Input Field (Upload Task)

Name	Cardinality	Type	Comment
input	1..1	BackboneElement	

Table 24: FHIR Elements for the Input Field (Upload Task)

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Table 24: FHIR Elements for the Input Field (Upload Task)

Name	Cardinality	Type	Comment
type	1..1	CodeableConcept	
coding	1..1	Coding	
code	1..1	code	Code from the `codingScheme` specified under `system`.
system	1..1	uri	Select a `codingScheme` available in the *Terminology Server*.
display	1..1	string	Set the display name for the `codingScheme` specified under `system`.
valueString	1..1	string	Used by eHealth Solutions to add the title of the task.

Example 47 shows the input field for an **Upload** task.

Example 47: `Input` Field for an Upload Task

```
...
     "input": [
    {
      "type": {
        "coding": [
          {
            "code": "34759-1",
            "system": "http://loinc.org",
            "display": "Laboratory Report"
          }
        ]
      },
      "valueString": "Laboratory report"
    }
  ]
...
```

2.1.6 Task Templates

To prepare an appointment, patients can be asked to fulfill certain tasks as described in Section 2.1.5. The necessary information about a task is stored in FHIR `task` resources. General information on FHIR `Task`s can be found in the official FHIR documentation. For a general description of the FHIR `appointment` resource see Section 2.1.3.

Templates for `Tasks` can be predefined and provided by means of `ActivityDefinitions` that contain one or several FHIR `task` resources.

The `id` of any task contained in the `ActivityDefinition` must be referenced under `extension`. The specified reference (prefixed with "#") can be arbitrary, but must be unique.

In addition to `task` resources, `ActivityDefinitions` include the following mandatory `meta.tags` with predefined values in the `system` fields:

- http://ehs/care-plan/service-type
- http://ehs/care-plan/specialty
- http://ehs/care-plan/performer
- http://ehs/care-plan/status

Whenever an appointment reaches the status set in the predefined `ActivityDefinition` (for example, "proposed" or "booked"), the system checks if the `code` values in the `Appointment` resource and the corresponding `meta.tag.codes` for "service-type", "specialty", and "performer" are matching as well.

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Tasks contained in the `ActivityDefinition` are created for the appointment if the values for "status" match and the values for the other three `meta.tags` either also match or have been set to "ANY" in the Ac `tivityDefinition`. For example, if the task templates should be applied for any **healthcare provider**, the "performer" `meta.tag` can be set to "ANY".

As `extension` and `contained` in the `ActivityDefinition` are lists, one `ActivityDefinition` can contain multiple tasks of any type.

For tasks to be completed by the patient before the requested appointment will be confirmed by the **healthcare provider**, the `code` field of the `meta.tag` element for "status" is set to "proposed". In this case, the task is already added to the appointment when the `status` of the `Appointment` resource changes to "proposed" (provided that the values of the other three `meta.tags` are matching as well).

Elements of the `ActivityDefinitions` are described in Table 25. For details on the structure of A `ctivityDefinitions` for specific types of tasks, also see Example 48, Example 49, Example 50, and Example 51.

Table 25: Elements of ActivityDefinitions for Task Templates

Name	Cardinality	Type	Comment
ActivityDefinition	1..1	DomainResource	
description	0..1	string	Description of the ActivityDefinition
status	1..1	code	Status of the ActivityDefinition that can be one of the following values: "draft", "active", "retired", "unknown"
kind	0..1	code	Kind of the resource, set to "Task"
extension	1..n	Resource	List of referenced task templates
url	1..1	uri	Set to "http://ehs/care-plan/task-relation".
valueReference	1..1	Element	Reference to the contained task template
reference	1..1	string	Reference to the task template identifier that must be prefixed with "#"
type	1..1	uri	Set to "Task".
contained	1..n	Resource	List of contained task templates
id	1..1	id	Unique identifier to be referenced in the extension field
			Add the elements of the tasks to be added if this ActivityDefinition matches with the `Appointment` resource. For the structure of the `Ta sk` resources see section "Tasks for Appointments" in the eHealth Solutions *HL7 Conformance Statement*.
meta	1..1	Meta	Metadata about the resource
tag	4..n	Coding	List of meta tags which define how the ActivityDefinition can be found. Meta tags of all four system values must be defined (see below).
system	1..1	uri	Set to "http://ehs/care-plan/service-type", "http://ehs/care-plan/specialty", "http://ehs/care-plan/performer" and "http://ehs/care-plan/status".
code	1..1	code	Set the matching code of service type, specialty, performer and status. If an ActivityDefinition should match with any Appointment with the respective status, the code of service-type, specialty, and/or performer can be set to "ANY".

2.1.6.1 Book Appointment Task

In order to initiate a task to book an appointment, code.coding.code must be set to "book". The second entry of the `input` field ("specialty") is optional.

Example 48: Book Appointment Task

```
{
    "resourceType": "ActivityDefinition",
    "description": "Template to create a Book Appointment task",
```

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```
    "status": "active",
    "kind": "Task",
    "extension": [
        {
            "url": "http://ehs/care-plan/task-relation",
            "valueReference": {
                "reference": "#1",
                "type": "Task"
            }
        }
    ],
    "contained": [{
        "resourceType": "Task",
        "id": "1",
        "status": "ready",
        "intent": "unknown",
        "code": {
            "coding": [
                {
                    "code": "book"
                }
            ]
        },
        "description": "Description of the task shown to the user",
        "input": [
            {
                "type": {
                  "text": "serviceType"
                },
                "valueCoding": {
                    "system": "http://loinc.org",
                    "code": "123",
                    "display": "MRI Scan"
                }
            },
            {
                "type": {
                  "text": "specialty"
                },
                "valueCoding": {
                    "system": "http://loinc.org",
                    "code": "456",
                    "display": "Radiology"
                }
            }
        ]
    }],
    "meta": {
      "tag": [
        {
           "system": "http://ehs/care-plan/service-type",
           "code": "333"
        },
        {
           "system": "http://ehs/care-plan/specialty",
           "code": "394586005"
        },
        {
           "system": "http://ehs/care-plan/performer",
           "code": "123412341234"
        },
        {
           "system": "http://ehs/care-plan/status",
           "code": "proposed"
        }
```

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```
      ]
   }
}
```

2.1.6.2 Form Task

In order to initiate a task to fill out a form, code.coding.code must be set to “questionnaire”. The resource added to the `reference` field under `focus` must be an actual resource to retrieve the desired form.

Example 49: Form Task

```
{
    "resourceType": "ActivityDefinition",
    "description": "Template to create a Form task",
    "status": "active",
    "kind": "Task",
    "extension": [
        {
            "url": "http://ehs/care-plan/task-relation",
            "valueReference": {
                "reference": "#1",
                "type": "Task"
            }
        }
    ],
    "contained": [{
        "resourceType": "Task",
        "id": "1",
        "status": "ready",
        "intent": "unknown",
        "code": {
            "coding": [
                {
                    "code": "questionnaire"
                }
            ]
        },
        "description": "Description of the task shown to the user",
        "focus": {
            "reference": "Questionnaire/31c74fbe-c2a5-4a70-b1dc-4b7bba3b7545",
            "type": "Questionnaire"
        }
    }],
    "meta": {
      "tag": [
        {
           "system": "http://ehs/care-plan/service-type",
           "code": "333"
        },
        {
           "system": "http://ehs/care-plan/specialty",
           "code": "394586005"
        },
        {
           "system": "http://ehs/care-plan/performer",
           "code": "123412341234"
        },
        {
           "system": "http://ehs/care-plan/status",
           "code": "booked"
        }
      ]
   }
```

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```
}
```

2.1.6.3 Read Task

In order to initiate a task to read a text provided via a URL, code.coding.code must be set to “read”. The field `valueString` needs to contain the URL of the text to be read and `display` is used for the task title.

Example 50: Read Task

```
{
    "resourceType": "ActivityDefinition",
    "description": "Template to create a Read task",
    "status": "active",
    "kind": "Task",
    "extension": [
        {
            "url": "http://ehs/care-plan/task-relation",
            "valueReference": {
                "reference": "#1",
                "type": "Task"
            }
        }
    ],
    "contained": [{
        "resourceType": "Task",
        "id": "1",
        "status": "ready",
        "intent": "unknown",
        "code": {
            "coding": [
                {
                    "code": "read"
                }
            ]
        },
        "description": "Description of the task shown to the user",
        "input": [{
            "type": {
            "coding": [
                {
                "display": "Read this document"
                }
            ]
            },
            "valueString": "https://www.example.com/"
        }]
    }],
    "meta": {
      "tag": [
        {
           "system": "http://ehs/care-plan/service-type",
           "code": "333"
        },
        {
           "system": "http://ehs/care-plan/specialty",
           "code": "394586005"
        },
        {
           "system": "http://ehs/care-plan/performer",
           "code": "123412341234"
        },
        {
           "system": "http://ehs/care-plan/status",
```

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```
            "code": "booked"
        }
      ]
   }
}
```

2.1.6.4 Upload Task

In order to initiate a task to upload a specific document, code.coding.code must be set to “upload”. The field `valueString` is required by FHIR and used by eHealth Solutions to add the title of the task.

Example 51: Upload Task

```
{
    "resourceType": "ActivityDefinition",
    "description": "Template to create an Upload task",
    "status": "active",
    "kind": "Task",
    "extension": [
        {
            "url": "http://ehs/care-plan/task-relation",
            "valueReference": {
                "reference": "#1",
                "type": "Task"
            }
        }
    ],
    "contained": [{
        "resourceType": "Task",
        "id": "1",
        "status": "ready",
        "intent": "unknown",
        "code": {
            "coding": [
                {
                    "code": "upload"
                }
            ]
        },
        "description": "Description of the task shown to the user",
        "input": [
            {
                "type": {
                    "coding": [
                        {
                            "system": "http://loinc.org",
                            "code": "9912310",
                            "display": "Diabetes Diary"
                        }
                    ]
                },
                "valueString": "Diabetes Diary"
            }
        ]
    }],
    "meta": {
      "tag": [
        {
           "system": "http://ehs/care-plan/service-type",
           "code": "333"
        },
        {
           "system": "http://ehs/care-plan/specialty",
```

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```
            "code": "394586005"
         },
         {
            "system": "http://ehs/care-plan/performer",
            "code": "123412341234"
         },
         {
            "system": "http://ehs/care-plan/status",
            "code": "booked"
         }
      ]
   }
}
```

2.2 HL7v2

2.2.1 Add Appointment

An appointment received via HL7v2 message can be processed and stored to the *HDR* in order to be displayed in the *Patient Portal*.

The following sections provide an overview and description of the message structure required by eHealth Solutions. An example message can be found in Example 52. The minimal required fields allow to create basic appointments. To handle appointments that contain tasks, send notifications, and provide as much information as possible in the UI, add the recommended fields as well.

2.2.1.1 Message Structure

Table 26: Add Appointment Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message code must be **SIU**
MSH-9-2	The trigger event must be **S12**
SCH	Scheduling Activity Information
TQ1	Timing/Quantity
PID	Patient Information
RGS	Resource Group
AIP	Appointment Information - Personnel Resource

- PID

  eHealth Solutions recommends to send the PID segment, such that the appointment can be linked to a patient.

- AIP

  eHealth Solutions uses the AIP to transmit the healthcare provider with whom the patient has an appointment.

2.2.1.2 Field Overview

The data generally required for the MSH segment can be seen in Table 2 and those for PID in Table 4. Refer to the HL7v2 definition for general information on the required fields as listed in Table 26. Information on the fields eHealth Solutions requires to add an appointment are listed here:

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MSH-9-1

The message code must be **SIU**.

MSH-9-2

The trigger event must be **S12**.

SCH-8

Recommended. eHealth Solutions uses this field to display the title of the appointment.

SCH-8-1

If this field corresponds to the "Code" of the `AppointmentServiceType` defined in the SVS, the corresponding "Display Name" is shown as the title of the appointment in the UI.

SCH-8-2

This field is used to display the title of the appointment in the UI in either of the following cases:

- SCH-8-1 is not sent.
- SCH-8-1 is sent but not available as "Code" of the `AppointmentServiceType` defined in the SVS.

SCH-25

eHealth Solutions accepts the following status: "Booked", "Cancelled", "Noshow", "Pending", "Waitlist".

If this field is missing or contains a not accepted status, eHealth Solutions uses the status "Booked".

TQ1-6

Optional. If this field is missing, SCH-11-3 is used as fallback. In case both are missing, eHealth Solutions tries to calculate the duration based on start and end date/time.

TQ1-7

The start time of an appointment is mandatory. If this field is missing, eHealth Solutions uses SCH-11-4 as fallback.

TQ1-8

Optional. End date/time is not considered by eHealth Solutions if it is before the start date/time (TQ1-7 or SCH-11-4). If this field is missing, eHealth Solutions uses SCH-11-5 as fallback.

PID-3

At least one valid patient id to uniquely identify the patient is mandatory.

PID-5

Patient name is mandatory.

AIP-3

Recommended. If possible this field should contain the HPD id of the healthcare provider who is requested in the appointment. In case the transmitted healthcare provider is not listed in the HPD, the field should contain the name of the healthcare provider. Otherwise no information regarding the healthcare provider can be displayed in the appointment.

AIP-4-1

Recommended. Set this field to "PPRF". This allows the sending of notifications for appointments.

Example 52: Add Appointment

```
MSH|^~\&|HIS1^1.2.840.4711.815.1^ISO|HOSPITAL1^1.2.840.4711.815.1^ISO|PIX
    ^2.16.840.1.114060.4711.1.12.3.1.1.2^ISO|REPOAD3^2.16.840.1.114060.4711.3.12.1.1^ISO
    |20061020075954||SIU^S12^SIU_S12|7734213|P|2.6||||||UNICODE UTF-8
SCH|Snabe4^^|Snabe4^^|4|||CT Examination|CT Examination|urn:ehs:spec:ctexam^CT Examination^
    http://ehs/care-plan/service-type|30|m|^^^202506030600^202506030630|||||^lastName^
    firstName^||||^lastName^firstName^|||||
PID|1||401257^^^KIS&1.2.840.4711.815.1&ISO^PI~SSN401257^^^KVNR&1.2.276.0.76.4.8&ISO^SS||
```

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```
    lastName^firstName^^^^^L^A||19770610000000|M||||DE|^PRN^Internet^patient@example.com||DE
    |B|||||||||||||N
TQ1|1|||||30^min|20250603060000+0200|20250603063000+0200|||||30^min
RGS|1|
AIP|1||2.16.840.1.114060.4711.3:1744618326742^Radiotherapy^^^^^^^^^^|PPRF^primary performer
```

2.2.2 Delete Appointment

Appointments added via an HL7v2 message (see Section 2.2.1) can be deleted from the HDR. If an appointment is deleted, the referenced objects such as tasks are deleted as well.

To delete an appointment, you can adapt the HL7v2 message you used to create the appointment as follows:

- Replace the trigger event in MSH-9-2 with "S17".
- Make sure the scheduling information in `SCH-1` and `SCH-2` corresponds to the appointment you want to delete.

eHealth Solutions searches for the appointment based on the provided scheduling information as follows:

- If both `SCH-1` and `SCH-2` are provided, the appointment that matches both fields is deleted.
- If only `SCH-1` or `SCH-2` is provided, the appointment that matches this field is deleted.
- If several appointments match the provided scheduling information, no appointment is deleted.

Example 53 shows a "delete appointment" message. The message is based on the "add appointment" message in Example 52.

Example 53: Delete Appointment

```
MSH|^~\&|HIS1^1.2.840.4711.815.1^ISO|HOSPITAL1^1.2.840.4711.815.1^ISO|PIX
    ^2.16.840.1.114060.4711.1.12.3.1.1.2^ISO|REPOAD3^2.16.840.1.114060.4711.3.12.1.1^ISO
    |20061020075954||SIU^S17^SIU_S17|7734213|P|2.6||||||UNICODE UTF-8
SCH|Snabe4^^|Snabe4^^|4|||CT Examination|CT Examination|urn:ehs:spec:ctexam^CT Examination^
    http://ehs/care-plan/service-type|30|m|^^^202506030600^202506030630|||||^lastName^
    firstName^||||^lastName^firstName^|||||
PID|1||401257^^^KIS&1.2.840.4711.815.1&ISO^PI~SSN401257^^^KVNR&1.2.276.0.76.4.8&ISO^SS||
    lastName^firstName^^^^^L^A||19770610000000|M||||DE|^PRN^Internet^patient@example.com||DE
    |B|||||||||||||N
TQ1|1|||||30^min|20250603060000+0200|20250603063000+0200|||||30^min
RGS|1|
AIP|1||2.16.840.1.114060.4711.3:1744618326742^Radiotherapy^^^^^^^^^^|PPRF^primary performer
```

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3 Document Administration

The IHE defines how documents are submitted within the XDS infrastructure in *ITI-41 Provide and Register Document Set-b*. The client submits a document to the Document Repository by first providing it to the Document Repository and consequently registering it in the Document Registry. According to the IHE, this transaction is based on ebXML, not HL7. eHealth Solutions provides a **Document Administration** interface based on the HL7v2 inbound MDM messages to enable systems which already have a working MDM interface to submit documents within the XDS infrastructure. The HL7v2 outbound MDM interface allows customers to export documents from the XDS infrastructure and import them into their local, MDM-enabled systems. Table 27 shows all supported transactions for administrating documents.

The **Health Records** application supports the importing of documents to a local system, e.g., an archive, using HL7 MDM. To ensure that documents will be assigned to the correct patient, the identifiers SVNR and XAD PID (global identifier) are used. It is possible to replace the XAD PID with the local patient ID, however, the following rule applies: If the local patient ID and the patient Assigning Authority are transmitted within an integration call-up such as a URL call or over SAML, the MDM must include these parameters instead of the global identifier (XAD PID).

Table 27: Document Administration Supported Transactions

Message Type	Description
MDM^T02	Submit new Document.
MDM^T06	Append a Document to an existing one.
MDM^T08	Submit a Transformation of an existing Document
MDM^T10	Submit a Replacement of an existing Document
MDM^T11	Deprecate a document.



Note

Note that in all MDM messages, eHealth Solutions uses **MSH-4-2** to set the submissionSetUniqueID from the Source. This value is generated according to the pattern: MSH-4-2 + . + currentMillis + . + Thread-ID.

The following optional segments may be placed in inbound as well as outbound MDM messages:

- NTE Segment

  The Notes and Comments (NTE) segment allows for the transmission of notes or comments on the sent document(s) in human-readable format. It must follow directly after the OBR segment and is repeatable (max. length per segment: 64 KB). NTE content is appended to a single text comment for the XDS document.

- UAC Segment

  The User Authentication Credential (UAC) segment is used to transport the SAML assertion used in access control and audit trails. In the context of Document Administration SAML is expected for UAC-1-1 (if SAML is not present, the segment will not be processed further). For UAC-2-5, the Base64-encoded SAML assertion is expected. Please refer to Section 1.1.5.7 for further information on the UAC segment.

  Example 54:

```
UAC|SAML|^text^^Base64^PHNhbWwyOkFzc2VydGlvbj5ibGFibGE8L3NhbWwyOkFzc2VydGlvbj4=
```

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ZRI Segment

The ZRI segment is used in HL7 MDM T02 messages to transmit grouping-relevant Reference IDs saved in the ReferenceIDList (e.g., AccessionNumber). It follows after the OBR segment and is repeatable. The ZRI segment has the format **ZRI|SetID|CX|CWE**.

- **Set-ID:** Unique numerical ID of the segment (mandatory)
- **CX:** ReferenceID with the Assigning Authority (mandatory)
- **CWE:** Identifier Type Code of the Reference ID (mandatory). Identifier values should follow the **urn:** syntax and preferably be taken from the table provided in Section 15.1.1.

Example 55: ZRI Segments

```
ZRI|1|1.3.6.1.4.101^^^&1.2.3.4&ISO|urn:sense:2016:studyInstanceUID
ZRI|2|1.2.7.8.1.1^^^&1.2.7.3.2&ISO|urn:ihe:iti:xds:2013:accession
ZRI|3|1.2.7.8.1.2^^^&1.2.7.3.2&ISO|urn:ihe:iti:xds:2013:accession}
```

ZSC Segment

The ZSC segment is used in HL7 MDM T02 messages to transmit a comment pertaining to the HL7 message itself, with a maximum length of 256 characters. It is non-repeating. Its position in the HL7 message structure is at the very end, after the ZRI segment.

Note

HL7 provides only one field for both the `Type Code` and the `Class Code`. eHealth Solutions recommends to use the `Type Code`, as it is more specific and can therefore unambiguously mapped to the respective `Class Code`.

3.1 Submit Document

3.1.1 Submit Document – HL7v2

The following HL7 message can be received and processed in order to submit a new document to the XDS infrastructure:

- **MDM T02** – Submit Document.

This message type is used to register documents. Additionally, the HL7 message **Submit Document** updates documents if the unique ID of the document is already known. If a recipient is specified in the **TXA-23** field, the document is transmitted to the recipient in the same go and appears in their **Document Transfer** application.

The **MDM T02** message can also be used to send transferral forms. In this case, the file concerned is treated as a form to be provided in the **Transferrals** application instead. To trigger this behavior, the values provided in the **TXA-23** and **OBR-31** fields must correspond to the values set in the configuration as `TransferralItem` (infrastructureNode > TransferralService). For details, see Section 3.1.1.2.

3.1.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **Submit Document**.

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Table 28: Message Structure Segments

Segment	Description
MSH	Message Header
MSH-9-1	The Message Type must be **MDM**
MSH-9-2	The TriggerEvent must be **T02**
EVN	Event Information
PID	Patient Information
PV1	Case Information
OBR	Observation Information
TXA	Document Header
OBX	Document
ZAI	Additional Information Segment
ZAI-1	Document Type Code: the Data Type must be **CWE**
ZRI	Document Reference ID List

3.1.1.2 Field Overview

The mapping from the MDM^T02 to the XDS data structure is shown in the following tables:

- Sessioninfo
  Containing information about the current Session (Table 29).
- SubmissionInfo
  Containing information about the current submission (Table 30).
- DocumentMetadata
  Metadata describing the document (Table 31).
- Document
  The document itself (Table 32).

- MSH-3-1
  sendingApplication.name: Name of the sending application.
- MSH-3-2
  sendingApplication.oid: OID of the sending application.
- MSH-4-1
  sendingFacility.name: Name of the sending facility.
- MSH-4-2
  sendingFacility.oid: OID of the sending facility.
- EVN-5
  Contains the userID and userName of the user who triggered the submission. UserID is filled by EVN-5-1 and EVN-5-9; userName is supplied by the XCN components (see Section 1.1.4.5).
- EVN-5-1 and EVN-5-9
  userID: ID of the user who triggered the submission. The ID number can be prefixed with any of the recognized **urn:** prefixes. It forms the first part of the EVN-5 segment.
- MSH-10
  sessionID: Unique identifier of this session.

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Table 29: Mapping from HL7 MDM message to XDS Data – SessionInfo

HL7-Path	Name	Presence	Repeatable
MSH-3-1	sendingApplication.name	Required	-
MSH-3-2	sendingApplication.oid	Required	-
MSH-4-1	sendingFacility.name	Required	-
MSH-4-2	sendingFacility.oid	Required	-
EVN-5	userName, userID	Required	-
EVN-5-1 and EVN-5-9	userID	Required	-
MSH-10	sessionID	Required	-

PV1-3-4-1
: institution.name: Name of the institution where the document originates from.

PV1-3-4-2
: institution.oid: OID of the institution where the document originates from.

OBR-31-1
: contentTypeCode.value: Content Type of the Submission: Value.

OBR-31-2
: contentTypeCode.displayName: Content Type of the Submission: human-readable display name.

OBR-31-3
: contentTypeCode.codingScheme: Content Type of the Submission: Coding Scheme.

TXA-9-2
: author.lastName: Given name of the author of the submission. This is the same as the author of the document.

TXA-9-3
: author.firstName: Family name of the author of the submission. This is the same as the author of the document.

TXA-16
: title: Title of the submission. This is the title of the document.

Table 30: Mapping from HL7 MDM message to XDS Data – SubmissionInfo

HL7-Path	Name	Presence	Repeatable
PV1-3-4-1	institution.name	Required	-
PV1-3-4-2	institution.oid	Required	-
OBR-31-1	contentTypeCode.value	Required	-
OBR-31-2	contentTypeCode. displayName	Required	-
OBR-31-3	contentTypeCode. codingScheme	Required	-
TXA-9-2	author.lastName	Required	-
TXA-9-3	author.firstName	Required	-
TXA-16	title	Required	-

MSH-6-2
: homeCommunityID: OID of the affinity domain where the document will be stored.

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MSH-19

languageCode: Specifies the human language of the document. Format according RFC-3066.

PID-3

patientInfo.socialSecurityNumber: Social security number of the patient. Important: The social security number will be identified within the list of patient identifiers (PID-3) by the OID of the social security association.

PID-3

patientInfo.sourcePatientID: Patient identifier of the local CIS/RIS/PACS/etc. Note that the Patient Identifier is identified within the list of patient identifiers (PID-3) by the identifier type code PI.

PID-5-1

patientInfo.familyName: Family name of the patient.

PID-5-2

patientInfo.givenName: Given name of the patient.

PID-5-3

patientInfo.secondAndFurtherNames[0]: Second and further names of the patient

PID-5-4

patientInfo.suffix: Name suffix of the patient.

PID-5-5

patientInfo.prefix: Name prefix of the patient.

PID-7

patientInfo.birthdate: Birth date of the patient, who has the document assigned.

PID-8

patientInfo.gender: Gender of the patient.

PID-11-1

patientInfo.address.street: Address of the patient: streetline with dwelling number.

PID-11-3

patientInfo.address.city: Address of the patient: city.

PID-11-5

patientInfo.address.postalCode: Address of the patient: postal code.

PID-11-6

patientInfo.address.country: Address of the patient: country.

PV1-2-1

eventCodes[0].value: Event Codes contain additional information to the document. Part 1: Observation Type. (inpatient, outpatient, etc.): typecode.

PV1-2-2

eventCodes[0].displayName: Event Codes contain additional information to the document. Part 1: Observation Type. (inpatient, outpatient, etc.): display name.

PV1-2-3

eventCodes[0].codingScheme: Event Codes contain additional information to the document. Part 1: Observation Type. (inpatient, outpatient, etc.): coding scheme.

PV1-3-4-1

institution.name: Name of the institution from where the document originates.

PV1-3-4-2

institution.oid

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PV1-3-4-2 + TXA-12-1
: sourceDocumentID: Globally unique identifier of the document. To achieve global uniqueness, the OID of the institution (PV1-3-4-2) is concatenated with the local document identifier (TXA-12-1).

PV1-3-7-2
: department: Name of the Department from where the document originates.

PV1-3-7-3
: subDepartment: Name of the Sub-department from where the document originates.

PV1-3-10-1
: practiceSettingCode.value: Specifies the specialty of the department from where the document originates: value.

PV1-3-10-2
: practiceSettingCode.displayName: Specifies the specialty of the department from where the document originates: human-readable display name.

PV1-3-10-3
: practiceSettingCode.codingScheme: Specifies the specialty of the department from where the document originates: coding scheme.

PV1-10-1
: healthcareFacilityTypeCode.value: Specifies the type of the facility from where the document originates: value.

PV1-10-2
: healthcareFacilityTypeCode.displayName: Specifies the type of the facility from where the document originates: human-readable display name.

PV1-10-3
: healthcareFacilityTypeCode.codingScheme: Specifies the type of the facility from where the document originates: coding scheme.

OBR-4
: Universal Service Identifier

OBR-7
: serviceStartTime: Start time of the medical service.

OBR-8
: serviceStopTime: End time of the medical service.

OBR-31
: eventCodes: Additional EventCodes: listed values are possible. When submitting a transferral form, the content of this field must correspond to the value configured as `TransferralItem`.

TXA-2-1
: typeCode.value: Code specifying the particular type of the document: value. Note that the field classCode.value will be directly mapped to this value.

TXA-2-2
: typeCode.displayName.value: Code specifying the particular type of document: Human-readable display name.

TXA-2-2
: classCode.displayName: Code specifying the particular type of the document: Human-readable display name.

TXA-2-3
: classCode.codingScheme: Code specifying the particular type of the document: Coding scheme.

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TXA-2-3
typeCode.codingScheme: Code specifying the particular type of the document: Coding scheme.

TXA-3-1
mimeType: Mime type of the document.

TXA-3-2
formatCode.value: This code identifies the format of the document (e.g., "ScanPDF/IHE 1.0"): Value.

TXA-3-3
formatCode.displayName: This code identifies the format of the document (e.g., "ScanPDF/IHE 1.0"): Human-readable display name.

TXA-3-4
formatCode.codingScheme: This code identifies the format of the document (e.g., "ScanPDF/IHE 1.0"): Coding scheme.

TXA-6
creationTime: Time when the Author created the document.

TXA-9-2
author.lastName: Family Name of the author.

TXA-9-3
author.firstName: Given Name of the author.

TXA-10-2
legalAuthenticator.lastName: Family name of the authenticator of the document.

TXA-10-3
legalAuthenticator.firstName: Given name of the authenticator of the document.

TXA-16
title: Title of the document.

TXA-18-1
confidentialityCodes[0].value: This code is used to specify the level of confidentiality: value.

TXA-18-2
confidentialityCodes[0].displayname: This code is used to specify the level of confidentiality: display-name.

TXA-18-3
confidentialityCodes[0].codingScheme: This code is used to specify the level of confidentiality: coding scheme.

TXA-19
availabilityStatus: Availability status of the document. Possible values are: **F** if the document is final and should be stored/updated. **D** if the document is deprecated and should be deleted.

TXA-23
intendedRecipient: This could be individual or organizational providers. The TXA-23-1 component must contain the provider ID as defined in the Healthcare Provider Directory, including the ID type and the assigning authority. The content of TXA-23-13 (Identifier Type) must either be **DN** for individuals or **XX** for organizations. If an individual in a specific organization is to be addressed, the first occurrence of the TXA-23 field is reserved for the individual provider, while the second must refer to the respective organization. In this case, the organization must be marked with **EN** as identifier type. When submitting a transferral form, the content of this field must correspond to the value configured as `TransferralItem`.

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ZAI-1-1

documentTypeCode.value: Code specifying the particular type of the document: value. (conditionally required field).

ZAI-1-2

documentTypeCode.displayName: Code specifying the particular type of the document: Human-readable display name. (optional field).

ZAI-1-3

documentTypeCode.codingScheme: Code specifying the particular type of the document: Coding scheme. (optional field).

ZRI-1

set-id.uniqueId: Unique numeric HL7 Segment ID (required field).

ZRI-2

cx.referenceId: The Reference ID with Assigning Authority (required field).

ZRI-3

cwe.identifierTypeCode: The Identifier Type Code of the Reference ID (required field) e.g., for a case visit ID.

Table 31: Mapping from HL7 MDM message to XDS Data – DocumentMetadata

HL7-Path	Name	Presence	Repeatable
MSH-6-2	homeCommunityID	Required	-
MSH-19	languageCode	Required	-
PID-3	patientInfo.socialSecurityNumber	Required	-
PID-3	patientInfo.sourcePatientID	Required	-
PID-5-1	patientInfo.familyName	Required	-
PID-5-2	patientInfo.givenName	Required	-
PID-5-3	patientInfo.secondAndFurtherNames[0]	Optional	-
PID-5-4	patientInfo.suffix	Optional	-
PID-5-5	patientInfo.prefix	Optional	-
PID-7	patientInfo.birthdate	Required	-
PID-8	patientInfo.gender	Required	-
PID-11-1	patientInfo.address.street	R*	-
PID-11-3	patientInfo.address.city	R*	-
PID-11-5	patientInfo.address.postalCode	R*	-
PID-11-6	patientInfo.address.country	R*	-
PV1-2-1	eventCodes[0].value	Required	-
PV1-2-2	eventCodes[0].displayName	Required	-
PV1-2-3	eventCodes[0].codingScheme	Required	-
PV1-3-4-1	institution.name	Required	-
PV1-3-4-2	institution.oid: OID of the institution where the document originates.	Required	-
PV1-3-4-2 + TXA-12-1	sourceDocumentID	Required	-
PV1-3-7-2	department	Optional	-
PV1-3-7-3	subDepartment	Optional	-
PV1-3-10-1	practiceSettingCode.value	Required	-

Table 31: Mapping from HL7 MDM message to XDS Data – DocumentMetadata

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Table 31: Mapping from HL7 MDM message to XDS Data – DocumentMetadata

HL7-Path	Name	Presence	Repeatable
PV1-3-10-2	practiceSettingCode.displayName	Required	-
PV1-3-10-3	practiceSettingCode.codingScheme	Required	-
PV1-10-1	healthcareFacilityTypeCode.value	Required	-
PV1-10-2	healthcareFacilityTypeCode.displayName	Required	-
PV1-10-3	healthcareFacilityTypeCode.codingScheme	Required	-
OBR-4	Universal Service Identifier	Required by HL7 but not processed in eHealth	No
OBR-7	serviceStartTime	Required by eHealth Solutions	-
OBR-8	serviceStopTime	Optional	-
OBR-31	eventCodes	Optional	-
TXA-2-1	typeCode.value	Required	-
TXA-2-2	typeCode.displayName.value	Required	-
TXA-2-2	classCode.displayName	Required	-
TXA-2-3	classCode.codingScheme	Required	-
TXA-2-3	typeCode.codingScheme	Required	-
TXA-3-1	mimeType	Required	-
TXA-3-2	formatCode.value	Required	-
TXA-3-3	formatCode.displayName	Required	-
TXA-3-4	formatCode.codingScheme	Required	-
TXA-6	creationTime	Required	-
TXA-9-2	author.lastName	Required	-
TXA-9-3	author.firstName	Required	-
TXA-10-2	legalAuthenticator.lastName	Required	-
TXA-10-3	legalAuthenticator.firstName	Required	-
TXA-16	title	Required	-
TXA-18-1	confidentialityCodes[0].value	Required	-
TXA-18-2	confidentialityCodes[0].displayname	Required	-
TXA-18-3	confidentialityCodes[0].codingScheme	Required	-
TXA-19	availabilityStatus	Required	-
TXA-23	intendedRecipient	Conditionally Required	Y
ZAI-1-1	documentTypeCode.value	Conditionally Required	-
ZAI-1-2	documentTypeCode.displayName	Optional	-
ZAI-1-3	documentTypeCode.codingScheme	Optional	-
ZRI-1	set-id.uniqueId	Optional	-
ZRI-2	cx.referenceId	Optional	-
ZRI-3	cwe.identifierTypeCode	Presence	-

Table Legend: R* = Required only in MDM messages.

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OBX-2

Document submission type: This represents how the document is submitted. In this case the value must be set to ED (Encapsulated Data) to signal that the binary content can be found in OBX-5.

OBX-5

Binary Content: The binary content Base64 encoded. Documents may be split into docblocks with 64kB.

Table 32: Mapping from HL7 MDM message to XDS Data – Document

HL7-Path	Name	Presence	Repeatable
OBX-2	Document submission type	Required	-
OBX-5	Binary Content	Required	-

3.1.1.3 HL7v2 Inbound Message Structure

Example 56: Submitting Documents (Inbound)

```
MSH|^~\&|SendingApplicationName^1.2.3.4.5^ISO|SendingFacilityName^1.1.1.2.98^ISO||^1.1.1.1^
    ISO|||MDM^T02||||||||||
EVN|||||^UserFamilyName^UserGivenName
PID|||1231451^^^NATIONAL SOCIAL SECURITY ASSOCIATION&2.1.414.1.4.14&ISO^SS~pat1125^^^
    LocalAssigningAuthority&1.2.3.4.6&ISO||PatientFamilyName^PatientGivenName
    ||20110706094842|M|||Address^^City^^Postal Code
PV1|||^^^SendingFacilityName&1.2.3.4.6&ISO^^^&Department&SubDepartment^^^419192003&Internal
    Medicine&SNOMED_CT|||||||ETU^Trauma Unit^2.16.840.1.113883.5.11
OBR|||||||20110706094842|20110706094842|||||||||||||||||||||ABC1^DEF^1.3.4.2|Counseling^
    Konsil^eHealth_contentTypeCodes|ABC3^DEF^1.3.4.2
TXA||11490-0^Discharge Letter^LOINC|application/pdf^ScanPDF/IHE 1.x^ScanPDF/IHE 1.x^
    eHealth_formatCodes|||20110706094842|||^AuthorFamilyName^AuthorGivenName|^
    LegalAuthenticatorFamilyName^LegalAuthenticatorGivenName||docID1309938522620||||HL7v2
    TestDocument||N^Normal^2.16.840.1.113883.5.25|F
OBX|1|ED|||JVBERi0xLjQKJcOkw7zDtsOfCjIgMCBvYmoKPDwvTGVuZ3RoIDMgMCBSL0ZpbHRlci9GbGF0ZURlY29
    kZT4+CnN0cmVhbQp4nOUby4okufHeX5HnAdcqpJSUCYuhqqvL+Nj2gD9g7V1jpm1mL/v7ljJDocgIRVX32
    GYNyzAzSKl....i0kluI|||||||
OBX|2|ED|||bpJEw+Mfu5XSQYsU7VByhF1eDUmARDRBklJkGlwuDNla9nY7pDTpxIKmGMHg31bSacSM7fJg6K+//u0
    xmHT+bw5ol+h4Kds2Q8RK2VYPe+lyp3MsyS+JrhdWRfuFXkVAr4hjonREzBEdbz3CREdJZ2niLu5UMv/
    dKKRViLZSOBK....+A75Tv|||||||
OBX|3|ED|||tE/hm2CElItbsmHJySWssAQvaQn6atqrN1Qz1fcvJid+YEyZI/t6HDmHfNH7SeIVUToQKCykidLaiNCOD
    3OoS1mY979lavhhZjtlWwmmOZEoE+wi35r8VmJVyDl5B3WaM/ncLI7WApXIO5h/wzf3iizLzjX1nP/KDP/CX5/
    qnsX....VPRgo=|||||||
ZAI|11490-0^Zusammenfassung bei Entlassung (Arzt)^LOINC
ZRI|1|1.3.6.1.4.101^^^&1.2.3.4&ISO|urn:sense:2016:studyInstanceUID
ZRI|2|1.2.7.8.1.1^^^&1.2.7.3.2&ISO|urn:ihe:iti:xds:2013:accession
ZRI|3|1.2.7.8.1.2^^^&1.2.7.3.2&ISO|urn:ihe:iti:xds:2013:accession
```

In HL7v2 inbound MDM messages eHealth Solutions supports the transmission of the Document Type Code either in the TXA-2 field or in the ZAI-1 field. Depending on the transmission, eHealth Solutions decodes the Document Type Code and the Document Class Code as follows:

- If you only transmit the ZAI-1 field, eHealth Solutions decodes the Document Type Code from the ZAI-1 field and resolves the Document Class Code from the Document Type Code.
- If you transmit the ZAI-1 and the TXA-2 fields, eHealth Solutions decodes the Document Type Code from the ZAI-1 field and the Document Class Code from the TXA-2 field.
- If you only transmit the TXA-2 field, eHealth Solutions decodes the Document Type Code from the TXA-2 field and resolves the Document Class Code from the Document Type Code.

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3.1.1.4 HL7v2 Outbound Message Structure

The following segments take on a special meaning in outbound Submit Document messages:

EVN-5 – Operator ID
: The HPD UID of the individual provider. Since the MSH segment always lists eHealth Solutions in outgoing messages, the EVN-5 segment is used to indicate the person who originally submitted the document to eHealth Solutions. The value of this field is used in audit logs, it is thus recommended to always provide a meaningful value here.

EVN-7 – Event Facility
: The HPD UID of the organizational provider. Since the MSH segment always lists eHealth Solutions in outgoing messages, the EVN-7 segment is used to indicate the organization/facility which originally submitted the document.

ZAI-1 – Document Type Code
: The Document Type Code. In HL7v2 outbound MDM messages, the ZAI-1 field is used to send the Document Type Code. The data type of this field is CWE (Coded with Exceptions). See Section 1.1.4 for further information about data types.

Example 57: Submitting Documents (Outbound)

```
MSH|^~\&|^1.1.1.2.37|^1.1.1|^1.1.1:K706|^1.1.1:K706|20191028095351.502+0100||MDM^T02^MDM_T
    02|c4d4534b-2eca-4320-9a21-4a039cfe7a5b|P|2.3.1|||AL|||UNICODE UTF-8|de-AT
EVN||20191028095351.502+0100|||urn:hpd:1.1.1:1572252626718||^urn:hpd:1.1.1:K706
PID|||2af053b8-554d-430a-b47f-59a0b2a15808^^^&2.2.2.9.9&ISO||Dinzel^Franz^^Msc.^Dr.^^A~
    Dinzel^Franz^Test_ELGA_FurtherName^Msc.^Dr.^^L||19801221|M|||Amraser Straße 1a^^
    Innsbruck^Tirol^6020^AT^L~Amraser Straße 1a^^Innsbruck^^6020^AT^M||||||||||||||0|||||N
PV1|||^^^Landeskrankenhaus Innsbruck&1.1.1.2.2.1^^^^^^419192003&Innere Medizin&SNOMED_CT
    |||||||PC^Allgemeine Ambulanz^2.16.840.1.113883.5.11
OBR|||||||20130821000000.796+0200|20200919010000.796+0200|||||||||||||||||||||||
    ContentTypeCode^Content Type Code^sense_contentTypeCodes
NTE|||Used to test submission and retrieval for ELGA documents: CDA Level 3
TXA||11490-0^Zusammenfassung bei Entlassung (Arzt)^LOINC|text/xml^urn:elga:dissum:2013:
    EIS_FullSupport^ELGA Entlassungsbrief EIS_FullSupport
    ^1.2.40.0.34.5.37|||20130821130000+0200|||^Mustermann^Max^Arthur^^^Dr.^^^^^^^^^^^^^^Dr
    .|||f76ce0b1-f7d5-4127-9bc8-5c5190d72b86||||Zusammenfassung bei Entlassung EIS
    FullSupport||MPQ^MPQ^2.16.840.1.113883.5.25|||||urn:hpd:1.1.1:K706^^^^^^^^^^^^XX
OBX||ED|||PD94bWwgdmVyc2lvbj0iMS4wIiBlbmNvZGluZz0idXRmLTgiIHN0YW5kYWxvbmU9InllcyI/Pgo8P3htbC
    1zdHls...
ZAI|11490-0^Zusammenfassung bei Entlassung (Arzt)^LOINC
ZRI|1|1.2.7.8.1.1^^^&1.2.7.3.2&ISO|urn:ihe:iti:xds:2013:accession
```

3.2 Append Document

3.2.1 Append Document – HL7v2

The following HL7 message can be received and processed in order to append a document:

- **MDM T06** – Append Document.

The submission of an addendum document creates a link between an existing document and the addendum document. The append relationship leaves the original document with its availabilityStatus unchanged (Approved).



Note

An appended document can be any document that is associated with the initial document but differs in content.

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3.2.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **Append Document**.

Table 33: Append Document Segments

Segment	Description
MSH	Message Header
MSH-9-1	The Message Type must be **MDM**
MSH-9-2	The TriggerEvent must be **T06**
EVN	Event Information
PID	Patient Information
PV1	Case Information
OBR	Observation Information
TXA	Document Header
OBX	Document

3.2.1.2 Field Overview

The message syntax generally does not differ from the syntax of submitting a document (see Table 29, Table 30, Table 31, Table 32). However, there is one exception: Within the document metadata, the document ID of the initial document (which receives the addendum) must be set as shown in Table 34.

TXA-13

document.parentDocumentID: Document ID of the Parent document.

Table 34: Mapping from HL7 MDM message to XDS Data for Document Addendum

HL7-Path	Name	Presence	Repeatable
TXA-13	document. parentDocumentID	Required	-

Example 58:

```
MSH|^~\&|SendingApplicationName^1.2.3.4.5^ISO|SendingFacilityName^1.1.1.2.98^ISO||^1.1.1.1^
    ISO|||MDM^T06|||||||||
EVN|||||^UserFamilyName^UserGivenName
PID|||1231451^^^NATIONAL SOCIAL SECURITY ASSOCIATION&2.1.414.1.4.14&ISO^SS~pat1125^^^
    LocalAssigningAuthority&1.2.3.4.6&ISO||PatientFamilyName^PatientGivenName
    ||20110706094842|M|||Address^^City^^Postal Code
PV1|||^^^SendingFacilityName&1.2.3.4.6&ISO^^^&Department&SubDepartment^^^419192003&Internal
    Medicine&SNOMED_CT|||||||ETU^Trauma Unit^2.16.840.1.113883.5.11
OBR|||||||20110706094842|20110706094842|||||||||||||||||||||ABC1^DEF^1.3.4.2|Counseling^
    Konsil^eHealth_contentTypeCodes|ABC3^DEF^1.3.4.2
TXA||11490-0^Discharge Letter^LOINC|application/pdf^ScanPDF/IHE 1.x^ScanPDF/IHE 1.x^
    eHealth_formatCodes|||20110706094842|||^AuthorFamilyName^AuthorGivenName|^
    LegalAuthenticatorFamilyName^LegalAuthenticatorGivenName||docID1309938522620|parentDocID
    1309938522620|||HL7v2 TestDocument||N^Normal^2.16.840.1.113883.5.25|F
OBX|1|ED|||JVBERi0xLjQKJcOkw7zDtsOfCjIgMCBvYmoKPDwvTGVuZ3RoIDMgMCBSL0ZpbHRlci9GbGF0ZURlY29
    kZT4+CnN0cmVhbQp4nOUby4okufHeX5HnAdcqpJSUCYuhqqvL+Nj2gD9g7V1jpm1mL/v7ljJDocgIRVX32
    GYNyzAzSKl....i0kluI|||||||
OBX|2|ED|||bpJEw+Mfu5XSQYsU7VByhF1eDUmARDRBklJkGlwuDNla9nY7pDTpxIKmGMHg31bSacSM7fJg6K+//u0
    xmHT+bw5ol+h4Kds2Q8RK2VYPe+lyp3MsyS+JrhdWRfuFXkVAr4hjonREzBEdbz3CREdJZ2niLu5UMv/
    dKKRViLZSOBK....+A75Tv|||||||
OBX|3|ED|||tE/hm2CElItbsmHJySWssAQvaQn6atqrN1Qz1fcvJid+YEyZI/t6HDmHfNH7SeIVUToQKCykidLaiNCOD
```

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```
3OoS1mY979lavhhZjtlWwmmOZEoE+wi35r8VmJVyDl5B3WaM/ncLI7WApXIO5h/wzf3iizLzjX1nP/KDP/CX5/
qnsX....VPRgo=|||||||
```

3.3 Transform Document

3.3.1 Transform Document – HL7v2

The following HL7 message can be received and processed in order to transform a document:

- **MDM T08** – Transform Document.

The submission of a transformation document creates a link between an existing document and the transformation document. The transform relationship leaves the original document with its availabilityStatus unchanged (Approved).

Note

A transformation document might be a translation or different representation (PDF and plain-text) version of the initial document.

3.3.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **Transform Document**.

Table 35: Transform Document Segments

Segment	Description
MSH	Message Header
MSH-9-1	The Message Type must be **MDM**
MSH-9-2	The TriggerEvent must be **T08**
EVN	Event Information
PID	Patient Information
PV1	Case Information
OBR	Observation Information
TXA	Document Header
OBX	Document

3.3.1.2 Field Overview

The message syntax generally does not differ from the syntax of submitting a document (see Table 29, Table 30, Table 31, Table 32). However, there is one exception: The document ID of the initial document (which gets the transformation) must be set as shown in Table 36.

TXA-13
: document.parentDocumentID: Document ID of the Parent document.

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Table 36: Mapping from HL7 MDM message to XDS Data for Document Transform

HL7-Path	Name	Presence	Repeatable
TXA-13	document. parentDocumentID	Required	-

Example 59:

```
MSH|^~\&|SendingApplicationName^1.2.3.4.5^ISO|SendingFacilityName^1.1.1.2.98^ISO||^1.1.1.1^
    ISO|||MDM^T08|||||||||
EVN|||||^UserFamilyName^UserGivenName
PID|||1231451^^^NATIONAL SOCIAL SECURITY ASSOCIATION&2.1.414.1.4.14&ISO^SS~pat1125^^^
    LocalAssigningAuthority&1.2.3.4.6&ISO||PatientFamilyName^PatientGivenName
    ||20110706094842|M|||Address^^City^^Postal Code
PV1|||^^^SendingFacilityName&1.2.3.4.6&ISO^^^&Department&SubDepartment^^^419192003&Internal
    Medicine&SNOMED_CT|||||||ETU^Trauma Unit^2.16.840.1.113883.5.11
OBR|||||||20110706094842|20110706094842|||||||||||||||||||||ABC1^DEF^1.3.4.2|Counseling^
    Konsil^eHealth_contentTypeCodes|ABC3^DEF^1.3.4.2
TXA||11490-0^Discharge Letter^LOINC|application/pdf^ScanPDF/IHE 1.x^ScanPDF/IHE 1.x^
    eHealth_formatCodes|||20110706094842|||^AuthorFamilyName^AuthorGivenName|^
    LegalAuthenticatorFamilyName^LegalAuthenticatorGivenName||docID1309938522620|parentDocID
    1309938522620|||HL7v2 TestDocument||N^Normal^2.16.840.1.113883.5.25|F
OBX|1|ED|||JVBERi0xLjQKJcOkw7zDtsOfCjIgMCBvYmoKPDwvTGVuZ3RoIDMgMCBSL0ZpbHRlci9GbGF0ZURlY29
    kZT4+CnN0cmVhbQp4nOUby4okufHeX5HnAdcqpJSUCYuhqqvL+Nj2gD9g7V1jpm1mL/v7ljJDocgIRVX32
    GYNyzAzSKl....i0kluI|||||||
OBX|2|ED|||bpJEw+Mfu5XSQYsU7VByhF1eDUmARDRBklJkGlwuDNla9nY7pDTpxIKmGMHg31bSacSM7fJg6K+//u0
    xmHT+bw5ol+h4Kds2Q8RK2VYPe+lyp3MsyS+JrhdWRfuFXkVAr4hjonREzBEdbz3CREdJZ2niLu5UMv/
    dKKRViLZSOBK....+A75Tv|||||||
OBX|3|ED|||tE/hm2CElItbsmHJySWssAQvaQn6atqrN1Qz1fcvJid+YEyZI/t6HDmHfNH7SeIVUToQKCykidLaiNCOD
    3OoS1mY979lavhhZjtlWwmmOZEoE+wi35r8VmJVyDl5B3WaM/ncLI7WApXIO5h/wzf3iizLzjX1nP/KDP/CX5/
    qnsX....VPRgo=|||||||
```

3.4 Replace Document

3.4.1 Replace Document – HL7v2

The following HL7 message can be received and processed in order to replace a document:

- **MDM T10** – Replace Document.

The submission of an replacement document creates a link between an existing document and the replacement document. The availabilityStatus of the initial document is changed to “deprecated” and the newly created replacement document is set to “approved”.

3.4.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **Replace Document**.

Table 37: Replace Document Segments

Segment	Description
MSH	Message Header
MSH-9-1	The Message Type must be **MDM**

Table 37: Replace Document Segments

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Table 37: Replace Document Segments

Segment	Description
MSH-9-2	The TriggerEvent must be **T10**
EVN	Event Information
PID	Patient Information
PV1	Case Information
OBR	Observation Information
TXA	Document Header
OBX	Document

3.4.1.2 Field Overview

The message syntax generally does not differ from the syntax of submitting a document (see Table 29, Table 30, Table 31, Table 32). However, there is one exception: The document ID of the initial document (which gets the replacement) must be set as shown in Table 38.

TXA-13

document.parentDocumentID: Document ID of the Parent document.

Table 38: Mapping from HL7 MDM message to XDS Data for Document Replacement

HL7-Path	Name	Presence	Repeatable
TXA-13	document. parentDocumentID	Required	-

Example 60:

```
MSH|^~\&|SendingApplicationName^1.2.3.4.5^ISO|SendingFacilityName^1.1.1.2.98^ISO||^1.1.1.1^
    ISO|||MDM^T10||||||||||
EVN|||||^UserFamilyName^UserGivenName
PID|||1231451^^^NATIONAL SOCIAL SECURITY ASSOCIATION&2.1.414.1.4.14&ISO^SS~pat1125^^^
    LocalAssigningAuthority&1.2.3.4.6&ISO||PatientFamilyName^PatientGivenName
    ||20110706094842|M|||Address^^City^^Postal Code
PV1|||^^^SendingFacilityName&1.2.3.4.6&ISO^^^&Department&SubDepartment^^^419192003&Internal
    Medicine&SNOMED_CT|||||||ETU^Trauma Unit^2.16.840.1.113883.5.11
OBR|||||||20110706094842|20110706094842|||||||||||||||||||||ABC1^DEF^1.3.4.2|Counseling^
    Konsil^eHealth_contentTypeCodes|ABC3^DEF^1.3.4.2
TXA||11490-0^Discharge Letter^LOINC|application/pdf^ScanPDF/IHE 1.x^ScanPDF/IHE 1.x^
    eHealth_formatCodes|||20110706094842|||^AuthorFamilyName^AuthorGivenName|^
    LegalAuthenticatorFamilyName^LegalAuthenticatorGivenName||docID1309938522620|parentDocID
    1309938522620|||HL7v2 TestDocument||N^Normal^2.16.840.1.113883.5.25|F
OBX|1|ED|||JVBERi0xLjQKJcOkw7zDtsOfCjIgMCBvYmoKPDwvTGVuZ3RoIDMgMCBSL0ZpbHRlci9GbGF0ZURlY29
    kZT4+CnN0cmVhbQp4nOUby4okufHeX5HnAdcqpJSUCYuhqqvL+Nj2gD9g7V1jpm1mL/v7ljJDocgIRVX32
    GYNyzAzSKl....i0kluI|||||||
OBX|2|ED|||bpJEw+Mfu5XSQYsU7VByhF1eDUmARDRBklJkGlwuDNla9nY7pDTpxIKmGMHg31bSacSM7fJg6K+//u0
    xmHT+bw5ol+h4Kds2Q8RK2VYPe+lyp3MsyS+JrhdWRfuFXkVAr4hjonREzBEdbz3CREdJZ2niLu5UMv/
    dKKRViLZSOBK....+A75Tv|||||||
OBX|3|ED|||tE/hm2CElItbsmHJySWssAQvaQn6atqrN1Qz1fcvJid+YEyZI/t6HDmHfNH7SeIVUToQKCykidLaiNCOD
    3OoS1mY979lavhhZjtlWwmmOZEoE+wi35r8VmJVyDl5B3WaM/ncLI7WApXIO5h/wzf3iizLzjX1nP/KDP/CX5/
    qnsX....VPRgo=|||||||
```

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3.5 Deprecate Document

3.5.1 Deprecate Document – HL7v2

The following HL7 message can be received and processed in order to deprecate a document:

- **MDM T11** – Deprecate Document.

This method is used to deprecate a document. The deprecated document is not removed from the infrastructure, but its document status is set from **approved** to **deprecated**.



Note

When a document's status has been set to "deprecated", it is still displayed in the default results set. Nevertheless, the document is clearly recognizable as "deprecated" since it is crossed out in the **Health Records** application.

3.5.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **Deprecate Document**.

Table 39: Deprecate Document Segments

Segment	Description
MSH	Message Header
MSH-9-1	The Message Type must be **MDM**
MSH-9-2	The TriggerEvent must be **T11**
EVN	Event Information
PID	Patient Information
PV1	Case Information
OBR	Observation Information
TXA	Document Header

3.5.1.2 Field Overview

The message syntax differs from the syntax of submitting a document (see Table 29, Table 30, Table 31) in only one regard: It entirely misses the binary document itself (the OBX segment is missing).

Example 61:

```
MSH|^~\&|SendingApplicationName^1.2.3.4.5^ISO|SendingFacilityName^1.1.1.2.98^ISO||^1.1.1.1^
    ISO|||MDM^T11|||||||||
EVN|||||^UserFamilyName^UserGivenName
PID|||1231451^^^NATIONAL SOCIAL SECURITY ASSOCIATION&2.1.414.1.4.14&ISO^SS~pat1125^^^
    LocalAssigningAuthority&1.2.3.4.6&ISO||PatientFamilyName^PatientGivenName
    ||20110706094842|M|||Address^^City^^Postal Code
PV1|||^^^SendingFacilityName&1.2.3.4.6&ISO^^^&Department&SubDepartment^^^419192003&Internal
    Medicine&SNOMED_CT|||||||ETU^Trauma Unit^2.16.840.1.113883.5.11
OBR|||||||20110706094842|20110706094842|||||||||||||||||||||ABC1^DEF^1.3.4.2|Counseling^
    Konsil^eHealth_contentTypeCodes|ABC3^DEF^1.3.4.2
TXA||11490-0^Discharge Letter^LOINC|application/pdf^ScanPDF/IHE 1.x^ScanPDF/IHE 1.x^
    eHealth_formatCodes|||20110706094842|||^AuthorFamilyName^AuthorGivenName|^
    LegalAuthenticatorFamilyName^LegalAuthenticatorGivenName||docID1309938522620||||HL7v2
    TestDocument||N^Normal^2.16.840.1.113883.5.25|F
```

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4 eHealth Stroke

eHealth Stroke is an application designed to assist in the treatment of stroke cases. It coordinates the communication and ensures an efficient data and image exchange between all involved parties. This section offers information on FHIR resources used by eHealth Stroke.

4.1 HL7 FHIR

4.1.1 Authorized Therapy

Details about an authorized therapy for a stroke case are stored in a FHIR `ServiceRequest` resource. Table 40 contains information on the relevant FHIR elements for the `ServiceRequest` resource for an authorized therapy. Example 62, Example 63, and Example 64 show sample JSON structures for an authorized lysis therapy, other therapy, and a withdrawn thrombectomy.

For further details, refer to the official FHIR documentation (ServiceRequest resource).

Table 40: FHIR Elements for the ServiceRequest Resource Authorized Therapy

Name	Cardinality	Comment
resourceType	1..1	Set to "ServiceRequest".
meta	1..1	
tag	1..1	
system	1..1	Set to "http://sense/ssc/strokeCaseId".
code	1..1	Set to the respective case ID.
contained	1..1	
resourceType	1..1	Set to "Practitioner".
id	1..1	
name	1..1	Contains the human name.
status	1..1	Is set to "active" by default. When a therapy is withdrawn, the status is "revoked".
intent	1..1	Set to "order".
code	1..1	
coding	1..1	
system	1..1	Set to "http://sense/ssc/therapyType".
code	1..1	Set to "LYSIS", "THROMBECTOMY" or "OP" or "OTHER".
encounter	1..1	The is the emergency case (see Section 4.1.2).
reference	1..1	
type	1..1	Set to "Encounter".
identifier	1..1	
system	1..1	Set to "http://sense/ssc/strokeCaseId".
value	1..1	Set to the respective case ID (see `meta.tag.code`).
subject	1..1	The patient.
reference	1..1	
type	1..1	Set to "Patient".
identifier	1..1	
system	1..1	Assigning authority of the source patient ID.
value	1..1	The source patient ID.
authoredOn	1..1	
requester	1..1	"Practicioner" resource used in the "contained" element.
reference	1..1	

Table 40: FHIR Elements for the ServiceRequest Resource Authorized Therapy

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Table 40: FHIR Elements for the ServiceRequest Resource Authorized Therapy

Name	Cardinality	Comment
type	1..1	Set to “Practitioner”.
note	0..*	Add the therapy, if `code.coding.code` is set to “OTHER”.

Example 62: Authorized Lysis Therapy

```
{
  "resourceType": "ServiceRequest",
  "id": "ab32d569-d38e-4cf7-b6cb-e0b9b140ef52",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2024-12-04T07:30:18.990+00:00",
    "source": "<source_system_OID>",
    "tag": [
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "<caseID>"
      }
    ]
  },
  "contained": [
    {
      "resourceType": "Practitioner",
      "id": "1",
      "name": [
        {
          "use": "nickname",
          "text": "<user_display_name>"
        }
      ]
    }
  ],
  "status": "active",
  "intent": "order",
  "code": {
    "coding": [
      {
        "system": "http://sense/ssc/therapyType",
        "code": "LYSIS"
      }
    ]
  },
  "encounter": {
    "reference": "Encounter/<resource_ID>",
    "type": "Encounter",
    "identifier": {
      "system": "http://sense/ssc/strokeCaseId",
      "value": "<caseID>"
    }
  },
  "subject": {
    "reference": "Patient/<resource_ID>",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:<patient_assigning_authority_OID>",
      "value": "<source_patient_ID>"
    }
  },
  "authoredOn": "2024-12-04T08:30:18+01:00",
  "requester": {
    "reference": "#1",
```

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```
    "type": "Practitioner"
  }
}
```

Example 63: Authorized Other Therapy

```
{
  "resourceType": "ServiceRequest",
  "id": "43b9737f-9dea-4d66-82b5-67a1804873ca",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2025-11-14T09:56:57.175+00:00",
    "source": "<source_system_OID>",
    "profile": [
      "https://ehs.at/fhir/StructureDefinition/EhsServiceRequest"
    ],
    "tag": [
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "<caseID>"
      }
    ]
  },
  "contained": [
    {
      "resourceType": "Practitioner",
      "id": "1",
      "name": [
        {
          "use": "nickname",
          "text": "<user_display_name>"
        }
      ]
    }
  ],
  "status": "active",
  "intent": "order",
  "code": {
    "coding": [
      {
        "system": "http://sense/ssc/therapyType",
        "code": "OTHER"
      }
    ]
  },
  "subject": {
    "extension": [
      {
        "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
        "valueIdentifier": {
          "system": "urn:oid:<patient_assigning_authority_OID>",
          "value": "567b9e51-5bb2-4743-bf51-f2b3c95e7378"
        }
      }
    ],
    "reference": "Patient/<resource_ID>",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:<patient_assigning_authority_OID>",
      "value": "<source_patient_ID>"
    }
  },
```

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```
  "encounter": {
    "reference": "Encounter/<resource_ID>",
    "type": "Encounter",
    "identifier": {
      "system": "http://sense/ssc/strokeCaseId",
      "value": "<caseID>"
    }
  },
  "authoredOn": "2025-11-14T09:56:57+00:00",
  "requester": {
    "reference": "#1",
    "type": "Practitioner"
  },
  "note": [
    {
      "text": "TEST Therapy"
    }
  ]
}
```

Example 64: Withdrawn Thrombectomy

```
{
  "resourceType": "ServiceRequest",
  "id": "b3bdebca-66a9-4cee-a9af-40729a2ddf9c",
  "meta": {
    "versionId": "2",
    "lastUpdated": "2024-12-04T07:30:25.356+00:00",
    "source": "<source_system_OID>",
    "tag": [
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "<caseID>"
      }
    ]
  },
  "contained": [
    {
      "resourceType": "Practitioner",
      "id": "1",
      "name": [
        {
          "use": "nickname",
          "text": "<user_display_name>"
        }
      ]
    }
  ],
  "status": "revoked",
  "intent": "order",
  "code": {
    "coding": [
      {
        "system": "http://sense/ssc/therapyType",
        "code": "THROMBECTOMY"
      }
    ]
  },
  "encounter": {
    "reference": "Encounter/<resource_ID>",
    "type": "Encounter",
    "identifier": {
      "system": "http://sense/ssc/strokeCaseId",
```

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```
      "value": "<caseID>"
    }
  },
  "subject": {
    "reference": "Patient/<resource_ID>",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:<patient_assigning_authority_OID>",
      "value": "<source_patient_ID>"
    }
  },
  "authoredOn": "2024-12-04T08:30:19+01:00",
  "requester": {
    "reference": "#1",
    "type": "Practitioner"
  }
}
```

4.1.2 Emergency Case

Details about an emergency case are stored in a FHIR `Encounter` resource. Table 41 contains information on the relevant FHIR elements for the `Encounter` resource for an emergency case. Example 65 shows an example of a JSON structure.

For further details, refer to the official FHIR documentation (Encounter resource).

Table 41: FHIR Elements for the Encounter Resource Emergency Case

Name	Cardinality	Comment
resourceType	1..1	Set to “Encounter”.
meta	1..1	
contained	1..1	
resourceType	1..1	Set to “Location”.
id	1..1	
identifier	1..1	“Room ID” for the video call.
name	1..1	Name of the video call room.
identifier	1..*	Only one identifier can contain the case ID.
type	0..1	For the identifier containing the case ID, set to “Public Health Case Identifier”
system	1..1	For the identifier containing the case ID, set to “http://sense/ssc/strokeCaseId”.
value	1..1	For the identifier containing the case ID, set to the respective case ID (see `meta.tag.code`).
status	1..1	Is set to “in-progress” by default. When an emergency case is closed, the status is “finished”.
class	1..1	
system	1..1	Set to “http://terminology.hl7.org/CodeSystem/v3-ActCode”
code	1..1	Set to “EMER”
display	1..1	Set to “emergency”
subject	1..1	The patient.
reference	1..1	
type	1..1	Set to “Patient”.
identifier	1..1	
system	1..1	Assigning authority of the source patient ID.
value	1..1	The source patient ID.
period	1..1	

Table 41: FHIR Elements for the Encounter Resource Emergency Case

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Table 41: FHIR Elements for the Encounter Resource Emergency Case

Name	Cardinality	Comment
start	1..1	Creation date of the emergency case.
location	1..1	"Location" resource used in the "contained" element.
reference	1..1	
type	1..1	Set to "Location".

Example 65: Emergency Case

```
{
  "resourceType": "Encounter",
  "id": "19b52ec5-2f6b-4d4b-9a35-cc8faded30c8",
  "meta": {
    "versionId": "4",
    "lastUpdated": "2025-11-18T14:01:55.431+00:00",
    "source": "<source_system_OID>",
    "profile": [
      "https://ehs.at/fhir/StructureDefinition/EhsEncounter"
    ]
  },
  "contained": [
    {
      "resourceType": "Location",
      "id": "1",
      "identifier": [
        {
          "type": {
            "coding": [
              {
                "system": "http://sense/ssc/identifier",
                "code": "AZR",
                "display": "Azure Room ID"
              }
            ]
          },
          "value": "<azure_room_ID>"
        }
      ],
      "name": "Azure Room"
    }
  ],
  "identifier": [
    {
      "type": {
        "coding": [
          {
            "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
            "code": "PHC",
            "display": "Public Health Case Identifier"
          }
        ]
      },
      "system": "http://sense/ssc/strokeCaseId",
      "value": "<case_ID>"
    }
  ],
  "status": "in-progress",
  "class": {
    "system": "http://terminology.hl7.org/CodeSystem/v3-ActCode",
    "code": "EMER",
    "display": "emergency"
  },
```

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```
  "subject": {
    "extension": [
      {
        "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
        "valueIdentifier": {
          "system": "urn:oid:<patient_assigning_authority_OID>",
          "value": "<source_patient_ID>"
        }
      }
    ],
    "reference": "Patient/<resource_ID>",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:<patient_assigning_authority_OID>",
      "value": "<source_patient_ID>"
    }
  },
  "period": {
    "start": "2025-11-14T09:36:09+00:00"
  },
  "location": [
    {
      "location": {
        "reference": "#1",
        "type": "Location"
      }
    }
  ]
}
```

4.1.3 FAST Assessment

Table 42 provides information on the relevant FHIR elements for the `Questionnaire` resource for the FAST assessment. Example 66 shows an example of a JSON structure and Example 67 its related questionnaire response. See Section 6 and the official FHIR documentation (Questionnaire resource) for additional information.

Table 42: FHIR Elements for the Questionnaire Resource FAST Assessment

Name	Cardinality	Comment
resourceType	1..1	Set to “Questionnaire”.
language	1..1	Set to the desired primary language, default “en-US”.
url	1..1	Set to “https://ehs.at/fhir/Questionnaire/fe34eda6-62cf-41c7-868f-7d539273d49c”.
status	1..1	Set to “active”.
item	1..*	
extension	1..*	
url	1..1	Set to “http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl”.
valueCodeableConcept	1..1	
coding	1..*	
system	1..1	Set to “http://hl7.org/fhir/questionnaire-item-control”.
code	1..1	
display	1..1	
linkId	1..1	
text	1..1	String of the question.
_text	0..*	Extensions for the translation of the “text” element.

Table 42: FHIR Elements for the Questionnaire Resource FAST Assessment

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Table 42: FHIR Elements for the Questionnaire Resource FAST Assessment

Name	Cardinality	Comment
type	1..1	
answerOption	0..*	
display	1..1	String of the answer option.
_display	0..*	Extensions for the translation of the “display” element.

Example 66: FAST Assessment


```
{
  "resourceType": "Questionnaire",
  "url": "https://ehs.at/fhir/Questionnaire/fe34eda6-62cf-41c7-868f-7d539273d49c",
  "status": "active",
  "item": [
    {
      "extension": [
        {
          "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://hl7.org/fhir/questionnaire-item-control",
                "code": "radio-button",
                "display": "Radio Button"
              }
            ]
          }
        }
      ],
      "linkId": "167180394667",
      "text": "Face Drooping",
      "type": "choice",
      "required": true,
      "answerOption": [
        {
          "valueCoding": {
            "code": "1",
            "display": "No - there are no symptoms"
          }
        },
        {
          "valueCoding": {
            "code": "2",
            "display": "Yes – there is facial drooping on one or both sides"
          }
        }
      ]
    },
    {
      "extension": [
        {
          "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://hl7.org/fhir/questionnaire-item-control",
                "code": "radio-button",
                "display": "Radio Button"
              }
            ]
          }
        }
```


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```
      ],
      "linkId": "505251541948",
      "text": "Arm Weakness",
      "type": "choice",
      "required": true,
      "answerOption": [
        {
          "valueCoding": {
            "code": "1",
            "display": "No - there are no symptoms"
          }
        },
        {
          "valueCoding": {
            "code": "2",
            "display": "Yes – there are difficulties with raising the arms, downward drift,
    or rotation of the arms"
          }
        }
      ]
    },
    {
      "extension": [
        {
          "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://hl7.org/fhir/questionnaire-item-control",
                "code": "radio-button",
                "display": "Radio Button"
              }
            ]
          }
        }
      ],
      "linkId": "192664940936",
      "text": "Speech Difficulties",
      "type": "choice",
      "required": true,
      "answerOption": [
        {
          "valueCoding": {
            "code": "1",
            "display": "No - there are no symptoms"
          }
        },
        {
          "valueCoding": {
            "code": "2",
            "display": "Yes – there are difficulties with speech, such as unclear or slurred
     language"
          }
        }
      ]
    }
  ]
}
```

Example 67: Questionnaire Response for FAST Assessment

```
{
  "resourceType": "QuestionnaireResponse",
```

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```
"id": "e845bcdc-c372-417a-9e2e-e1324d58134e",
"meta": {
  "versionId": "1",
  "lastUpdated": "2025-11-14T09:42:50.090+00:00",
  "source": "<source_system_OID>",
  "profile": [
    "https://ehs.at/fhir/StructureDefinition/EhsQuestionnaireResponse"
  ],
  "tag": [
    {
      "system": "http://sense/ssc/author",
      "code": "<user_display_name>"
    },
    {
      "system": "http://sense/ssc/questionnaireType",
      "code": "FAST"
    },
    {
      "system": "http://sense/ssc/strokeCaseId",
      "code": "<caseID>"
    }
  ]
},
"questionnaire": "https://ehs.at/fhir/Questionnaire/fe34eda6-62cf-41c7-868f-7d539273d49c",
"status": "completed",
"subject": {
  "extension": [
    {
      "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
      "valueIdentifier": {
        "system": "urn:oid:<patient_assigning_authority_OID>",
        "value": "<source_patient_ID>"
      }
    }
  ],
  "reference": "Patient/<resource_ID>",
  "type": "Patient",
  "identifier": {
    "system": "urn:oid:<patient_assigning_authority_OID>",
    "value": "<source_patient_ID>"
  }
},
"authored": "2025-11-14T09:42:50+00:00",
"item": [
  {
    "linkId": "167180394667",
    "text": "Face Drooping",
    "answer": [
      {
        "valueCoding": {
          "code": "1",
          "display": "No - there are no symptoms"
        }
      }
    ]
  },
  {
    "linkId": "505251541948",
    "text": "Arm Weakness",
    "answer": [
      {
        "valueCoding": {
          "code": "2",
          "display": "Yes – there are difficulties with raising the arms, downward drift,
  or rotation of the arms"
```


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```
          }
        }
      ]
    },
    {
      "linkId": "192664940936",
      "text": "Speech Difficulties",
      "answer": [
        {
          "valueCoding": {
            "code": "2",
            "display": "Yes – there are difficulties with speech, such as unclear or slurred
     language"
          }
        }
      ]
    }
  ]
}
```

4.1.4 Glasgow Coma Scale (GCS)

Table 43 provides information on the relevant FHIR elements for the `Questionnaire` resource for the Glasgow Coma Scale. Example 68 shows an example of a JSON structure and Example 69 its related questionnaire response.. See Section 6 and the official FHIR documentation (Questionnaire resource) for additional information.

Table 43: FHIR Elements for the Questionnaire Resource GCS

Name	Cardinality	Comment
resourceType	1..1	Set to “Questionnaire”.
language	1..1	Set to the desired primary language, default “en-US”.
url	1..1	Set to “https://ehs.at/fhir/Questionnaire/10a45e0d-a98b-45fd-b9fc-8e0eec4ee5ed”.
status	1..1	Set to “active”.
item	1..*	
extension	1..*	
url	1..1	Set to “http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl”.
valueCodeableConcept	1..1	
coding	1..*	
system	1..1	Set to “http://hl7.org/fhir/questionnaire-item-control”.
code	1..1	
display	1..1	
linkId	1..1	
text	1..1	String of the question.
_text	0..*	Extensions for the translation of the “text” element.
type	1..1	
answerOption	0..*	
display	1..1	String of the answer option.
_display	0..*	Extensions for the translation of the “display” element.

Example 68: GCS

```
{
  "resourceType": "Questionnaire",
  "url": "https://ehs.at/fhir/Questionnaire/10a45e0d-a98b-45fd-b9fc-8e0eec4ee5ed",
```

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```
  "status": "active",
  "item": [
    {
      "extension": [
        {
          "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://hl7.org/fhir/questionnaire-item-control",
                "code": "radio-button",
                "display": "Radio Button"
              }
            ]
          }
        }
      ],
      "linkId": "30382797777770",
      "text": "Best Eye Response",
      "type": "choice",
      "required": true,
      "answerOption": [
        {
          "valueCoding": {
            "code": "1",
            "display": "1 - None"
          }
        },
        {
          "valueCoding": {
            "code": "2",
            "display": "2 - To pressure"
          }
        },
        {
          "valueCoding": {
            "code": "3",
            "display": "3 - To sound"
          }
        },
        {
          "valueCoding": {
            "code": "4",
            "display": "4 - Spontaneous"
          }
        }
      ]
    },
    {
      "extension": [
        {
          "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://hl7.org/fhir/questionnaire-item-control",
                "code": "radio-button",
                "display": "Radio Button"
              }
            ]
          }
        }
      ],
      "linkId": "30382797777771",
      "text": "Best Verbal Response",
```


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```
      "type": "choice",
      "required": true,
      "answerOption": [
        {
          "valueCoding": {
            "code": "1",
            "display": "1 - None"
          }
        },
        {
          "valueCoding": {
            "code": "2",
            "display": "2 - Sounds"
          }
        },
        {
          "valueCoding": {
            "code": "3",
            "display": "3 - Words"
          }
        },
        {
          "valueCoding": {
            "code": "4",
            "display": "4 - Confused"
          }
        },
        {
          "valueCoding": {
            "code": "5",
            "display": "5 - Oriented"
          }
        }
      ]
    },
    {
      "extension": [
        {
          "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://hl7.org/fhir/questionnaire-item-control",
                "code": "radio-button",
                "display": "Radio Button"
              }
            ]
          }
        }
      ],
      "linkId": "30382797777772",
      "text": "Best Motor Response",
      "type": "choice",
      "required": true,
      "answerOption": [
        {
          "valueCoding": {
            "code": "1",
            "display": "1 - None"
          }
        },
        {
          "valueCoding": {
            "code": "2",
            "display": "2 - Extension"
```


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```
          }
        },
        {
          "valueCoding": {
            "code": "3",
            "display": "3 - Abnormal flexion"
          }
        },
        {
          "valueCoding": {
            "code": "4",
            "display": "4 - Normal flexion"
          }
        },
        {
          "valueCoding": {
            "code": "5",
            "display": "5 - Localising"
          }
        },
        {
          "valueCoding": {
            "code": "6",
            "display": "6 - Obey commands"
          }
        }
      ]
    }
  ]
}
```

Example 69: Questionnaire Response for GCS

```
{
  "resourceType": "QuestionnaireResponse",
  "id": "256eb67d-354c-49b1-8428-ff70a54e7caf",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2025-11-14T09:43:00.705+00:00",
    "source": "<source_system_OID>",
    "profile": [
      "https://ehs.at/fhir/StructureDefinition/EhsQuestionnaireResponse"
    ],
    "tag": [
      {
        "system": "http://sense/ssc/author",
        "code": "<user_display_name>"
      },
      {
        "system": "http://sense/ssc/questionnaireType",
        "code": "GCS"
      },
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "<caseID>"
      }
    ]
  },
  "questionnaire": "https://ehs.at/fhir/Questionnaire/10a45e0d-a98b-45fd-b9fc-8e0eec4ee5ed",
  "status": "completed",
  "subject": {
    "extension": [
      {
```

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```
        "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
        "valueIdentifier": {
          "system": "urn:oid:<patient_assigning_authority_OID>",
          "value": "<source_patient_ID>"
        }
      }
    ],
    "reference": "Patient/<resource_ID>",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:<patient_assigning_authority_OID>",
      "value": "<source_patient_ID>"
    }
  },
  "authored": "2025-11-14T09:43:00+00:00",
  "item": [
    {
      "linkId": "30382797777770",
      "text": "Best Eye Response",
      "answer": [
        {
          "valueCoding": {
            "code": "1",
            "display": "1 - None"
          }
        }
      ]
    },
    {
      "linkId": "30382797777771",
      "text": "Best Verbal Response",
      "answer": [
        {
          "valueCoding": {
            "code": "2",
            "display": "2 - Sounds"
          }
        }
      ]
    },
    {
      "linkId": "30382797777772",
      "text": "Best Motor Response",
      "answer": [
        {
          "valueCoding": {
            "code": "3",
            "display": "3 - Abnormal flexion"
          }
        }
      ]
    }
  ]
}
```

4.1.5 Imaging Notes

Table 44 contains information on the relevant FHIR elements for the `DiagnosticReport` resource for imaging notes. Example 70 shows a sample JSON structure.

Refer to the official FHIR documentation (DiagnosticReport resource) for further details.

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Table 44: FHIR Elements for the DiagnosticReport Resource Imaging Notes

Name	Cardinality	Comment
resourceType	1..1	Set to “DiagnosticReport”.
meta	1..1	
tag	1..1	
system	1..1	Set to “http://sense/ssc/strokeCaseId”.
code	1..1	Set to the respective case ID.
contained	1..1	
resourceType	2..2	Set one to “Practitioner” and another one to “ImagingStudy”.
id	1..1	
name	1..1	For `contained.resourceType`=“Practitioner” specify the human name.
identifier	1..1	Only necessary for `contained.resourceType`=“ImagingStudy”.
type	1..*	
coding	1..*	
system	1..1	Set to “http://terminology.hl7.org/CodeSystem/v2-0203”.
code	1..1	Set to “ACSN” .
value	1..1	Value of the accession number used to connect an order to a newly registered study.
status	1..1	Set to “final”.
code	1..1	
coding	1..1	
system	1..1	Set to “http://loinc.org”.
code	1..1	Set to “75490-3”.
encounter	1..1	The emergency case (see Section 4.1.2).
reference	1..1	
type	1..1	Set to “Encounter”.
identifier	1..1	
system	1..1	Set to “http://sense/ssc/strokeCaseId”.
value	1..1	Set to the respective case ID (see `meta.tag.code`).
issued	1..1	
performer	1..1	“Practitioner” resource used in the “contained” element.
reference	1..1	
type	1..1	Set to “Practitioner”.
imagingStudy	1..1	“ImagingStudy” resource used in the “contained” element.
reference	1..1	
type	1..1	Set to “ImagingStudy”.
conclusion	0..1	Text entered by user.

Example 70: Imaging Notes


```
{
  "resourceType": "DiagnosticReport",
  "id": "56982e1f-78f2-43e7-9fe8-839124a4991c",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2025-11-18T13:20:30.406+00:00",
    "source": "<source_system_OID>",
    "profile": [
      "https://ehs.at/fhir/StructureDefinition/EhsDiagnosticReport"
    ],
    "tag": [
      {
        "system": "http://sense/ssc/strokeCaseId",
```


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```
      "code": "<caseID>"
    }
  ]
},
"contained": [
  {
    "resourceType": "Practitioner",
    "id": "1",
    "name": [
      {
        "use": "nickname",
        "text": "<user_display_name>"
      }
    ]
  },
  {
    "resourceType": "ImagingStudy",
    "id": "2",
    "identifier": [
      {
        "type": {
          "coding": [
            {
              "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
              "code": "ACSN"
            }
          ]
        },
        "value": "1.3.12.2.1107.5.1.4.64935.99701502"
      }
    ],
    "status": "unknown",
    "subject": {
      "extension": [
        {
          "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
          "valueIdentifier": {
            "system": "urn:oid:<patient_assigning_authority_OID>",
            "value": "<source_patient_ID>"
          }
        }
      ],
      "type": "Patient",
      "identifier": {
        "system": "urn:oid:<patient_assigning_authority_OID>",
        "value": "<source_patient_ID>"
      }
    }
  }
],
"status": "final",
"code": {
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "75490-3"
    }
  ]
},
"subject": {
  "extension": [
    {
      "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
      "valueIdentifier": {
        "system": "urn:oid:<patient_assigning_authority_OID>",
```

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```
          "value": "<source_patient_ID>"
        }
      }
    ],
    "reference": "Patient/<resource_ID>",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:<patient_assigning_authority_OID>",
      "value": "<source_patient_ID>"
    }
  },
  "encounter": {
    "type": "Encounter",
    "identifier": {
      "system": "http://sense/ssc/strokeCaseId",
      "value": "<caseID>"
    }
  },
  "issued": "2025-11-18T13:20:30.266+00:00",
  "performer": [
    {
      "reference": "#1",
      "type": "Practitioner"
    }
  ],
  "imagingStudy": [
    {
      "reference": "#2",
      "type": "ImagingStudy"
    }
  ],
  "conclusion": "I am a test note!"
}
```

4.1.6 Lysis Contraindications

Contraindications for a lysis treatment are stored in a FHIR `Condition` resource. Table 45 provides information on the relevant elements. A sample JSON structure is shown in Example 71.

Refer to the official FHIR documentation (Condition resource) for further details.

Table 45: FHIR Elements for the Condition Resource Lysis Contraindications

Name	Cardinality	Comment
resourceType	1..1	Set to “Condition”.
meta	1..1	
tag	1..*	
system	1..1	Set to “http://sense/ssc/strokeCaseId”.
code	1..1	Set to the respective case ID.
contained	1..1	
resourceType	1..1	Set to “Practitioner”.
id	1..1	
name	1..1	Contains the human name.
code	1..1	
coding	1..*	
extension	1..1	
url	1..1	Set to “https://<hostname>:7443/ValueSetRepository/services/ValueSetRepositoryService”

Table 45: FHIR Elements for the Condition Resource Lysis Contraindications

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Table 45: FHIR Elements for the Condition Resource Lysis Contraindications

Name	Cardinality	Comment
valueString	1..1	Set to "<home_community_OID>.1.9.35", dq<home_community_OID>.1.9.36, or the OID of the value set in the SVS.
system	1..1	› Set to "eHealth-Solutions-Stroke-BloodThinners" if `valueString` is "<home_community_OID>.1.9.35". › Set to "eHealth-Solutions-Stroke-FurtherContraindications" if `valueString` is "<home_community_OID>.1.9.36".
code	1..1	Set to the OID of the value set in the SVS.
display	1..1	
encounter	1..1	The emergency case (see Section 4.1.2).
reference	1..1	
type	1..1	Set to "Encounter".
identifier	1..1	
system	1..1	Set to "http://sense/ssc/strokeCaseId".
value	1..1	Set to the respective case ID (see `meta.tag.code`).
subject	1..1	The patient.
reference	1..1	
type	1..1	Set to "Patient".
identifier	1..1	
system	1..1	Assigning authority of the source patient ID.
value	1..1	The source patient ID.
recordedDate	1..1	
recorder	1..1	"Practicioner" resource used in the "contained" element.
reference	1..1	
type	1..1	Set to "Practitioner".
note	0..1	Can be used to add additional details about lysis contraindications.

Example 71: Lysis Contraindications

```
{
  "resourceType": "Condition",
  "id": "d1acc4a0-a0c7-4feb-a913-2de05f786f09",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2025-11-18T13:36:03.586+00:00",
    "source": "<source_system_OID>",
    "profile": [
      "https://ehs.at/fhir/StructureDefinition/EhsCondition"
    ],
    "tag": [
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "<caseID>"
      }
    ]
  },
  "contained": [
    {
      "resourceType": "Practitioner",
      "id": "1",
      "name": [
        {
          "use": "nickname",
          "text": "<user_display_name>"
        }
      ]
```

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```
    }
  ],
  "code": {
    "coding": [
      {
        "extension": [
          {
            "url": "http://sense/ssc/terminologyServer",
            "valueString": "https://<hostname>:7443/ValueSetRepository/services/
    ValueSetRepositoryService"
          },
          {
            "url": "http://sense/ssc/terminologyValueSet",
            "valueString": "<home_community_OID>.1.9.35"
          }
        ],
        "code": "<home_community_OID>.1.1",
        "display": "Aspirin"
      },
      {
        "extension": [
          {
            "url": "http://sense/ssc/terminologyServer",
            "valueString": "https://<hostname>:7443/ValueSetRepository/services/
    ValueSetRepositoryService"
          },
          {
            "url": "http://sense/ssc/terminologyValueSet",
            "valueString": "<home_community_OID>.1.9.36"
          }
        ],
        "code": "<home_community_OID>.1.5",
        "display": "Aktiver Krebs"
      }
    ]
  },
  "subject": {
    "extension": [
      {
        "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
        "valueIdentifier": {
          "system": "urn:oid:<patient_assigning_authority_OID>",
          "value": "<source_patient_ID>"
        }
      }
    ],
    "reference": "Patient/<resource_ID>",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:<patient_assigning_authority_OID>",
      "value": "<source_patient_ID>"
    }
  },
  "encounter": {
    "reference": "Encounter/<resource_ID>",
    "type": "Encounter",
    "identifier": {
      "system": "http://sense/ssc/strokeCaseId",
      "value": "<caseID>"
    }
  },
  "recordedDate": "2025-11-18T13:36:03+00:00",
  "recorder": {
    "reference": "#1",
    "type": "Practitioner"
```

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```
  },
  "note": [
    {
      "text": "Test Comment"
    }
  ]
}
```

4.1.7 National Institutes of Health Stroke Scale (NIHSS)

Table 46 contains information on the relevant FHIR elements for the `Observation` resource for the NIHSS. Example 72 and Example 73 show sample JSON structures of a NIHSS survey and a NIHSS estimation.

Refer to the official FHIR documentation (Observation resource) for further details.

Table 46: FHIR Elements for the Observation Resource NIHSS

Name	Cardinality	Comment
resourceType	1..1	Set to "Observation".
meta	1..1	
tag	1..1	
system	1..1	Set to "http://sense/ssc/strokeCaseId".
code	1..1	Set to the respective case ID.
contained	1..1	
resourceType	1..1	Set to "Practitioner".
id	1..1	
name	1..1	Contains the human name.
status	1..1	Set to "final".
category	1..1	Code from the `codingScheme` specified under `category.system`
coding	1..1	
system	1..1	Set to "http://terminology.hl7.org/CodeSystem/observation-category".
code	1..1	Set to "exam".
code	1..1	
coding	1..1	
system	1..1	Set to "http://loinc.org".
code	1..1	Set to "70182-1".
encounter	1..1	The emergency case (see Section 4.1.2).
reference	1..1	
type	1..1	Set to "Encounter".
identifier	1..1	
system	1..1	Set to "http://sense/ssc/strokeCaseId".
value	1..1	Set to the respective case ID (see `meta.tag.code`).
subject	1..1	The patient.
reference	1..1	
type	1..1	Set to "Patient".
identifier	1..1	
system	1..1	Assigning authority of the source patient ID.
value	1..1	The source patient ID.
performer	1..1	"Practicioner" resource used in the "contained" element.
reference	1..1	
type	1..1	Set to "Practitioner".

Table 46: FHIR Elements for the Observation Resource NIHSS

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Table 46: FHIR Elements for the Observation Resource NIHSS

Name	Cardinality	Comment
note	0..1	
authorString	1..1	Contains the human name.
time	1..1	
text	1..1	Comment related to the NIHSS estimation.
method	1..1	
coding	1..1	
system	1..1	Set to “http://sense/ssc/quickScore”.
code	1..1	Set to “false” for NIHSS surveys and to “true” for NIHSS estimations.
component	1..1	
code	1..*	
coding	1..1	
system	1..1	Set to “http://loinc.org”.
code	1..1	Set to the LOINC code of the respective NIHSS items.
value[x]	1..1	Choice of different value types. Use “valueInteger” for the value of the NIHSS items and “valueDateTime” for the date and time of the observation.

Example 72: NIHSS Survey

```
{
  "resourceType": "Observation",
  "id": "29df5e71-6f89-478b-beee-21d28adf430a",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2025-11-18T15:00:50.520+00:00",
    "source": "<source_system_OID>",
    "profile": [
      "https://ehs.at/fhir/StructureDefinition/EhsObservation"
    ],
    "tag": [
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "<caseID>"
      }
    ]
  },
  "contained": [
    {
      "resourceType": "Practitioner",
      "id": "1",
      "name": [
        {
          "use": "nickname",
          "text": "<user_display_name>"
        }
      ]
    }
  ],
  "status": "final",
  "category": [
    {
      "coding": [
        {
          "system": "http://terminology.hl7.org/CodeSystem/observation-category",
          "code": "exam"
        }
      ]
    }
```

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```
  ],
  "code": {
    "coding": [
      {
        "system": "http://loinc.org",
        "code": "70182-1"
      }
    ]
  },
  "subject": {
    "extension": [
      {
        "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
        "valueIdentifier": {
          "system": "urn:oid:<patient_assigning_authority_OID>",
          "value": "<source_patient_ID>"
        }
      }
    ],
    "reference": "Patient/<resource_ID>",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:<patient_assigning_authority_OID>",
      "value": "<source_patient_ID>"
    }
  },
  "encounter": {
    "reference": "Encounter/<resource_ID>",
    "type": "Encounter",
    "identifier": {
      "system": "http://sense/ssc/strokeCaseId",
      "value": "<caseID>"
    }
  },
  "effectiveDateTime": "2025-11-18T15:00:50+00:00",
  "issued": "2025-11-18T15:00:50.438+00:00",
  "performer": [
    {
      "reference": "#1",
      "type": "Practitioner"
    }
  ],
  "method": {
    "coding": [
      {
        "system": "http://sense/ssc/quickScore",
        "code": "false"
      }
    ]
  },
  "component": [
    {
      "code": {
        "coding": [
          {
            "system": "http://loinc.org",
            "code": "65844-3"
          }
        ]
      },
      "valueDateTime": "2025-11-18T15:00:50+00:00"
    },
    {
      "code": {
        "coding": [
```

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```
        {
          "system": "http://loinc.org",
          "code": "70184-7"
        }
      ]
    },
    "valueInteger": 2
  },
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "70185-4"
        }
      ]
    },
    "valueInteger": 1
  },
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "70186-2"
        }
      ]
    },
    "valueInteger": 1
  },
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "70187-0"
        }
      ]
    },
    "valueInteger": 2
  },
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "70188-8"
        }
      ]
    },
    "valueInteger": 1
  },
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "70189-6"
        }
      ]
    },
    "valueInteger": 1
  },
  {
    "code": {
```

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```
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "70190-4"
        }
      ]
    },
    "valueInteger": 2
  },
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "70967-5"
        }
      ]
    },
    "valueInteger": 2
  },
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "70191-2"
        }
      ]
    },
    "valueInteger": 2
  },
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "70968-3"
        }
      ]
    },
    "valueInteger": 1
  },
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "70192-0"
        }
      ]
    },
    "valueInteger": 1
  },
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "70193-8"
        }
      ]
    },
    "valueInteger": 2
  },
  {
```

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```
      "code": {
        "coding": [
          {
            "system": "http://loinc.org",
            "code": "70194-6"
          }
        ]
      },
      "valueInteger": 1
    },
    {
      "code": {
        "coding": [
          {
            "system": "http://loinc.org",
            "code": "70195-3"
          }
        ]
      },
      "valueInteger": 2
    },
    {
      "code": {
        "coding": [
          {
            "system": "http://loinc.org",
            "code": "70196-1"
          }
        ]
      },
      "valueInteger": 2
    },
    {
      "code": {
        "coding": [
          {
            "system": "http://loinc.org",
            "code": "72089-6"
          }
        ]
      },
      "valueInteger": 0
    }
  ]
}
```

Example 73: NIHSS Estimation

```
{
  "resourceType": "Observation",
  "id": "1c6e3d6c-1fea-45f9-9559-fb65a2b0f24b",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2025-11-18T14:48:33.508+00:00",
    "source": "<source_system_OID>",
    "profile": [
      "https://ehs.at/fhir/StructureDefinition/EhsObservation"
    ],
    "tag": [
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "<caseID>"
      }
```

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```
  ]
},
"contained": [
  {
    "resourceType": "Practitioner",
    "id": "1",
    "name": [
      {
        "use": "nickname",
        "text": "<user_display_name>"
      }
    ]
  }
],
"status": "final",
"category": [
  {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/observation-category",
        "code": "exam"
      }
    ]
  }
],
"code": {
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "70182-1"
    }
  ]
},
"subject": {
  "extension": [
    {
      "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
      "valueIdentifier": {
        "system": "urn:oid:<patient_assigning_authority_OID>",
        "value": "<source_patient_ID>"
      }
    }
  ],
  "reference": "Patient/<resource_ID>",
  "type": "Patient",
  "identifier": {
    "system": "urn:oid:<patient_assigning_authority_OID>",
    "value": "<source_patient_ID>"
  }
},
"encounter": {
  "reference": "Encounter/<resource_ID>",
  "type": "Encounter",
  "identifier": {
    "system": "http://sense/ssc/strokeCaseId",
    "value": "<caseID>"
  }
},
"effectiveDateTime": "2025-11-18T14:48:33+00:00",
"issued": "2025-11-18T14:48:33.385+00:00",
"performer": [
  {
    "reference": "#1",
    "type": "Practitioner"
  }
```

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```
  ],
  "note": [
    {
      "authorString": "<user_display_name>",
      "time": "2025-11-18T14:48:33+00:00",
      "text": "I'm a NIHSS test estimation"
    }
  ],
  "method": {
    "coding": [
      {
        "system": "http://sense/ssc/quickScore",
        "code": "true"
      }
    ]
  },
  "component": [
    {
      "code": {
        "coding": [
          {
            "system": "http://loinc.org",
            "code": "65844-3"
          }
        ]
      },
      "valueDateTime": "2025-11-18T14:48:33+00:00"
    },
    {
      "code": {
        "coding": [
          {
            "system": "http://loinc.org",
            "code": "72089-6"
          }
        ]
      },
      "valueInteger": 15
    }
  ]
}
```

4.1.8 Next of Kin

Table 47 provides information on the relevant FHIR elements for the `Questionnaire` resource for the next of kin. Example 74 shows an example of a JSON structure and Example 75 its related questionnaire response. See Section 6 and the official FHIR documentation (Questionnaire resource) for additional information.

Table 47: FHIR Elements for the Questionnaire Resource Next of Kin

Name	Cardinality	Comment
resourceType	1..1	Set to “Questionnaire”.
language	1..1	Set to the desired primary language, default “en-US”.
url	1..1	Set to “https://ehs.at/fhir/Questionnaire/c68e42d2-86a2-4607-8858-49203871a3a5”.
status	1..1	Set to “active”.
item	1..*	
linkId	1..1	

Table 47: FHIR Elements for the Questionnaire Resource Next of Kin

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Table 47: FHIR Elements for the Questionnaire Resource Next of Kin

Name	Cardinality	Comment
text	1..1	String of the question.
_text	0..*	Extensions for the translation of the “text” element.
type	1..1	
answerOption	0..*	
display	1..1	String of the answer option.
_display	0..*	Extensions for the translation of the “display” element.

Example 74: Next of Kin

```
{
  "resourceType": "Questionnaire",
  "url": "https://ehs.at/fhir/Questionnaire/c68e42d2-86a2-4607-8858-49203871a3a5",
  "status": "active",
  "item": [
    {
      "linkId": "312947155476",
      "text": "First name",
      "type": "string",
      "required": true
    },
    {
      "linkId": "246080998330",
      "text": "Last name",
      "type": "string",
      "required": true
    },
    {
      "linkId": "252370437886",
      "text": "(Mobile) Phone number",
      "type": "string",
      "required": false
    },
    {
      "linkId": "918652488729",
      "text": "Relation to patient",
      "type": "string",
      "required": false
    }
  ]
}
```

Example 75: Questionnaire Response for Next of Kin

```
{
  "resourceType": "QuestionnaireResponse",
  "id": "84b8f1c3-566f-423e-8111-e1ab95664882",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2025-11-14T09:42:42.193+00:00",
    "source": "<source_system_OID>",
    "profile": [
      "https://ehs.at/fhir/StructureDefinition/EhsQuestionnaireResponse"
    ],
    "tag": [
      {
        "system": "http://sense/ssc/author",
        "code": "<user_display_name>"
```

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```
      },
      {
        "system": "http://sense/ssc/questionnaireType",
        "code": "NEXT_OF_KIN"
      },
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "<caseID>"
      }
    ]
  },
  "questionnaire": "https://ehs.at/fhir/Questionnaire/c68e42d2-86a2-4607-8858-49203871a3a5",
  "status": "completed",
  "subject": {
    "extension": [
      {
        "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
        "valueIdentifier": {
          "system": "urn:oid:<patient_assigning_authority_OID>",
          "value": "<source_patient_ID>"
        }
      }
    ],
    "reference": "Patient/<resource_ID>",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:<patient_assigning_authority_OID>",
      "value": "<source_patient_ID>"
    }
  },
  "authored": "2025-11-14T09:42:42+00:00",
  "item": [
    {
      "linkId": "312947155476",
      "text": "First name",
      "answer": [
        {
          "valueString": "Max"
        }
      ]
    },
    {
      "linkId": "246080998330",
      "text": "Last name",
      "answer": [
        {
          "valueString": "Mustermann"
        }
      ]
    },
    {
      "linkId": "252370437886",
      "text": "(Mobile) Phone number",
      "answer": [
        {
          "valueString": "123456789"
        }
      ]
    },
    {
      "linkId": "918652488729",
      "text": "Relation to patient",
      "answer": [
        {
          "valueString": "Parent"
```

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```
        }
      ]
    }
  ]
}
```

4.1.9 Onset Timer

Information about the onset time of a stroke is stored in a FHIR `Observation` resource. Table 48 provides information about the relevant FHIR elements. Example 76 shows an exemplary JSON structure.

Refer to the official FHIR documentation (Observation resource) for further details.

Table 48: FHIR Elements for the Observation Resource Onset Timer

Name	Cardinality	Comment
resourceType	1..1	Set to "Observation".
meta	1..1	
tag	1..1	
system	1..1	Set to "http://sense/ssc/strokeCaseId".
code	1..1	Set to the respective case ID.
status	1..1	Set to "final".
code	1..1	Code from the `codingScheme` specified under `system`
coding	1..1	
system	1..1	Set to "http://sense/ssc/timerType".
code	1..1	Set to "ONSET_KNOWN", "UNKNOWN", or "LAST_KNOWN_WELL".
encounter	1..1	The emergency case (see Section 4.1.2).
reference	1..1	
type	1..1	Set to "Encounter".
identifier	1..1	
system	1..1	Set to "http://sense/ssc/strokeCaseId".
value	1..1	Set to the respective case ID (see `meta.tag.code`).
subject	1..1	The patient.
reference	1..1	
type	1..1	Set to "Patient".
identifier	1..1	
system	1..1	Assigning authority of the source patient ID.
value	1..1	The source patient ID.
valueString	1..1	Enter a timestamp in the ISO 8601 format to start the stroke timer.

Example 76: Onset Timer

```
{
  "resourceType": "Observation",
  "id": "7f506dae-d9f6-4334-b94c-28c0e9fd8bb7",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2025-11-14T10:14:04.353+00:00",
    "source": "<source_system_OID>",
    "profile": [
      "https://ehs.at/fhir/StructureDefinition/EhsObservation"
    ],
    "tag": [
      {
        "system": "http://sense/ssc/strokeCaseId",
```

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```
        "code": "<caseID>"
      }
    ]
  },
  "status": "final",
  "code": {
    "coding": [
      {
        "system": "http://sense/ssc/timerType",
        "code": "ONSET_KNOWN"
      }
    ]
  },
  "subject": {
    "extension": [
      {
        "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
        "valueIdentifier": {
          "system": "urn:oid:<patient_assigning_authority_OID>",
          "value": "<source_patient_ID>"
        }
      }
    ],
    "reference": "Patient/<resource_ID>",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:<patient_assigning_authority_OID>",
      "value": "<source_patient_ID>"
    }
  },
  "encounter": {
    "reference": "Encounter/<resource_ID>",
    "type": "Encounter",
    "identifier": {
      "system": "http://sense/ssc/strokeCaseId",
      "value": "<caseID>"
    }
  },
  "effectiveDateTime": "2025-11-14T10:14:04+00:00",
  "issued": "2025-11-14T10:14:04.239+00:00",
  "valueString": "2025-11-14T09:13:00.087Z"
}
```


4.1.10 Order

Table 49 provides information on the relevant FHIR elements for the `ServiceRequest` resource for an order. Example 77 illustrates a sample JSON structure.

For further details, refer to the official FHIR documentation (ServiceRequest resource).

Table 49: FHIR Elements for the ServiceRequest Resource Order

Name	Cardinality	Comment
resourceType	1..1	Set to “ServiceRequest”.
meta	1..1	
tag	1..*	
system	1..1	Set to “http://sense/ssc/strokeCaseId”.
code	1..1	Set to the respective case ID.
contained	1..1	

Table 49: FHIR Elements for the ServiceRequest Resource Order

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Table 49: FHIR Elements for the ServiceRequest Resource Order

Name	Cardinality	Comment
resourceType	2..2	Set one to “Practitioner” and the other to “Location”.
id	1..1	
name	1..1	For contained.resourceType=“Practitioner”specify the human name.
identifier	1..1	Only necessary for contained.resourceType=“Location”
type	1..*	
coding	1..*	
system	1..1	Set to “http://terminology.hl7.org/CodeSystem/v2-0203”.
code	1..1	Set to “FI”
value	1..1	OID of requested MSU is stored with the location value.
status	1..1	Set to “unknown”.
intent	1..1	Set to “order”.
code	1..1	
coding	1..1	
system	1..1	Set to “http://sense/ssc”.
code	1..1	Set to “11111-1”.
orderDetails	1..1	
coding	1..1	
system	1..1	Set to “http://sense/ssc/acsn”.
code	1..1	Accession number for the study.
encounter	1..1	The emergency case (see Section 4.1.2).
reference	1..1	
type	1..1	Set to “Encounter”.
identifier	1..1	Only necessary for contained.resourceType=“Location”
system	1..1	Set to “http://sense/ssc/strokeCaseId”.
value	1..1	Set to the respective case ID (see `meta.tag.code`).
subject	1..1	The patient.
reference	1..1	
type	1..1	Set to “Patient”.
identifier	1..1	
system	1..1	Assigning authority of the source patient ID.
value	1..1	The source patient ID.
authoredOn	1..1	
requester	1..1	“Practicioner” resource used in the “contained” element.
reference	1..1	
type	1..1	Set to “Practitioner”.
locationReference	1..1	“Location” resource used in the “contained” element.
reference	1..1	
type	1..1	Set to “Location”.
note	0..*	
time	1..1	
text	1..1	

Example 77: Order

```
{
  "resourceType": "ServiceRequest",
  "id": "04d7ed32-819a-43db-87fd-3e5d098bb882",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2025-11-14T09:48:10.562+00:00",
```

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```
    "source": "<source_system_OID>",
    "profile": [
      "https://ehs.at/fhir/StructureDefinition/EhsServiceRequest"
    ],
    "tag": [
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "<caseID>"
      }
    ]
  },
  "contained": [
    {
      "resourceType": "Practitioner",
      "id": "1",
      "name": [
        {
          "use": "nickname",
          "text": "<user_display_name>"
        }
      ]
    },
    {
      "resourceType":"Location",
      "id":"2",
      "identifier":[
        {
          "type":{
            "coding":[
              {
                 "system":"http://terminology.hl7.org/CodeSystem/v2-0203",
                 "code":"FI"
              }
            ]
          },
          "value":"<MSU_OID>"
        }
      ]
    }
  ],
  "status": "unknown",
  "intent": "order",
  "code": {
    "coding": [
      {
        "system": "http://sense/ssc/",
        "code": "11111-1"
      }
    ]
  },
  "orderDetail": [
    {
      "coding": [
        {
          "system": "http://sense/ssc/acsn",
          "code": "1230000387160100"
        }
      ]
    }
  ],
  "subject": {
    "extension": [
      {
        "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
        "valueIdentifier": {
```

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```
          "system": "urn:oid:<patient_assigning_authority_OID>",
          "value": "<source_patient_ID>"
        }
      }
    ],
    "reference": "Patient/<resource_ID>",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:<patient_assigning_authority_OID>",
      "value": "<source_patient_ID>"
    }
  },
  "encounter": {
    "reference": "Encounter/<resource_ID>",
    "type": "Encounter",
    "identifier": {
      "system": "http://sense/ssc/strokeCaseId",
      "value": "<caseID>"
    }
  },
  "authoredOn": "2025-11-14T09:48:10+00:00",
  "requester": [
    {
      "reference": "#1",
      "type": "Practitioner"
    }
  "locationReference": [
    {
      "reference": "#2",
      "type": "Location"
    }
  ],
  "note": [
    {
      "time": "2025-11-14T09:48:10+00:00",
      "text": "TEST Order"
    },
    {
      "time": "2025-11-14T09:48:10+00:00",
      "text": "Discussed and confirmed with radiology department"
    }
  ]
}
```

4.1.11 Pre-Stroke Modified Rankin Scale (Pre-Stroke mRS)

Table 50 shows the relevant FHIR elements for the `Questionnaire` resource for the pre-stroke mRS. A sample JSON structure is shown in Example 78 and Example 79 shows its related questionnaire response.

See Section 6 and the official FHIR documentation (Questionnaire resource) for additional information.

Table 50: FHIR Elements for the Questionnaire Resource Pre-Stroke mRS

Name	Cardinality	Comment
resourceType	1..1	Set to “Questionnaire”.
language	1..1	Set to the desired primary language, default “en-US”.
url	1..1	Set to “https://ehs.at/fhir/Questionnaire/235aa1b6-b8c0-4ff4-bdba-169bbaa5d1bf”.
status	1..1	Set to “active”.
item	1..*	

Table 50: FHIR Elements for the Questionnaire Resource Pre-Stroke mRS

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Table 50: FHIR Elements for the Questionnaire Resource Pre-Stroke mRS

Name	Cardinality	Comment
extension	1..*	
url	1..1	Set to “http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl”.
valueCodeableConcept	1..1	
coding	1..*	
system	1..1	Set to “http://hl7.org/fhir/questionnaire-item-control”.
code	1..1	
display	1..1	
linkId	1..1	
text	1..1	String of the question.
_text	0..*	Extensions for the translation of the “text” element.
type	1..1	
answerOption	0..*	
display	1..1	String of the answer option.
_display	0..*	Extensions for the translation of the “display” element.

Example 78: Pre-Stroke mRS

```
{
  "resourceType": "Questionnaire",
  "url": "https://ehs.at/fhir/Questionnaire/235aa1b6-b8c0-4ff4-bdba-169bbaa5d1bf",
  "status": "active",
  "item": [
    {
      "extension": [
        {
          "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://hl7.org/fhir/questionnaire-item-control",
                "code": "radio-button",
                "display": "Radio Button"
              }
            ]
          }
        }
      ],
      "linkId": "30382797777773",
      "text": "Pre-Stroke mRS",
      "type": "choice",
      "required": true,
      "answerOption": [
        {
          "valueCoding": {
            "code": "0",
            "display": "0 - No symptoms."
          }
        },
        {
          "valueCoding": {
            "code": "1",
            "display": "1 - No significant disability: Able to carry out all usual duties
    and activities despite the symptoms."
          }
        },
        {
          "valueCoding": {
```

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```
            "code": "2",
            "display": "2 - Slight disability: Able to look after own affairs without
    assistance, but unable to carry out all previous activities."
          }
        },
        {
          "valueCoding": {
            "code": "3",
            "display": "3 - Moderate disability: Requires some external help, but able to
    walk without the assistance of another individual."
          }
        },
        {
          "valueCoding": {
            "code": "4",
            "display": "4 - Moderate to severe disability: Unable to attend to own bodily
    needs without assistance, and unable to walk unassisted."
          }
        },
        {
          "valueCoding": {
            "code": "5",
            "display": "5 - Severe disability: Requires constant nursing care and attention,
     bedridden, incontinent."
          }
        }
      ]
    }
  ]
}
```

Example 79: Questionnaire Response for Pre-Stroke mRS

```
{
  "resourceType": "QuestionnaireResponse",
  "id": "bb7a5fb0-10e5-48a2-aac2-7528f6b2c0c5",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2025-11-14T09:42:53.684+00:00",
    "source": "<source_system_OID>",
    "profile": [
      "https://ehs.at/fhir/StructureDefinition/EhsQuestionnaireResponse"
    ],
    "tag": [
      {
        "system": "http://sense/ssc/author",
        "code": "<user_display_name>"
      },
      {
        "system": "http://sense/ssc/questionnaireType",
        "code": "PRE_STROKE_MRS"
      },
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "<caseID>"
      }
    ]
  },
  "questionnaire": "https://ehs.at/fhir/Questionnaire/235aa1b6-b8c0-4ff4-bdba-169bbaa5d1bf",
  "status": "completed",
  "subject": {
    "extension": [
      {
```

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```
        "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
        "valueIdentifier": {
          "system": "urn:oid:<patient_assigning_authority_OID>",
          "value": "<source_patient_ID>"
        }
      }
    ],
    "reference": "Patient/<resource_ID>",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:<patient_assigning_authority_OID>",
      "value": "<source_patient_ID>"
    }
  },
  "authored": "2025-11-14T09:42:53+00:00",
  "item": [
    {
      "linkId": "30382797777773",
      "text": "Pre-Stroke mRS",
      "answer": [
        {
          "valueCoding": {
            "code": "2",
            "display": "2 - Slight disability: Able to look after own affairs without
    assistance, but unable to carry out all previous activities."
          }
        }
      ]
    }
  ]
}
```


4.1.12 Process Steps and Time Log

Different process steps of stroke treatment can be recorded with the FHIR `Task` resource. Table 51 details the relevant elements for the `Task` resource for a process step. Example 80 shows an example for the process step “Lysis Started”.

Refer to the official FHIR documentation (Task resource) for further details.

Table 51: FHIR Elements for the Task Resource Process Step

Name	Cardinality	Comment
resourceType	1..1	Set to “Task”.
meta	1..1	
tag	1..*	
system	1..1	Set to “http://sense/ssc/strokeCaseId”.
code	1..1	Set to the respective case ID.
status	1..1	Set to “completed”.
intent	1..1	Set to “plan”.
code	1..1	
coding	1..1	
system	1..1	Set to “http://sense/sscl”.
code	1..1	Set to “11111-2”.
description	1..1	Name of the process step.
executionPeriod	1..1	
end	1..1	Time stamp entered by the user for this process step.

Table 51: FHIR Elements for the Task Resource Process Step

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Table 51: FHIR Elements for the Task Resource Process Step

Name	Cardinality	Comment
encounter	1..1	The emergency case (see Section 4.1.2).
reference	1..1	
type	1..1	Set to "Encounter".
identifier	1..1	
system	1..1	Set to "http://sense/ssc/strokeCaseId".
value	1..1	Set to the respective case ID (see `meta.tag.code`).
authoredOn	1..1	

Example 80: Process Step Lysis Started

```
{
  "resourceType": "Task",
  "id": "0357f62e-ce1f-46dc-87be-c9b8f0908804",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2025-11-14T10:23:45.386+00:00",
    "source": "<source_system_OID>",
    "tag": [
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "<caseID>"
      }
    ]
  },
  "status": "completed",
  "intent": "plan",
  "code": {
    "coding": [
      {
        "system": "http://sense/ssc/",
        "code": "11111-2"
      }
    ]
  },
  "description": "arrivalAtHospital",
  "encounter": {
    "reference": "Encounter/<resource_ID>",
    "type": "Encounter",
    "identifier": {
      "system": "http://sense/ssc/strokeCaseId",
      "value": "<caseID>"
    }
  },
  "executionPeriod": {
    "end": "2025-11-14T10:23:40+00:00"
  },
  "authoredOn": "2025-11-14T10:23:45+00:00"
}
```

4.1.13 Type of Stroke, Affected Areas, and Laterality

Table 52 contains information on the relevant FHIR elements for the `DiagnosticReport` resource for the type, affected areas and laterality of a stroke. Example 81 provides a sample JSON structure.

For further details, refer to the official FHIR documentation (DiagnosticReport resource).

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Table 52: FHIR Elements for the DiagnosticReport Resource Type of Stroke including Affected Areas and Laterality

Name	Cardinality	Comment
resourceType	1..1	Set to "DiagnosticReport".
meta	1..1	
tag	1..*	
system	1..1	Set to "http://sense/ssc/strokeCaseId".
code	1..1	Set to the respective case ID.
contained	1..*	
resourceType	1..*	Set one to "Practitioner" and others to "Observation".
id	1..1	
name	1..1	Contains the human name for `contained.resourceType`="Practitioner".
status	1..1	Set to "final" for `contained.resourceType`="Observation".
code	1..1	For `contained.resourceType`="Observation".
coding	1..*	
system	1..1	Set to "http://snomed.info/sct".
code	1..1	SNOMED CT code for the affected area (see table Table 53).
display	0..1	Display text for the affected area.
bodySite	1..1	For `contained.resourceType`="Observation".
extension	0..*	
url	1..1	Set to "http://hl7.org/fhir/StructureDefinition/observation-structureLaterality".
valueCode-ableConcept	1..1	
coding	1..*	
system	1..1	Set to "http://snomed.info/sct".
code	1..1	SNOMED CT code for laterality (see table Table 54).
display	0..1	Display text for laterality.
coding	1..*	
system	1..1	Set to "http://snomed.info/sct".
code	1..1	SNOMED CT code for body site. (see table Table 53).
display	0..1	Display text for body site.
status	1..1	Set to "final".
code	1..1	
coding	1..1	
system	1..1	Set to "http://sense/ssc/".
code	1..1	Set to "11111-3".
encounter	1..1	The emergency case (see Section 4.1.2).
reference	1..1	
type	1..1	Set to "Encounter".
identifier	1..1	
system	1..1	Set to "http://sense/ssc/strokeCaseId".
value	1..1	Set to the respective case ID (see `meta.tag.code`).
subject	1..1	The patient.
extension	0..1	
url	1..1	Set to "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier".
valueIdentifier	1..1	
system	1..1	Assigning authority of the source patient ID.
value	1..1	The source patient ID.
reference	1..1	
type	1..1	Set to "Patient".

Table 52: FHIR Elements for the DiagnosticReport Resource Type of Stroke including Affected Areas and Laterality



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Table 52: FHIR Elements for the DiagnosticReport Resource Type of Stroke including Affected Areas and Laterality

Name	Cardinality	Comment
identifier	1..1	
system	1..1	Assigning authority of the source patient ID.
value	1..1	The source patient ID.
effectivePeriod	1..1	
start	1..1	Start timestamp.
issued	1..1	
performer	1..*	"Practicioner" resource used in the "contained" element.
reference	1..1	
type	1..1	Set to "Practitioner".
result	0..*	References to contained "Observation" resources.
reference	1..1	Reference to a contained "Observation" resource.
type	1..1	Set to "Observation".
conclusionCode	1..1	
coding	1..*	
system	1..1	Set to "http://snomed.info/sct".
code	1..1	SNOMED CT code or expression (see table Table 55).
display	0..1	Display text for the conclusion.

Table 53, Table 54, and Table 55 show the CT codes used in the `DiagnosticReport` resource for the type, affected areas and laterality of a stroke.

Table 53: SNOMED CT Codes for Affected Area

UI Label	Code
ICA	86117002
M1	414722000
M2	414723005
M3	772219006
M4	772221001
PCA	70382005
Basilar	59011009
ACA	60176003
Other	74964007

Table 54: SNOMED CT Codes for Laterality

UI Label	Code
Left	7771000
Right	24028007
Bilateral	51440002

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Table 55: SNOMED CT Codes for Diagnostic Report Conclusion

Display name	Code / Expression
Intracerebral hemorrhage	230661003
Intracranial hemorrhage	1386000
Transient Ischemic Attack	266257000
Stroke absent	243796009:{246090004=230690007,408729009=410593006}
Uncertain diagnosis	282292002
Ischemic stroke - LVO present	422504002:{47429007=20059004,408729009=410515003}
Ischemic stroke - LVO absent	422504002:{47429007=20059004,408729009=410516002}

Example 81: Type of Stroke with Affected Areas and Laterality


```
{
  "resourceType": "DiagnosticReport",
  "id": "c34f15c1-fe36-47e1-a38c-a3a4ae5e6b7a",
  "meta": {
    "versionId": "11",
    "lastUpdated": "2026-09-02T14:16:23.474+00:00",
    "source": "1.1.1.258939285410",
    "profile": [
      "https://ehs.at/fhir/StructureDefinition/EhsDiagnosticReport"
    ],
    "tag": [
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "49796"
      }
    ]
  },
  "contained": [
    {
      "resourceType": "Practitioner",
      "id": "1",
      "name": [
        {
          "use": "nickname",
          "text": "Support Administrator"
        }
        ]
        },
        {
        "resourceType": "Observation",
        "id": "2",
        "status": "final",
        "code": {
          "coding": [
            {
              "system": "http://snomed.info/sct",
              "code": "414722000",
              "display": "M1"
            }
          ]
        },
        "bodySite": {
          "extension": [
            {
              "url": "http://hl7.org/fhir/StructureDefinition/observation-
    structureLaterality",
              "valueCodeableConcept": {
                "coding": [
```


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```
                {
                  "system": "http://snomed.info/sct",
                  "code": "51440002",
                  "display": "Bilateral"
                }
              ]
            }
          }
        ],
        "coding": [
          {
            "system": "http://snomed.info/sct",
            "code": "414722000",
            "display": "M1"
          }
        ]
      }
      },
      {
      "resourceType": "Observation",
      "id": "3",
      "status": "final",
      "code": {
        "coding": [
          {
            "system": "http://snomed.info/sct",
            "code": "772221001",
            "display": "M4"
          }
        ]
      },
      "bodySite": {
        "extension": [
          {
            "url": "http://hl7.org/fhir/StructureDefinition/observation-
  structureLaterality",
            "valueCodeableConcept": {
              "coding": [
                {
                  "system": "http://snomed.info/sct",
                  "code": "51440002",
                  "display": "Bilateral"
                }
              ]
            }
          }
        ],
        "coding": [
          {
            "system": "http://snomed.info/sct",
            "code": "772221001",
            "display": "M4"
          }
        ]
      }
      },
      {
      "resourceType": "Observation",
      "id": "4",
      "status": "final",
      "code": {
        "coding": [
          {
            "system": "http://snomed.info/sct",
            "code": "60176003",
```


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```
            "display": "ACA"
          }
        ]
      },
      "bodySite": {
      "extension": [
        {
          "url": "http://hl7.org/fhir/StructureDefinition/observation-structureLaterality
  ",
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://snomed.info/sct",
                "code": "51440002",
                "display": "Bilateral"
              }
            ]
          }
        }
      ],
      "coding": [
        {
          "system": "http://snomed.info/sct",
          "code": "60176003",
          "display": "ACA"
        }
      ]
    }
  }
],
"status": "final",
"code": {
  "coding": [
    {
      "system": "http://sense/ssc/",
      "code": "11111-3"
    }
  ]
},
"subject": {
  "extension": [
    {
      "url": "https://ehs.at/fhir/StructureDefinition/EhsSourcePatientIdentifier",
      "valueIdentifier": {
        "system": "urn:oid:1.1.1.258939285410",
        "value": "7aaeb287-3db1-4694-891f-93463eaaba07"
      }
    }
  ],
  "reference": "Patient/23afe76f-688e-4886-af92-018850eb9cbb",
  "type": "Patient",
  "identifier": {
    "system": "urn:oid:1.1.1.258939285410",
    "value": "7aaeb287-3db1-4694-891f-93463eaaba07"
  }
},
"encounter": {
  "reference": "Encounter/b6490bfa-10a0-4ff4-ac1a-1e414d3aabab",
  "type": "Encounter",
  "identifier": {
    "system": "http://sense/ssc/strokeCaseId",
    "value": "49796"
  }
},
"effectivePeriod": {
```


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```
    "start": "2026-09-02T16:16:23+02:00"
  },
  "issued": "2026-09-02T15:12:28.303+02:00",
  "performer": [
    {
      "reference": "#1",
      "type": "Practitioner"
    }
  ],
  "result": [
    {
      "reference": "#2",
      "type": "Observation"
    },
    {
      "reference": "#3",
      "type": "Observation"
    },
    {
      "reference": "#4",
      "type": "Observation"
    }
  ],
  "conclusionCode": [
    {
      "coding": [
        {
          "system": "http://snomed.info/sct",
          "code": "422504002:{47429007=20059004,408729009=410515003}",
          "display": "Ischemic stroke - LVO present"
        }
      ]
    }
  ]
}
```


4.1.14 Vital Signs

Table 56 provides information on the relevant FHIR elements for the `Observation` resource for vital signs. Example 82 and Example 83 show sample JSON structures.

Refer to the official FHIR documentation (Observation resource) for further details.

Table 56: FHIR Elements for the Observation Resource Vital Signs

Name	Cardinality	Comment
resourceType	1..1	Set to “Observation”.
meta	1..1	
tag	1..*	
system	1..1	Set to “http://sense/ssc/strokeCaseId”.
code	1..1	Set to the respective case ID.
status	1..1	Set to “final”.
category	1..1	Code from the `codingScheme` specified under `category.system`
coding	1..1	
system	1..1	Set to “http://terminology.hl7.org/CodeSystem/observation-category”.
code	1..1	Set to “vital-signs”.
code	1..1	
coding	1..1	

Table 56: FHIR Elements for the Observation Resource Vital Signs

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Table 56: FHIR Elements for the Observation Resource Vital Signs

Name	Cardinality	Comment
system	1..1	Set to "http://loinc.org".
code	1..1	Use the respective LOINC code.
value[x]	0..1	Choice of different types, depending on the FHIR Vital Signs Profiles.
component	0..1	Is needed for systolic and diastolic component observations for blood pressure measurements.
code	1..*	
coding	1..1	
system	1..1	Set to "http://loinc.org".
code	1..1	Use the respective LOINC code. The following are supported: › Vital Signs Panel (85353-1) › Heart rate (8867-4) › Oxygen saturation (2708-6) › Body temperature (8310-5) › Blood pressure arterial systolic and diastolic (85354-9) › Systolic arterial blood pressure (8480-6) › Diastolic arterial blood pressure (8462-4) › INR in Blood by Coagulation assay (34714-6) › Glucose [Moles/volume] in Blood (15074-8) For further details see the official available FHIR vital signs and the official website of LOINC.
encounter	1..1	The emergency case (see Section 4.1.2).
reference	1..1	
type	1..1	Set to "Encounter".
identifier	1..1	
system	1..1	Set to "http://sense/ssc/strokeCaseId".
value	1..1	Set to the respective case ID (see `meta.tag.code`).
subject	1..1	The patient.
reference	1..1	
type	1..1	Set to "Patient".
identifier	1..1	
system	1..1	Assigning authority of the source patient ID.
value	1..1	The source patient ID.
valueQuantity	1..*	

Example 82: Vital Sign Oxygen Saturation

```
{
  "resourceType": "Observation",
  "id": "50f74f59-83cf-4587-803b-6d6415998728",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2024-09-30T09:17:27.737+00:00",
    "source": "<source_system_OID>",
    "profile": [
      "http://hl7.org/fhir/StructureDefinition/vitalsigns"
    ],
    "tag": [
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "<caseID>"
      }
    ]
  },
  "status": "final",
  "category": [
```

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```
    {
      "coding": [
        {
          "system": "http://terminology.hl7.org/CodeSystem/observation-category",
          "code": "vital-signs"
        }
      ]
    }
  ],
  "code": {
    "coding": [
      {
        "system": "http://loinc.org",
        "code": "2708-6"
      }
    ]
  },
  "encounter": {
    "reference": "Encounter/<resource_ID>",
    "type": "Encounter",
    "identifier": {
      "system": "http://sense/ssc/strokeCaseId",
      "value": "<caseID>"
    }
  },
  "subject": {
    "reference": "Patient/<resource_ID>",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:<patient_assigning_authority_OID>",
      "value": "<source_patient_ID>"
    }
  },
  "effectiveDateTime": "2024-09-30T09:17:27+00:00",
  "issued": "2024-09-30T09:17:27.523+00:00",
  "valueQuantity": {
    "value": 95.0,
    "unit": "%",
    "system": "http://unitsofmeasure.org",
    "code": "%"
  }
}
```

Example 83: Vital Sign Blood Pressure

```
{
  "resourceType": "Observation",
  "id": "92e73ef2-599a-4b81-8cc7-104c60fce72b",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2024-09-30T09:17:27.737+00:00",
    "source": "<source_system_OID>",
    "profile": [
      "http://hl7.org/fhir/StructureDefinition/vitalsigns"
    ],
    "tag": [
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "<caseID>"
      }
    ]
  },
  "status": "final",
```

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```
"category": [
  {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/observation-category",
        "code": "vital-signs"
      }
    ]
  }
],
"code": {
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "85354-9"
    }
  ]
},
"encounter": {
  "reference": "Encounter/<resource_ID>",
  "type": "Encounter",
  "identifier": {
    "system": "http://sense/ssc/strokeCaseId",
    "value": "<caseID>"
  }
},
"subject": {
  "reference": "Patient/<resource_ID>",
  "type": "Patient",
  "identifier": {
    "system": "urn:oid:<patient_assigning_authority_OID>",
    "value": "<source_patient_ID>"
  }
},
"effectiveDateTime": "2024-09-30T09:17:27+00:00",
"issued": "2024-09-30T09:17:27.522+00:00",
"component": [
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "8480-6"
        }
      ]
    },
    "valueQuantity": {
      "value": 120,
      "unit": "mmHg",
      "system": "http://unitsofmeasure.org",
      "code": "mm[Hg]"
    }
  },
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "8462-4"
        }
      ]
    },
    "valueQuantity": {
      "value": 50,
      "unit": "mmHg",
```

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```
        "system": "http://unitsofmeasure.org",
        "code": "mm[Hg]"
      }
    }
  ]
}
```

4.1.14.1 Vital Signs Panel

In a vital signs panel, different observations can be grouped. Table 57 shows the relevant elements for a vital sign panel and Example 84 provides an example.

Refer to the official FHIR documentation (Observation resource) for further details.

Table 57: FHIR Elements for the Observation Resource Vital Signs Panel

Name	Cardinality	Comment
resourceType	1..1	Set to "Observation".
meta	1..1	
tag	1..*	
system	1..1	Set to "http://sense/ssc/strokeCaseId".
code	1..1	Set to the respective case ID.
status	1..1	Set to "final".
category	1..1	Code from the `codingScheme` specified under `category.system`
coding	1..1	
system	1..1	Set to "http://terminology.hl7.org/CodeSystem/observation-category".
code	1..1	Set to "vital-signs".
code	1..1	
coding	1..1	
system	1..1	Set to "http://loinc.org".
code	1..1	Use the LOINC code "85353-1".
encounter	1..1	The emergency case (see Section 4.1.2).
reference	1..1	
type	1..1	Set to "Encounter".
identifier	1..1	
system	1..1	Set to "http://sense/ssc/strokeCaseId".
value	1..1	Set to the respective case ID (see `meta.tag.code`).
subject	1..1	The patient.
reference	1..1	
type	1..1	Set to "Patient".
identifier	1..1	
system	1..1	Assigning authority of the source patient ID.
value	1..1	The source patient ID.
hasMember	1..1	
reference	1..*	
type	1..*	Set to "Observation".

Example 84: Vital Signs Panel

```
{
  "resourceType": "Observation",
  "id": "7924a509-f604-4f07-a315-d6c10dfe9fcc",
  "meta": {
```

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```
    "versionId": "1",
    "lastUpdated": "2024-10-14T09:01:38.325+00:00",
    "source": "<source_system_OID>",
    "profile": [
      "http://hl7.org/fhir/StructureDefinition/vitalsigns"
    ],
    "tag": [
      {
        "system": "http://sense/ssc/strokeCaseId",
        "code": "<caseID>"
      }
    ]
  },
  "status": "final",
  "category": [
    {
      "coding": [
        {
          "system": "http://terminology.hl7.org/CodeSystem/observation-category",
          "code": "vital-signs"
        }
      ]
    }
  ],
  "code": {
    "coding": [
      {
        "system": "http://loinc.org",
        "code": "85353-1"
      }
    ]
  },
  "encounter": {
    "reference": "Encounter/<resource_ID>",
    "type": "Encounter",
    "identifier": {
      "system": "http://sense/ssc/strokeCaseId",
      "value": "<caseID>"
    }
  },
  "subject": {
    "reference": "Patient/<resource_ID>",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:<patient_assigning_authority_OID>",
      "value": "<source_patient_ID>"
    }
  },
  "effectiveDateTime": "2024-10-14T09:01:37+00:00",
  "issued": "2024-10-14T09:01:37.690+00:00",
  "hasMember": [
    {
      "reference": "Observation/<resource_ID>",
      "type": "Observation"
    },
    {
      "reference": "Observation/<resource_ID>",
      "type": "Observation"
    },
    {
      "reference": "Observation/<resource_ID>",
      "type": "Observation"
    },
    {
      "reference": "Observation/<resource_ID>",
```

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```
      "type": "Observation"
    },
    {
      "reference": "Observation/<resource_ID>",
      "type": "Observation"
    },
    {
      "reference": "Observation/<resource_ID>",
      "type": "Observation"
    }
  ]
}
```

4.2 HL7v2

4.2.1 Order Imaging

The Emergency Case Service enables CT imaging orders for stroke cases at a Mobile Stroke Unit (MSU). Table 58 shows the relevant HL7v2 message segments and Example 85 provides an example order.

Message Header
: The HL7 MSH segment is present in all HL7v2 message types and defines the message's source, purpose, destination, and certain syntax specifics like delimiters (separator characters) and character sets.

PID Segment
: The PID segment contains the relevant patient data.

ORC Segment
: The ORC segment includes the order details. It can be present multiple times as each occurrence represents one single finding.

OBR Segment
: The OBR segment contains information on the examination context.

Table 58: ORM Message Segments Overview

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ORM**.
MSH-9-2	The trigger event must be **O01**.
PID	Patient Information
ORC	Common Order
ORC-1	The Order Control must be **NW**, **SC** or **CA**.
ORC-2-1	Placer Order Number (same value as for ORC-3-1)
ORC-3-1	Filler Order Number (same value as for ORC-2-1)
ORC-5	The Order Status must be **SC**, **CM** or **CA**.
OBR	Observation Request
OBR-4-2	Universal Service Identifier must be **MSU CT**.
OBR-24	Diagnostic Service Section ID.
OBR-36	Scheduled Date/Time

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Example 85: Imaging Order

```
MSH|^~\&|||||20260209120548.735+0100||ORM^O01^ORM_O01|1225f740-ecd5-41f5-80e0-9582cb90c1b0|P
    |2.6||||||UNICODE UTF-8
PID|||123^^^&1.1.1&ISO||familyName^givenName||20000101|F
ORC|NW|123|123||SC|||||||^userName^lastName
OBR||||MSU CT||||||||||||||||||||AET||||||||||||20260209110548.8772+0000
```

The 16-digit placer/filler order number is created by the *Emergency Case Service* is used by the *DICOM Proxy* to generate the accession number for DICOM images. For example, the filler order number `123 0 00000002 01 00` consists of:

`123`
: The configurable `StrokeNetworkID`.

`000000002`
: The 9-digit `CaseID` of a stroke case.

`01`
: The total number of images ordered for this case.

`00`
: Padding for 16 chars SH (Short String) limit of DICOM tag.

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5 Encounter Administration

These messages are used to create encounters/visits for a Patient. Visits can be uniquely identified by using a composite of the Visit ID and the Assigning Authority ID. Therefore, it is strongly recommended that the Assigning Authority is provided in HL7v2 messages. This is already the required standard for HL7v3.

HL7v2

The PV1-19 field should contain both an ID number (PV1-19.1) and an Assigning Authority (PV1-19.4). If a value is present in this field, the patient visit notification will be processed by the `MPI` after the patient has been created/updated. The patient class (PV1-2) determines whether the visit refers to an inpatient or outpatient visit. If no patient class is provided, the trigger event determines the patient visit type: A01 for an inpatient visit, A04 for an outpatient visit.



Note

If the Assigning Authority is not supplied in PV1-19, the value supplied by PV1-3-4 (Patient Location – Facility) is used as a fallback. Note that this behavior is not covered in the HL7 Standard.

HL7v3

All visit-related inbound messages for HL7v3 must contain an Assigning Authority ID under:

`controlActProcess.subject.encounterEvent.id.item`

Currently, the following encounter operations are supported in eHealth Solutions:

Detailed descriptions are given in the sections below.

The processing of the following HL7 fields/segments concerning encounter properties can be en- or disabled by configuration:

Table 59: Available HL7 Fields/Segments Concerning Encounter Properties

HL7 fields/segments	HL7v2	HL7v3
the attending and referring doctor	PV1-7 and PV1-8 fields	-
the patient account number	PID-18 field	-
the special arrangements for patients	PV-15 field	-
the historic movement information	ZBE segment	-

5.1 Admit Inpatient

This transaction is used to notify the **MPI** about an inpatient visit.

5.1.1 Admit Inpatient – HL7v2

- **ADT A01** – Admit/visit notification
- **ADT A04** – Register a patient

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5.1.1.1 Message Structure

This section provides an overview and description of the message structure of the Admit Inpatient transaction.

Table 60: Segments: Admit Inpatient

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A01** or **A04**
EVN	Event Information
IN1	Patient Insurance Information **(optional)**
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **INSERT**
ZBE-5	The movement indicator must be **N**

MSH Segment

The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment

The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment

The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment

The PID segment contains the relevant patient data.

PV1 Segment

The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment

The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.1.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 4. These are the relevant fields of the other segments:

EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

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EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-3

Assigned Patient Location: The facility that processes the patient visit. The `MPI` only processes PV1-3.4 (Facility) and requires this component to be present.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-44

Admit Date/Time: The start date/time of the patient visit.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

Table 61: Fields relevant for the Begin Inpatient Visit Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required

Table 61: Fields relevant for the Begin Inpatient Visit Transaction

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Table 61: Fields relevant for the Begin Inpatient Visit Transaction

HL7-Path	Name	Repeatable	Presence
PV1-3	Assigned Patient Location	No	Optional
PV1-19	Visit Number	No	Recommended
PV1-44	Admit Date/Time	No	Required
PV1-51	Visit Indicator	No	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 86:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306154052.781+0100||ADT^A01^ADT_A01|53b4e866-14b6-4cc5-995c-aaa
    0743d3dd2|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306154052.781+0100|||userId9277^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974&ISO^L^^^EN|20180306154052.697+0100
PID|||patientId3225^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234582296^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980306|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount8753^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||N||GB||||N
PV1||I|^^^Radiology&1.2.123.27.1974.187.15&ISO||||doctor9396^FamilyName^GivenName^^^^^^
    Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|doctor7763^FamilyName^
    GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|||||||A0||||
    visitId6965^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||20180306154052.697+0100
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313135112.535+0100||ADT^A01^ADT_A01|f943bb65-c45e-4ba5-a239-976e
    2213f4bd|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313135112.535+0100|||userId0103^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313135112.523+0100
PID|||patientId9777^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234586142^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980313|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount1946^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||N||GB||||N
PV1||I|^^^Radiology&1.2.123.27.1974.187.15&ISO||||doctor2884^FamilyName^GivenName^^^^^^
    Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|doctor4412^FamilyName^
    GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|||||||A0||||
    visitId8498^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||20180313135112.523+0100|||||||V
ZBE|visitEvent3471^My Local Clinic^1.2.123.27.1974^ISO|20180313135112.523+0100||INSERT|N
```

Response:

```
MSH|^~\&|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|201505051501||ACK
    ^A01|124|P|2.3.1
MSA|AA|123
```

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5.1.2 Admit Inpatient – HL7v3

5.1.2.1 Message Structure

Example 87: HL7v3 Begin Inpatient Visit Root Element

interactionId's extension field: `PRPA_IN400001UV01`

```
<hl7:PRPA_IN400001UV01 ITSVersion="XML_1.0" xmlns:hl7="urn:hl7-org:v3" xmlns:xsi="http://www
    .w3.org/2001/XMLSchema-instance">
  INSERT MESSAGE HEADER
  INSERT PAYLOAD
</hl7:PRPA_IN400001UV01>
```

5.1.2.2 Inbound Message Structure

The following elements are required in this specific order:

1. controlActProcess
2. controlActProcess.code
3. controlActProcess.subject
4. controlActProcess.subject.encounterEvent
5. controlActProcess.subject.encounterEvent.id
6. controlActProcess.subject.encounterEvent.id.item
7. controlActProcess.subject.encounterEvent.code
8. controlActProcess.subject.encounterEvent.statusCode
9. controlActProcess.subject.encounterEvent.effectiveTime
10. controlActProcess.subject.encounterEvent.effectiveTime.low
11. controlActProcess.subject.encounterEvent.subject
12. controlActProcess.subject.encounterEvent.subject.patient
13. controlActProcess.subject.encounterEvent.subject.patient.id
14. controlActProcess.subject.encounterEvent.subject.patient.id.item
15. controlActProcess.subject.encounterEvent.subject.patient.patientPerson.name
16. controlActProcess.subject.encounterEvent.responsibleParty
17. controlActProcess.subject.encounterEvent.responsibleParty.time
18. controlActProcess.subject.encounterEvent.responsibleParty.time.low
19. controlActProcess.subject.encounterEvent.responsibleParty.id
20. controlActProcess.subject.encounterEvent.responsibleParty.assignedOrganization
21. controlActProcess.subject.encounterEvent.admitter
22. controlActProcess.subject.encounterEvent.admitter.time
23. controlActProcess.subject.encounterEvent.admitter.assignedPerson
24. controlActProcess.subject.encounterEvent.admitter.assignedPerson.name
25. controlActProcess.subject.encounterEvent.admitter.assignedPerson.name.item
26. controlActProcess.subject.encounterEvent.admitter.assignedPerson.name.item.part

Example 88: HL7v3 Begin In-Patient Visit Payload

The "IMP" in `encounterEvent.code` refers to stationary patients (in-patients).

```
<hl7:controlActProcess classCode="CACT" moodCode="EVN">
  <hl7:code code="PRPA_TE400001UV01" />
  <hl7:subject typeCode="SUBJ">
    <hl7:encounterEvent>
      <hl7:id>
        <hl7:item root="1.6.7.8.9.0" extension="12345678" />
      </hl7:id>
      <hl7:code code="IMP" />
      <hl7:statusCode code="active" />
      <hl7:effectiveTime>
        <hl7:low value="20141125155917" />
      </hl7:effectiveTime>
```

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```
      <hl7:subject>
        <hl7:patient classCode="PAT">
          <hl7:id>
            <hl7:item root="1.1.1.1.1" extension="23018887746236" />
          </hl7:id>
          <hl7:patientPerson classCode="PSN" determinerCode="INSTANCE">
            <hl7:name></hl7:name>
          </hl7:patientPerson>
        </hl7:patient>
      </hl7:subject>
      <hl7:responsibleParty>
        <hl7:time>
          <hl7:low value="20141125155917" />
        </hl7:time>
        <hl7:id root="1.6.7.8.9.0" />
        <hl7:assignedOrganization classCode="ASSIGNED" />
      </hl7:responsibleParty>
      <hl7:admitter>
        <hl7:time></hl7:time>
        <hl7:assignedPerson classCode="ASSIGNED">
          <hl7:assignedPerson classCode="PSN" determinerCode="INSTANCE">
            <hl7:name>
              <hl7:item>
                <hl7:part type="FAM" value="Admitter" />
                <hl7:part type="GIV" value="Alan" />
              </hl7:item>
            </hl7:name>
          </hl7:assignedPerson>
        </hl7:assignedPerson>
      </hl7:admitter>
    </hl7:encounterEvent>
  </hl7:subject>
</hl7:controlActProcess>
```

5.1.2.3 Outbound Message Structure

See Section 1.2.2.

5.2 Register Outpatient

This transaction is used to notify the **MPI** about an outpatient visit.

5.2.1 Register Outpatient – HL7v2

- **ADT A01** – Admit/visit notification
- **ADT A04** – Register a patient

5.2.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Register Outpatient.

Table 62: Begin Outpatient Visit Segments

Segment	Description
MSH	Message Header

Table 62: Begin Outpatient Visit Segments

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Table 62: Begin Outpatient Visit Segments

Segment	Description
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A01** or **A04**
EVN	Event Information
IN1	Patient Insurance Information **(optional)**
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **INSERT**
ZBE-5	The movement indicator must be **N**

MSH Segment

The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment

The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment

The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment

The PID segment contains the relevant patient data.

PV1 Segment

The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment

The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.2.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 4. These are the relevant fields of the other segments:

EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

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EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-3

Assigned Patient Location: The facility that processes the patient visit. The `MPI` only processes PV1-3.4 (Facility) and requires this component to be present.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-44

Admit Date/Time: The start date/time of the patient visit.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

Table 63: Fields relevant for the Begin Outpatient Visit Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-3	Assigned Patient Location	No	Optional
PV1-19	Visit Number	No	Recommended
PV1-44	Admit Date/Time	No	Required
ZBE-1	Movement ID	No	Required for Historic Movement Management
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management

Table 63: Fields relevant for the Begin Outpatient Visit Transaction

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Table 63: Fields relevant for the Begin Outpatient Visit Transaction

HL7-Path	Name	Repeatable	Presence
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 89:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306155002.309+0100||ADT^A04^ADT_A01|a9263d4d-b333-4195-8e19-f4713
    beb9852|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306155002.309+0100|||userId7015^Warren^Karen^^^^^^My Local Clinic&1.2.123.27.1974&
    ISO^L^^^EN|20180306154947.185+0100
PID|||patientId9079^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234587990^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980306|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount0572^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||Y|2|GB||||N
PV1||O|^^^Radiology&1.2.123.27.1974.187.15&ISO||||doctor5475^FamilyName^GivenName^^^^^^
    Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|doctor7834^FamilyName^
    GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|||||||A0||||
    visitId2885^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||20180306154947.185+0100
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313135304.181+0100||ADT^A04^ADT_A01|bd990e55-4f91-4129-8e5a-bb
    58896ebb1b|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313135304.181+0100|||userId5361^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313135304.055+0100
PID|||patientId5255^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234580079^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980313|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount3531^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||Y|2|GB||||N
PV1||O|^^^Radiology&1.2.123.27.1974.187.15&ISO||||doctor4392^FamilyName^GivenName^^^^^^
    Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|doctor2948^FamilyName^
    GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|||||||A0||||
    visitId8471^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||20180313135304.055+0100|||||||V
ZBE|visitEvent6753^My Local Clinic^1.2.123.27.1974^ISO|20180313135304.055+0100||INSERT|N
```

Response

```
MSH|^~\&|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|201505051501||ACK
    ^A04|126|P|2.3.1
MSA|AA|125
```

5.2.2 Register Outpatient – HL7v3

Example 90: HL7v3 Begin Outpatient Visit Root Element

interactionId's extension field: PRPA_IN400001UV01

```
<hl7:PRPA_IN400001UV01 ITSVersion="XML_1.0" xmlns:hl7="urn:hl7-org:v3" xmlns:xsi="http://www
    .w3.org/2001/XMLSchema-instance">
  INSERT MESSAGE HEADER
  INSERT PAYLOAD
</hl7:PRPA_IN400001UV01>
```

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5.2.2.1 Inbound Message Structure

The following elements are required in this specific order:

1. controlActProcess
2. controlActProcess.code
3. controlActProcess.subject
4. controlActProcess.subject.encounterEvent
5. controlActProcess.subject.encounterEvent.id
6. controlActProcess.subject.encounterEvent.id.item
7. controlActProcess.subject.encounterEvent.code
8. controlActProcess.subject.encounterEvent.statusCode
9. controlActProcess.subject.encounterEvent.effectiveTime
10. controlActProcess.subject.encounterEvent.effectiveTime.low
11. controlActProcess.subject.encounterEvent.subject
12. controlActProcess.subject.encounterEvent.subject.patient
13. controlActProcess.subject.encounterEvent.subject.patient.id
14. controlActProcess.subject.encounterEvent.subject.patient.id.item
15. controlActProcess.subject.encounterEvent.subject.patient.patientPerson.name
16. controlActProcess.subject.encounterEvent.responsibleParty
17. controlActProcess.subject.encounterEvent.responsibleParty.time
18. controlActProcess.subject.encounterEvent.responsibleParty.time.low
19. controlActProcess.subject.encounterEvent.responsibleParty.id
20. controlActProcess.subject.encounterEvent.responsibleParty.assignedOrganization
21. controlActProcess.subject.encounterEvent.admitter
22. controlActProcess.subject.encounterEvent.admitter.time
23. controlActProcess.subject.encounterEvent.admitter.assignedPerson
24. controlActProcess.subject.encounterEvent.admitter.assignedPerson.name
25. controlActProcess.subject.encounterEvent.admitter.assignedPerson.name.item
26. controlActProcess.subject.encounterEvent.admitter.assignedPerson.name.item.part

Example 91: HL7v3 Begin Outpatient Visit Payload

Change the `encounterEvent.code` to “AMB” for ambulant patients (out-patients). “EMER”, which stands for emergency admission, may also be used for ambulant patients (out-patients).

See Section 5.1.2 Admit Inpatient – HL7v3.

5.2.2.2 Outbound Message Structure

See Section 1.2.2.

5.3 Discharge Patient

This transaction is used to notify the **MPI** about the end of a patient visit (both inpatient and outpatient).

5.3.1 Discharge Patient – HL7v2

› **ADT A03** – Discharge/end visit



Note

The ADT A03 message can be used to end patient visits for both inpatients and outpatients.

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5.3.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Discharge Patient.

Table 64: End Patient Visit Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A03**
EVN	Event Information
IN1	Patient Insurance Information **(optional)**
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **INSERT**
ZBE-5	The movement indicator must be **N**

MSH Segment

The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment

The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment

The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment

The PID segment contains the relevant patient data.

PV1 Segment

The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment

The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.3.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 4. These are the relevant fields of the other segments:

EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

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EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-45

Discharge Date/Time: The end date/time of the patient visit.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

Table 65: Fields relevant for the End Patient Visit Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-19	Visit Number	No	Recommended
PV1-45	Discharge Date/Time	No	Required
PV1-51	Visit Indicator	No	Optional

Table 65: Fields relevant for the End Patient Visit Transaction

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Table 65: Fields relevant for the End Patient Visit Transaction

HL7-Path	Name	Repeatable	Presence
ZBE-1	Movement ID	No	Required for Historic Movement Management
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 92:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306173133.042+0100||ADT^A03^ADT_A03|9811c620-59b1-4fc1-b90f-fdd02
    d535a7e|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306173133.042+0100|||userId9480^Warren^Karen^^^^^^My Local Clinic&1.2.123.27.1974&
    ISO^L^^^EN|20180306173132.949+0100
PID|||patientId4193^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234584816^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980306|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount1232^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||N||GB||||N
PV1||I|^^^Radiology&1.2.123.27.1974.187.15&ISO||||doctor2851^FamilyName^GivenName^^^^^^
    Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|doctor8830^FamilyName^
    GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|||||||A0||||
    visitId4087^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||||20180306173132.949+0100
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313140434.906+0100||ADT^A03^ADT_A03|90a0924d-c3c2-4997-93e2-f5c8
    dc85baae|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313140434.906+0100|||userId8867^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313140434.88+0100
PID|||patientId3096^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234587663^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980313|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount4723^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||Y|2|GB||||N
PV1||I|^^^Radiology&1.2.123.27.1974.187.15&ISO||||doctor4072^FamilyName^GivenName^^^^^^
    Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|doctor6530^FamilyName^
    GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|||||||A0||||
    visitId2318^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||||20180313140434.88+0100||||||V
ZBE|visitEvent7923^My Local Clinic^1.2.123.27.1974^ISO|20180313140434.880+0100||INSERT|N
```

Response

```
MSH|^~\&|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|201505051501||ACK
    ^A03|128|P|2.3.1
MSA|AA|127
```

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5.3.2 Discharge Patient – HL7v3

Example 93: HL7v3 End Patient Visit Root Element

interactionId's extension field: PRPA_IN400003UV01

```
<hl7:PRPA_IN400003UV01 ITSVersion="XML_1.0" xmlns:hl7="urn:hl7-org:v3" xmlns:xsi="http://www
    .w3.org/2001/XMLSchema-instance">
  INSERT MESSAGE HEADER
  INSERT PAYLOAD
</hl7:PRPA_IN400003UV01>
```

5.3.2.1 Inbound Message Structure

The following elements are required in this specific order:

1. controlActProcess
2. controlActProcess.classcode
3. controlActProcess.moodCode
4. controlActProcess.moodCode.code
5. controlActProcess.moodCode.subject
6. controlActProcess.moodCode.subject.encounterEvent
7. controlActProcess.moodCode.subject.encounterEvent.id
8. controlActProcess.moodCode.subject.encounterEvent.id.item
9. controlActProcess.moodCode.subject.encounterEvent.code
10. controlActProcess.moodCode.subject.encounterEvent.statusCode
11. controlActProcess.moodCode.subject.encounterEvent.effectiveTime
12. controlActProcess.moodCode.subject.encounterEvent.effectiveTime.high
13. controlActProcess.moodCode.subject.encounterEvent.subject
14. controlActProcess.moodCode.subject.encounterEvent.subject.patient
15. controlActProcess.moodCode.subject.encounterEvent.subject.patient.id
16. controlActProcess.moodCode.subject.encounterEvent.subject.patient.id.item
17. controlActProcess.moodCode.subject.encounterEvent.subject.patient.patientPerson
18. controlActProcess.moodCode.subject.encounterEvent.subject.patient.patientPerson.name
19. controlActProcess.moodCode.subject.encounterEvent.subject.patient.patientPerson.name.item
20. controlActProcess.moodCode.subject.encounterEvent.subject.patient.patientPerson.name.item.part
21. controlActProcess.moodCode.subject.encounterEvent.discharger
22. controlActProcess.moodCode.subject.encounterEvent.discharger.time
23. controlActProcess.moodCode.subject.encounterEvent.discharger.assignedPerson
24. controlActProcess.moodCode.subject.encounterEvent.discharger.assignedPerson.assignedPerson
25. controlActProcess.moodCode.subject.encounterEvent.discharger.assignedPerson.assignedPerson
26. controlActProcess.moodCode.subject.encounterEvent.discharger.assignedPerson.assignedPerson.name
27. controlActProcess.moodCode.subject.encounterEvent.discharger.assignedPerson.assignedPerson.name.item
28. controlActProcess.moodCode.subject.encounterEvent.discharger.assignedPerson.assignedPerson.name.item.part

Example 94: HL7v3 End Patient Visit Payload

```
<hl7:controlActProcess
  classCode="CACT"
  moodCode="EVN">
  <hl7:code code="PRPA_TE400003UV01" />
  <hl7:subject typeCode="SUBJ">
    <hl7:encounterEvent>
      <hl7:id>
        <hl7:item root="1.6.7.8.9.0" extension="12345678" />
      </hl7:id>
      <hl7:code code="AMB"></hl7:code>
      <hl7:statusCode code="completed" />
      <hl7:effectiveTime>
```

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```
        <hl7:high value="20141126155917" />
      </hl7:effectiveTime>
      <hl7:subject>
        <hl7:patient classCode="PAT">
          <hl7:id>
            <hl7:item root="1.1.1.1.1" extension="23018887746236" />
          </hl7:id>
          <hl7:patientPerson>
            <hl7:name>
              <hl7:item>
                <hl7:part type="FAM" value="Doe" />
                <hl7:part type="GIV" value="John" />
              </hl7:item>
            </hl7:name>
          </hl7:patientPerson>
        </hl7:patient>
      </hl7:subject>
      <hl7:discharger>
        <hl7:time></hl7:time>
        <hl7:assignedPerson classCode="ASSIGNED">
          <hl7:assignedPerson classCode="PSN" determinerCode="INSTANCE">
            <hl7:name>
              <hl7:item>
                <hl7:part type="FAM" value="Discharger" />
                <hl7:part type="GIV" value="Dennis" />
              </hl7:item>
            </hl7:name>
          </hl7:assignedPerson>
        </hl7:assignedPerson>
      </hl7:discharger>
    </hl7:encounterEvent>
  </hl7:subject>
</hl7:controlActProcess>
```

5.3.2.2 Outbound Message Structure

See Section 1.2.2.

5.4 Cancel Admit Inpatient/Outpatient

5.4.1 Cancel Admit Inpatient/Outpatient – HL7v2

This transaction is used to notify the **MPI** about the cancellation of a patient visit (both inpatient and outpatient):

- **ADT A11** – Cancel admit/visit notification



Note

The ADT A11 message can be used to cancel patient visits for both inpatients and outpatients.

5.4.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Cancel Admit Inpatient/Outpatient.

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Table 66: Cancel Patient Visit Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A11**
EVN	Event Information
IN1	Patient Insurance Information **(optional)**
PID	Patient Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **CANCEL**
ZBE-5	The movement indicator must be **N**



Note

Although the PID segment is required in Cancel Transactions, patient data will not be updated when differing from those registered in the system.

MSH Segment

The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment

The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment

The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment

The PID segment contains the relevant patient data.

PV1 Segment

The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment

The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.4.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for IN1 in Table 4. In cancellation messages, the PID segment is only required to contain a valid ID (PID-3) and the patient name (PID-5). The relevant fields of the other segments are:

EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

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EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

Table 67: Fields relevant for the Cancel Patient Visit Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-19	Visit Number	No	Recommended
PV1-51	Visit Indicator	No	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management

Table 67: Fields relevant for the Cancel Patient Visit Transaction

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Table 67: Fields relevant for the Cancel Patient Visit Transaction

HL7-Path	Name	Repeatable	Presence
ZBE-4	Movement Action	No	Required for Historic Movement Management
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 95:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306163345.831+0100||ADT^A11^ADT_A09|841a9cc5-65f6-40cd-8b8d-9c
    4847d7cc52|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306163345.831+0100|||userId7879^Warren^Karen^^^^^^My Local Clinic&1.2.123.27.1974&
    ISO^L^^^EN|20180306163345.756+0100
PID|||patientId5372^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PV1||N|||||||||||||||||visitId8716^^^My Local Clinic&1.2.123.27.1974&ISO^VN
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313135514.035+0100||ADT^A11^ADT_A09|5c131f74-523e-49eb-8c1b-6ce
    297610cfc|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313135514.035+0100|||userId5418^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313135514.028+0100
PID|||patientId0472^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PV1||N|||||||||||||||||visitId9980^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    |||||||||||||||||||||||||||||||V
ZBE|visitEvent2551^My Local Clinic^1.2.123.27.1974^ISO|20180313135514.028+0100||CANCEL|N
```

Response

```
MSH|^~\&|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|201505051501||ACK
    ^A11|130|P|2.3.1
MSA|AA|129
```

5.4.2 Cancel Admit Inpatient/Outpatient – HL7v3

Example 96: HL7v3 Cancel Patient Visit Root Element

interactionId's extension field: PRPA_IN400006UV01

```
<hl7:PRPA_IN400006UV01 ITSVersion="XML_1.0" xmlns:hl7="urn:hl7-org:v3" xmlns:xsi="http://www
    .w3.org/2001/XMLSchema-instance">
  INSERT MESSAGE HEADER
  INSERT PAYLOAD
</hl7:PRPA_IN400006UV01>
```

5.4.2.1 Inbound Message Structure

The following elements are required in this specific order:

1. controlActProcess
2. controlActProcess.code
3. controlActProcess.authorOrPerformer
4. controlActProcess.authorOrPerformer.assignedPerson

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5. controlActProcess.authorOrPerformer.assignedPerson.name
6. controlActProcess.authorOrPerformer.assignedPerson.name.item
7. controlActProcess.authorOrPerformer.assignedPerson.name.item.part
8. controlActProcess.subject
9. controlActProcess.subject.encounterEvent
10. controlActProcess.subject.encounterEvent.id
11. controlActProcess.subject.encounterEvent.id.item
12. controlActProcess.subject.encounterEvent.statusCode

Example 97: HL7v3 Cancel Patient Visit Payload

```
<hl7:controlActProcess classCode="CACT" moodCode="EVN">
  <hl7:code code="PRPA_TE400999UV01" />
  <hl7:authorOrPerformer typeCode="AUT">
    <hl7:assignedPerson classCode="ASSIGNED">
      <hl7:assignedPerson classCode="PSN" determinerCode="INSTANCE">
        <hl7:name>
          <hl7:item>
            <hl7:part type="FAM" value="Canceler" />
            <hl7:part type="GIV" value="Carrie" />
          </hl7:item>
        </hl7:name>
      </hl7:assignedPerson>
    </hl7:assignedPerson>
  </hl7:authorOrPerformer>
  <hl7:subject typeCode="SUBJ">
    <hl7:encounterEvent>
      <hl7:id>
        <hl7:item root="1.2.6.7.8.9.0" extension="12345678" />
      </hl7:id>
      <hl7:statusCode code="nullified" />
    </hl7:encounterEvent>
  </hl7:subject>
</hl7:controlActProcess>
```

5.4.2.2 Outbound Message Structure

See Section 1.2.2.

5.5 Cancel Discharge Patient

This transaction is used to notify the **MPI** about the cancellation of a prior patient discharge event:

5.5.1 Cancel Discharge Patient – HL7v2

› **ADT A13** – Cancel discharge/end visit



Note

The ADT A13 message can be used to cancel patient discharge events for both inpatients and outpatients. The patient visit will be active again once this message has been processed.

5.5.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Cancel Discharge Patient.

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Table 68: Cancel End Patient Visit Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A13**
EVN	Event Information
IN1	Patient Insurance (**optional**)
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **CANCEL**
ZBE-5	The movement indicator must be **N**



Note

Although the PID segment is required in Cancel Transactions, patient data will not be updated when differing from those registered in the system.

MSH Segment

The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment

The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment

The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment

The PID segment contains the relevant patient data.

PV1 Segment

The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment

The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.5.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for IN1 in Table 4. In cancellation messages, the PID segment is only required to contain a valid ID (PID-3) and the patient name (PID-5). The relevant fields of the other segments are:

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EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

Table 69: Fields relevant for the Cancel End Patient Visit Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-19	Visit Number	No	Recommended
PV1-51	Visit Indicator	No	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management

Table 69: Fields relevant for the Cancel End Patient Visit Transaction

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Table 69: Fields relevant for the Cancel End Patient Visit Transaction

HL7-Path	Name	Repeatable	Presence
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 98:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306170804.479+0100||ADT^A13^ADT_A01|0f922693-3233-4f4c-af2d-d7fec
    1969376|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306170804.479+0100|||userId1582^Warren^Karen^^^^^^My Local Clinic&1.2.123.27.1974&
    ISO^L^^^EN|20180306170804.395+0100
PID|||patientId8162^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PV1||N|||||||||||||||visitId2776^^^My Local Clinic&1.2.123.27.1974&ISO^VN
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313135820.874+0100||ADT^A13^ADT_A01|69e96337-9d78-4734-8c23-395c
    95443af0|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313135820.874+0100|||userId7526^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313135820.865+0100
PID|||patientId2905^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PV1||N|||||||||||||||visitId2914^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||||||||V
ZBE|visitEvent1623^My Local Clinic^1.2.123.27.1974^ISO|20180313135820.865+0100||CANCEL|N
```

Response

```
MSH|^~\&|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|201505051501||ACK
    ^A13|130|P|2.3.1
MSA|AA|129
```

5.5.2 Cancel Discharge Patient – HL7v3

5.5.2.1 Message Structure

Example 99: HL7v3 Cancel End Patient Visit Root Element

interactionId's extension field: PRPA_IN400007UV01

```
<ns0:PRPA_IN400007UV01 xmlns:ns0="urn:hl7-org:v3" xmlns:xsi="http://www.w3.org/2001/
    XMLSchema-instance" ITSVersion="XML_1.0">
  INSERT MESSAGE HEADER
  INSERT PAYLOAD
</ns0:PRPA_IN400007UV01>
```

5.5.2.2 Inbound Message Structure

The following elements are required in this specific order:

1. controlActProcess

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2. controlActProcess.code
3. controlActProcess.subject
4. controlActProcess.subject.encounterEvent
5. controlActProcess.subject.encounterEvent.id
6. controlActProcess.subject.encounterEvent.id.item
7. controlActProcess.subject.encounterEvent.code
8. controlActProcess.subject.encounterEvent.statusCode
9. controlActProcess.subject.encounterEvent.effectiveTime
10. controlActProcess.subject.encounterEvent.effectiveTime.low
11. controlActProcess.subject.encounterEvent.subject
12. controlActProcess.subject.encounterEvent.subject.patient
13. controlActProcess.subject.encounterEvent.subject.patient.id
14. controlActProcess.subject.encounterEvent.subject.patient.id.item
15. controlActProcess.subject.encounterEvent.subject.patient.patientPerson
16. controlActProcess.subject.encounterEvent.subject.patient.patientPerson.name
17. controlActProcess.subject.encounterEvent.subject.patient.patientPerson.name.item
18. controlActProcess.subject.encounterEvent.subject.patient.patientPerson.name.item.part
19. controlActProcess.subject.encounterEvent.discharger
20. controlActProcess.subject.encounterEvent.discharger.time
21. controlActProcess.subject.encounterEvent.discharger.assignedPerson
22. controlActProcess.subject.encounterEvent.discharger.assignedPerson.assignedPerson
23. controlActProcess.subject.encounterEvent.discharger.assignedPerson.assignedPerson.name
24. controlActProcess.subject.encounterEvent.discharger.assignedPerson.assignedPerson.name.item
25. controlActProcess.subject.encounterEvent.discharger.assignedPerson.assignedPerson.name.item.part

Example 100: HL7v3 Cancel End Patient Visit Payload

```
<ns0:controlActProcess classCode="CACT" moodCode="EVN">
  <ns0:code code="PRPA_MT400001UV01" />
  <ns0:subject typeCode="SUBJ">
    <ns0:encounterEvent classCode="ENC">
      <ns0:id>
        <ns0:item root="1.6.7.8.9.0" extension="12345678" />
      </ns0:id>
      <ns0:code code="IMP" />
      <ns0:statusCode code="active" />
      <ns0:effectiveTime>
        <ns0:low value="20150217114002" />
      </ns0:effectiveTime>
      <ns0:subject>
        <ns0:patient classCode="PAT">
          <ns0:id>
            <ns0:item root="1.1.1.1.1" extension="23018887746236" />
          </ns0:id>
          <ns0:patientPerson>
            <ns0:name>
              <ns0:item>
                <ns0:part value="John" type="GIV" />
                <ns0:part value="Doe" type="FAM" />
              </ns0:item>
            </ns0:name>
          </ns0:patientPerson>
        </ns0:patient>
      </ns0:subject>
      <ns0:discharger>
        <ns0:time></ns0:time>
        <ns0:assignedPerson classCode="ASSIGNED">
          <ns0:assignedPerson classCode="PSN" determinerCode="INSTANCE">
            <ns0:name>
              <ns0:item>
                <ns0:part type="FAM" value="Reactivator" />
                <ns0:part type="GIV" value="Ronald" />
```

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```
            </ns0:item>
          </ns0:name>
        </ns0:assignedPerson>
      </ns0:assignedPerson>
    </ns0:discharger>
  </ns0:encounterEvent>
 </ns0:subject>
</ns0:controlActProcess>
```

5.5.2.3 Outbound Message Structure

See Section 1.2.2.

5.6 Transfer Patient

This transaction is used to notify the **MPI** about the delegation of a patient visit to another responsible organization.

5.6.1 Transfer Patient – HL7v2

› **ADT A02** – Transfer a patient



Note

The ADT A02 message requires that the patient visit that should be delegated is already registered with the `MPI`.

5.6.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Transfer Patient.

Table 70: Delegate Patient Visit Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A02**
EVN	Event Information
IN1	Patient Insurance Information **(optional)**
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **INSERT**
ZBE-5	The movement indicator must be **N**

MSH Segment

The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

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EVN Segment

The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment

The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment

The PID segment contains the relevant patient data.

PV1 Segment

The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment

The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.6.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 4. These are the relevant fields of the other segments:

EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-3

Assigned Patient Location: The facility that processes the patient visit. The `MPI` only processes PV1-3.4 (Facility) and requires this component to be present.

PV1-6

Prior Patient Location: The facility formerly responsible for the patient visit. The `MPI` only processes PV1-6.4.2 and requires this component to be present.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier,

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and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the MPI processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-44

Admit Date/Time: The start date/time of the patient visit.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

Table 71: Fields relevant for the Transfer Patient Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-3	Assigned Patient Location	No	Required
PV1-6	Prior Patient Location	No	Recommended
PV1-19	Visit Number	No	Recommended
PV1-44	Admit Date/Time	No	Required
PV1-51	Visit Indicator	No	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 101:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306175226.599+0100||ADT^A02^ADT_A02|f354dbc3-4e4e-4983-bbab-03bb
    121e7556|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306175226.599+0100|||userId4616^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974&ISO^L^^^EN|20180306175226.513+0100
PID|||patientId1911^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234586879^^^Social
```

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```
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980306|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount7152^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||Y|1|GB||||N
PV1||I|^^^Surgical Ward&1.2.123.27.22861&ISO|||^^^Radiology&1.2.123.27.1974.187.15&ISO|
    doctor1455^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN
    ^^^^^^^^M.D.|doctor9813^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&
    ISO^L^^^DN^^^^^^^^M.D.|||||||A0||||visitId0606^^^My Local Clinic&1.2.123.27.1974&ISO^VN
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313140649.202+0100||ADT^A02^ADT_A02|7811a967-7019-42bd-8feb-2
    bfeffb86518|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313140649.202+0100|||userId9297^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313140649.176+0100
PID|||patientId9674^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234580271^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980313|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount8490^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||N||GB||||N
PV1||I|^^^Surgical Ward&1.2.123.27.22861&ISO|||^^^Radiology&1.2.123.27.1974.187.15&ISO|
    doctor2574^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN
    ^^^^^^^^M.D.|doctor5441^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&
    ISO^L^^^DN^^^^^^^^M.D.|||||||A0||||visitId6671^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||||||||V
ZBE|visitEvent2791^My Local Clinic^1.2.123.27.1974^ISO|20180313140649.176+0100||INSERT|N
```

Response

```
MSH|^~\&|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|201505051501||ACK
    ^A02|134|P|2.3.1
MSA|AA|133
```

5.6.2 Transfer Patient – HL7v3

Example 102: HL7v3 Delegate Patient Visit Root Element
interactionId's extension field: PRPA_IN303011UV01

```
<hl7:PRPA_IN303011UV01 ITSVersion="XML_1.0" xmlns:hl7="urn:hl7-org:v3" xmlns:xsi="http://www
    .w3.org/2001/XMLSchema-instance">
  INSERT MESSAGE HEADER
  INSERT PAYLOAD
</hl7:PRPA_IN303011UV01>
```

5.6.2.1 Inbound Message Structure

The following elements are required in this specific order:

1. controlActProcess
2. controlActProcess.code
3. controlActProcess.authorOrPerformer
4. controlActProcess.authorOrPerformer.assignedPerson
5. controlActProcess.authorOrPerformer.assignedPerson.assignedPerson
6. controlActProcess.authorOrPerformer.assignedPerson.assignedPerson.name
7. controlActProcess.authorOrPerformer.assignedPerson.assignedPerson.name.item
8. controlActProcess.authorOrPerformer.assignedPerson.assignedPerson.name.item.part
9. controlActProcess.subject
10. controlActProcess.subject.encounterEvent
11. controlActProcess.subject.encounterEvent.id
12. controlActProcess.subject.encounterEvent.id.item

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13. controlActProcess.subject.encounterEvent.responsibleParty1
14. controlActProcess.subject.encounterEvent.responsibleParty1.time
15. controlActProcess.subject.encounterEvent.responsibleParty1.time.low
16. controlActProcess.subject.encounterEvent.responsibleParty1.statusCode
17. controlActProcess.subject.encounterEvent.responsibleParty1.assignedOrganization
18. controlActProcess.subject.encounterEvent.responsibleParty1.assignedOrganization.id
19. controlActProcess.subject.encounterEvent.responsibleParty1.assignedOrganization.id.item
20. controlActProcess.subject.encounterEvent.responsibleParty2
21. controlActProcess.subject.encounterEvent.responsibleParty2.time
22. controlActProcess.subject.encounterEvent.responsibleParty2.time.high
23. controlActProcess.subject.encounterEvent.responsibleParty2.statusCode
24. controlActProcess.subject.encounterEvent.responsibleParty2.assignedOrganization
25. controlActProcess.subject.encounterEvent.responsibleParty2.assignedOrganization.id.item

Example 103: HL7v3 Delegate Patient Visit Payload

```
<hl7:controlActProcess classCode="CACT" moodCode="EVN">
  <hl7:code code="PRPA_TE303011UV01" />
  <hl7:authorOrPerformer typeCode="AUT">
    <hl7:assignedPerson classCode="ASSIGNED">
      <hl7:assignedPerson classCode="PSN" determinerCode="INSTANCE">
        <hl7:name>
          <hl7:item>
            <hl7:part type="FAM" value="Delegater" />
            <hl7:part type="GIV" value="Dennis" />
          </hl7:item>
        </hl7:name>
      </hl7:assignedPerson>
    </hl7:assignedPerson>
  </hl7:authorOrPerformer>
  <hl7:subject typeCode="SUBJ">
    <hl7:encounterEvent>
      <hl7:id>
        <hl7:item root="1.2.6.7.8.9.0" extension="12345678" />
      </hl7:id>
      <hl7:responsibleParty1>
        <hl7:time>
          <hl7:low value="20141127160100" />
        </hl7:time>
        <hl7:statusCode code="active" />
        <hl7:assignedOrganization classCode="ASSIGNED">
          <hl7:id>
            <hl7:item root="1.2.6.7.8.9.0" />
          </hl7:id>
        </hl7:assignedOrganization>
      </hl7:responsibleParty1>
      <hl7:responsibleParty2>
          <hl7:time>
              <hl7:high value="20141127160000" />
          </hl7:time>
          <hl7:statusCode code="completed" />
          <hl7:assignedOrganization classCode="ASSIGNED">
              <hl7:id>
                  <hl7:item root="1.2.3.4.5" />
              </hl7:id>
          </hl7:assignedOrganization>
      </hl7:responsibleParty2>
    </hl7:encounterEvent>
  </hl7:subject>
</hl7:controlActProcess>
```

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5.6.2.2 Outbound Message Structure

See Section 1.2.2.

5.7 Cancel Transfer Patient

This transaction is used to notify the **MPI** about the cancellation of a patient delegation to another responsible organization.

5.7.1 Cancel Transfer Patient – HL7v2

› **ADT A12** – Cancel Patient Transfer

5.7.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Transfer Patient.

Table 72: Delegate Patient Visit Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A12**
EVN	Event Information
IN1	Patient Insurance Information **(optional)**
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **CANCEL**
ZBE-5	The movement indicator must be **N**



Note

Although the PID segment is required in Cancel Transactions, patient data will not be updated when differing from those registered in the system.

MSH Segment

The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment

The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment

The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment

The PID segment contains the relevant patient data.

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PV1 Segment

The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment

The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.7.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for IN1 in Table 4. In cancellation messages, the PID segment is only required to contain a valid ID (PID-3) and the patient name (PID-5). The relevant fields of the other segments are:

EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-3

Assigned Patient Location: The facility that processes the patient visit. The `MPI` only processes PV1-3.4 (Facility) and requires this component to be present.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

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ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

Table 73: Fields relevant for theCancel Transfer Patient Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-3	Assigned Patient Location	No	Required
PV1-19	Visit Number	No	Recommended
PV1-51	Visit Indicator	No	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 104:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306190456.216+0100||ADT^A12^ADT_A12|e6a41f1b-e4b6-47b3-916c-2fa
    895dde58e|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306190456.216+0100|||userId6626^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974&ISO^L^^^EN|20180306190456.136+0100
PID|||patientId3555^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PV1||I|^^^Radiology&1.2.123.27.1974.187.15&ISO|||||||||||||||visitId3415^^^My Local Clinic
    &1.2.123.27.1974&ISO^VN
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313140020.883+0100||ADT^A12^ADT_A12|db4362c7-9dfa-4e8b-9066-e05b6
    c01b345|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313140020.883+0100|||userId3744^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313140020.874+0100
PID|||patientId1866^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PV1||I|^^^Radiology&1.2.123.27.1974.187.15&ISO|||||||||||||||visitId8173^^^My Local Clinic
    &1.2.123.27.1974&ISO^VN|||||||||||||||||||||||||||||||V
ZBE|visitEvent6739^My Local Clinic^1.2.123.27.1974^ISO|20180313140020.874+0100||CANCEL|N
```

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5.8 Change Outpatient To Inpatient

This transaction is used to notify the **MPI** about the change of a preexisting outpatient visit to an inpatient visit.

5.8.1 Change Outpatient To Inpatient – HL7v2

› **ADT A06** – Change an outpatient to an inpatient.



Note

The ADT A06 message requires that the outpatient visit that should be changed is already registered with the `MPI`.

5.8.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Change Outpatient To Inpatient.

Table 74: Change Outpatient To Inpatient Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A06**
EVN	Event Information
IN1	Patient Insurance Information **(optional)**
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **INSERT**
ZBE-5	The movement indicator must be **N**

MSH Segment
: The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment
: The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment
: The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment
: The PID segment contains the relevant patient data.

PV1 Segment
: The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

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ZBE Segment

The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.8.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 4. These are the relevant fields of the other segments:

EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-3

Assigned Patient Location: The facility that processes the patient visit. The `MPI` only processes PV1-3.4 (Facility) and requires this component to be present.

PV1-6

Prior Patient Location: The facility formerly responsible for the patient visit. The `MPI` only processes PV1-6.4.2 and requires this component to be present.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-44

Admit Date/Time: The start date/time of the patient visit.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

MRG-1

Prior Patient Identifier List: List of all Patient IDs of the recessive patient. The structure of this field corresponds to that of PID-3 (*Patient Identifier List*). For a valid transaction it is sufficient to provide

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one Source Patient Identifier. Regional identifiers such as social security numbers should not be used since they will be ignored by eHealth Solutions.

MRG-3

Prior Patient Account Number: Account Number of the recessive patient. The structure of this field corresponds to that of PID-18 (*Patient Account Number*).

MRG-7

Prior Patient Name List: Name of the recessive patient. Values given in this field are used for logging purposes.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

Table 75: Fields relevant for the Change Outpatient To Inpatient Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-3	Assigned Patient Location	No	Required
PV1-6	Prior Patient Location	No	Recommended
PV1-19	Visit Number	No	Recommended
PV1-44	Admit Date/Time	No	Required
PV1-51	Visit Indicator	No	Optional
MRG-1	Patient Identifier List	Yes	Required
MRG-3	Prior Patient Account Number	No	Optional
MRG-7	Prior Patient Name List	Yes	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management



Note

eHealth Solutions does not process any patient information for the transaction **Change Outpatient To Inpatient**. Therefore, the PID segment can be empty.

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Example 105:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306172741.348+0100||ADT^A06^ADT_A06|366ef1f2-06cb-4525-bd09-28472
    b5141a5|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306172741.348+0100|||userId1502^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974&ISO^L^^^EN|20180306172741.255+0100
PID|||patientId7542^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234581536^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980306|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount3869^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||Y|1|GB||||N
PV1||I|^^^Radiology&1.2.123.27.1974.187.15&ISO|||^^^My Outpatient Clinic&1.2.123.27.27894&
    ISO|doctor1191^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN
    ^^^^^^^^M.D.|doctor0077^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&
    ISO^L^^^DN^^^^^^^^M.D.|||||||A2||||visitId5939^^^My Local Clinic&1.2.123.27.1974&ISO^VN
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313140335.883+0100||ADT^A06^ADT_A06|8cae2709-7d75-40e5-966f-eb12
    bf29a943|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313140335.883+0100|||userId3804^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313140335.751+0100
PID|||patientId9329^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234583044^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980313|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount9838^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||Y|1|GB||||N
PV1||I|^^^Radiology&1.2.123.27.1974.187.15&ISO|||^^^My Outpatient Clinic&1.2.123.27.27894&
    ISO|doctor8800^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN
    ^^^^^^^^M.D.|doctor2376^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&
    ISO^L^^^DN^^^^^^^^M.D.|||||||A2||||visitId2917^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    |||||||||||||||||||||||||||||||V
ZBE|visitEvent7437^My Local Clinic^1.2.123.27.1974^ISO|20180313140335.751+0100||INSERT|N
```

Response

```
MSH|^~\&|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|201505051501||ACK
    ^A06|132|P|2.3.1
MSA|AA|131
```

5.8.2 Change Outpatient To Inpatient – HL7v3

5.8.2.1 Message Structure

There is no separate message for this type. See Section 5.1.2 Admit Inpatient – HL7v3.

Example 106: HL7v3 Change Outpatient to Inpatient Root Element

See Section 5.1.2 Admit Inpatient – HL7v3.

Example 107: HL7v3 Change Outpatient to Inpatient Payload

Change the `encounterEvent.code` to "IMP", which refers to stationary patients (in-patients).

See Section 5.1.2 Admit Inpatient – HL7v3.

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5.9 Change Inpatient To Outpatient

This transaction is used to notify the **MPI** about the change of a preexisting inpatient visit to an outpatient visit.

5.9.1 Change Inpatient To Outpatient – HL7v2

› **ADT A07** – Change an inpatient to an outpatient.



Note

The ADT A07 message requires that the inpatient visit that should be changed is already registered with the `MPI`.

5.9.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Change Inpatient To Outpatient.

Table 76: Change Inpatient To Outpatient Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A07**
EVN	Event Information
IN1	Patient Insurance (**optional**)
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **INSERT**
ZBE-5	The movement indicator must be **N**

MSH Segment
: The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment
: The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment
: The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment
: The PID segment contains the relevant patient data.

PV1 Segment
: The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

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ZBE Segment

The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.9.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 4. These are the relevant fields of the other segments:

EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-3

Assigned Patient Location: The facility that processes the patient visit. The `MPI` only processes PV1-3.4 (Facility) and requires this component to be present.

PV1-6

Prior Patient Location: The facility formerly responsible for the patient visit. The `MPI` only processes PV1-6.4.2 and requires this component to be present.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-44

Admit Date/Time: The start date/time of the patient visit.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

MRG-1

Prior Patient Identifier List: List of all Patient IDs of the recessive patient. The structure of this field corresponds to that of PID-3 (*Patient Identifier List*). For a valid transaction it is sufficient to provide

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one Source Patient Identifier. Regional identifiers such as social security numbers should not be used since they will be ignored by eHealth Solutions.

MRG-3

Prior Patient Account Number: Account Number of the recessive patient. The structure of this field corresponds to that of PID-18 (*Patient Account Number*).

MRG-7

Prior Patient Name List: Name of the recessive patient. Values given in this field are used for logging purposes.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

Table 77: Fields relevant for the Change Inpatient To Outpatient Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-3	Assigned Patient Location	No	Required
PV1-6	Prior Patient Location	No	Recommended
PV1-19	Visit Number	No	Recommended
PV1-44	Admit Date/Time	No	Required
PV1-51	Visit Indicator	No	Optional
MRG-1	Patient Identifier List	Yes	Required
MRG-3	Prior Patient Account Number	No	Optional
MRG-7	Prior Patient Name List	Yes	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 108:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306172412.257+0100||ADT^A07^ADT_A06|06d16e2e-bf31-4c14-8478-c1855
    e339d17|P|2.5|||AL|||UNICODE UTF-8
```

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```
EVN||20180306172412.257+0100|||userId3513^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974&ISO^L^^^EN|20180306172412.163+0100
PID|||patientId2683^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234587227^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980306|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount9059^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||N||GB||||N
PV1||O|^^^My Outpatient Clinic&1.2.123.27.27894&ISO|||^^^Radiology&1.2.123.27.1974.187.15&
    ISO|doctor1720^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN
    ^^^^^^^^M.D.|doctor4898^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&
    ISO^L^^^DN^^^^^^^^M.D.|||||||A4||||visitId6829^^^My Local Clinic&1.2.123.27.1974&ISO^VN
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313140213.169+0100||ADT^A07^ADT_A06|499cfba4-0606-4cb6-8287-727a
    2367cde2|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313140213.169+0100|||userId8903^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313140213.04+0100
PID|||patientId4794^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234585111^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980313|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount3576^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||Y|1|GB||||N
PV1||O|^^^My Outpatient Clinic&1.2.123.27.27894&ISO|||^^^Radiology&1.2.123.27.1974.187.15&
    ISO|doctor8534^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN
    ^^^^^^^^M.D.|doctor3422^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&
    ISO^L^^^DN^^^^^^^^M.D.|||||||A4||||visitId7153^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||||||||V
ZBE|visitEvent6185^My Local Clinic^1.2.123.27.1974^ISO|20180313140213.040+0100||INSERT|N
```

Response

```
MSH|^~\&|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|201505051501||ACK
    ^A06|132|P|2.3.1
MSA|AA|131
```

5.9.2 Change Inpatient To Outpatient – HL7v3

5.9.2.1 Inbound Message Structure

Example 109: HL7v3 Change Inpatient to Outpatient Root Element

See Section 5.1.2 Admit Inpatient – HL7v3.

Example 110: HL7v3 Change Inpatient to Outpatient Payload

Change the `encounterEvent.code` to “AMB” for ambulant patients (out-patients). “EMER”, which stands for emergency admission, may also be used for ambulant patients (out-patients).

See Section 5.1.2 Admit Inpatient – HL7v3.

5.9.2.2 Outbound Message Structure

See Section 1.2.2.

5.10 Change Patient Identifier List

This transaction is used to notify the `MPI` about an adaption of the patient identifiers.

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5.10.1 Change Patient Identifier List – HL7v2

› **ADT A47** – Change patient identifier list

5.10.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Change Patient Identifier List.

Table 78: Change Patient Identifier List Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A47**
EVN	Event Information
IN1	Patient Insurance (**optional**)
PID	Patient Information
PV1	Patient Visit Information

MSH Segment
: The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment
: The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment
: The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment
: The PID segment contains the relevant patient data.

PV1 Segment
: The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment
: The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.10.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 4. These are the relevant fields of the other segments:

EVN-2
: Recorded Date/Time: Time at which the notification has been recorded in the system.

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EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

Table 79: Fields relevant for the Change Patient Identifier List Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-19	Visit Number	No	Recommended
PV1-51	Visit Indicator	No	Optional

5.11 Change Attending Doctor

This transaction is used to notify the `MPI` about a change of the doctor attended by the patient.

5.11.1 Change Attending Doctor – HL7v2

› **ADT A54** – Change attending doctor

5.11.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Change Attending Doctor.

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Table 80: Change Attending Doctor Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A54**
EVN	Event Information
IN1	Patient Insurance (**optional**)
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **INSERT**
ZBE-5	The movement indicator must be **N**

MSH Segment
: The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment
: The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment
: The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment
: The PID segment contains the relevant patient data.

PV1 Segment
: The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment
: The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.11.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 4. These are the relevant fields of the other segments:

EVN-2
: Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5
: Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

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EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-7

Attending Doctor: Refers to the attending physician. In eHealth Solutions, repetitions of this field cannot be processed. The components evaluated by eHealth Solutions are: PV1-7.1 (Identifier), PV1-7.2.1 (Family Name, Surname), PV1-7.3 (Given Name), PV1-7.4 (Additional Given Names), PV1-7.5 (Suffix), PV1-7.6 (Prefix), PV1-7.7 (Degree), PV1-7.9 (Assigning Authority), PV1-7.10 (Name Type Code), PV1-7.13 (Identifier Type Code), PV1-7.19 (Effective Date), PV1-7.20 (Expiration Date), PV1-7.21 (Professional Suffix). At least one identifier (either PV1-7.1 or PV1-7.9) has to be provided so the field can be stored.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

Table 81: Fields relevant for the Change Attending Doctor Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-7	Attending Doctor	Yes, but without effect	Required
PV1-19	Visit Number	No	Recommended

Table 81: Fields relevant for the Change Attending Doctor Transaction

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Table 81: Fields relevant for the Change Attending Doctor Transaction

HL7-Path	Name	Repeatable	Presence
PV1-51	Visit Indicator	No	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 111:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306171409.784+0100||ADT^A54^ADT_A54|7ac18fbd-42b4-49be-8b8c-9f
    2601491e7e|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306171409.784+0100|||userId3093^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974&ISO^L^^^EN|20180306171409.698+0100
PID|||patientId3068^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PV1||N|||||doctor5555^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L
    ^^^DN^^^^^^^^M.D.||||||||||||visitId4052^^^My Local Clinic&1.2.123.27.1974&ISO^VN
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313140117.548+0100||ADT^A54^ADT_A54|247f1475-e79f-4e77-89ea-c3f
    104ff4a5a|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313140117.548+0100|||userId0566^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313140117.429+0100
PID|||patientId4462^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
    ||||||||||||||||||N||||||N
PV1||N|||||doctor1155^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L
    ^^^DN^^^^^^^^M.D.||||||||||||visitId7718^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||||||||||V
ZBE|visitEvent0797^My Local Clinic^1.2.123.27.1974^ISO|20180313140117.429+0100||INSERT|N
```

5.12 Cancel Change Attending Doctor

This transaction is used to notify the MPI about the cancellation of a change in the doctor attended by the patient.

5.12.1 Cancel Change Attending Doctor – HL7v2

› **ADT A55** – Cancel change attending doctor

5.12.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Cancel Change Attending Doctor.

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Table 82: Cancel Change Attending Doctor Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A55**
EVN	Event Information
IN1	Patient Insurance (**optional**)
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **CANCEL**
ZBE-5	The movement indicator must be **N**

Note

Although the PID segment is required in Cancel Transactions, patient data will not be updated when differing from those registered in the system.

MSH Segment

The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment

The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment

The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment

The PID segment contains the relevant patient data.

PV1 Segment

The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment

The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.12.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for IN1 in Table 4. In cancellation messages, the PID segment is only required to contain a valid ID (PID-3) and the patient name (PID-5). The relevant fields of the other segments are:

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EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-7

Attending Doctor: Refers to the attending physician. In eHealth Solutions, repetitions of this field cannot be processed. The components evaluated by eHealth Solutions are: PV1-7.1 (Identifier), PV1-7.2.1 (Family Name, Surname), PV1-7.3 (Given Name), PV1-7.4 (Additional Given Names), PV1-7.5 (Suffix), PV1-7.6 (Prefix), PV1-7.7 (Degree), PV1-7.9 (Assigning Authority), PV1-7.10 (Name Type Code), PV1-7.13 (Identifier Type Code), PV1-7.19 (Effective Date), PV1-7.20 (Expiration Date), PV1-7.21 (Professional Suffix). At least one identifier (either PV1-7.1 or PV1-7.9) has to be provided so the field can be stored.

PV1-8

Referring doctor: In eHealth Solutions, repetitions of this field cannot be processed. The components evaluated by eHealth Solutions are: PV1-8.1 (Identifier), PV1-8.2.1 (Family Name, Surname), PV1-8.3 (Given Name), PV1-8.4 (Additional Given Names), PV1-8.5 (Suffix), PV1-8.6 (Prefix), PV1-8.7 (Degree), PV1-8.9 (Assigning Authority), PV1-8.10 (Name Type Code), PV1-8.13 (Identifier Type Code), PV1-8.19 (Effective Date), PV1-8.20 (Expiration Date), PV1-8.21 (Professional Suffix). At least one identifier (either PV1-8.1 or PV1-8.9) has to be provided so the field can be stored.

PV1-15

Ambulatory Status: Refers to special conditions of the patient such as the need of a wheelchair or a hearing impairment. Note that the selection of values is predefined by the HL7 standard.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

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ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

Table 83: Fields relevant for the Cancel Change Attending Doctor Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-7	Attending Doctor	Yes, but without effect	Required
PV1-8	Referring Doctor	Yes, but without effect	Optional
PV1-15	Ambulatory Status	Yes	Optional
PV1-19	Visit Number	No	Recommended
PV1-51	Visit Indicator	No	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 112:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306170409.292+0100||ADT^A55|b57b422a-9282-4d17-a717-7cf89acc365b|
    P|2.5|||AL|||UNICODE UTF-8
EVN||20180306170409.292+0100|||userId9760^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974&ISO^L^^^EN|20180306170409.209+0100
PID|||patientId2040^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PV1||N|||||doctor1804^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L
    ^^^DN^^^^^^^^M.D.||||||||||||visitId9914^^^My Local Clinic&1.2.123.27.1974&ISO^VN
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313135718.16+0100||ADT^A55|171e419e-33b0-4305-ab5b-61cbbb805b39|P
    |2.5|||AL|||UNICODE UTF-8
EVN||20180313135718.16+0100|||userId8860^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313135718.047+0100
PID|||patientId6762^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PV1||N|||||doctor4565^FamilyName^GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L
    ^^^DN^^^^^^^^M.D.||||||||||||visitId5690^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||||||||V
ZBE|visitEvent4553^My Local Clinic^1.2.123.27.1974^ISO|20180313135718.047+0100||CANCEL|N
```

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5.13 Begin Leave of Absence

This transaction is used to notify the MPI that an admitted patient has left the institution temporarily.

5.13.1 Begin Leave of Absence – HL7v2

- **ADT A21** – Patient goes on a "leave of absence"

5.13.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Begin Leave of Absence.

Table 84: Begin Leave of Absence Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A21**
EVN	Event Information
IN1	Patient Insurance (**optional**)
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **INSERT**
ZBE-5	The movement indicator must be **N**

MSH Segment
: The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment
: The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment
: The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment
: The PID segment contains the relevant patient data.

PV1 Segment
: The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment
: The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

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5.13.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 4. These are the relevant fields of the other segments:

EVN-2
: Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5
: Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7
: Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2
: Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-19
: Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-51
: Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

ZBE-1
: Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

ZBE-2
: Start Movement Date/Time: The timestamp of the movement.

ZBE-4
: Movement Action: For the type of movement see Table 60.

ZBE-5
: Historical Movement Indicator: See Table 60.

Table 85: Fields relevant for the Begin Leave of Absence Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional

Table 85: Fields relevant for the Begin Leave of Absence Transaction

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Table 85: Fields relevant for the Begin Leave of Absence Transaction

HL7-Path	Name	Repeatable	Presence
PV1-2	Patient Class	No	Required
PV1-19	Visit Number	No	Recommended
PV1-51	Visit Indicator	No	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 113:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306161712.247+0100||ADT^A21^ADT_A21|510ba620-3df5-463e-941b-cf94e
    02ddaab|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306161712.247+0100|||userId6762^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974&ISO^L^^^EN|20180306161712.166+0100
PID|||patientId9625^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234587517^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980306|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount8187^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||Y|1|GB||||N
PV1||N|||||||||||||||||visitId9284^^^My Local Clinic&1.2.123.27.1974&ISO^VN
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313135414.026+0100||ADT^A21^ADT_A21|5f85450a-67cb-4cbe-a588-daefd
    90c391f|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313135414.026+0100|||userId6205^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313135414.016+0100
PID|||patientId8502^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234581763^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980313|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount9499^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||Y|2|GB||||N
PV1||N|||||||||||||||||visitId9690^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||||||||||V
ZBE|visitEvent9028^My Local Clinic^1.2.123.27.1974^ISO|20180313135414.016+0100||INSERT|N
```

5.14 Cancel Begin Leave of Absence

This transaction is used to notify the MPI about the cancellation of a Begin Leave of Absence event.

5.14.1 Cancel Begin Leave of Absence – HL7v2

› **ADT A52** – Cancel leave of absence for a patient

5.14.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Cancel Begin Leave of Absence.

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Table 86: Cancel Begin Leave of Absence Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A52**
EVN	Event Information
IN1	Patient Insurance (**optional**)
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **CANCEL**
ZBE-5	The movement indicator must be **N**



Note

Although the PID segment is required in Cancel Transactions, patient data will not be updated when differing from those registered in the system.

MSH Segment

The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment

The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment

The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment

The PID segment contains the relevant patient data.

PV1 Segment

The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment

The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.14.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2 and those for IN1 in Table 4. In cancellation messages, the PID segment is only required to contain a valid ID (PID-3) and the patient name (PID-5). The relevant fields of the other segments are:

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EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

Table 87: Fields relevant for the Cancel Begin Leave of Absence Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-19	Visit Number	No	Recommended
PV1-51	Visit Indicator	No	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management

Table 87: Fields relevant for the Cancel Begin Leave of Absence Transaction

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Table 87: Fields relevant for the Cancel Begin Leave of Absence Transaction

HL7-Path	Name	Repeatable	Presence
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 114:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306164448.523+0100||ADT^A52^ADT_A52|ff27b11a-863a-4d12-96bf-28db4
    dcb2070|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306164448.523+0100|||userId1565^Warren^Karen^^^^^^My Local Clinic&1.2.123.27.1974&
    ISO^L^^^EN|20180306164448.447+0100
PID|||patientId1943^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PV1||N|||||||||||||||||visitId7077^^^My Local Clinic&1.2.123.27.1974&ISO^VN
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313135607.178+0100||ADT^A52^ADT_A52|2b6f9ed2-bbc6-4018-a737-2d2d
    114223fe|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313135607.178+0100|||userId0184^Warren^Karen^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313135607.171+0100
PID|||patientId9219^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PV1||N|||||||||||||||||visitId5690^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||||||||V
ZBE|visitEvent7402^My Local Clinic^1.2.123.27.1974^ISO|20180313135607.171+0100||CANCEL|N
```

5.15 End Leave of Absence

This transaction is used to notify the MPI that an admitted patient has returned to the institution after temporarily leaving it.

5.15.1 End Leave of Absence – HL7v2

- **ADT A22** – Patient returns from a “leave of absence”

5.15.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction End Leave of Absence.

Table 88: End Leave of Absence Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**

Table 88: End Leave of Absence Segments

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Table 88: End Leave of Absence Segments

Segment	Description
MSH-9-2	The trigger event must be **A22**
EVN	Event Information
IN1	Patient Insurance (**optional**)
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **INSERT**
ZBE-5	The movement indicator must be **N**

MSH Segment
: The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment
: The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment
: The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment
: The PID segment contains the relevant patient data.

PV1 Segment
: The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment
: The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.15.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 4. These are the relevant fields of the other segments:

EVN-2
: Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5
: Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7
: Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

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PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

Table 89: Fields relevant for the End Leave of Absence Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-19	Visit Number	No	Recommended
PV1-51	Visit Indicator	No	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 115:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306173425.879+0100||ADT^A22|f04ed00a-3a7c-4026-851d-39ad7df6229c|
```

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```
    P|2.5|||AL|||UNICODE UTF-8
EVN||20180306173425.879+0100|||userId4264^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974&ISO^L^^^EN|20180306173425.788+0100
PID|||patientId0222^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234582998^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980306|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount0355^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||Y|1|GB||||N
PV1||N|||||||||||||||||visitId7729^^^My Local Clinic&1.2.123.27.1974&ISO^VN
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313140543.34+0100||ADT^A22|f283e54a-1d87-45b8-816a-e46d80c2d963|P
    |2.5|||AL|||UNICODE UTF-8
EVN||20180313140543.34+0100|||userId6167^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313140543.207+0100
PID|||patientId1107^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234580028^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980313|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|
    patientAccount8507^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||Y|1|GB||||N
PV1||N|||||||||||||||||visitId0280^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||||||||V
ZBE|visitEvent4414^My Local Clinic^1.2.123.27.1974^ISO|20180313140543.207+0100||INSERT|N
```

5.16 Cancel End Leave Of Absence

This transaction is used to notify the MPI about the cancellation of an End Leave of Absence event.

5.16.1 Cancel End Leave Of Absence – HL7v2

- **ADT A53** – Cancel patient returns from a leave of absence

5.16.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Cancel End Leave Of Absence.

Table 90: Cancel End Leave Of Absence Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A53**
EVN	Event Information
IN1	Patient Insurance (**optional**)
PID	Patient Information
PV1	Patient Visit Information



Note

Although the PID segment is required in Cancel Transactions, patient data will not be updated when differing from those registered in the system.

MSH Segment

The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose,

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destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment
: The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment
: The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment
: The PID segment contains the relevant patient data.

PV1 Segment
: The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment
: The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.16.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2 and those for IN1 in Table 4. In cancellation messages, the PID segment is only required to contain a valid ID (PID-3) and the patient name (PID-5). The relevant fields of the other segments are:

EVN-2
: Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5
: Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7
: Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2
: Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-19
: Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

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PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

Table 91: Fields relevant for the Cancel End Leave of Absence Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-19	Visit Number	No	Recommended
PV1-51	Visit Indicator	No	Optional

Example 116:

Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306171152.786+0100||ADT^A53|eb4eb86a-9cf9-48a5-b0b5-01745136d698|
    P|2.5|||AL|||UNICODE UTF-8
EVN||20180306171152.786+0100|||userId9231^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974&ISO^L^^^EN|20180306171152.701+0100
PID|||patientId0902^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PV1||N|||||||||||||||||visitId3830^^^My Local Clinic&1.2.123.27.1974&ISO^VN
```

Submission with Historic Movement Management

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313135921.01+0100||ADT^A53|c7c54ec2-2dcd-4a9f-93d8-db0fe791f007|P
    |2.5|||AL|||UNICODE UTF-8
EVN||20180313135921.01+0100|||userId3648^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313135920.997+0100
PID|||patientId1751^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PV1||N|||||||||||||||||visitId2780^^^My Local Clinic&1.2.123.27.1974&ISO^VN
    ||||||||||||||||||||||||||||||V
ZBE|visitEvent8186^My Local Clinic^1.2.123.27.1974^ISO|20180313135920.997+0100||CANCEL|N
```

5.17 Move Account Information

5.17.1 Move Account Information – HL7v2

› **ADT A44** – Move account information – patient account number

5.17.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Move Account Information.

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Table 92: Move Account Information Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A44**
EVN	Event Information
IN1	Patient Insurance (**optional**)
PID	Patient Information
PV1	Patient Visit Information

MSH Segment
: The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment
: The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment
: The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment
: The PID segment contains the relevant patient data.

PV1 Segment
: The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment
: The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.17.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 4. These are the relevant fields of the other segments:

EVN-2
: Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5
: Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7
: Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

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PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

MRG-1

Prior Patient Identifier List: List of all Patient IDs of the recessive patient. The structure of this field corresponds to that of PID-3 (*Patient Identifier List*). For a valid transaction it is sufficient to provide one Source Patient Identifier. Regional identifiers such as social security numbers should not be used since they will be ignored by eHealth Solutions.

MRG-3

Prior Patient Account Number: Account Number of the recessive patient. The structure of this field corresponds to that of PID-18 (*Patient Account Number*).

MRG-7

Prior Patient Name List: Name of the recessive patient. Values given in this field are used for logging purposes.

Table 93: Fields relevant for the Move Account Information Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-19	Visit Number	No	Recommended
PV1-51	Visit Indicator	No	Optional
MRG-1	Patient Identifier List	Yes	Required
MRG-3	Prior Patient Account Number	No	Optional
MRG-7	Prior Patient Name List	Yes	Optional

Example 117:
Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180306174815.292+0100||ADT^A44^ADT_A43|73aba801-c195-4adb-89c6-5d
    9098bc57b8|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306174815.292+0100|||userId9885^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974&ISO^L^^^EN
```

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```
PID|||patientId3526^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234581018^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980306|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|||||||Y|2|
    GB||||N
MRG|previousPatientId1234^^^My Local Clinic&1.2.123.27.1974&ISO^PI||patientAccount5844^^^My
    Local Clinic&1.2.123.27.1974&ISO^AN
```

5.18 Update Encounter Event

5.18.1 Update Encounter Event – HL7v2

› **ADT Z99** – Historic Movement

5.18.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Update Encounter Event.

Table 94: Update Encounter Event Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **Z99**
EVN	Event Information
IN1	Patient Insurance (**optional**)
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **UPDATE**
ZBE-5	The movement indicator must be **Y**

MSH Segment

The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment

The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment

The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment

The PID segment contains the relevant patient data.

PV1 Segment

The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

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ZBE Segment

The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.18.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 4. These are the relevant fields of the other segments:

EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

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Table 95: Fields relevant for the Update Encounter Event Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-19	Visit Number	No	Recommended
PV1-51	Visit Indicator	No	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 118:
Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180313125647.897+0100||ADT^Z99|d5d31bd2-edf5-4615-b11e-1087d0df4dca|
    P|2.5||||||UNICODE UTF-8
EVN||20180313125647.897+0100|||userId6136^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO^L^^^EN|20180313125647.814+0100
PID|||patientId9538^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
    ||||||||||||||patientAccount3391^^^My Local Clinic&1.2.123.27.1974&ISO^AN||||||N||||||N
PV1||I|^^^Radiology&1.2.123.27.1974.187.15&ISO||||doctor0876^FamilyName^GivenName^^^^^^
    Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|doctor7659^FamilyName^
    GivenName^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.||||||||||||
    visitId0278^^^My Local Clinic&1.2.123.27.1974&ISO^VN|||||||||||||||||||||||||||||||V
ZBE|visitEvent4692^My Local Clinic^1.2.123.27.1974^ISO|20180313125647.814+0100||UPDATE|Y
```

5.19 Cancel Encounter Event

5.19.1 Cancel Encounter Event – HL7v2

› **ADT Z99** – Historic Movement

5.19.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Cancel Encounter Event.

Table 96: Cancel Encounter Event Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **Z99**

Table 96: Cancel Encounter Event Segments

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Table 96: Cancel Encounter Event Segments

Segment	Description
EVN	Event Information
IN1	Patient Insurance (**optional**)
PID	Patient Information
PV1	Patient Visit Information
ZBE	Movement Action (**optional**)
ZBE-4	The type of action must be **CANCEL**
ZBE-5	The movement indicator must be **N**



Note

Although the PID segment is required in Cancel Transactions, patient data will not be updated when differing from those registered in the system.

MSH Segment

The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment

The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment

The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment

The PID segment contains the relevant patient data.

PV1 Segment

The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

ZBE Segment

The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

5.19.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2 and those for IN1 in Table 4. In cancellation messages, the PID segment is only required to contain a valid ID (PID-3) and the patient name (PID-5). The relevant fields of the other segments are:

EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes).

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In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

ZBE-1

Movement ID: The unique identifier of the movement. All components are processed, ZBE-1.1 (Entity ID) and ZBE-1.3 (Universal ID; it is recommended to use the value given in the Source Patient Assigning Authority) are required.

ZBE-2

Start Movement Date/Time: The timestamp of the movement.

ZBE-4

Movement Action: For the type of movement see Table 60.

ZBE-5

Historical Movement Indicator: See Table 60.

Table 97: Fields relevant for the Cancel Encounter Event Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
PV1-19	Visit Number	No	Recommended
PV1-51	Visit Indicator	No	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management
ZBE-2	Start Movement Date/Time	No	Required for Historic Movement Management
ZBE-4	Movement Action	No	Required for Historic Movement Management

Table 97: Fields relevant for the Cancel Encounter Event Transaction

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Table 97: Fields relevant for the Cancel Encounter Event Transaction

HL7-Path	Name	Repeatable	Presence
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

5.20 Merge Patients/Encounters

5.20.1 Merge Patients/Encounters – HL7v2

- **ADT A34** – Merge Patient Information – Patient ID Only

or

- **ADT A40** – Merge Patient – Patient Identifier List
- **ADT A39** – Merge Person – Patient ID

5.20.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Merge Patients/Encounters.

Table 98: Merge Patients/Encounters Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A40** and **A39** or **A34**
EVN	Event Information
IN1	Patient Insurance (**optional**)
MRG	Merge Patient Information
PID	Patient Information
PV1	Patient Visit Information

MSH Segment

The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment

The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message. Values provided in fields other than those listed in the Field Overview will be ignored.

IN1 Segment

The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment

The PID segment contains the relevant patient data.

PV1 Segment

The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

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ZBE Segment

The ZBE segment can be used to uniquely identify individual movements. This allows for corrections in historic information at a later point. Note that, when the ZBE segment is used, at least one patient assigning authority must be configured to support the Historic Movement Management option. As long as this configuration is active, the ZBE segment is treated as required.

MRG Segment

The MRG segment is used to specify the patient dataset to be merged.

5.20.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 4. These are the relevant fields of the other segments:

EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

MRG-1

Prior Patient Identifier List: List of all Patient IDs of the recessive patient. The structure of this field corresponds to that of PID-3 (*Patient Identifier List*). For a valid transaction it is sufficient to provide one Source Patient Identifier. Regional identifiers such as social security numbers should not be used since they will be ignored by eHealth Solutions.

MRG-3

Prior Patient Account Number: Account Number of the recessive patient. The structure of this field corresponds to that of PID-18 (*Patient Account Number*).

MRG-7

Prior Patient Name List: Name of the recessive patient. Values given in this field are used for logging purposes.

PV1-2

Patient Class: Determines the type of patient visit. This field is not case-sensitive; it identifies the type of patient visit. Accepted values are **B** for obstetrics, **C** for commercial account, **E** for emergency, **I** for inpatient, **N** for not applicable, **O** for outpatient, **P** for pre-admit, **R** for recurring patient.

PV1-19

Visit Number: The unique identifier of the patient encounter. The value is supposed to be static for all messages referring to the same encounter. If no value is present, PID-18 will be used as a fallback encounter identifier. However, it is strongly recommended to use PV1-19 as the encounter identifier, and use PID-18 only to group encounters under a common patient encounter (if desired). In any case, this field is not intended to identify a specific encounter event (e.g., inpatient admission), but the patient encounter (a sequence of individual encounter events) as a whole. Also, it should be noted that the `MPI` processes PV1-19.1, PV1-19.4 and PV1-19.5.

PV1-51

Visit Indicator: Specifies the field that is used to identify the encounter. Possible values are **A** for PID-

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18, **V** for PV1-19 (recommended). It is recommended by IHE to set a value for this field. In eHealth Solutions, however, values given here will not be processed.

Table 99: Fields relevant for the Merge Patients/Encounters Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
MRG-1	Patient Identifier List	Yes	Required
MRG-3	Prior Patient Account Number	No	Optional
MRG-7	Prior Patient Name List	Yes	Optional
PV1-2	Patient Class	No	Required
PV1-19	Visit Number	No	Recommended
PV1-51	Visit Indicator	No	Optional

Example 119:
Submission

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180312153358.894+0100||ADT^A40^ADT_A39|419e1774-2fc6-4890-838e-a0305
    d9d0713|P|2.3.1|||AL|||UNICODE UTF-8
EVN||20180312153358.894+0100|||userId8374^FamilyName^GivenName ^^^^^^^My Local Clinic
    &1.2.123.27.1974.1.239&ISO
PID|||patientId3978^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234581551^^^Social
    Security Association&1.2.123.27.1974&ISO^SS||FamilyName^GivenName^^^^^L||19980312|M|||&
    Main Street&17^^London^^54820^GB^L||^^^^^^^^^^011 44 20 1234 5678||en|M|VAR|||||||2|GB
    ||||N
MRG|patientId4377^^^My Local Clinic&1.2.123.27.1974&ISO^PI||||||FamilyName^GivenName^^^^^L
PV1||N
```

5.21 Retrieve DICOM Studies – HL7v2

Incoming HL7v2 ADT messages are trigger events to query DICOM studies with the requested metadata (C-Find) and register them in the XDS Registry. These trigger events and the Application Entity Title (AET) that is queried for DICOM studies are configurable. Automatic retrieval for DICOM studies can be triggered by below listed ADT messages.

List of supported trigger events:

- **A01**
- **A02**
- **A03**
- **A04**
- **A05**
- **A06**
- **A07**
- **A11**
- **A12**
- **A13**
- **A21**
- **A22**
- **A52**
- **A53**
- **A54**
- **A55**

Note

Note that if you trigger A01 or A05 a special behavior occurs: even if A01 is not set in the configuration and you send a A05, you not only get the response for A05 but also for A01 and vice versa.

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6 Forms

eHealth Solutions offers an interface for creating and operating forms that can be integrated in various features and workflows within eHealth Solutions.

Forms enable the creation of forms or questionnaires that can be provided to end users (for example, patients) and offer the possibility to collect data in a structured way following the FHIR standard to grant further processing in other eHealth Solutions applications.

Table 100 and Table 101 contain information on which elements are needed in the `Questionnaire` and the `QuestionnaireResponse` resources.

Table 100: FHIR Elements for the Questionnaire Resource

Element	Required	Comment
resourceType	yes	Set it to "Questionnaire".
url	yes	Must be unique. If empty, the URL will be generated automatically. Valid format: It has to start with "https://" or "http://". The `url` cannot be changed later.
status	yes	
item	yes	
linkId	yes	
text	yes	
type	yes	Refer to Section 6.1 for a list of the supported types for eHealth Solutions.
enableWhen	no	Used if conditional questions shall be displayed based on the answers to other questions. Not supported for quantities with multiple units.
enableBehavior	conditionally required	Required if `enableWhen` is specified and multiple conditions are used.
required	yes	
readOnly	yes	
answerValueSet	conditionally required	Specify the `OID` of the value set from the eHealth Solutions *Value Set Repository* with `"urn:oid:{oid}"`. This is only supported for items of type `choice`. Note that you can only use either `answerValueSet` or `answerOption`.
answerOption	conditionally required	Can only be used for either of the following: › `Questionnaire.item.type` = "choice" › `Questionnaire.item.type` = "open-choice"

Refer to the official FHIR documentation (Questionnaire resource) for further details.

Table 101: FHIR Elements for the QuestionnaireResponse Resource

Element	Required	Comment
resourceType	yes	Set it to "QuestionnaireResponse".
questionnaire	yes	This links the questionnaire response to the questionnaire. Note that for the link to be set correctly, this value must match the value specified in the `Questionnaire.url` element.
item	yes	
linkId	yes	
answer	yes	
value[x]	optional	

Refer to the official FHIR documentation (QuestionnaireResponse resource) for further details.

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6.1 Supported Types and Their Mapping

Table 102 lists the supported item types of `Questionnaire.item.type` and depicts their mapping to `QuestionnaireResponse.item.answer.value[x]`. For example, a `Questionnaire.item` of type "choice" is mapped to a `QuestionnaireResponse.item.answer.value[x]` of type "coding".

Table 102: Supported Item Types and their Mapping

FHIR item type	repeatable	repeatable inside group	value[x]
group	✓	✗	Does not contain a direct answer but one or more child items instead. Nesting groups is not supported.
boolean	✓	✗	valueBoolean
decimal	✓	✗	valueDecimal
integer	✓	✗	valueInteger
date	✓	✗	valueDate
dateTime	✓	✗	valueDateTime
time	✓	✗	valueTime
string	✓	✗	valueString
text	✓	✗	valueString
choice	✓	✓	valueCoding
open-choice	✓	✓	valueCoding, valueString
quantity	✓	✗	valueQuantity



Note

For `Questionnaire.items` of type `choice` (single- and multiselect), you can either specify the available options manually in `Questionnaire.item.answerOption` or you can import them from the eHealth Solutions *Terminology Server*. Note that only the eHealth Solutions *Terminology Server* can be used; no other external terminology server or the eHealth SolutionsHealth Data Repository is supported. Refer to section "Questionnaires" of the eHealth Solutions *Configuration Instructions* for configuration details.

Example 120 and Example 121 provide a simple JSON structure for a `Questionnaire` or `QuestionnaireResponse` respectively. Example 122 shows how conditional questions are specified in a `Questionnaire`.

Example 120: Questionnaire

```
{
  "resourceType": "Questionnaire",
  "id": "d5d9395c-e09a-4e10-a774-4d1ee0c39246",
  "meta": {
      "versionId": "1",
      "lastUpdated": "2024-10-23T12:46:49.500+00:00",
      "source": "1.1.1.4#1aPFfcfXolZrbjev"
  },
  "url": "https://ehs.at/fhir/Questionnaire/e6b50bb3-10bb-4418-927b-4dfb0ecb483e",
  "title": "This is a Sample Questionnaire",
  "status": "active",
  "item": [
    {
      "linkId": "firstQuestionForString",
      "text": "This is a 'String'",
      "type": "string",
```

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```
      "required": false
    },
    {
      "linkId": "secondQuestionForInteger",
      "text": "This is an 'Integer' with a default value",
      "type": "integer",
      "initial": [
        {
          "valueInteger": 12
        }
      ]
    },
    {
      "extension": [
        {
          "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://hl7.org/fhir/questionnaire-item-control",
                "code": "radio-button",
                "display": "Radio Button"
              }
            ]
          }
        }
      ],
      "linkId": "thirdQuestionForRadioButton",
      "text": "This is a 'Radio Button'",
      "type": "choice",
      "required": false,
      "answerOption": [
        {
          "valueCoding": {
            "code": "1",
            "display": "1"
          }
        },
        {
          "valueCoding": {
            "code": "2",
            "display": "2"
          },
          "initialSelected": true
        },
        {
          "valueCoding": {
            "code": "3",
            "display": "3"
          }
        }
      ]
    },
    {
      "extension": [
        {
          "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://hl7.org/fhir/questionnaire-item-control",
                "code": "drop-down",
                "display": "Drop down"
              }
            ]
```

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```
        }
      }
    ],
    "linkId": "fourthQuestionForDropDown",
    "text": "This is a 'Drop down' with single select option",
    "type": "choice",
    "required": false,
    "readOnly": true,
    "answerOption": [
      {
        "valueCoding": {
          "code": "a",
          "display": "Choice A"
        }
      },
      {
        "valueCoding": {
          "code": "b",
          "display": "Choice B"
        },
        "initialSelected": true
      }
    ]
  },
  {
    "extension": [
      {
        "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
        "valueCodeableConcept": {
          "coding": [
            {
              "system": "http://hl7.org/fhir/questionnaire-item-control",
              "code": "drop-down",
              "display": "Drop down"
            }
          ]
        }
      }
    ],
    "linkId": "3177355981487",
    "text": "This is a 'Drop down' with multiple select option with default values",
    "type": "choice",
    "repeats": true,
    "answerOption": [
      {
        "valueCoding": {
          "code": "one",
          "display": "one"
        }
      },
      {
        "valueCoding": {
          "code": "two",
          "display": "two"
        },
        "initialSelected": true
      },
      {
        "valueCoding": {
          "code": "three",
          "display": "three"
        },
        "initialSelected": true
      }
    ]
```

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```
    },
    {
      "extension":[
        {
          "url":"http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
          "valueCodeableConcept":{
            "coding": [
              {
                "system":"http://hl7.org/fhir/questionnaire-item-control",
                "code":"drop-down",
                "display":"Drop down"
              }
            ]
          }
        }
      ],
      "linkId":"cDRsvsSingleSelect",
      "text":"SVS Single Select",
      "type":"choice",
      "required":true,
      "answerValueSet":"urn:oid:1.3.6.1.4.1.36124.100.10"
    },
    {
      "type": "open-choice",
      "extension": [
        {
          "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://hl7.org/fhir/questionnaire-item-control",
                "code": "radio-button",
                "display": "Radio Buttons"
              }
            ]
          }
        }
      ],
      "linkId": "fifthQuestionForRadioButtonsWithFreeText",
      "text": "Radio buttons with free text option",
      "required": true,
      "repeats": false,
      "answerOption": [
        {
          "valueCoding": {
                  "system": "item1",
                  "code": "item1",
                  "display": "item1"
          },
          "initialSelected": true
        },
        {
          "valueCoding": {
            "system": "item2",
            "code": "item2",
            "display": "item2"
          }
        }
      ]
    },
    {
      "type": "open-choice",
      "extension": [
        {
          "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
```

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```
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://hl7.org/fhir/questionnaire-item-control",
                "code": "check-box",
                "display": "Check-box"
              }
            ]
          }
        }
      ],
      "linkId": "sixthQuestionForCheckBoxWithFreeText",
      "text": "Checkbox with other option",
      "required": false,
      "repeats": true,
      "answerOption": [
        {
          "valueCoding": {
            "system": "item1",
            "code": "item1",
            "display": "item1"
          }
        },
        {
          "valueCoding": {
            "system": "item2",
            "code": "item2",
            "display": "item2"
          }
        }
      ]
    }
  ]
}
```

Example 121: Questionnaire Response

```
{
  "resourceType": "QuestionnaireResponse",
  "id": "82200f51-eb2a-4661-9389-905d6d944601",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2024-03-19T12:48:02.490+00:00",
    "source": "1.4.4.4#mPOzOusTW03dwAVl"
  },
  "questionnaire": "https://ehs.at/fhir/Questionnaire/e6b50bb3-10bb-4418-927b-4dfb0ecb483e",
  "status": "completed",
  "subject": {
    "reference": "Patient/2321",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:1.1.1",
      "value": "07836b2f-bb5c-4d66-a1d7-7a620cf02dc3"
    }
  },
  "authored": "<YYYY-MM-DD>T13:47:59+01:00",
  "author": {
    "reference": "Patient/2321",
    "type": "Patient",
    "identifier": {
      "system": "urn:oid:1.1.1",
      "value": "07836b2f-bb5c-4d66-a1d7-7a620cf02dc3"
    }
```

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```
  },
  "source": {
    "reference": "PractitionerRole/26",
    "type": "PractitionerRole",
    "identifier": {
      "system": "urn:ietf:rfc:3986",
      "value": "urn:hpd:1.1.1:1681215025649"
    }
  },
  "item": [
    {
      "linkId": "firstQuestionForString",
      "answer": [
        {
          "valueString": "This is my answer"
        }
      ]
    },
    {
      "linkId": "secondQuestionForInteger",
      "answer": [
        {
          "valueInteger": 42
        }
      ]
    },
    {
      "linkId": "thirdQuestionForRadioButton",
      "answer": [
        {
          "valueCoding": {
            "code": "1",
            "display": "1"
          }
        }
      ]
    },
    {
      "linkId": "fourthQuestionForDropDown",
      "answer": [
        {
          "valueCoding": {
            "code": "b",
            "display": "Choice B"
          }
        }
      ]
    },
    {
      "linkId": "fifthQuestionForRadioButtonsWithFreeText",
      "text": "Radio with other option",
      "answer": [
        {
          "valueString": "Some free text"
        }
      ]
    },
    {
      "linkId": "sixthQuestionForCheckBoxWithFreeText",
      "text": "Checkbox with other option",
      "answer": [
        {
          "valueCoding": {
            "system": "item1",
            "code": "item1",
```

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```
            "display": "item1"
          }
        },
        {
          "valueString": "Some free text"
        }
      ]
    }
  ]
}
```

Example 122: Conditional Questions

```
{
  "resourceType": "Questionnaire",
  "id": "c4b65f0b-9243-4c40-94e0-d28aef2db5cb",
  "meta": {
    "versionId": "2",
    "lastUpdated": "2026-05-27T13:06:19.560+00:00",
    "source": "1.1.1.194611240010"
  },
  "url": "https://ehs.at/fhir/Questionnaire/conditionalQuestionnaire",
  "title": "Conditional Questionnaire",
  "status": "active",
  "description": "This is a sample questionnaire with conditional questions",
  "item": [
    {
      "linkId": "388089196633",
      "text": "Question1 - text",
      "type": "string",
      "required": false,
      "repeats": false
    },
    {
      "linkId": "459013025109",
      "text": "Question 2 -Decimal",
      "type": "decimal",
      "required": false,
      "repeats": false
    },
    {
      "linkId": "456525614699",
      "text": "Conditional Question",
      "type": "string",
      "enableWhen": [
        {
          "question": "388089196633",
          "operator": "=",
          "answerString": "show"
        },
        {
          "question": "459013025109",
          "operator": "<",
          "answerDecimal": 55.0
        }
      ],
      "enableBehavior": "all",
      "required": false,
      "repeats": false
    }
  ]
}
```

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6.2 Data Extraction

eHealth Solutions supports the extraction of data from questionnaire responses using the following mechanisms: `observation-based` and `definition-based` extraction.

Table 103 and Table 104 list the items needed in a `Questionnaire` resource for the respective extraction type. Note that different types of extraction can be used in one questionnaire, but they cannot be mixed within the same group.

Refer to the official FHIR SDC Guide (Extraction) for further details.

Table 103: Elements needed for the Observation-based Extraction

Element	Required	Comment
item	yes	
coding	yes	The contained code will be set in the `code` element of the resulting `Observation` resource.
system	yes	
code	yes	
display	optional	

Table 104: Elements needed for the Definition-based Extraction

Element	Required	Comment
item	yes	
definition	yes	The definition-based extraction is only available for `AllergyIntolerance` and `MedicationStatement` resources.

Example 123 shows a sample `Questionnaire` that can be used for extraction and Example 124 shows a sample `QuestionnaireResponse`. Example 125, Example 126, and Example 127 provide examples for extracted `Observation`, `AllergyIntolerance`, and `MedicationStatement` resources.

Example 123: Questionnaire for Data Extraction

```
{
  "resourceType": "Questionnaire",
  "id": "dab27dbb-7ebf-44b3-8dde-b94f0ee6ec34",
  "url": "https://ehs.at/fhir/Questionnaire/5b93f9a2-3282-4d07-b4f4-942cd6f0e04c",
  "name": "ExtractionTest",
  "title": "Extraction Test Questionnaire",
  "status": "active",
  "description": "A questionnaire to use for testing the questionnaire response extraction
    .",
  "item": [
    {
      "linkId": "allergy",
      "definition": "http://hl7.org/fhir/StructureDefinition/AllergyIntolerance#
    AllergyIntolerance",
      "text": "Allergy Intolerance",
      "type": "group",
      "item": [
        {
          "extension": [
            {
              "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
              "valueCodeableConcept": {
                "coding": [
                  {
```

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```
                "system": "http://hl7.org/fhir/questionnaire-item-control",
                "code": "drop-down",
                "display": "Drop down"
              }
            ],
            "text": "Drop down"
          }
        }
      ],
      "linkId": "allergy1",
      "definition": "http://hl7.org/fhir/StructureDefinition/AllergyIntolerance#
AllergyIntolerance.code.coding",
      "text": "What kind of Allergy do you have?",
      "type": "choice",
      "answerOption": [
        {
          "valueCoding": {
            "system": "http://ehealth/allergy",
            "code": "1a",
            "display": "Allergy A"
          }
        },
        {
          "valueCoding": {
            "system": "http://ehealth/allergy",
            "code": "1b",
            "display": "Allergy B"
          }
        },
        {
          "valueCoding": {
            "system": "http://ehealth/allergy",
            "code": "1c",
            "display": "Allergy C"
          }
        }
      ]
    },
    {
      "linkId": "allergy2",
      "definition": "http://hl7.org/fhir/StructureDefinition/AllergyIntolerance#
AllergyIntolerance.onsetDateTime",
      "text": "When did the Allergy start?",
      "type": "dateTime"
    },
    {
      "linkId": "allergy3",
      "definition": "http://hl7.org/fhir/StructureDefinition/AllergyIntolerance#
AllergyIntolerance.reaction.description",
      "text": "Please describe the Allergy Reaction",
      "type": "string"
    },
    {
      "extension": [
        {
          "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://hl7.org/fhir/questionnaire-item-control",
                "code": "radio-button",
                "display": "Radio button"
              }
            ],
            "text": "Radio Button"
```

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```
            }
          }
        ],
        "linkId": "allergy4",
        "definition": "http://hl7.org/fhir/StructureDefinition/AllergyIntolerance#
    AllergyIntolerance.reaction.severity",
        "text": "What is the severity of the Allergy?",
        "type": "choice",
        "answerOption": [
          {
            "valueCoding": {
              "system": "http://hl7.org/fhir/ValueSet/reaction-event-severity",
              "code": "mild",
              "display": "Mild"
            }
          },
          {
            "valueCoding": {
              "system": "http://hl7.org/fhir/ValueSet/reaction-event-severity",
              "code": "moderate",
              "display": "Moderate"
            }
          },
          {
            "valueCoding": {
              "system": "http://hl7.org/fhir/ValueSet/reaction-event-severity",
              "code": "severe",
              "display": "Severe"
            }
          }
        ]
      }
    ]
  },
  {
    "linkId": "heartrate",
    "code": [
      {
        "system": "http://loinc.org",
        "code": "8867-4",
        "display": "Heart rate"
      }
    ],
    "text": "What is your heart rate?",
    "type": "integer"
  },
  {
    "linkId": "medicationStatement",
    "definition": "http://hl7.org/fhir/StructureDefinition/MedicationStatement#
    MedicationStatement",
    "text": "Medication Statement",
    "type": "group",
    "item": [
      {
        "extension": [
          {
            "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
            "valueCodeableConcept": {
              "coding": [
                {
                  "system": "http://hl7.org/fhir/questionnaire-item-control",
                  "code": "drop-down",
                  "display": "Drop down"
                }
              ],
```

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```
              "text": "Drop down"
            }
          }
        ],
        "linkId": "medicationStatement1",
        "definition": "http://hl7.org/fhir/StructureDefinition/MedicationStatement#
    MedicationStatement.medicationCodeableConcept.coding",
        "text": "What kind of Medication do you take regularly?",
        "type": "choice",
        "answerOption": [
          {
            "valueCoding": {
              "system": "http://ehealth/medication",
              "code": "medA",
              "display": "Medication A"
            }
          },
          {
            "valueCoding": {
              "system": "http://ehealth/medication",
              "code": "medB",
              "display": "Medication B"
            }
          },
          {
            "valueCoding": {
              "system": "http://ehealth/both",
              "code": "bogh",
              "display": "Medication A and B"
            }
          }
        ]
      },
      {
        "linkId": "medicationStatement2",
        "definition": "http://hl7.org/fhir/StructureDefinition/MedicationStatement#
    MedicationStatement.note.text",
        "text": "Would you like to add a note to the Medication?",
        "type": "string"
      },
      {
        "extension": [
          {
            "url": "http://hl7.org/fhir/StructureDefinition/questionnaire-itemControl",
            "valueCodeableConcept": {
              "coding": [
                {
                  "system": "http://hl7.org/fhir/questionnaire-item-control",
                  "code": "radio-button",
                  "display": "Radio button"
                }
              ],
              "text": "Radio Button"
            }
          }
        ],
        "linkId": "medicationStatement3",
        "definition": "http://hl7.org/fhir/StructureDefinition/MedicationStatement#
    MedicationStatement.statusReason.coding",
        "text": "Why don't you take the drugs?",
        "type": "choice",
        "answerOption": [
          {
            "valueCoding": {
              "system": "http://snomed.info/sct",
```

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```
              "code": "182862001",
              "display": "Drug not taken - dislike taste"
            }
          },
          {
            "valueCoding": {
              "system": "http://snomed.info/sct",
              "code": "275929009",
              "display": "Tablets too large to swallow"
            }
          },
          {
            "valueCoding": {
              "system": "http://snomed.info/sct",
              "code": "182842009 ",
              "display": "Doctor stopped drugs - side effect"
            }
          }
        ]
      }
    ]
  }
 ]
}
```

Example 124: QuestionnaireResponse for Data Extraction

```
{
    "resourceType": "QuestionnaireResponse",
    "id": "fec05a42-85ac-4367-9657-7edbffce69b7",
    "questionnaire": "https://ehs.at/fhir/Questionnaire/5b93f9a2-3282-4d07-b4f4-942cd6f0e04c
    ",
    "status": "completed",
    "item": [
        {
            "linkId": "allergy",
            "definition": "http://hl7.org/fhir/StructureDefinition/AllergyIntolerance#
    AllergyIntolerance",
            "text": "Allergy Intolerance",
            "item": [
                {
                    "linkId": "allergy1",
                    "definition": "http://hl7.org/fhir/StructureDefinition/
    AllergyIntolerance#AllergyIntolerance.code.coding",
                    "text": "What kind of Allergy do you have?",
                    "answer": [
                        {
                            "valueCoding": {
                                "system": "http://ehealth/allergy",
                                "code": "1a",
                                "display": "Allergy A"
                            }
                        }
                    ]
                },
                {
                    "linkId": "allergy2",
                    "definition": "http://hl7.org/fhir/StructureDefinition/
    AllergyIntolerance#AllergyIntolerance.onsetDateTime",
                    "text": "When did the Allergy start?",
                    "answer": [
                        {
                            "valueDateTime": "2000-01-15T11:00:00.000Z"
```

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```
                    }
                ]
            },
            {
                "linkId": "allergy3",
                "definition": "http://hl7.org/fhir/StructureDefinition/
AllergyIntolerance#AllergyIntolerance.reaction.description",
                "text": "Please describe the Allergy Reaction",
                "answer": [
                    {
                        "valueString": "The skin is itching and gets read when in
contact with substance A"
                    }
                ]
            },
            {
                "linkId": "allergy4",
                "definition": "http://hl7.org/fhir/StructureDefinition/
AllergyIntolerance#AllergyIntolerance.reaction.severity",
                "text": "What is the severity of the Allergy?",
                "answer": [
                    {
                        "valueCoding": {
                            "system": "http://hl7.org/fhir/ValueSet/reaction-event-
severity",
                            "code": "moderate",
                            "display": "Moderate"
                        }
                    }
                ]
            }
        ]
    },
    {
        "linkId": "heartrate",
        "text": "What is your heart rate?",
        "answer": [
            {
                "valueInteger": 70
            }
        ]
    },
    {
        "linkId": "medicationStatement",
        "definition": "http://hl7.org/fhir/StructureDefinition/MedicationStatement#
MedicationStatement",
        "text": "Medication Statement",
        "item": [
            {
                "linkId": "medicationStatement1",
                "definition": "http://hl7.org/fhir/StructureDefinition/
MedicationStatement#MedicationStatement.medicationCodeableConcept.coding",
                "text": "What kind of Medication do you take regularly?",
                "answer": [
                    {
                        "valueCoding": {
                            "system": "http://ehealth/medication",
                            "code": "medB",
                            "display": "Medication B"
                        }
                    }
                ]
            },
            {
                "linkId": "medicationStatement2",
```

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```
                    "definition": "http://hl7.org/fhir/StructureDefinition/
    MedicationStatement#MedicationStatement.note.text",
                    "text": "Would you like to add a note to the Medication?",
                    "answer": [
                        {
                            "valueString": "Sometimes I can not take the drugs"
                        }
                    ]
                },
                {
                    "linkId": "medicationStatement3",
                    "definition": "http://hl7.org/fhir/StructureDefinition/
    MedicationStatement#MedicationStatement.statusReason.coding",
                    "text": "Why don't you take the drugs?",
                    "answer": [
                        {
                            "valueCoding": {
                                "system": "http://snomed.info/sct",
                                "code": "275929009",
                                "display": "Tablets too large to swallow"
                            }
                        }
                    ]
                }
            ]
        }
    ]
}
```

Example 125: Extracted Observation Resource

```
{
   "resourceType": "Observation",
   "id": "d318519b-6f81-4d50-9dd1-3dcd714b980a",
   "meta": {
       "versionId": "1",
       "lastUpdated": "2025-01-28T10:10:13.061+00:00",
       "source": "1.1.1.2.1#46SwDfl44UX4v7sB"
   },
   "extension": [
       {
           "url": "http://hl7.org/fhir/uv/sdc/StructureDefinition/derivedFromLinkId",
           "extension": [
               {
                   "url": "text",
                   "valueString": "heartrate"
               }
           ]
       }
   ],
   "status": "final",
   "category": [
       {
           "coding": [
               {
                   "system": "http://hl7.org/fhir/observation-category",
                   "code": "survey"
               }
           ]
       }
   ],
   "code": {
       "coding": [
```

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```
            {
                "system": "http://loinc.org",
                "code": "8867-4",
                "display": "Heart rate"
            }
        ]
    },
    "effectiveDateTime": "2025-01-28T10:10:10+00:00",
    "issued": "2025-01-28T10:10:10.000+00:00",
    "valueInteger": 70,
    "derivedFrom": [
        {
            "reference": "QuestionnaireResponse/fec05a42-85ac-4367-9657-7edbffce69b7",
            "type": "QuestionnaireResponse"
        }
    ]
}
```


Example 126: Extracted AllergyIntolerance Resource


```
{
    "resourceType": "AllergyIntolerance",
    "id": "a1b214e2-6e47-4d65-9502-0c234a6e606e",
    "meta": {
        "versionId": "1",
        "lastUpdated": "2025-01-28T10:10:12.520+00:00",
        "source": "1.1.1.2.1#rKxqagUraXabXef8",
        "profile": [
            "http://hl7.org/fhir/StructureDefinition/AllergyIntolerance"
        ]
    },
    "code": {
        "coding": [
            {
                "system": "http://ehealth/allergy",
                "code": "1a",
                "display": "Allergy A"
            }
        ]
    },
    "onsetDateTime": "2000-01-15T11:00:00.000Z",
    "asserter": {
        "type": "PractitionerRole",
        "identifier": {
            "system": "1.1.1",
            "value": "1.1.1:1686056768398"
        }
    },
    "reaction": [
        {
            "description": "The skin is itching and gets read when in contact with substance
     A",
            "severity": "moderate"
        }
    ]
}
```


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Example 127: Extracted MedicationStatement Resource


```
{
  "resourceType": "MedicationStatement",
  "id": "ab8d7ff9-425c-4483-922e-45fd85a51c24",
  "meta": {
      "versionId": "1",
      "lastUpdated": "2025-01-28T10:10:13.535+00:00",
      "source": "1.1.1.2.1#xjPbtQbbjAv8Ygvb",
      "profile": [
          "http://hl7.org/fhir/StructureDefinition/MedicationStatement"
      ]
  },
  "statusReason": [
      {
          "coding": [
              {
                  "system": "http://snomed.info/sct",
                  "code": "275929009",
                  "display": "Tablets too large to swallow"
              }
          ]
      }
  ],
  "medicationCodeableConcept": {
      "coding": [
          {
              "system": "http://ehealth/medication",
              "code": "medB",
              "display": "Medication B"
          }
      ]
  },
  "effectiveDateTime": "2025-01-28T10:10:10+00:00",
  "informationSource": {
      "type": "PractitionerRole",
      "identifier": {
          "system": "1.1.1",
          "value": "1.1.1:1686056768398"
      }
  },
  "note": [
      {
          "text": "Sometimes I can not take the drugs"
      }
  ]
}
```




Note

These examples were not filled in by or for a patient and thus are not connected to a patient resource.

6.3 Translations of Forms

In the **Forms** application, a primary language of a form and translations into additional languages can be added.

The translated labels of the form are stored in the `Questionnaire` resource as extensions and arrays of extensions in case of more than one translated language.

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For such translations, the elements shown in Table 105 are added to the `Questionnaire` resource in addition to those listed in Table 100.

Table 105: FHIR Elements for the Multilingual Questionnaire Resource

Element	Required	Comment
language	yes	Specify the primary language of the form.
extension	yes	
url	yes	Set it to "http://hl7.org/fhir/StructureDefinition/translation".
extension	yes	Repeat for each target language.
url	yes	Set it to "lang".
valueCode	yes	Specify the target language (for example "de-DE").
url	yes	Set it to "content"
valueString	yes	Enter the text of the label in the target language.

Refer to the official FHIR documentation (Translation Extensions) for further details.

Example 128 provides an example of a `Questionnaire` with added translations.

Example 128: Multilingual Questionnaire

```
{
    "resourceType": "Questionnaire",
    "id": "8354e352-65bb-4bc1-845a-a231259ff422",
    "meta": {
        "versionId": "2",
        "lastUpdated": "2026-05-22T07:55:50.665+00:00",
        "source": "1.1.1.124889443010"
    },
    "language": "en-US",
    "text": {
        "status": "generated",
        "div": "<div xmlns=\"http://www.w3.org/1999/xhtml\"><h1>Multilingual Questionnaire</
    h1><p>Example form with target languages</p></div>"
    },
    "url": "https://ehs.at/fhir/Questionnaire/8eab3269-0107-428e-8914-aa2d6b8c8228",
    "title": "Multilingual Questionnaire",
    "_title": {
        "extension": [
            {
                "url": "http://hl7.org/fhir/StructureDefinition/translation",
                "extension": [
                    {
                        "url": "lang",
                        "valueCode": "de-DE"
                    },
                    {
                        "url": "content",
                        "valueString": "Mehrsprachiger Fragebogen"
                    }
                ]
            },
            {
                "url": "http://hl7.org/fhir/StructureDefinition/translation",
                "extension": [
                    {
                        "url": "lang",
                        "valueCode": "tr-TR"
                    },
                    {
                        "url": "content",
```

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```
                    "valueString": "Çok dilli form"
                }
            ]
        }
    ]
},
"status": "active",
"publisher": "Support Administrator",
"description": "Example form with target languages",
"_description": {
    "extension": [
        {
            "url": "http://hl7.org/fhir/StructureDefinition/translation",
            "extension": [
                {
                    "url": "lang",
                    "valueCode": "de-DE"
                },
                {
                    "url": "content",
                    "valueString": "Beispielformular mit Zielsprachen"
                }
            ]
        },
        {
            "url": "http://hl7.org/fhir/StructureDefinition/translation",
            "extension": [
                {
                    "url": "lang",
                    "valueCode": "tr-TR"
                },
                {
                    "url": "content",
                    "valueString": "Hedef diller için form"
                }
            ]
        }
    ]
},
"item": [
    {
        "linkId": "410488857820",
        "text": "What is your name?",
        "_text": {
            "extension": [
                {
                    "url": "http://hl7.org/fhir/StructureDefinition/translation",
                    "extension": [
                        {
                            "url": "lang",
                            "valueCode": "de-DE"
                        },
                        {
                            "url": "content",
                            "valueString": "Wie heißen Sie?"
                        }
                    ]
                },
                {
                    "url": "http://hl7.org/fhir/StructureDefinition/translation",
                    "extension": [
                        {
                            "url": "lang",
                            "valueCode": "tr-TR"
                        },
```

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```
                            {
                                "url": "content",
                                "valueString": "ııAdnz nedir?"
                            }
                        ]
                    }
                ]
            },
            "type": "string",
            "required": false,
            "repeats": false
        }
    ]
}
```

6.4 Integrating Questionnaires

Integrating your questionnaires into the *Health Data Repository* can be established via the `create` interaction as described in Section 1.3.6.1.

Alternatively, the *Form Management Service* offers the possibility to import questionnaires from a folder location. The setup is described in the section "Form Management" of the eHealth Solutions *Configuration Instructions*.

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7 Observations

eHealth Solutions provides an interface for the transmission of ORU messages on its *Document Processor*. ORU messages are used to submit medical observations, in particular laboratory findings.

7.1 Unsolicited Transmission of an Observation Message

7.1.1 Message Structure

The segments relevant for **ORU R01** messages are the following:

Table 106: ORU Message Segments Overview

Segment	Description
MSH	Message Header
PID	Patient Information
PV1	Patient Visit Information
OBR	Observation Request
OBX	Observations
NTE	Comments

Message Header
: The HL7 MSH segment is present in all HL7 message types and defines the message's source, purpose, destination and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

PID Segment
: The PID segment contains the relevant patient data.

PV1 Segment
: The PV1 segment is used by Registration/ADT applications to communicate information on a patient visit-specific basis.

OBR Segment
: The OBR segment contains information on the examination context.

OBX Segment
: The OBX segment includes the observation data. It can be present multiple times as each occurrence represents one single finding.

NTE Segment
: The NTE segment serves as a space for comments. When placed directly after the **OBR** segment, the textual description is relevant for all results of the message. NTE segments after an **OBX** segment only refer to the preceding OBX segment.

7.1.1.1 Field Overview

OBR-4
: Universal Service Identifier:

OBR-7
: Observation Date: This is the time when the observation has taken place.

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OBR-14

Specimen Received Date/Time: This is the time when the sample has arrived in the laboratory.

OBR-32

Principal Result Interpreter: This is the person responsible for the interpretation of the finding.

OBX-2

Value Type: Indicates the data type transmitted in the segment, for instance a group header for further OBX segments (**FT**) or the actual values of a finding (**CL**)

OBX-3

Observation Identifier: This is a code containing the IDs of the laboratory and the measured value, followed by a textual description of the value.

OBX-5

Binary Content: The binary content Base64 encoded. Documents may be split into docblocks with 64kB.

OBX-6

Units: Indicates the unit of the measured value

OBX-7

References Range

OBX-8

Abnormal Flags

OBX-11

Observation Result Status: Indicates the status of the observation.

Table 107: Processable Observation Information in an ORU R01 Message

HL7-Path	Name	Presence	Repeatable
OBR-4	Universal Service Identifier	Required	No
OBR-7	Observation Date	Optional	No
OBR-14	Specimen Received Date/Time	Optional	No
OBR-32	Principal Result Interpreter	Optional	No
OBX-2	Value Type	Required	No
OBX-3	Observation Identifier	Required	No
OBX-5	Binary Content	Required	-
OBX-6	Units	Optional	No
OBX-7	References Range	Optional	No
OBX-8	Abnormal Flags	Optional	Yes
OBX-11	Observation Result Status	Required	No

Example 129:

```
MSH|^~\&|PG-MLS|ZLAB|CLOVER|COMM|20180108081000|XRC|ORU^R01|Test1|P|2.2
PID|||2011810074||Einstein^Albert||19050910|M
PV1||||||||012302||||||||||3007421698||||||||||||||||||LK
OBR||99741|08154711|1380137013012830||||20180108080500||||||20180108080400||||||||||F
    |||012302||||LAB_ZL_R|||Peter Willi
OBX|1|FT|0|1|Harnanalytik
OBX|2|FT|0|2|HARNSTATUS (Harnstix, semiquantitativ)
OBX|3|CE|ZIMCL10205^Leukozyten(-esterase)^ZLAB^LEUKO_U|1|25|Zahl/ul|0-10|H~8||N|F
OBX|4|CE|ZIMCL10081^Nitrit^ZLAB^NIT|1|negativ|||N|||F
OBX|5|CE|ZIMCL10106^pH^ZLAB^PH_U|1|6||5-7|~5||N|F
OBX|6|CE|ZIMCL10209^Protein^ZLAB^PROT_U|1|250|mg/l|0-120|H~8||N|F
```

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```
OBX|7|CE|ZIMCL10210^Glukose^ZLAB^GLU_U|1|normal|mg/dl|6-20|N||N|F
OBX|8|CE|ZIMCL10207^Ketonkörper^ZLAB^KET|1|negativ|mg/dl|0-2|N||N|F
OBX|9|CE|ZIMCL10213^Urobilinogen^ZLAB^UBG|1|normal|mg/dl|0-1|N||N|F
OBX|10|CE|ZIMCL10212^Bilirubin^ZLAB^BILI_U|1|negativ|mg/dl|0-0|N||N|F
OBX|11|CE|ZIMCL10206^Erythrozyten/Hb^ZLAB^ERY_U|1|50|Zahl/ul|0-5|H~8||N|F
OBX|12|CE|ZIMCL10211^Relative Dichte^ZLAB^SPEZ_G|1|1.015||1.005-1.030|~5||N|F
NTE||L|Die Ergebnisse des Harnstreifentests sind semi-quantitativ und entsprechen
NTE||L|überlappenden Wertebereichen. Ergebnisse, die im Referenzbereich liegen,
NTE||L|werden zu 100% als "normal" oder "negativ" identifiziert. Ergebnisse, die
NTE||L|zwischen dem oberen Referenzwert und der analytischen Sensitivität für den
NTE||L|jeweiligen Analyten liegen, werden entweder im negativen (NEG, NORM) oder im
NTE||L|untersten positiven Wertebereich detektiert. Das bedeutet, dass in diesem
NTE||L|Graubereich in einem sehr geringen Ausmaß falsch negative Werte auftreten
NTE||L|können. Oberhalb der analytischen Sensitivität liegende Ergebnisse werden zu
NTE||L|> 90% als positiv identifiziert. Weitere Details, analytische Sensitivitäten
NTE||L|sowie Störfaktoren des Streifentests entnehmen Sie bitte unserer Homepage
NTE||L|unter http://zimcl.tirol-kliniken.at. Zur Umrechnung von uL-->
NTE||L|HPF bzw. LPF empfehlen
NTE||L|wir die folgenden Näherungsformeln: Zahl pro µl/5.555 = Zahl pro HPF; Zahl
NTE||L|pro µl x 2.9 = Zahl pro LPF
```

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8 Patient Administration

Patient Administration messages are used to exchange patient information as defined by the IHE PAM (*Patient Administration*) profile. It allows for the creation and updating of patients using the following transactions:

ITI-8
: Used to communicate patient information, including corroborating demographic data, after a patient's identity is established, modified or merged or after the key corroborating demographic data has been modified.

ITI-9
: Used to query Patient Identifiers from the `MPI` using the local (or any other known) patient identifier.

ITI-21
: Used to query one or multiple patients (demographics including their identifiers).

Within these transactions, individual HL7 messages and events are used to administrate patient information. Other HL7 messages do not correspond directly to an IHE transaction, but are used for eHealth Solutions's proprietary transactions.

Currently, the following patient operations are supported in eHealth Solutions:

- Create Patient
- Update Patient
- Merge Patients
- Link Patients
- Unlink Patients
- Master Patient Change
- Query Patient IDs
- Query Patients

Detailed descriptions are given in the sections below.

The processing of the following HL7 fields/segments concerning patient properties can be en- or disabled by configuration:

Table 108: Available HL7 Fields/Segments Concerning Patient Properties

HL7 fields/segments	HL7v2	HL7v3
Patient insurance information	IN1 segment	-
Patient telecommunication addresses	PID-13 and PID-14 fields	controlActProcess.subject.registration Event.subject1.patient.patientPerson.telecom

8.1 Create Patient

8.1.1 Create Patient – HL7v2

The following HL7 messages can be received and processed to create a new patient:

- ADT-A01
- ADT-A04
- ADT-A05
- ADT-A08

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- ADT-A28
- ADT-A31



Note

Despite the different trigger events (admit, update etc.) eHealth Solutions processes the received patient data identically: it always checks whether the given patient already exists in another domain. If so, the patient data is compared/linked. Only when no equivalent patient exists a new patient is created.

8.1.1.1 Message Structure

This section provides an overview and description of the message structure of the Create Patient transaction.

Table 109: List of Segments – Create Patient

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**.
MSH-9-2	The trigger event must be **A01**, **A04**, **A05**, **A08**, **A28** or **A31**.
UAC	User Authentication Credential. The trigger event must be **A01** or **A08**.
EVN	Event Information
IN1	Patient Insurance Information
PID	Patient Information
ROL	Role
PV1	Patient Visit Information
PV1-2	The Patient Class should be **N**.
CON	Consent Information

MSH Segment
: The HL7 MSH segment is present in every HL7 message type and defines the message's source, purpose, destination, and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment
: The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message.

IN1 Segment
: The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment
: The PID segment contains the relevant patient data.

ROL Segment
: The ROL segment is used to transmit the family doctor. Please refer to Section 1.1.5.8 for further information on the ROL segment.

PV1 Segment
: The PV1 segment is used by Registration/ADT applications to communicate information on a visit-specific basis. For the Merge Patients transaction, it is sufficient to fill the PV1-2 field.

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CON Segment

The CON segment contains information on patient declarations, such as consents or opt-outs.

UAC Segment

The User Authentication Credential (UAC) segment is used to create, update or deactivate a user account for a patient if sent in combination with an ADT-01 or an ADT-08 message as trigger events. If the HL7 message contains the UAC segment and the configuration is set to create a user account, the account is created for the specified patient. Note that the phone number and the e-mail address have to be submitted as described in the field description of PID-13 (see Section 1.1.5.3). Please refer to Section 1.1.5.7 for further information on the UAC segment.

8.1.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 7. For more information on the UAC and the ROL segment, please refer to Table 8 and Table 9. These are the relevant fields of the other segments:

ROL-2

The action field is used to transmit the family doctor. The following options are available: **AD**, **LI** and **UP**.

ROL-3-1

This field has to contain the text **PP**. Other codes are not recognized by eHealth Solutions.

ROL-4-1

ID number. To add the family doctor, this field is required by eHealth Solutions. It has to contain an HPD ID (e.g., GLN, UID) that can be prefixed with: **urn:gln**, **urn:uid** and **urn:oid**.

ROL-4-9

Assigning Authority. To add the family doctor, this field is required by eHealth Solutions. It has to contain the assigning authority of the physician's ID.

UAC-1-1

Type of the data submitted in field UAC-2-5. eHealth Solutions limits it to JWT in the context of Patient Administration.

UAC-2-4

The type of encoding of the data specified in field UAC-2-5. The following options are available: Base64 or A / plain (plain is not recommended).

UAC-2-5

Data to be sent. eHealth Solutions limits it to JWT in the context of Patient Administration. For further details, refer to chapter *Automation Service* in the eHealth Solutions *Interface Manual*.

EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

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PV1-2

Patient Class: Determines the type of patient visit. The field should have the value **N** for "not applicable".

CON-1

Set ID: Identifies the segment instance within the message.

CON-2

Consent Type: Describes the service the subject has consented to.

CON-3

Consent Form ID and Version: Identifies the template and version used for the declaration. Possible values are **SUBMIT_ONLY**, **QUERY_ONLY**, **QUERY_SUBMIT** and custom values as defined in the configuration. The field is required if `CON-11` has the value **A**, otherwise it is obsolete.

CON-11

Consent Status: Indicates whether the subject consents or does not consent to the service. Possible values are **A** for "active" (mandatory in "create"-type messages) and **R** for "refused" (only possible in "update"-type messages).

CON-15

Consent End Date/Time: Indicates when the declaration becomes or has become ineffective. The field is required if `CON-11` has the value **A**, otherwise it is obsolete.

CON-24

Consenter ID: ID of the individual concerned by the declaration. Currently not processed by eHealth Solutions but required by the standard.

CON-25

Relationship to Subject: Relationship of the consenter to the subject. Currently not processed by eHealth Solutions but required by the standard.

Table 110: Fields Relevant for the Create Patient Transaction

HL7-Path	Name	Repeatable	Presence
ROL-2	ID	No	Required
ROL-3-1	ST	No	Required
ROL-4-1	ST	No	Required
ROL-4-9	HD	No	Required
UAC-1-1	ST	No	Conditionally Required
UAC-2-4	ID	No	Conditionally Required
UAC-2-5	ST	No	Conditionally Required
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
CON-1	Set ID	No	Required
CON-2	Consent Type	No	Required
CON-3	Consent Form ID and Version	No	Conditionally required
CON-11	Consent Status	No	Required
CON-15	Consent End Date/Time	No	Conditionally required
CON-24	Consenter ID	Yes	Required
CON-25	Relationship to Subject	Yes	Required

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Note

The entire EVN segment is conditionally required when user account creation is enabled in the eHealth Solutions configuration and the customer provides a CON segment.

Note

To be able to identify a given patient uniquely and unambiguously, it is advisable to include at least PID-3.1, PID-3.4.2 and PID-3.4.3 in submitted patient identifiers. Nevertheless, IHE permits an alternative way of patient identification: namespace IDs specified in PID-3.4.1. The default configuration of the **PIX/PDQ Manager** does not include namespace IDs in patient identifier queries.

Example 130: HL7v2 Create Patient Message

Submission:

```
MSH|^~\&|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|QUA^1.1.1.1.1^ISO|QUA^1.
    1.1^ISO|20141001233656||ADT^A01|1412199415701|P|2.3.1|||AL
UAC|JWT|^application^^A^JWT_TOKEN
EVN||20141001233656|||12345^FamilyName^FirstName^^^^^^&1.1.1.1.3&ISO^L^^^PN
PID|||1412199415782^^^&1.1.1.1.3&ISO^PI~66127483762232^
    ^^NATIONAL SOCIAL SECURITY ASSOCIATION&1.3.6.1.4.1.9784.999200.2.1&ISO^SS||LASTNAME^
    FIRSTNAME||19030930233655|M|||||+435121234567^^CP~^^Internet^bla.bla@ith-icoserve.com
ROL||AD|PP|123456^^^^^^^^&1.1.11.12.13&ISO^^^^DN
PV1||N
CON|1||QUERY_ONLY||||||||A|||19981004010159+0100|20281004010159+0100||||||||LASTNAME^
    FIRSTNAME|123^Some Identifier
```

Response:

```
MSH|^~\&|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO
   |20141001233657||ACK^A01|1412199417491285|P|2.3.1
MSA|AA|1412199415701
```

8.1.2 Create Patient – HL7v3

Example 131: HL7v3 Create Patient Root Element

interactionId's extension field: `PRPA_IN201301UV02`

```
<ns1:PRPA_IN201301UV02 xmlns:ns1="urn:hl7-org:v3" ITSVersion="XML_1.0">
  INSERT MESSAGE HEADER
  INSERT PAYLOAD
</ns1:PRPA_IN201301UV02>
```

8.1.2.1 Inbound Message Structure

The following elements are required in this specific order:

1. controlActProcess
2. controlActProcess.code
3. controlActProcess.authorOrPerformer
4. controlActProcess.authorOrPerformer.assignedPerson
5. controlActProcess.authorOrPerformer.assignedPerson.assignedPerson
6. controlActProcess.authorOrPerformer.assignedPerson.assignedPerson.name
7. controlActProcess.subject
8. controlActProcess.subject.registrationEvent
9. controlActProcess.subject.registrationEvent.id

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10. controlActProcess.subject.registrationEvent.statusCode
11. controlActProcess.subject.registrationEvent.subject1
12. controlActProcess.subject.registrationEvent.subject1.patient
13. controlActProcess.subject.registrationEvent.subject1.patient.id
14. controlActProcess.subject.registrationEvent.subject1.patient.statusCode
15. controlActProcess.subject.registrationEvent.subject1.patient.veryImportantPersonCode



Warning

The VIP flag submitted in `veryImportantPersonCode` has no effect on matching algorithms and is not displayed in the user interface. However, this flag can be deleted without any impact on the patient's demographic data. It is therefore highly recommended not to use pseudonymized data for patients who have been assigned the VIP flag.
In case you use pseudonymized data, there is a risk of erroneously matching the wrong patients. To prevent this, please follow these instructions:

- Use unique pseudonymized data for every VIP patient.
- Use pseudonymized data that does not match any natural person.
- Be aware that the pseudonymized data will not be changed to the original data when deleting the VIP flag.

16. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson
17. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.name
18. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.name.given
19. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.name.family
20. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.administrativeGenderCode
21. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.birthTime
22. controlActProcess.subject.registrationEvent.subject1.patient.providerOrganization
23. controlActProcess.subject.registrationEvent.subject1.patient.providerOrganization.id
24. controlActProcess.subject.registrationEvent.subject1.patient.providerOrganization.contactParty
25. controlActProcess.subject.registrationEvent.custodian
26. controlActProcess.subject.registrationEvent.custodian.assignedEntity
27. controlActProcess.subject.registrationEvent.custodian.id
28. controlActProcess.subject.registrationEvent.custodian.assignedOrganization
29. controlActProcess.subject.registrationEvent.custodian.assignedOrganization.name
30. controlActProcess.subject.registrationEvent.custodian.assignedOrganization.delimiter

Example 132: HL7v3 Create Patient Payload

```
<ns1:controlActProcess classCode="CACT" moodCode="EVN">
   <ns1:code xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:CD"
             code="PRPA_TE201301UV02"/>
   <ns1:authorOrPerformer typeCode="AUT">
      <ns1:assignedPerson classCode="ASSIGNED">
         <ns1:assignedPerson classCode="PSN" determinerCode="INSTANCE">
            <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:EN
    ">
               <ns1:prefix>Dr.</ns1:prefix>
               <ns1:given>Vorname</ns1:given>
               <ns1:family>Nachname</ns1:family>
               <ns1:suffix>Jr.</ns1:suffix>
            </ns1:name>
         </ns1:assignedPerson>
      </ns1:assignedPerson>
   </ns1:authorOrPerformer>
   <ns1:subject typeCode="SUBJ" contextConductionInd="false">
      <ns1:registrationEvent classCode="REG" moodCode="EVN">
         <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
                 nullFlavor="NA"/>
         <ns1:statusCode code="active"/>
```

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```
         <ns1:subject1 typeCode="SBJ">
            <ns1:patient classCode="PAT">
               <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
    II"
                       root="1.3.6.1.4.1.21367.13.20.262"
                       extension="williamWaltersIcoserve655278204663014"
                       assigningAuthorityName="EHR_ITH icoserve_2019"/>
               <ns1:statusCode code="active"/>
               <ns1:veryImportantPersonCode code="VIP"/>
               <ns1:patientPerson classCode="PSN" determinerCode="INSTANCE">
                  <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
    ns1:PN">
                     <ns1:given>WILLIAM</ns1:given>
                     <ns1:family>WALTERS</ns1:family>
                  </ns1:name>
                   <ns1:administrativeGenderCode code="M"/>
                  <ns1:birthTime xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:
    type="ns1:TS"
                                 value="19550505"/>
                  <ns1:deceasedInd xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi
    :type="ns1:BL"
                                   value="false"/>
                  <ns1:addr xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
    ns1:AD">
                     <ns1:city>ST. LOUIS</ns1:city>
                     <ns1:state>MO</ns1:state>
                     <ns1:postalCode>63110</ns1:postalCode>
                     <ns1:streetName>3900 FLORA PL</ns1:streetName>
                  </ns1:addr>
               </ns1:patientPerson>
               <ns1:providerOrganization classCode="ORG" determinerCode="INSTANCE">
                  <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
    1:II"
                          root="1.3.6.1.4.1.21367.13.20.262"/>
                  <ns1:contactParty classCode="CON">
                     <ns1:telecom xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:
    type="ns1:TEL"
                                  value="http://www.ith-icoserve.com"
                                  use="PUB"/>
                  </ns1:contactParty>
               </ns1:providerOrganization>
            </ns1:patient>
         </ns1:subject1>
         <ns1:custodian typeCode="CST">
            <ns1:assignedEntity classCode="ASSIGNED">
               <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
    II"
                       root="1.3.6.1.4.1.21367.13.50.300222"/>
               <ns1:assignedOrganization classCode="ORG" determinerCode="INSTANCE">
                  <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
    ns1:EN">
                     <ns1:delimiter>1.3.6.1.4.1.21367.13.50.300222</ns1:delimiter>
                  </ns1:name>
               </ns1:assignedOrganization>
            </ns1:assignedEntity>
         </ns1:custodian>
      </ns1:registrationEvent>
   </ns1:subject>
</ns1:controlActProcess>
```

8.1.2.2 Outbound Message Structure

See Section 1.2.2.

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8.2 Update Patient

8.2.1 Update Patient – HL7v2

The following HL7 messages can be received and processed in order to update a patient:

- ADT-A01
- ADT-A04
- ADT-A05
- ADT-A08
- ADT-A28
- ADT-A31

Note

Despite the different trigger events (admit, update etc.) eHealth Solutions processes the received patient data identically: it always checks whether the given patient already exists in another domain. If so, the patient data is compared/linked. Only when no equivalent patient exists a new patient is created.

8.2.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Update Patient.

Table 111: List of Segments – Update Patient

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**.
MSH-9-2	The trigger event must be **A01**, **A04**, **A05**, **A08**, **A28** or **A31**.
UAC	User Authentication Credential. The trigger event must be **A01** or**A08**.
CON	Consent Information
EVN	Event Information
IN1	Patient Insurance Information
PID	Patient Information
ROL	Role
PV1	Patient Visit Information
PV1-2	The Patient Class should be **N**.

MSH Segment

The HL7 MSH segment is present in every HL7 message type and defines the message's source, purpose, destination, and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment

The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message.

IN1 Segment

The IN1 segment is used to transmit information about the paying body of the health services received

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by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment
: The PID segment contains the relevant patient data.

ROL Segment
: The ROL segment is used to transmit the family doctor. Please refer to Section 1.1.5.8 for further information on the ROL segment.

PV1 Segment
: The PV1 segment is used by Registration/ADT applications to communicate information on a visit-specific basis. For the Merge Patients transaction, it is sufficient to fill the PV1-2 field.

CON Segment
: The CON segment contains information on patient declarations, such as consents or opt-outs.

UAC Segment
: The User Authentication Credential (UAC) segment is used to create, update or deactivate the user account of a patient if sent in combination with an ADT-01 or an ADT-08 message as trigger event. Note that the phone number and the e-mail address have to be submitted as described in the field description of PID-13 (see Section 1.1.5.3). Please refer to Section 1.1.5.7 for further information on the UAC segment.

8.2.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 7. For more information on the UAC and the ROL segment, please refer to Table 8 and Table 9. These are the relevant fields of the other segments:

ROL-2
: The action field is used to update the family doctor. The following options are available: **DE**, **UN**, and **UP**.

ROL-3-1
: This field has to contain the text **PP**. Other codes are not recognized by eHealth Solutions.

ROL-4-1
: ID number. To update the family doctor, this field is required by eHealth Solutions. It has to contain an HPD ID (e.g., GLN, UID) that can be prefixed with: **urn:gln**, **urn:uid** and **urn:oid**.

ROL-4-9
: Assigning Authority. To update the family doctor, this field is required by eHealth Solutions. It has to contain the assigning authority of the physician's ID.

UAC-1-1
: Type of the data submitted in field UAC-2-5. eHealth Solutions limits it to JWT in the context of Patient Administration.

UAC-2-4
: The type of encoding of the data specified in field UAC-2-5. The following options are available: Base64 or A / plain (plain is not recommended).

UAC-2-5
: Data to be sent. eHealth Solutions limits it to JWT in the context of Patient Administration.For further details, refer to chapter *Automation Service* in the eHealth Solutions *Interface Manual*.

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CON-1

Set ID: Identifies the segment instance within the message.

CON-2

Consent Type: Describes the service the subject has consented to.

CON-3

Consent Form ID and Version: Identifies the template and version used for the declaration. Possible values are **SUBMIT_ONLY**, **QUERY_ONLY**, **QUERY_SUBMIT** and custom values as defined in the configuration. The field is required if `CON-11` has the value **A**, otherwise it is obsolete.

CON-11

Consent Status: Indicates whether the subject consents or does not consent to the service. Possible values are **A** for "active" (mandatory in "create"-type messages) and **R** for "refused" (only possible in "update"-type messages).

CON-15

Consent End Date/Time: Indicates when the declaration becomes or has become ineffective. The field is required if `CON-11` has the value **A**, otherwise it is obsolete.

CON-24

Consenter ID: ID of the individual concerned by the declaration. Currently not processed by eHealth Solutions but required by the standard.

CON-25

Relationship to Subject: Relationship of the consenter to the subject. Currently not processed by eHealth Solutions but required by the standard.

EVN-2

Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5

Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7

Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2

Patient Class: Determines the type of patient visit. The field should have the value **N** for "not applicable".

Table 112: Fields Relevant for the Update Patient Transaction

HL7-Path	Name	Repeatable	Presence
ROL-2	ID	No	Required
ROL-3-1	ST	No	Required
ROL-4-1	ST	No	Required
ROL-4-9	HD	No	Required
UAC-1-1	ST	No	Conditionally Required
UAC-2-4	ID	No	Conditionally Required
UAC-2-5	ST	No	Conditionally Required
CON-1	Set ID	No	Required
CON-2	Consent Type	No	Required

Table 112: Fields Relevant for the Update Patient Transaction

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Table 112: Fields Relevant for the Update Patient Transaction

HL7-Path	Name	Repeatable	Presence
CON-3	Consent Form ID and Version	No	Conditionally required
CON-11	Consent Status	No	Required
CON-15	Consent End Date/Time	No	Conditionally required
CON-24	Consenter ID	Yes	Required
CON-25	Relationship to Subject	Yes	Required
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required



Note

The entire EVN segment is conditionally required when user account creation is enabled in the eHealth Solutions configuration and the customer provides a CON segment.

Example 133: HL7v2 Update Patient

Submission:

```
MSH|^~\&|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|20141001234455||
    ADT^A08|1412199893935|P|2.3.1
UAC|JWT|^application^^A^JWT_TOKEN
EVN||20141001234455|||12345^FamilyName^FirstName^^^^^^&1.1.1.1.3&ISO^L^^^PN
PID|||1412199894037^^^&1.3.6.1.4.1.21367.2010.2.1.419&ISO^PI~23649402402049^^^NATIONAL
    SOCIAL SECURITY ASSOCIATION&1.3.6.1.4.1.9784.999200.2.1&ISO^SS||NOLL^Levi
    ||19370310234454|U
ROL||UP|PP|123456^^^^^^^^&1.1.11.12.13&ISO^^^^DN
PV1||N
CON|1||QUERY_ONLY|||||||A|||19981004010159+0100|20281004010159+0100|||||||||LASTNAME^
    FIRSTNAME|123^Some Identifier
```

Response:

```
MSH|^~\&|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|20141001234455||
    ACK^A08|1412199895764279|P|2.3.1
MSA|AA|1412199893935
```

8.2.2 Update Patient – HL7v3

Example 134: HL7v3 Update Patient Root Element

interactionId's extension field=PRPA_IN201302UV02

```
<ns1:PRPA_IN201302UV02 xmlns:ns1="urn:hl7-org:v3" ITSVersion="XML_1.0">
  INSERT MESSAGE HEADER
  INSERT PAYLOAD
</ns1:PRPA_IN201302UV02>
```

8.2.2.1 Inbound Message Structure

The following elements are required in this specific order:

1. controlActProcess
2. controlActProcess.code
3. controlActProcess.authorOrPerformer

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4. controlActProcess.authorOrPerformer.assignedPerson
5. controlActProcess.authorOrPerformer.assignedPerson.assignedPerson
6. controlActProcess.authorOrPerformer.assignedPerson.assignedPerson.name
7. controlActProcess.subject
8. controlActProcess.subject.registrationEvent
9. controlActProcess.subject.registrationEvent.id
10. controlActProcess.subject.registrationEvent.statusCode
11. controlActProcess.subject.registrationEvent.subject1
12. controlActProcess.subject.registrationEvent.subject1.patient
13. controlActProcess.subject.registrationEvent.subject1.patient.id
14. controlActProcess.subject.registrationEvent.subject1.patient.statusCode
15. controlActProcess.subject.registrationEvent.subject1.patient.veryImportantPersonCode



Warning

The VIP flag submitted in `veryImportantPersonCode` has no effect on matching algorithms and is not displayed in the user interface. However, this flag can be deleted without any impact on the patient's demographic data. It is therefore highly recommended not to use pseudonymized data for patients who have been assigned the VIP flag.
In case you use pseudonymized data, there is a risk of erroneously matching the wrong patients. To prevent this, please follow these instructions:

- Use unique pseudonymized data for every VIP patient.
- Use pseudonymized data that does not match any natural person.
- Be aware that the pseudonymized data will not be changed to the original data when deleting the VIP flag.

16. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson
17. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.name
18. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.name.given
19. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.name.family
20. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.administrativeGenderCode
21. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.deceasedInd
22. controlActProcess.subject.registrationEvent.subject1.patient.providerOrganization
23. controlActProcess.subject.registrationEvent.subject1.patient.providerOrganization.id
24. controlActProcess.subject.registrationEvent.subject1.patient.providerOrganization.contactParty
25. controlActProcess.subject.registrationEvent.custodian
26. controlActProcess.subject.registrationEvent.custodian.assignedEntity
27. controlActProcess.subject.registrationEvent.custodian.id
28. controlActProcess.subject.registrationEvent.custodian.assignedOrganization
29. controlActProcess.subject.registrationEvent.custodian.assignedOrganization.name
30. controlActProcess.subject.registrationEvent.custodian.assignedOrganization.delimiter

Example 135: HL7v3 Update Patient Payload

```
<ns1:controlActProcess classCode="CACT" moodCode="EVN">
   <ns1:code xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:CD"
             code="PRPA_TE201302UV02"/>
   <ns1:authorOrPerformer typeCode="AUT">
      <ns1:assignedPerson classCode="ASSIGNED">
         <ns1:assignedPerson classCode="PSN" determinerCode="INSTANCE">
            <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:EN
    ">
               <ns1:prefix>Dr.</ns1:prefix>
               <ns1:given>Vorname</ns1:given>
               <ns1:family>Nachname</ns1:family>
               <ns1:suffix>Jr.</ns1:suffix>
            </ns1:name>
         </ns1:assignedPerson>
```

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```
      </ns1:assignedPerson>
   </ns1:authorOrPerformer>
   <ns1:subject typeCode="SUBJ" contextConductionInd="false">
      <ns1:registrationEvent classCode="REG" moodCode="EVN">
         <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
                 nullFlavor="NA"/>
         <ns1:statusCode code="active"/>
         <ns1:subject1 typeCode="SBJ">
            <ns1:patient classCode="PAT">
               <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                       xsi:type="ns1:PRPA_MT201302UV02.Patient.id"
                       root="1.3.6.1.4.1.21367.13.20.262"
                       extension="alyssaIcoserve12345671"
                       assigningAuthorityName="EHR_ITH icoserve_2019"/>
               <ns1:statusCode xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                               xsi:type="ns1:PRPA_MT201302UV02.Patient.statusCode"
                               code="active"/>
               <ns1:veryImportantPersonCode code="VIP"/>
               <ns1:patientPerson xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                                  xsi:type="ns1:PRPA_MT201302UV02.Patient.patientPerson"
                                  classCode="PSN"
                                  determinerCode="INSTANCE">
                  <ns1:name xsi:type="ns1:PN">
                     <ns1:given>ALICE</ns1:given>
                     <ns1:family>EHR_ITH icoserve_2019</ns1:family>
                  </ns1:name>
                  <ns1:administrativeGenderCode code="F"/>
                  <ns1:birthTime xsi:type="ns1:TS" value="19710701"/>
                  <ns1:deceasedInd xsi:type="ns1:BL" value="false"/>
                  <ns1:addr xsi:type="ns1:AD">
                     <ns1:country>AT</ns1:country>
                     <ns1:city>Innsbruck</ns1:city>
                     <ns1:state>Tirol</ns1:state>
                     <ns1:postalCode>6020</ns1:postalCode>
                     <ns1:streetName>Innrain 98</ns1:streetName>
                  </ns1:addr>
               </ns1:patientPerson>
               <ns1:providerOrganization classCode="ORG" determinerCode="INSTANCE">
                  <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:II"
                          root="1.3.6.1.4.1.21367.13.20.262"/>
                  <ns1:contactParty classCode="CON">
                     <ns1:telecom xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:
type="ns1:TEL"
                                  value="http://www.ith-icoserve.com"
                                  use="PUB"/>
                  </ns1:contactParty>
               </ns1:providerOrganization>
            </ns1:patient>
         </ns1:subject1>
         <ns1:custodian typeCode="CST">
            <ns1:assignedEntity classCode="ASSIGNED">
               <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II"
                       root="1.3.6.1.4.1.21367.13.50.300222"/>
               <ns1:assignedOrganization classCode="ORG" determinerCode="INSTANCE">
                  <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
ns1:EN">
                     <ns1:delimiter>1.3.6.1.4.1.21367.13.50.300222</ns1:delimiter>
                  </ns1:name>
               </ns1:assignedOrganization>
            </ns1:assignedEntity>
         </ns1:custodian>
      </ns1:registrationEvent>
   </ns1:subject>
```

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```
</ns1:controlActProcess>
```

8.2.2.2 Outbound Message Structure

See Section 1.2.2.

8.3 Merge Patients

8.3.1 Merge Patients – HL7v2

The following HL7 messages can be received and processed in order to merge patients:

- ADT A34
- ADT A39
- ADT A40
- ADT A41
- ADT A42
- ADT A43
- ADT A47

The `MPI` provides the ability to merge (combine) two patients into one resulting patient. One of those patients is the "surviving/dominant" patient, while the other one is "deleted/recessive". The `MPI` adds all patient identifiers (e.g., local identifier, social security numbers, ...) of the recessive patient to the dominant patient. In the final step the recessive patient is deprecated, rendering it inaccessible by clients. The dominant patient is then updated in eHealth Solutions, it is thus highly recommended to transmit the full patient data in the PID segment.

The following scenarios can occur when merging patients:

- If both the dominant and recessive patient is not known to the MPI, it will not take action. A success response is returned.
- If only the recessive patient is not known to the MPI, it will not take action. A success response is returned
- If only the dominant patient ID is not known to the MPI, the Merge Patient transaction is ignored; the MPI performs a Replace Identifier transaction instead. This results in the recessive patient ID being swapped with the dominant patient ID, and is not an error.
- If both the dominant and recessive patients are known to the MPI, the merge is performed as intended.



Note

In order to avoid an unwanted Replace Identifier transaction, it is highly recommended to register and/or update the relevant patients beforehand.

8.3.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **Merge Patient**.

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Table 113: Merge Patient Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A34**, **A39**, **A40**, **A41**, **A42**, **A43** or **A47**
EVN	Event Information
IN1	Patient Insurance Information
MRG	Merge Patient Information
PID	Patient Information
PV1	Patient Visit Information
PV1-2	The Patient Class should be **N**.

MSH Segment
: The HL7 MSH segment is present in every HL7 message type and defines the message's source, purpose, destination, and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment
: The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message.

IN1 Segment
: The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment
: The PID segment contains the relevant patient data.

MRG Segment
: The MRG segment is used to specify the patient dataset to be merged.

PV1 Segment
: The PV1 segment is used by Registration/ADT applications to communicate information on a visit-specific basis. For the Merge Patients transaction, it is sufficient to fill the PV1-2 field.

8.3.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 7. These are the relevant fields of the other segments:

EVN-2
: Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5
: Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7
: Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

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PV1-2

Patient Class: Determines the type of patient visit. The field should have the value **N** for "not applicable".

MRG-1

Prior Patient Identifier List: List of all Patient IDs of the recessive patient. The structure of this field corresponds to that of PID-3 (*Patient Identifier List*). For a valid transaction it is sufficient to provide one Source Patient Identifier. Regional identifiers such as social security numbers should not be used since they will be ignored by eHealth Solutions.

MRG-3

Prior Patient Account Number: Account Number of the recessive patient. The structure of this field corresponds to that of PID-18 (*Patient Account Number*).

MRG-7

Prior Patient Name List: Name of the recessive patient. Values given in this field are used for logging purposes.

Table 114: Fields Relevant for the Merge Patients Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
MRG-1	Patient Identifier List	Yes	Required
MRG-3	Prior Patient Account Number	No	Optional
MRG-7	Prior Patient Name List	Yes	Optional



Note

The entire EVN segment is conditionally required when user account creation is enabled in the eHealth Solutions configuration and the customer provides a CON segment.

Example 136:

Submission:

```
MSH|^~\&|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|20141001235158||
    ADT^A40|1412200317060|P|2.3.1
EVN||20141001235158|||^unknown
PID|||1412200317139^^^&1.1.1.1.3&ISO^PI~648786472101230541^^^NATIONAL SOCIAL SECURITY
    ASSOCIATION&1.3.6.1.4.1.9784.999200.2.1&ISO^SS||ROSARIO^Carlo||18770926235157|M
MRG|1412200318179^^^&1.1.1.1.3&ISO^PI~2569605884678423^^^NATIONAL SOCIAL SECURITY
    ASSOCIATION&1.3.6.1.4.1.9784.999200.2.1&ISO^SS
```

Response:

```
MSH|^~\&|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|20141001235159||
    ACK^A40|1412200319353285|P|2.3.1
MSA|AA|1412200317060
```

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8.3.2 Merge Patients – HL7v3

Example 137: HL7v3 Merge Patient Root Element

interactionId's extension field: PRPA_IN201304UV02

```
<ns1:PRPA_IN201304UV02 xmlns:ns1="urn:hl7-org:v3" ITSVersion="XML_1.0">
  INSERT MESSAGE HEADER
  INSERT PAYLOAD
</ns1:PRPA_IN201304UV02>
```

8.3.2.1 Inbound Message Structure

The following elements are required in this specific order:

1. controlActProcess
2. controlActProcess.code
3. controlActProcess.authorOrPerformer
4. controlActProcess.authorOrPerformer.assignedPerson
5. controlActProcess.authorOrPerformer.assignedPerson.assignedPerson
6. controlActProcess.authorOrPerformer.assignedPerson.assignedPerson.name
7. controlActProcess.subject
8. controlActProcess.subject.registrationEvent
9. controlActProcess.subject.registrationEvent.id
10. controlActProcess.subject.registrationEvent.statusCode
11. controlActProcess.subject.registrationEvent.subject1
12. controlActProcess.subject.registrationEvent.subject1.patient
13. controlActProcess.subject.registrationEvent.subject1.patient.id
14. controlActProcess.subject.registrationEvent.subject1.patient.statusCode
15. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson
16. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.name
17. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.name.given
18. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.name.family
19. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.administrativeGenderCode
20. controlActProcess.subject.registrationEvent.subject1.patient.patientPerson.deceasedInd
21. controlActProcess.subject.registrationEvent.subject1.patient.providerOrganization
22. controlActProcess.subject.registrationEvent.subject1.patient.providerOrganization.id
23. controlActProcess.subject.registrationEvent.subject1.patient.providerOrganization.contactParty
24. controlActProcess.subject.registrationEvent.custodian
25. controlActProcess.subject.registrationEvent.custodian.assignedEntity
26. controlActProcess.subject.registrationEvent.custodian.id
27. controlActProcess.subject.registrationEvent.custodian.assignedOrganization
28. controlActProcess.subject.registrationEvent.custodian.assignedOrganization.name
29. controlActProcess.subject.registrationEvent.custodian.assignedOrganization.delimiter

Example 138: HL7v3 Merge Patient Payload

```
<ns1:controlActProcess classCode="CACT" moodCode="EVN">
   <ns1:code xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:CD"
             code="PRPA_TE201304UV02"/>
   <ns1:authorOrPerformer typeCode="AUT">
      <ns1:assignedPerson classCode="ASSIGNED">
         <ns1:assignedPerson classCode="PSN" determinerCode="INSTANCE">
            <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:EN
    ">
               <ns1:prefix>Dr.</ns1:prefix>
               <ns1:given>Vorname</ns1:given>
               <ns1:family>Nachname</ns1:family>
               <ns1:suffix>Jr.</ns1:suffix>
            </ns1:name>
```

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```
      </ns1:assignedPerson>
   </ns1:assignedPerson>
</ns1:authorOrPerformer>
<ns1:subject typeCode="SUBJ" contextConductionInd="false">
   <ns1:registrationEvent classCode="REG" moodCode="EVN">
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
              nullFlavor="NA"/>
      <ns1:statusCode code="active"/>
      <ns1:subject1 typeCode="SBJ">
         <ns1:patient classCode="PAT">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
 II"
                    root="1.3.6.1.4.1.21367.13.20.262"
                    extension="alyssaIcoserve12345671"
                    assigningAuthorityName="EHR_ITH icoserve_2019"/>
            <ns1:statusCode code="active"/>
            <ns1:patientPerson classCode="PSN" determinerCode="INSTANCE">
               <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
 ns1:PN">
                  <ns1:given>ALICE</ns1:given>
                  <ns1:family>EHR_ITH icoserve_2019</ns1:family>
               </ns1:name>
             <ns1:administrativeGenderCode code="F"/>
               <ns1:birthTime xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:
 type="ns1:TS"
                              value="19710701"/>
               <ns1:deceasedInd xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi
 :type="ns1:BL"
                                value="false"/>
               <ns1:addr xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
 ns1:AD">
                  <ns1:country>AT</ns1:country>
                  <ns1:city>Innsbruck</ns1:city>
                  <ns1:state>Tirol</ns1:state>
                  <ns1:postalCode>6020</ns1:postalCode>
                  <ns1:streetName>Innrain 98</ns1:streetName>
               </ns1:addr>
            </ns1:patientPerson>
            <ns1:providerOrganization classCode="ORG" determinerCode="INSTANCE">
               <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
 1:II"
                       root="1.3.6.1.4.1.21367.13.20.262"/>
               <ns1:contactParty classCode="CON">
                  <ns1:telecom xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:
 type="ns1:TEL"
                               value="http://www.ith-icoserve.com"
                               use="PUB"/>
               </ns1:contactParty>
            </ns1:providerOrganization>
         </ns1:patient>
      </ns1:subject1>
      <ns1:custodian typeCode="CST">
         <ns1:assignedEntity classCode="ASSIGNED">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
 II"
                    root="1.3.6.1.4.1.21367.13.50.300222"/>
            <ns1:assignedOrganization classCode="ORG" determinerCode="INSTANCE">
               <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
 ns1:EN">
                  <ns1:delimiter>1.3.6.1.4.1.21367.13.50.300222</ns1:delimiter>
               </ns1:name>
            </ns1:assignedOrganization>
         </ns1:assignedEntity>
      </ns1:custodian>
      <ns1:replacementOf typeCode="RPLC">
```

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```
            <ns1:priorRegistration classCode="REG" moodCode="EVN">
               <ns1:statusCode code="obsolete"/>
               <ns1:subject1 typeCode="SBJ">
                  <ns1:priorRegisteredRole classCode="PAT">
                     <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type
    ="ns1:II"
                             root="1.3.6.1.4.1.21367.13.20.262"
                             extension="aliceMaidenIcoserve12345671"
                             assigningAuthorityName="EHR_ITH icoserve_2019"/>
                  </ns1:priorRegisteredRole>
               </ns1:subject1>
            </ns1:priorRegistration>
         </ns1:replacementOf>
      </ns1:registrationEvent>
   </ns1:subject>
</ns1:controlActProcess>
```

8.3.2.2 Outbound Message Structure

See Section 1.2.2.

8.4 Link Patients

8.4.1 Link Patients – HL7v2

This transaction is used to link a Local Patient to a Master Patient. The following HL7 messages can be received and processed in order to execute this transaction:

- ADT-A24

8.4.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **Link Patients**.

Table 115: Link Patient Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A24**
EVN	Event Information
PID	Patient Information

MSH Segment
: The HL7 MSH segment is present in every HL7 message type and defines the message's source, purpose, destination, and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment
: The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message.

PID Segment
: The PID segment contains the relevant patient data.

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8.4.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 7. These are the relevant fields of the other segments:

EVN-2
: Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5
: Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7
: Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

Table 116: Fields Relevant for the Link Patients Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional

The PID Segment has to be placed twice in this message, as each occurrence refers to one patient to be linked. The first occurrence is always a Source Patient, the second can be either a Source or a Master Patient. Links are however always established to a Master Patient.



Warning

The *Link Patients* transaction must be exclusively used for establishing links between Source and Master Patients. Do not try to update patient data in the same go, as all changes other than the linkage will be ignored.



Warning

Also, be aware that this transaction establishes a "hard link" between the data sets and does not check for matching criteria. Therefore, the transaction must be applied with caution.

Example 139:
Submission:

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180312132909.639+0100||ADT^A24^ADT_A24|c2997f5e-7027-4f57-acc8-f36a
    625b2624|P|2.5|||AL|||UNICODE UTF-8
EVN||20180312132909.639+0100|||userId5583^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974&ISO^L^^^EN
PID|||patientId4436^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PID|||patientId4316^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
```

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8.5 Unlink Patients

8.5.1 Unlink Patients – HL7v2

This transaction is used to remove a link between a Local Patient and a Master Patient. The following HL7 messages can be received and processed in order to execute this transaction:

- ADT-A37

8.5.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **Unlink Patients**.

Table 117: Unlink Patient Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A37**
EVN	Event Information
PID	Patient Information

MSH Segment
: The HL7 MSH segment is present in every HL7 message type and defines the message's source, purpose, destination, and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment
: The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message.

PID Segment
: The PID segment contains the relevant patient data.

8.5.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 7. These are the relevant fields of the other segments:

EVN-2
: Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5
: Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7
: Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

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Table 118: Fields Relevant for the Unlink Patients Transaction

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional

The PID Segment has to be placed twice in this message, as each occurrence refers to one patient to be unlinked. The first occurrence is always a Source Patient, the second can be either a Source or a Master Patient and must be present to conform to the HL7 standard. The link to be removed however always points to a Master Patient.

Example 140:
Submission:

```
MSH|^~\&|My Clinic ADT System^1.2.123.27.1974.165.12^ISO|My Local Clinic^1.2.123.27.1974^ISO
    |eHealth Solutions MPI^1.1.234.1245.2^ISO|eHealth Solutions Affinity Domain
    ^1.1.234.1245^ISO|20180312133336.031+0100||ADT^A37^ADT_A37|06d50d88-7e4b-4884-a32c-259e0
    a3705e4|P|2.5|||AL|||UNICODE UTF-8
EVN||20180312133336.031+0100|||userId0241^FamilyName^GivenName^^^^^^My Local Clinic
    &1.2.123.27.1974&ISO^L^^^EN
PID|||patientId5795^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
PID|||patientId5795^^^My Local Clinic&1.2.123.27.1974&ISO^PI||FamilyName^GivenName^^^^^L
```

8.6 Master Patient Change

8.6.1 XAD-PID Change Notification – HL7v2

This transaction is used when a Local Patient is unlinked from their previous Master Patient (XAD-PID) and assigned to a new Master Patient (XAD-PID).

Trigger Event

- ADT A43

Processing

- **Inbound:** XDS Registry
- **Outbound:** MPI

8.6.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **XAD-PID Change**.

Table 119: XAD-PID Change Segments

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**
MSH-9-2	The trigger event must be **A43**

Table 119: XAD-PID Change Segments

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Table 119: XAD-PID Change Segments

Segment	Description
EVN	Event Information
PID	Patient Information
MRG	Merge Patient Information

MSH Segment
: The HL7 MSH segment is present in every HL7 message type and defines the message's source, purpose, destination, and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment
: The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message.

PID Segment
: The PID segment contains the relevant patient data.

MRG Segment
: The MRG segment contains information relevant for the merging of patient data.

Field Overview

PID-3
: The PID-3 Segment is repeated twice in this message; the first occurrence refers to the newly linked Master Patient (XAD-PID), effective immediately, while the second occurrence refers to the Local Patient whose Master Patient ID (XAD-PID) is being changed.

MRG-1
: The MRG-1 Segment contains the old, i.e. previously linked, Master Patient ID (XAD-PID).

Example 141:
Submission:

```
MSH|^~\&|Test Sending Application^1.1.2.1.1|Test Sending Facility^1.1.2|Test Receiving
    Application^1.1.1.1.1|Test Receiving Facility^1.1.1|201505051500||ADT^A43|127|P|2.3.1
EVN||201505051500|||1234^Ford^Harrison^Jonathan^Jr.^Mr.^^^^^^^^^^^^^^PhD|201505051100
PID|||1412199415782^^^&1.1.1&ISO^PI~4564534^^^&1.1.1.3.2&ISO^PI
MRG|1412200318179^^^&1.1.2&ISO^PI
```

8.7 Query Patient IDs

The PIX/PDQ Manager provides two patient query methods: **Query Patient IDs** and **Query Patients** (Section 8.8). The transaction **Query Patient IDs** passes one patient identifier (most commonly the identifier of the local CIS, PACS, ...) and receives all identifiers (or optionally only identifiers from a given subset of patient assigning authorities) in return.

It is possible to search by a patient's identifier without setting the assigning authority. In this case, the search is extended to all available assigning authorities.



Warning

This option does not conform to the IHE standards and can only be used within the eHealth Solutions infrastructure.

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8.7.1 Query Patient IDs – HL7v2

8.7.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **Query Patient IDs**.

The Query

The Request for Corresponding Patient Identifiers transaction is conducted by the QBP Q23 message. The segments of the message listed in Table 120 are required:

Table 120: Query Patient ID Segments

Segment	Description
MSH	Message Header
MSH-9-1	The Message Type must be **QBP**
MSH-9-2	The TriggerEvent must be **Q23**
QPD	Query Parameter Definition
RCP	Response Control Parameter

Message Header

The HL7 MSH segment is present in every HL7 message type and defines the message's source, purpose, destination, and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

Query Parameter Definition

Echoes the QPD Segment value that was sent in the QBP Q23 message.

Response Control Parameter

The RCP Segment must only have the first element populated with an "I", indicating that this message must be processed immediately.

The Response

The response message is (in difference to administrative ACK responses) a RSP K23 message (see Table 121).

Table 121: Query Patient ID Responses

Segment	Description
MSH	Message Header
MSH-9-1	The Message Type must be **RSP**
MSH-9-2	The TriggerEvent must be **K23**
MSA	Message Acknowledgement
ERR	Error
QAK	Query Acknowledgement
QPD	Query Parameter Definition
PID	Patient Identifier

Message Header

The HL7 MSH segment is present in every HL7 message type and defines the message's source, purpose, destination, and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

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Message Acknowledgement
: Message Acknowledgement displaying the success of the message.

Error
: If an error occurred this segment is populated with the details.

Query Acknowledgement
: The Query Acknowledgement repeats the Query Tag (send by the client in the QPD-2 field) and a query status.

Query Parameter Definition
: Echoes the QPD Segment value that was sent in the QBP Q23 message.

Patient Identifier
: If the corresponding patient was found, a PID segment having only PID-3 (requested Identifiers) and PID-5 (names) valued.

Response Control Parameter
: The RCP Segment must only have the first element populated with an "I", indicating that this message must be processed immediately.

8.7.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 7. These are the relevant fields of the other segments:

QPD-1
: Query Parameter Definition: This is a constant value and must be "IHE PIX Query" (defined by the IHE).

QPD-2
: Query Tag: Name for the query. This value will be returned to find matching responses to queries.

QPD-3
: Person Identifier: One or more Patient Identifier used to query the patient in the PIX/PDQ. Datatype: CX

QPD-8
: What Domains Returned: Instead of querying all patient IDs, the requesting system is also able to query only a selected number of patient IDs. It does so by populating QPD-4-What Domains Returned with as many repetitions as needed. The number of repetitions equals the number of domains from which the patient IDs are supposed to come from.

Table 122: Fields Relevant for the Query Patient ID Transaction

HL7-Path	Name	Repeatable	Presence
QPD-1	Query Parameter Definition	Required	No
QPD-2	Query Tag	Required	No
QPD-3	Person Identifier	Required	No
QPD-8	What Domains Returned	Optional	Yes

Example 142:
Submission:

```
MSH|^~\&|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|20141001235552||
    QBP^Q23^QBP_Q21|1412200551815|P|2.5|||AL
QPD|IHE PIX Query|QRY1412200552364|1412200317139^^^&1.1.1.1.3&ISO
RCP|I
```

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Response:

```
MSH|^~\&|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|20141001235552||
    RSP^K23^RSP_K23|141220055272243497|P|2.5
MSA|AA|1412200551815
QAK|QRY1412200552364|OK|IHE PIX Query|5
QPD|IHE PIX Query|QRY1412200552364|1412200317139^^^&1.1.1.1.3&ISO
PID|||648786472101230541^^^OTHER NATIONAL SOCIAL SECURITY ASSOCIATION
    &1.3.6.1.4.1.9784.999200.2.1&
ISO^SS~2569605884678423^^^OTHER NATIONAL SOCIAL SECURITY ASSOCIATION&1.3.6.1.4.1.9784.
999200.2.1&ISO^SS~de2dbe72-dc87-492b-baa6-dccbda635ac1^^^XDS Affinity Domain 1&1.1.1&ISO^GPI
    ||~^^^^^^S
```

8.7.2 Query Patient IDs – HL7v3

Example 143: HL7v3 Query Patient IDs Root Element

interactionId's extension field: PRPA_IN201309UV02

```
<ns1:PRPA_IN201309UV02 xmlns:ns1="urn:hl7-org:v3" ITSVersion="XML_1.0">
  INSERT MESSAGE HEADER
  INSERT PAYLOAD
</ns1:PRPA_IN201309UV02>
```

8.7.2.1 Inbound Message Structure

The following elements are required in this specific order:

1. controlActProcess
2. controlActProcess.code
3. controlActProcess.authorOrPerformer
4. controlActProcess.authorOrPerformer.assignedPerson
5. controlActProcess.authorOrPerformer.assignedPerson.assignedPerson
6. controlActProcess.authorOrPerformer.assignedPerson.assignedPerson.name
7. controlActProcess.queryByParameter
8. controlActProcess.queryByParameter.queryId
9. controlActProcess.queryByParameter.statusCode
10. controlActProcess.queryByParameter.responsePriorityCode
11. controlActProcess.queryByParameter.parameterList
12. controlActProcess.queryByParameter.parameterList.value
13. controlActProcess.queryByParameter.parameterList.value
14. controlActProcess.queryByParameter.parameterList.semanticsText

Example 144: HL7v3 Query Patient IDs Payload

```
<ns1:controlActProcess classCode="CACT" moodCode="EVN">
   <ns1:code xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:CD"
             code="PRPA_TE201309UV02"/>
   <ns1:authorOrPerformer typeCode="AUT">
      <ns1:assignedPerson classCode="ASSIGNED">
         <ns1:assignedPerson classCode="PSN" determinerCode="INSTANCE">
            <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:EN
    ">
               <ns1:prefix>Dr.</ns1:prefix>
               <ns1:given>Vorname</ns1:given>
               <ns1:family>Nachname</ns1:family>
               <ns1:suffix>Jr.</ns1:suffix>
            </ns1:name>
         </ns1:assignedPerson>
      </ns1:assignedPerson>
   </ns1:authorOrPerformer>
```

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```
   <ns1:queryByParameter>
      <ns1:queryId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
                   root="1.3.6.1.4.1.21367.13.50.300222"
                   extension="1552661647687"/>
      <ns1:statusCode code="new"/>
      <ns1:responsePriorityCode code="I"/>
      <ns1:parameterList>
         <ns1:patientIdentifier>
            <ns1:value xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
    II"
                       root="1.3.6.1.4.1.21367.3000.1.6"
                       extension="IHEFACILITY-998"
                       assigningAuthorityName="IHEFACILITY"/>
            <ns1:semanticsText>Patient.id</ns1:semanticsText>
         </ns1:patientIdentifier>
      </ns1:parameterList>
   </ns1:queryByParameter>
</ns1:controlActProcess>
```

Example 145: HL7v3 Query Patient IDs with Domain Restriction Payload

```
<ns1:controlActProcess classCode="CACT" moodCode="EVN">
  <ns1:code xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:CD" code="
    PRPA_TE201309UV02"/>
    <ns1:authorOrPerformer typeCode="AUT">
      <ns1:assignedDevice classCode="ASSIGNED">
        <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.3.6.1.4.1.21367.13.10.218"/>
        <ns1:assignedDevice classCode="DEV" determinerCode="INSTANCE"/>
      </ns1:assignedDevice>
    </ns1:authorOrPerformer>
    <ns1:queryByParameter>
      <ns1:queryId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
    root="1.3.6.1.4.1.21367.13.10.218" extension="1461857158532"/>
      <ns1:statusCode code="new"/>
      <ns1:responsePriorityCode code="I"/>
      <ns1:parameterList>
        <ns1:dataSource>
          <ns1:value xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
     root="1.3.6.1.4.1.21367.13.20.2000"/>
          <ns1:semanticsText>DataSource.id</ns1:semanticsText>
        </ns1:dataSource>
        <ns1:patientIdentifier>
          <ns1:value xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
     root="1.3.6.1.4.1.21367.3000.1.6" extension="IHEFACILITY-998"/>
          <ns1:semanticsText>Patient.id</ns1:semanticsText>
        </ns1:patientIdentifier>
      </ns1:parameterList>
    </ns1:queryByParameter>
  </ns1:controlActProcess>
</ns1:PRPA_IN201309UV02>
```

8.7.2.2 Outbound Message Structure

Example 146: HL7v3 Query Patient IDs Response with Results

```
<ns1:PRPA_IN201310UV02 xmlns:ns1="urn:hl7-org:v3" ITSVersion="XML_1.0">
  <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.2.3.4.5" extension="30"/>
  <ns1:creationTime xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:TS"
    value="20160429104522"/>
  <ns1:versionCode code="V3PR1"/>
```

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```
<ns1:interactionId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
   root="2.16.840.1.113883" extension="PRPA_IN201310UV02"/>
<ns1:processingCode code="P"/>
<ns1:processingModeCode code="T"/>
<ns1:acceptAckCode code="NE"/>
<ns1:receiver typeCode="RCV">
  <ns1:device classCode="DEV" determinerCode="INSTANCE">
    <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
  ="1.2.3.4.5.1000"/>
  </ns1:device>
</ns1:receiver>
<ns1:sender typeCode="SND">
  <ns1:device classCode="DEV" determinerCode="INSTANCE">
    <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
  ="1.2.3.4.5.1000"/>
  </ns1:device>
</ns1:sender>
<ns1:acknowledgement>
  <ns1:typeCode code="AA"/>
  <ns1:targetMessage>
    <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
  ="2.16.840.1.113883.1.6.1" extension="1461919519877"/>
  </ns1:targetMessage>
</ns1:acknowledgement>
<ns1:controlActProcess classCode="CACT" moodCode="EVN">
  <ns1:code xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:CD" code="
  PRPA_TE201310UV02"/>
  <ns1:subject typeCode="SUBJ">
    <ns1:registrationEvent classCode="REG" moodCode="EVN">
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
  nullFlavor="NA"/>
      <ns1:statusCode code="active"/>
      <ns1:subject1 typeCode="SBJ">
        <ns1:patient classCode="PAT">
          <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
  root="1.3.6.1.4.1.9784.999200.2.1.1" extension="2776347772" assigningAuthorityName="
  NATIONAL SOCIAL SECURITY ASSOCIATION"/>
          <ns1:statusCode code="active"/>
          <ns1:patientPerson classCode="PSN" determinerCode="INSTANCE">
            <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
  PN" nullFlavor="NA"/>
            <ns1:asOtherIDs classCode="ROL">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
  II" root="1.1.1" extension="3ae7a73a-7200-4cd3-99c9-f2653a06cfc7" assigningAuthorityName
  ="XDS Affinity Domain 1"/>
              <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
                <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
  1:II" root="1.1.1"/>
              </ns1:scopingOrganization>
            </ns1:asOtherIDs>
            <ns1:asOtherIDs classCode="ROL">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
  II" root="1.1.1.1.2" extension="ID-Value – 8642741598patientID0" assigningAuthorityName
  ="Landeskrankenhaus Innsbruck"/>
              <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
                <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
  1:II" root="1.1.1.1.2"/>
              </ns1:scopingOrganization>
            </ns1:asOtherIDs>
          </ns1:patientPerson>
        </ns1:patient>
      </ns1:subject1>
      <ns1:custodian typeCode="CST">
        <ns1:assignedEntity classCode="ASSIGNED">
          <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
```

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```
    root="1.3.6.1.4.1.21367.2010.1.2.600" extension="xxx"/>
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
    root="1.3.6.1.4.1.21367.2010.1.2.600" extension="xxx"/>
            <ns1:assignedOrganization classCode="ORG" determinerCode="INSTANCE">
              <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
    EN">
                <ns1:given>org</ns1:given>
              </ns1:name>
            </ns1:assignedOrganization>
          </ns1:assignedEntity>
        </ns1:custodian>
      </ns1:registrationEvent>
    </ns1:subject>
    <ns1:queryAck>
      <ns1:queryId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
    root="1.3.6.1.4.1.21367.13.10.218" extension="1461919522407"/>
      <ns1:statusCode code="deliveredResponse"/>
      <ns1:queryResponseCode code="OK"/>
    </ns1:queryAck>
    <ns1:queryByParameter>
      <ns1:queryId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
    root="1.3.6.1.4.1.21367.13.10.218" extension="1461919522407"/>
      <ns1:statusCode code="new"/>
      <ns1:responsePriorityCode code="I"/>
      <ns1:parameterList>
        <ns1:patientIdentifier>
          <ns1:value xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
     root="1.1.1.1.2" extension="ID-Value – 8642741598patientID0"/>
          <ns1:semanticsText>Patient.id</ns1:semanticsText>
        </ns1:patientIdentifier>
      </ns1:parameterList>
    </ns1:queryByParameter>
  </ns1:controlActProcess>
</ns1:PRPA_IN201310UV02>
```

Example 147: HL7v3 Query Patient IDs Response without Results

```
<ns1:PRPA_IN201310UV02 xmlns:ns1="urn:hl7-org:v3" ITSVersion="XML_1.0">
  <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.2.3.4.5" extension="30"/>
  <ns1:creationTime xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:TS"
    value="20160428174949"/>
  <ns1:versionCode code="V3PR1"/>
  <ns1:interactionId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
     root="2.16.840.1.113883" extension="PRPA_IN201310UV02"/>
  <ns1:processingCode code="P"/>
  <ns1:processingModeCode code="T"/>
  <ns1:acceptAckCode code="NE"/>
  <ns1:receiver typeCode="RCV">
    <ns1:device classCode="DEV" determinerCode="INSTANCE">
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.2.3.4.5.1000"/>
    </ns1:device>
  </ns1:receiver>
  <ns1:sender typeCode="SND">
    <ns1:device classCode="DEV" determinerCode="INSTANCE">
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.2.3.4.5.1000"/>
    </ns1:device>
  </ns1:sender>
  <ns1:acknowledgement>
    <ns1:typeCode code="AA"/>
    <ns1:targetMessage>
```

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```
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="2.16.840.1.113883.1.6.1" extension="1461858586585"/>
    </ns1:targetMessage>
  </ns1:acknowledgement>
  <ns1:controlActProcess classCode="CACT" moodCode="EVN">
    <ns1:code xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:CD" code="
    PRPA_TE201310UV02"/>
    <ns1:queryAck>
      <ns1:queryId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
    root="1.3.6.1.4.1.21367.13.10.218" extension="1461858589205"/>
      <ns1:statusCode code="deliveredResponse"/>
      <ns1:queryResponseCode code="NF"/>
    </ns1:queryAck>
    <ns1:queryByParameter>
      <ns1:queryId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
    root="1.3.6.1.4.1.21367.13.10.218" extension="1461858589205"/>
      <ns1:statusCode code="new"/>
      <ns1:responsePriorityCode code="I"/>
      <ns1:parameterList>
        <ns1:dataSource>
          <ns1:value xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
     root="1.3.6.1.4.1.21367.13.20.2000"/>
          <ns1:semanticsText>DataSource.id</ns1:semanticsText>
        </ns1:dataSource>
        <ns1:patientIdentifier>
          <ns1:value xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
     root="1.3.6.1.4.1.21367.3000.1.6" extension="IHEFACILITY-998"/>
          <ns1:semanticsText>Patient.id</ns1:semanticsText>
        </ns1:patientIdentifier>
      </ns1:parameterList>
    </ns1:queryByParameter>
  </ns1:controlActProcess>
</ns1:PRPA_IN201310UV02>
```

8.8 Query Patients

It is possible to search by a patient's identifier without setting the assigning authority. In this case, the search is extended to all available assigning authorities.



Warning

This option does not conform to the IHE standards and can only be used within the eHealth Solutions infrastructure.

The query for searching patients (request sent via HL7v2 or HL7v3) for the gender 'OTHER' also returns results for the gender 'AMBIGUOUS'. 'AMBIGUOUS' is still saved as 'AMBIGUOUS' in the database.

Source Patient Query

Both HL7v2 and HL7v3 allow the option of querying Source Patients. In this context, the HL7v2 segment `PID-34 (Last Update Facility)` and HL7v3 XML element `RegistrationEvent.Custodian.assignedEntity.id` (or, if empty, `sender.device.asAgent.representedOrganization.id.root`) take on a special meaning.

HL7v2

In query messages, the Last Update Facility is specified in the MSH-5 (Receiving Application). If the MPI does not recognize the provided Last Update Facility, it will execute a normal Master Patient Query. However, if it does recognize the Last Update Facility, the MPI will instead execute a Source Patient query.

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HL7v3

The XML element for the Last Update Facility in patient feeds (`sender.device.asAgent.representedOrganization.id.root`) has the following format:

Example 148:

```
<ns1:sender typeCode="SND">
        <ns1:device classCode="DEV" determinerCode="INSTANCE">
           <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II
    "
                   root="1.1.1.1.2"/>
           <ns1:asAgent classCode="AGNT">
              <ns1:representedOrganization classCode="ORG" determinerCode="INSTANCE">
                 <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
    ns1:II"
                         root="1.1.1"/>
              </ns1:representedOrganization>
           </ns1:asAgent>
        </ns1:device>
     </ns1:sender>
```

In patient queries, the XML element for Last Update Facility is `receiver.device.id.root` and has the following format:

Example 149:

```
<ns1:receiver typeCode="RCV">
        <ns1:device classCode="DEV" determinerCode="INSTANCE">
           <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II
    "
                   root="1.1.1.12"/>
           <ns1:asAgent classCode="AGNT">
              <ns1:representedOrganization classCode="ORG" determinerCode="INSTANCE">
                 <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
    ns1:II"
                         root="1.1.1"/>
              </ns1:representedOrganization>
           </ns1:asAgent>
        </ns1:device>
     </ns1:receiver>
```



Warning

Note that it is possible to unintentionally trigger Source Patient queries due to the dual use of the PID-34/RegistrationEvent.Custodian.assignedEntity.id element by the HL7 standard. In order to avoid such unintended queries, be mindful of the information written in the element when creating/registering patient data.

8.8.1 Query Patients – HL7v2

The difference between the transactions **Query Patient IDs** (Section 8.7) and **Query Patients** is that the focus of **Query Patients** is to find entire patient records. The client generates the query message whenever it needs to select from a list of patients whose information matches a minimal set of demographic data. To provide the option of retrieving a big amount it is possible to segment the responses by defining the maximum amount of patients returned per response, and by repeating the query having a continuation pointer set one can retrieve the next set of patients.

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8.8.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **Query Patients**.

The Query

The Patient Demographics Query is conducted by the QBP Q22 message (see Table 123).

Table 123: Message Segment Overview

Segment	Description
MSH	Message Header
MSH-9-1	The Message Type must be **QBP**
MSH-9-2	The TriggerEvent must be **Q22**
QPD	Query Parameter Definition
RCP	Response Control Parameter
DSC	Continuation Pointer

Message Header

The HL7 MSH segment is present in every HL7 message type and defines the message's source, purpose, destination, and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

Query Parameter Definition

Echoes the QPD Segment value that was sent in the QBP Q23 message.

Response Control Parameter

The RCP Segment must only have the first element populated with an "I", indicating that this message must be processed immediately.

Continuation Pointer

If the PIX/PDQ holds more patients to this query, the DSC-1 is filled with the Continuation Pointer, which can be used to retrieve the next patients.

The Response

The response message is a RSP K22 message (see Table 124):

Table 124: Patient Query Responses

Segment	Description
MSH	Message Header
MSH-9-1	The Message Type must be **RSP**
MSH-9-2	The TriggerEvent must be **K22**
MSA	Message Acknowledgement
ERR	Error
QAK	Query Acknowledgement
QPD	QPD Segment
PID	PID Segment
DSC	Continuation Pointers

Message Header

The HL7 MSH segment is present in every HL7 message type and defines the message's source,

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purpose, destination, and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, the only exception being HL7 batch messages.

Message Acknowledgement
: Displays the success of the message.

Error
: If an error occurred, this segment contains the details.

Query Acknowledgement
: Repeats the Query Tag (sent by the client in the QPD-2 field) and a query status.

QPD Segment
: Echoes the QPD Segment value sent in the QBP Q23 message.

PID Segment
: If the corresponding patients were found, a fully filled PID segment per found patient is provided.

Continuation Pointer
: If the PIX/PDQ holds more patients to this query, the DSC-1 is filled with the Continuation Pointer, which can be used to retrieve the next patients.

8.8.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 7. These are the relevant fields of the other segments:

QPD-1
: Query Parameter Definition: This is a constant value and must be "IHE PDQ Query" (defined by the IHE).

QPD-2
: Query Tag: Name for the query. This value will be returned to find matching responses to queries.

QPD-3
: Demographics Field: A list of Key-Value pairs defining the Query parameter.
Supported demographics: identifiers (multiple), names (multiple), gender, date of birth, addresses (multiple) and mother's birth name.

QPD-8
: What Domains Returned: List of all Patient IDs. (Instead of querying all patient IDs, the requesting system is also able to query only a selected number of patient IDs. It does so by populating QPD-4-What Domains Returned with as many repetitions as needed. The number of repetitions equals the number of domains from which the patient IDs are supposed to come from.)

RCP-1
: Query Priority: This is a constant value and must be "I" to force an immediate response.

RCP-2
: Quantity Limited Request: Specifies the amount of patient records returned per result page.

DSC-1
: Continuation Pointer: To request additional increments of data, DSC-1 (Continuation Pointer) shall echo the value from RSP^K22 DSC-1.

DSC-2
: Continuation Style: This is a constant value and must be "I" to force the following responses to be immediate as well.

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Table 125: List of data set in the QPD segment to query patients

HL7-Path	Name	Repeatable	Presence
QPD-1	Query Parameter Definition	Required	No
QPD-2	Query Tag	Required	No
QPD-3	Demographics Field	Required	Yes
QPD-8	What Domains Returned	Optional	Yes
RCP-1	Query Priority	Required	No
RCP-2	Quantity Limited Request	Optional	No
DSC-1	Continuation Pointer	Optional	No
DSC-2	Continuation Style	Optional	No



Note

In this transaction, the RCP segment is responsible for setting the quantity of returned patients.



Note

The DSC Segment must be set when the "next" result of a forked response (whenever the total response is bigger than the requested amount of patients in RCP-2).

The **QPD-3**-Demographics Field consists of one or more repetitions, each of which contains two components that together contain the name and value of a distinct parameter to the query. These parameters are values of the PID-segment:

```
@<seg>.<field no>.<component no>.<subcomponent no>
```

`<seg>`
: represents a 3-character segment ID from the HL7 Standard. Since only PID parameters are allowed, this must be PID.

`<field no>`
: is the number of a field within the segment as shown in the SEQ column of the segment attribute table for the selected segment.

`<component no>`
: is for fields whose data types contain multiple components and shall contain the cardinal number of the component being valued. For fields whose data types do not contain multiple components, <component no> shall not be valued and its preceding period shall not appear.

`<subcomponent no>`
: is for components whose data types contain multiple subcomponents and shall contain the cardinal number of the subcomponent being valued. For components whose data types do not contain multiple subcomponents, <subcomponent no> shall not be valued and its preceding period shall not appear.

Example 150:
Submission:

```
MSH|^~\&|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2.1^ISO|QUAD^1.1.1^ISO|QUAD^1.1.1^ISO|20141001115903||
    QBP^Q22^QBP_Q21|1412200743762.1|P|2.5|||AL
QPD|IHE PDQ Query|QRY1412200743832|@PID.5.1.1^Mar*~@PID.8^F~@PID.6.1.1^mothersMaidenName
RCP|I|10^RD
```

Response:

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```
MSH|^~\&|QUAD^1.1.1^ISO|QUAD^1.1.1^ISO|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2.1^ISO|20141001235904||
    RSP^K22^RSP_K21|141220074423143501|P|2.5
MSA|AA|1412200743762.1
QAK|QRY1412200743832|OK|IHE PDQ Query|1
QPD|IHE PDQ Query|QRY1412200743832|@PID.5.1.1^Mar*~@PID.8^F
PID|||1409917720110^^^Example Hospital&1.1.1.1.3&ISO^PI~719332451557239827^^^OTHER NATIONAL
SOCIAL SECURITY ASSOCIATION&1.3.6.1.4.1.9784.999200.2.1&ISO^SS~4d0d4212-d626-4894-984b-297c5
    ca2ac10^^^XDS
Affinity Domain 1&1.1.1&ISO^GPI||MARKLEY^Julie^^^^^L~MARKLEY^Julie^^^^^L||20120518|F
```

8.8.2 Query Patients – HL7v3

Example 151: HL7v3 Query Patients Root Element

interactionId's extension field: PRPA_IN201305UV02

```
<ns1:PRPA_IN201305UV02 xmlns:ns1="urn:hl7-org:v3" ITSVersion="XML_1.0">
  INSERT MESSAGE HEADER
  INSERT PAYLOAD
</ns1:PRPA_IN201305UV02>
```

8.8.2.1 Inbound Message Structure

The following elements are required in this specific order:

1. controlActProcess
2. controlActProcess.code
3. controlActProcess.authorOrPerformer
4. controlActProcess.authorOrPerformer.assignedPerson
5. controlActProcess.authorOrPerformer.assignedPerson.assignedPerson
6. controlActProcess.authorOrPerformer.assignedPerson.assignedPerson.name
7. controlActProcess.queryByParameter
8. controlActProcess.queryByParameter.queryId
9. controlActProcess.queryByParameter.statusCode
10. controlActProcess.queryByParameter.statusCoderesponseModalityCode
11. controlActProcess.queryByParameter.responsePriorityCode
12. controlActProcess.queryByParameter.initialQuantity
13. controlActProcess.queryByParameter.initialQuantityCode
14. controlActProcess.queryByParameter.parameterList
15. controlActProcess.queryByParameter.parameterList.id
16. controlActProcess.queryByParameter.parameterList.livingSubjectAdministrativeGender
17. controlActProcess.queryByParameter.parameterList.livingSubjectName
18. controlActProcess.queryByParameter.parameterList.livingSubjectName.value
19. controlActProcess.queryByParameter.parameterList.livingSubjectName.value.given
20. controlActProcess.queryByParameter.parameterList.livingSubjectName.value.family
21. controlActProcess.queryByParameter.parameterList.semanticsText

Example 152: HL7v3 Query Patients Payload (Results in multiple pages)

```
<ns1:controlActProcess classCode="CACT" moodCode="EVN">
   <ns1:code xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:CD"
             code="PRPA_TE201305UV02"/>
   <ns1:authorOrPerformer typeCode="AUT">
      <ns1:assignedPerson classCode="ASSIGNED">
         <ns1:assignedPerson classCode="PSN" determinerCode="INSTANCE">
            <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:EN
    ">
               <ns1:prefix>Dr.</ns1:prefix>
               <ns1:given>Vorname</ns1:given>
```

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```
               <ns1:family>Nachname</ns1:family>
               <ns1:suffix>Jr.</ns1:suffix>
            </ns1:name>
         </ns1:assignedPerson>
      </ns1:assignedPerson>
   </ns1:authorOrPerformer>
   <ns1:queryByParameter>
      <ns1:queryId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
                   root="1.3.6.1.4.1.21367.13.50.300222"
                   extension="1552661838861"/>
      <ns1:statusCode code="new"/>
      <ns1:responseModalityCode code="R"/>
      <ns1:responsePriorityCode code="I"/>
      <ns1:initialQuantity xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
    ns1:INT"
                           value="10"/>
      <ns1:initialQuantityCode code="RD"/>
      <ns1:parameterList>
         <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
                 root="2.16.840.1.113883.1.6.1"
                 extension="09f8f001-1768-407e-9266-3bddf9556aa4"/>
         <ns1:livingSubjectName>
            <ns1:value xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
    PN">
               <ns1:given>CHIP</ns1:given>
               <ns1:family>MOORE</ns1:family>
            </ns1:value>
            <ns1:semanticsText>LivingSubject.name</ns1:semanticsText>
         </ns1:livingSubjectName>
         <ns1:mothersMaidenName>
            <ns1:value xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
    PN">
               <ns1:family ns1:qualifier="BR">mothersMaidenName</ns1:family>
            </ns1:value>
            <ns1:semanticsText>Person.MothersMaidenName</ns1:semanticsText>
       </ns1:mothersMaidenName>
      </ns1:parameterList>
   </ns1:queryByParameter>
</ns1:controlActProcess>
```

8.8.2.2 Outbound Message Structure

Example 153: HL7v3 Query Patients Response (Results in multiple pages)

```
<ns1:PRPA_IN201306UV02 xmlns:ns1="urn:hl7-org:v3" ITSVersion="XML_1.0">
  <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.2.3.4.5" extension="30"/>
  <ns1:creationTime xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:TS"
    value="20160429134624"/>
  <ns1:versionCode code="V3PR1"/>
  <ns1:interactionId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
     root="2.16.840.1.113883" extension="PRPA_IN201306UV02"/>
  <ns1:processingCode code="P"/>
  <ns1:processingModeCode code="T"/>
  <ns1:acceptAckCode code="NE"/>
  <ns1:receiver typeCode="RCV">
    <ns1:device classCode="DEV" determinerCode="INSTANCE">
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.2.3.4.5.1000"/>
    </ns1:device>
  </ns1:receiver>
  <ns1:sender typeCode="SND">
    <ns1:device classCode="DEV" determinerCode="INSTANCE">
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
```

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```
  ="1.2.3.4.5.1000"/>
  </ns1:device>
</ns1:sender>
<ns1:acknowledgement>
  <ns1:typeCode code="AA"/>
  <ns1:targetMessage>
    <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
  ="2.16.840.1.113883.1.6.1" extension="1461930382073"/>
  </ns1:targetMessage>
</ns1:acknowledgement>
<ns1:controlActProcess classCode="CACT" moodCode="EVN">
  <ns1:code xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:CD" code="
  PRPA_TE201306UV02"/>
  <ns1:subject typeCode="SUBJ" contextConductionInd="false">
    <ns1:registrationEvent classCode="REG" moodCode="EVN">
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
  nullFlavor="NA"/>
      <ns1:statusCode code="active"/>
      <ns1:subject1 typeCode="SBJ">
        <ns1:patient classCode="PAT">
          <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
  root="1.1.1.1.1" extension="23043655300181" assigningAuthorityName="Example Hospital"/>
          <ns1:statusCode code="active"/>
          <ns1:patientPerson classCode="PSN" determinerCode="INSTANCE">
            <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
  PN">
              <ns1:given>Joe</ns1:given>
              <ns1:family>Shmoe</ns1:family>
            </ns1:name>
            <ns1:administrativeGenderCode code="F"/>
            <ns1:birthTime xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type
  ="ns1:TS" value="19760615"/>
            <ns1:addr xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
  AD">
              <ns1:city>Example City</ns1:city>
              <ns1:state>Example State</ns1:state>
              <ns1:postalCode>00000</ns1:postalCode>
              <ns1:streetAddressLine>Street 00</ns1:streetAddressLine>
            </ns1:addr>
            <ns1:asOtherIDs classCode="PAT">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
  II" root="1.3.6.1.4.1.9784.999200.2.1.1" extension="3931150676" assigningAuthorityName="
  NATIONAL SOCIAL SECURITY ASSOCIATION"/>
              <ns1:statusCode code="active"/>
              <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
                <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
  1:II" root="1.3.6.1.4.1.9784.999200.2.1.1"/>
              </ns1:scopingOrganization>
            </ns1:asOtherIDs>
            <ns1:asOtherIDs classCode="PAT">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
  II" root="1.2.3.3.3.1.3" extension="74113"/>
              <ns1:statusCode code="active"/>
              <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
                <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
  1:II" root="1.2.3.3.3.1.3"/>
              </ns1:scopingOrganization>
            </ns1:asOtherIDs>
            <ns1:asOtherIDs classCode="PAT">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
  II" root="1.2.3.3.3.2.1" extension="576c1266f33a4c9687d6dc636d29efd4"/>
              <ns1:statusCode code="active"/>
              <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
                <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
  1:II" root="1.2.3.3.3.2.1"/>
```

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```
            </ns1:scopingOrganization>
          </ns1:asOtherIDs>
          <ns1:asOtherIDs classCode="PAT">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II" root="1.2.3.3.3.2.2" extension="84113"/>
            <ns1:statusCode code="active"/>
            <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:II" root="1.2.3.3.3.2.2"/>
            </ns1:scopingOrganization>
          </ns1:asOtherIDs>
          <ns1:asOtherIDs classCode="PAT">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II" root="1.2.3.3.3.1.2" extension="94a33cb9-7526-4a3b-a7ef-524e263fae26"/>
            <ns1:statusCode code="active"/>
            <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:II" root="1.2.3.3.3.1.2"/>
            </ns1:scopingOrganization>
          </ns1:asOtherIDs>
          <ns1:asOtherIDs classCode="PAT">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II" root="1.2.3.3.3.1.1" extension="23043655300181"/>
            <ns1:statusCode code="active"/>
            <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:II" root="1.2.3.3.3.1.1"/>
            </ns1:scopingOrganization>
          </ns1:asOtherIDs>
          <ns1:asOtherIDs classCode="PAT">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II" root="1.1.1.1.3" extension="74113" assigningAuthorityName="NeuGötzner
Schönheitsklinik"/>
            <ns1:statusCode code="active"/>
            <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:II" root="1.1.1.1.3"/>
            </ns1:scopingOrganization>
          </ns1:asOtherIDs>
          <ns1:asOtherIDs classCode="PAT">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II" root="1.1.1" extension="8056dfc9-22cc-4199-838a-c89486c23fdf" assigningAuthorityName
="XDS Affinity Domain 1"/>
            <ns1:statusCode code="active"/>
            <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:II" root="1.1.1"/>
            </ns1:scopingOrganization>
          </ns1:asOtherIDs>
        </ns1:patientPerson>
        <ns1:providerOrganization classCode="ORG" determinerCode="INSTANCE">
          <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II
" root="1.3.6.1.4.1.21367.13.20.2000"/>
          <ns1:contactParty classCode="CON"/>
        </ns1:providerOrganization>
        <ns1:subjectOf1>
          <ns1:queryMatchObservation classCode="COND" moodCode="EVN">
            <ns1:code xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:CD" code="IHE_PDQ"/>
            <ns1:value xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
ns1:INT" value="100"/>
          </ns1:queryMatchObservation>
        </ns1:subjectOf1>
      </ns1:patient>
    </ns1:subject1>
```

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```
    <ns1:custodian typeCode="CST">
      <ns1:assignedEntity classCode="ASSIGNED">
        <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
root="1.3.6.1.4.1.21367.2010.1.2.600"/>
        <ns1:assignedOrganization classCode="ORG" determinerCode="INSTANCE">
          <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
EN">
            <ns1:given>org</ns1:given>
          </ns1:name>
        </ns1:assignedOrganization>
      </ns1:assignedEntity>
    </ns1:custodian>
  </ns1:registrationEvent>
</ns1:subject>
<ns1:subject typeCode="SUBJ" contextConductionInd="false">
  <ns1:registrationEvent classCode="REG" moodCode="EVN">
    <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
nullFlavor="NA"/>
    <ns1:statusCode code="active"/>
    <ns1:subject1 typeCode="SBJ">
      <ns1:patient classCode="PAT">
        <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
root="1.2.3.3.3.2.1" extension="910bee683aa7456fbec15cf0e6783f2f"/>
        <ns1:statusCode code="active"/>
        <ns1:patientPerson classCode="PSN" determinerCode="INSTANCE">
          <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
PN">
            <ns1:given>Joe</ns1:given>
            <ns1:family>Shmoe</ns1:family>
          </ns1:name>
          <ns1:administrativeGenderCode code="F"/>
          <ns1:birthTime xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type
="ns1:TS" value="19710520"/>
          <ns1:addr xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
AD">
            <ns1:city>Example City</ns1:city>
            <ns1:state>Example State</ns1:state>
            <ns1:postalCode>00000</ns1:postalCode>
            <ns1:streetAddressLine>Spanheimerstrasse 57</ns1:streetAddressLine>
          </ns1:addr>
          <ns1:asOtherIDs classCode="PAT">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II" root="1.2.3.3.3.2.2" extension="84118"/>
            <ns1:statusCode code="active"/>
            <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:II" root="1.2.3.3.3.2.2"/>
            </ns1:scopingOrganization>
          </ns1:asOtherIDs>
          <ns1:asOtherIDs classCode="PAT">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II" root="1.1.1" extension="e7249f3c-29af-4d16-8fe8-72a453639bf3" assigningAuthorityName
="XDS Affinity Domain 1"/>
            <ns1:statusCode code="active"/>
            <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:II" root="1.1.1"/>
            </ns1:scopingOrganization>
          </ns1:asOtherIDs>
          <ns1:asOtherIDs classCode="PAT">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II" root="1.1.1.2.1" extension="910bee683aa7456fbec15cf0e6783f2f" assigningAuthorityName
="St. James Hospital"/>
            <ns1:statusCode code="active"/>
            <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
```

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```
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:II" root="1.1.1.2.1"/>
            </ns1:scopingOrganization>
          </ns1:asOtherIDs>
          <ns1:asOtherIDs classCode="PAT">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II" root="1.2.3.3.3.1.3" extension="74118"/>
            <ns1:statusCode code="active"/>
            <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:II" root="1.2.3.3.3.1.3"/>
            </ns1:scopingOrganization>
          </ns1:asOtherIDs>
          <ns1:asOtherIDs classCode="PAT">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II" root="1.2.3.3.3.1.2" extension="bcc49584-2094-44f8-acd7-9274c2e82a26"/>
            <ns1:statusCode code="active"/>
            <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:II" root="1.2.3.3.3.1.2"/>
            </ns1:scopingOrganization>
          </ns1:asOtherIDs>
          <ns1:asOtherIDs classCode="PAT">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II" root="1.2.3.3.3.1.1" extension="23043660004680"/>
            <ns1:statusCode code="active"/>
            <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:II" root="1.2.3.3.3.1.1"/>
            </ns1:scopingOrganization>
          </ns1:asOtherIDs>
          <ns1:asOtherIDs classCode="PAT">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II" root="1.3.6.1.4.1.9784.999200.2.1.1" extension="7704200571" assigningAuthorityName="
NATIONAL SOCIAL SECURITY ASSOCIATION"/>
            <ns1:statusCode code="active"/>
            <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:II" root="1.3.6.1.4.1.9784.999200.2.1.1"/>
            </ns1:scopingOrganization>
          </ns1:asOtherIDs>
          <ns1:asOtherIDs classCode="PAT">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II" root="1.1.1.1.1" extension="23043660004680" assigningAuthorityName="Example Hospital
"/>
            <ns1:statusCode code="active"/>
            <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:II" root="1.1.1.1.1"/>
            </ns1:scopingOrganization>
          </ns1:asOtherIDs>
        </ns1:patientPerson>
        <ns1:providerOrganization classCode="ORG" determinerCode="INSTANCE">
          <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II
" root="1.3.6.1.4.1.21367.13.20.2000"/>
          <ns1:contactParty classCode="CON"/>
        </ns1:providerOrganization>
        <ns1:subjectOf1>
          <ns1:queryMatchObservation classCode="COND" moodCode="EVN">
            <ns1:code xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:CD" code="IHE_PDQ"/>
            <ns1:value xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
ns1:INT" value="100"/>
          </ns1:queryMatchObservation>
        </ns1:subjectOf1>
```

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```
          </ns1:patient>
        </ns1:subject1>
        <ns1:custodian typeCode="CST">
          <ns1:assignedEntity classCode="ASSIGNED">
            <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
    root="1.3.6.1.4.1.21367.2010.1.2.600"/>
            <ns1:assignedOrganization classCode="ORG" determinerCode="INSTANCE">
              <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
    EN">
                <ns1:given>org</ns1:given>
              </ns1:name>
            </ns1:assignedOrganization>
          </ns1:assignedEntity>
        </ns1:custodian>
      </ns1:registrationEvent>
    </ns1:subject>
    <ns1:queryAck>
      <ns1:queryId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
    root="1.3.6.1.4.1.21367.13.10.218" extension="1461930384492"/>
      <ns1:statusCode code="deliveredResponse"/>
      <ns1:queryResponseCode code="OK"/>
      <ns1:resultTotalQuantity xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:
    type="ns1:INT" value="2"/>
      <ns1:resultCurrentQuantity xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:
    type="ns1:INT" value="2"/>
      <ns1:resultRemainingQuantity xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi
    :type="ns1:INT" value="0"/>
    </ns1:queryAck>
    <ns1:queryByParameter>
      <ns1:queryId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
    root="1.3.6.1.4.1.21367.13.10.218" extension="1461930384492"/>
      <ns1:statusCode code="new"/>
      <ns1:responseModalityCode code="R"/>
      <ns1:responsePriorityCode code="I"/>
      <ns1:initialQuantity xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
    ns1:INT" value="3"/>
      <ns1:initialQuantityCode code="RD"/>
      <ns1:parameterList>
        <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="2.16.840.1.113883.1.6.1" extension="1461930382073"/>
        <ns1:livingSubjectAdministrativeGender>
          <ns1:value code="F"/>
          <ns1:semanticsText>LivingSubject.administrativeGender</ns1:semanticsText>
        </ns1:livingSubjectAdministrativeGender>
        <ns1:livingSubjectName>
          <ns1:value xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:PN"
     use="SRCH">
            <ns1:given>ine</ns1:given>
            <ns1:family>Bir</ns1:family>
          </ns1:value>
          <ns1:semanticsText>LivingSubject.name</ns1:semanticsText>
        </ns1:livingSubjectName>
      </ns1:parameterList>
    </ns1:queryByParameter>
  </ns1:controlActProcess>
</ns1:PRPA_IN201306UV02>
```

Example 154: HL7v3 Query Patients Response with one Result

```
<ns1:PRPA_IN201306UV02 xmlns:ns1="urn:hl7-org:v3" ITSVersion="XML_1.0">
  <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
    ="1.2.3.4.5" extension="30"/>
  <ns1:creationTime xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:TS"
```

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```
   value="20160429132958"/>
<ns1:versionCode code="V3PR1"/>
<ns1:interactionId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
    root="2.16.840.1.113883" extension="PRPA_IN201306UV02"/>
<ns1:processingCode code="P"/>
<ns1:processingModeCode code="T"/>
<ns1:acceptAckCode code="NE"/>
<ns1:receiver typeCode="RCV">
  <ns1:device classCode="DEV" determinerCode="INSTANCE">
    <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
  ="1.2.3.4.5.1000"/>
  </ns1:device>
</ns1:receiver>
<ns1:sender typeCode="SND">
  <ns1:device classCode="DEV" determinerCode="INSTANCE">
    <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
  ="1.2.3.4.5.1000"/>
  </ns1:device>
</ns1:sender>
<ns1:acknowledgement>
  <ns1:typeCode code="AA"/>
  <ns1:targetMessage>
    <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
  ="2.16.840.1.113883.1.6.1" extension="1461929395451"/>
  </ns1:targetMessage>
</ns1:acknowledgement>
<ns1:controlActProcess classCode="CACT" moodCode="EVN">
  <ns1:code xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:CD" code="
  PRPA_TE201306UV02"/>
  <ns1:subject typeCode="SUBJ" contextConductionInd="false">
    <ns1:registrationEvent classCode="REG" moodCode="EVN">
      <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
  nullFlavor="NA"/>
      <ns1:statusCode code="active"/>
      <ns1:subject1 typeCode="SBJ">
        <ns1:patient classCode="PAT">
          <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
  root="1.1.1.1.1" extension="12272436094084" assigningAuthorityName="Example Hospital"/>
          <ns1:statusCode code="active"/>
          <ns1:patientPerson classCode="PSN" determinerCode="INSTANCE">
            <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
  PN">
              <ns1:given>Joe</ns1:given>
              <ns1:family>Shmoe</ns1:family>
            </ns1:name>
            <ns1:administrativeGenderCode code="F"/>
            <ns1:birthTime xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type
  ="ns1:TS" value="19491206"/>
            <ns1:addr xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
  AD">
              <ns1:city>Example City</ns1:city>
              <ns1:state>Example State</ns1:state>
              <ns1:postalCode>00000</ns1:postalCode>
              <ns1:streetAddressLine>Salzburgerstrasse 37</ns1:streetAddressLine>
            </ns1:addr>
            <ns1:asOtherIDs classCode="PAT">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
  II" root="1.1.1" extension="13ea7dcc-59e2-40de-87a9-439c68418d0f" assigningAuthorityName
  ="XDS Affinity Domain 1"/>
              <ns1:statusCode code="active"/>
              <ns1:scopingOrganization classCode="ORG" determinerCode="INSTANCE">
                <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
  1:II" root="1.1.1"/>
              </ns1:scopingOrganization>
            </ns1:asOtherIDs>
```

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```
        </ns1:patientPerson>
        <ns1:providerOrganization classCode="ORG" determinerCode="INSTANCE">
          <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II
" root="1.3.6.1.4.1.21367.13.20.2000"/>
          <ns1:contactParty classCode="CON"/>
        </ns1:providerOrganization>
        <ns1:subjectOf1>
          <ns1:queryMatchObservation classCode="COND" moodCode="EVN">
            <ns1:code xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns
1:CD" code="IHE_PDQ"/>
            <ns1:value xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
ns1:INT" value="100"/>
          </ns1:queryMatchObservation>
        </ns1:subjectOf1>
      </ns1:patient>
    </ns1:subject1>
    <ns1:custodian typeCode="CST">
      <ns1:assignedEntity classCode="ASSIGNED">
        <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
root="1.3.6.1.4.1.21367.2010.1.2.600"/>
        <ns1:assignedOrganization classCode="ORG" determinerCode="INSTANCE">
          <ns1:name xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
EN">
            <ns1:given>org</ns1:given>
          </ns1:name>
        </ns1:assignedOrganization>
      </ns1:assignedEntity>
    </ns1:custodian>
  </ns1:registrationEvent>
</ns1:subject>
<ns1:queryAck>
  <ns1:queryId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
root="1.3.6.1.4.1.21367.13.10.218" extension="1461929398022"/>
  <ns1:statusCode code="deliveredResponse"/>
  <ns1:queryResponseCode code="OK"/>
  <ns1:resultTotalQuantity xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:
type="ns1:INT" value="1"/>
  <ns1:resultCurrentQuantity xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:
type="ns1:INT" value="1"/>
  <ns1:resultRemainingQuantity xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi
:type="ns1:INT" value="0"/>
</ns1:queryAck>
<ns1:queryByParameter>
  <ns1:queryId xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II"
root="1.3.6.1.4.1.21367.13.10.218" extension="1461929398022"/>
  <ns1:statusCode code="new"/>
  <ns1:responseModalityCode code="R"/>
  <ns1:responsePriorityCode code="I"/>
  <ns1:initialQuantity xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
ns1:INT" value="30"/>
  <ns1:initialQuantityCode code="RD"/>
  <ns1:parameterList>
    <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:II" root
="2.16.840.1.113883.1.6.1" extension="1461929395451"/>
    <ns1:livingSubjectAdministrativeGender>
      <ns1:value code="F"/>
      <ns1:semanticsText>LivingSubject.administrativeGender</ns1:semanticsText>
    </ns1:livingSubjectAdministrativeGender>
    <ns1:livingSubjectBirthTime>
      <ns1:value xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
IVL_TS" value="19491206"/>
      <ns1:semanticsText>LivingSubject.BirthTime</ns1:semanticsText>
    </ns1:livingSubjectBirthTime>
    <ns1:livingSubjectName>
      <ns1:value xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:PN
```

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```
    ">
            <ns1:given>Karin</ns1:given>
            <ns1:family>Thalberg</ns1:family>
          </ns1:value>
          <ns1:semanticsText>LivingSubject.name</ns1:semanticsText>
        </ns1:livingSubjectName>
      </ns1:parameterList>
    </ns1:queryByParameter>
  </ns1:controlActProcess>
</ns1:PRPA_IN201306UV02>
```

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9 Patient Chart

The eHealth Solutions **Patient Chart** provides an overview of patient's health data organized into several categories which are represented in the user interface by individual widgets.

Widgets aggregate and display FHIR data that is collected as follows:

- Retrieved directly from FHIR resources fetched from the HDR via the FHIR Facade
- Extracted and parsed from retrieved e-medication CDA documents (**Medications** widget)

Additional data from CDA documents is retrieved asynchronously and the user is notified when the data is ready to be displayed in the widgets.

The FHIR resource can include references to other FHIR resources (literal references) or to contained resources (contained references), see Section 1.3.5 and FHIR documentation (Resource References) for details. The **Patient Chart** tab supports the resolving of such references. The FHIR elements that can be used as a reference are labelled in the tables by a `(Reference)` tag.

- Filter
- Allergies
- Diagnoses
- Laboratory Report
- Encounters
- Medications
- Physiological Parameters
- Procedures
- Vaccinations

9.1 Filter

The **Patient Chart** provides a filter that is applied to multiple widgets at once:

- **Time-Range**: This filters for FHIR resources with a timestamp within the selected range, including the selected "From" and "To" date in case of a custom time-range.
- **Institution**: Restriction to a specific institution; this filters for FHIR resources that contain this institution in the respective fields as described below. Note that even if the table only displays the first entry, this filter evaluates all entries.

For the "date" filters, please refer to the official FHIR documentation (date parameter). The "institution" filter for `Reference` fields is applied on client side and not included in the FHIR query. Note that the filter behaves differently for some widgets, if so, it is described in the widget-specific section.

In the following widgets the content is always displayed, regardless of the applied filter:

- Allergies
- Patient Declarations
- Third-Party Application

9.2 Allergies

The **Allergies** widget uses `AllergyIntolerance` FHIR resources. Refer to the FHIR documentation (AllergyIntolerance) for further details.

Table 126, Table 127, Table 128, Table 129, Table 130, and Table 131 explain the use of the relevant FHIR elements by the **Allergies** widget.

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Table 126: FHIR Elements for the “Type” in the Allergies Widget

Name	Cardinality	Comment
code	1..1	If not available, the entry will not be displayed in the table.
coding	1..*	If not available, the entry will not be displayed in the table.
system	0..1	The combination of “system” and “code” is used for SVS search. If at least one is found, the translation is used.
code	0..1	The combination of “system” and “code” is used for SVS search. If at least one is found, the translation is used.
display	0..1	Used if “system” and “code” are not found in SVS and “text” is also not available. If “display” is not available, <**Unknown**> is displayed.
text	0..1	Used if “system” and “code” are not found in SVS.

Table 127: FHIR Elements for the “Reaction” in the Allergies Widget

Name	Cardinality	Comment
reaction	0..*	If not available, <**Unknown**> is displayed. If there are multiple entries, the first one is used.
manifestation	0..*	If not available, <**Unknown**> is displayed. If there are multiple entries, the first one is used.
text	0..1	If not available, “display” is used.
coding	0..*	If not available, <**Unknown**> is displayed. If there are multiple entries, the first one is used.
display	0..1	If “display” is also not available, <**Unknown**> is displayed.

Table 128: FHIR Elements for the “Criticality” in the Allergies Widget

Name	Cardinality	Comment
criticality	0..1	Possible values: “low” (**Low risk**), “high” (**High risk**), “unable-to-assess” (<**Unknown**>). If “criticality” is not available, <**Unknown**> is displayed.

Table 129: FHIR Elements for the “Institution” in the Allergies Widget

Name	Cardinality	Comment
meta	1..1	
source	1..1	Used for SVS/HPD search in institutions. If not found, “source” itself is used.

Table 130: FHIR Elements for the “Date” in the Allergies Widget

Name	Cardinality	Comment
recordedDate	0..1	If not provided, <**Unknown**> is displayed.

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Table 131: FHIR Elements for the "Verification Status" in the Allergies Widget

Name	Cardinality	Comment
verificationStatus	0..1	

9.3 Diagnoses

The **Diagnoses** table uses `Condition` FHIR resources. Refer to the FHIR documentation (Condition) for further details.

Table 132, Table 133, Table 134, and Table 135 explain the use of the relevant FHIR elements by the **Diagnoses** widget.

Table 132: FHIR Elements for the "Type" Column in the Diagnoses Widget

Name	Cardinality	Comment
code	1..1	If not available, the entry will not be displayed in the table.
coding	1..*	If not available, the entry will not be displayed in the table.
system	0..1	The combination of "system" and "code" is used for SVS search. If at least one is found, the translation is used.
code	0..1	The combination of "system" and "code" is used for SVS search. If at least one is found, the translation is used.
display	0..1	Used if "system" and "code" are not found in SVS and "text" is also not available. If "display" is not available, <**Unknown**> is displayed.
text	0..1	Used if "system" and "code" are not found in SVS.

Table 133: FHIR Elements for the "Institution" Column in the Diagnoses Widget

Name	Cardinality	Comment
meta	1..1	
source	1..1	Used for SVS/HPD search in institutions. If not found, "source" itself is used.

Table 134: FHIR Elements for the "Date" Column in the Diagnoses Widget

Name	Cardinality	Comment
onset[x]	0..1	"onsetDateTime" or "onsetPeriod" is used, depending of which is available. If neither is provided, <**Unknown**> is displayed.
onsetDateTime	0..1	
onsetPeriod	0..1	
start	0..1	

Table 135: FHIR Elements for the "Clinical status", "Verification status" and "Severity" Columns in the Diagnoses Widget

Name	Cardinality	Comment
clinicalStatus	0..1	
verificationStatus	0..1	
severity	1..1	

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9.4 Laboratory Report

The **Laboratory Report** widget is a lite version of the **Laboratory Reports** tab. Both use `DiagnosticReport` FHIR resources and `Observation` FHIR resources as referenced `DiagnosticReport.result`. Only observations that are linked to a diagnostic report are displayed. Refer to the FHIR documentation (DiagnosticReport) and FHIR documentation (Observation) for further details. Whereas in the **Laboratory Reports** tab full history of the laboratory results can be displayed, the **Laboratory Report** widget displays only the data of the latest observation. Refer to Section 10 for detailed information on the FHIR resources.

9.5 Encounters

The **Encounters** widget uses `Encounter` FHIR resources. Refer to the FHIR documentation (Encounter) for further details.

Table 136, Table 137, Table 138, and Table 139 explain the use of the relevant FHIR elements by the **Encounters** widget.

Table 136: FHIR Elements for the "Time Period" in the Encounters Widget

Name	Cardinality	Comment
period	1..1	
start	1..1	If not available, the entry will not be displayed in the table.
end	0..1	Not displayed if the encounter has not finished yet. If "start" date = "stop" date, only "start" date is displayed.

Table 137: FHIR Elements for the "Status" in the Encounters Widget

Name	Cardinality	Comment
status	1..1	If not available, the entry will not be displayed in the table.
class	1..1	Encounters are only shown if "Class" is not empty. Either "code" or "display" are required to provide a "class".
code	0..1	
display	0..1	

Table 138: FHIR Elements for the "Institution" in the Encounters Widget

Name	Cardinality	Comment
serviceProvider	0..1	If not available, no institution is displayed.
type	0..1	Must be set to "Organization".
identifier	0..1	Resolved in SVS. If empty or not resolvable, the "display" value is shown.
value	0..1	Only used if set to "Organization".
display	0..1	Used if the "identifier" is empty or not resolvable in SVS. If "display" is empty as well, no service provider is displayed.

Table 139: FHIR Elements for the "Service Type" in the Encounters Widget

Name	Cardinality	Comment
serviceType	0..1	If not available, no service type is displayed.

Table 139: FHIR Elements for the "Service Type" in the Encounters Widget

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Table 139: FHIR Elements for the "Service Type" in the Encounters Widget

Name	Cardinality	Comment
coding	0..1	
code	0..1	Used for SVS search. If found, the translation is used.
display	0..1	Used if "code" is not found in SVS. If "display" is also not available, the "code" of the "serviceType" is displayed.

9.6 Medications

The **Medications** table uses `MedicationStatement` FHIR resources. Refer to the FHIR documentation (MedicationStatement) for further details.

The **Medications** widget contains a `Filter` drop-down that allows to filter the FHIR resources in the table. By default no filter is selected. The available filters are:

- **Administered**: FHIR resource that is referring to at least one `MedicationAdministration` in the `partOf` reference.
- **Dispensed**: FHIR resource that is referring to at least one `MedicationDispense` in the `partOf` reference.
- **Prescribed**: FHIR resource that is referring to at least one `MedicationRequest` in the `basedOn` reference.

Table 140, Table 141, Table 142, Table 143, Table 144, Table 145, and Table 146 explain the use of the relevant FHIR elements by the **Medications** widget.

Table 140: FHIR Elements for the "Type" Column in the Medications Widget

Name	Cardinality	Comment
medication[x]	1..1	`(Reference)` If not available, the entry will not be displayed in the table. If the value is a `Reference`, the respective `Medication` resource is resolved and the code field is used.
coding	1..*	If not available, the entry will not be displayed in the table.
system	0..1	The combination of "system" and "code" is used for SVS search. If at least one is found, the translation is used.
code	0..1	The combination of "system" and "code" is used for SVS search. If at least one is found, the translation is used.
display	0..1	Used if "system" and "code" are not found in SVS and "text" is also not available. If "display" is not available, <**Unknown**> is displayed.
text	0..1	Used if "system" and "code" are not found in SVS.

Table 141: FHIR Elements for the "Date" Column in the Medications Widget

Name	Cardinality	Comment
effective[x]	0..1	"effectiveDateTime" or "effecivePeriod" is used, depending of which is available. If neither is provided, <**Unknown**> is displayed.
effectiveDateTime	0..1	
effectivePeriod	0..1	
start	0..1	If not available, <**Unknown**> is displayed.
end	0..1	If not available, <**Unknown**> is displayed.

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Table 142: FHIR Elements for the "Frequency" Column in the Medications Widget

Name	Cardinality	Comment
Dosage	0..*	If not available, <**Unknown**> is displayed. If there are multiple entries, the first one is used.
timing	0..1	If not available, <**Unknown**> is displayed.
repeat	0..1	If not available, <**Unknown**> is displayed.
frequency	0..1	The "intake" value is displayed in the format: **frequency / period periodUnit**.
period	0..1	If The "intake" value is displayed in the format: **frequency / period periodUnit**.
periodUnit	0..1	The "intake" value is displayed in the format: **frequency / period periodUnit**.

Table 143: FHIR Elements for the "Dose" Column in the Medications Widget

Name	Cardinality	Comment
Dosage	0..*	If not available, <**Unknown**> is displayed. If there are multiple entries, the first one is used.
doseAndRate	0..*	If not available, <**Unknown**> is displayed. If there are multiple entries, the first one is used.
dose[x]	0..1	dqdoseQuantity or "doseRange" is used, depending of which is available. If neither is provided, <**Unknown**> is displayed.
doseQuantity	0..1	
doseRange	0..1	
low	0..1	If not available, but "high" is available, "<" is displayed. If not available and also "high" is not available, <**Unknown**> is displayed.
high	0..1	If not available, but "low" is available, ">" is displayed. If not available and also "low" is not available, <**Unknown**> is displayed.

Table 144: FHIR Elements for the "Route" Column in the Medications Widget

Name	Cardinality	Comment
Dosage	0..*	If not available, <**Unknown**> is displayed. If there are multiple entries, the first one is used.
route	0..1	If not available, <**Unknown**> is displayed.
text	0..1	If not available, "display" is used.
coding	0..*	If not available, <**Unknown**> is displayed. If there are multiple entries, the first one is used.
display	0..1	If not available, <**Unknown**> is displayed.

Table 145: FHIR Elements for the "Institution" Column in the Medications Widget

Name	Cardinality	Comment
informationSource	0..1	`(Reference)` Only if one is available, the following applies:
type	1..1	Only used if it is set to "Organization".
identifier	0..1	
value	0..1	Used for SVS/HPD search in institutions. If not found, "Organization.name" is used.

Table 145: FHIR Elements for the "Institution" Column in the Medications Widget

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Table 145: FHIR Elements for the "Institution" Column in the Medications Widget

Name	Cardinality	Comment
Organization.name	0..1	Only used if the reference to the "Organization" could be resolved and the name is present. Otherwise, "display" is used.
display	0..1	If not available, "source" is used.
If none of the above applies:		
meta	1..1	
source	1..1	Used for SVS/HPD search in institutions. If not found, "source" itself is used.

Table 146: FHIR Elements for the "Status" Column in the Medications Widget

Name	Cardinality	Comment
status	1..1	

9.7 Physiological Parameters

The **Physiological Parameters** widget uses `Observation` FHIR resources. Refer to the FHIR documentation (Observation) for further details. Vital signs as listed under FHIR documentation (Vital Signs) can be displayed in the widget. Note that for the blood pressure only the combined value (LOINC 85354-9) is supported.

For performance reasons the client-side institution filter is not implemented for the **Physiological Parameters** widget. The institution filter is included in the FHIR query and works only if the "Organization" is referencing another resource via a literal reference. This means that only the data matching the filter is sent from the FHIR server.

Table 147, Table 148, Table 149, Table 150,Table 151, and Table 152 explain the FHIR elements relevant to display a vital sign in the **Physiological Parameters** widget.

Table 147: FHIR Elements for the "Type" in the Physiological Parameters Widget

Name	Cardinality	Comment
code	1..*	
coding	1..*	
system	1..1	Must be set to "http://loinc.org".
code	1..1	Use the LOINC value for the respective vital sign.
display	0..1	This value is ignored. eHealth Solutions uses default texts for the type of the vital sign.

Table 148: FHIR Elements to Identify the Patient in the Physiological Parameters Widget

Name	Cardinality	Comment
subject	1..1	(`Reference`)
type	1..1	Must be set to "Patient".

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Table 149: FHIR Elements for the "Date & Time" in the Physiological Parameters Widget

Name	Cardinality	Comment
effective[x]	0..1	The first available entry of the following list is used: "effectiveDateTime", "effecivePeriod.start", "effecivePeriod.end", "meta.lastUpdated"
effectiveDateTime	0..1	
effectivePeriod	0..1	
start	0..1	
end	0..1	
If none of the above applies:		
meta	1..1	
lastUpdated	1..1	

Table 150: FHIR Elements for the "Value" in the Physiological Parameters Widget

Name	Cardinality	Comment
value[x]	0..1	
valueQuantity	0..1	Not required for the vital sign "Blood Pressure (LOINC 85354-9)".
value	0..1	If not available, the entry will not be displayed.
unit	0..1	If not available, "code" is used.
code	0..1	
component	0..*	Required for the vital sign "Blood Pressure (LOINC 85354-9)".
code	1..1	
coding	0..*	
system	0..1	Must be set to "http://loinc.org".
code	0..1	Set it to "8480-6" for the systolic blood pressure and to "8462-4" for the diastolic blood pressure.
value[x]	0..1	
valueQuantity	0..1	
value	0..1	If not available, the entry will not be displayed.
unit	0..1	If not available, "code" is used.
code	0..1	

Table 151: FHIR Elements for the "Institution" in the Physiological Parameters Widget

Name	Cardinality	Comment
performer	0..*	`(Reference)` Only used if the "type" is set to "Organization".
type	1..1	Only used if set to "Organization".
identifier	0..1	
value	0..1	Used for SVS/HPD search in institutions.
display	0..1	Used if the "identifier" is empty or not resolvable in SVS. If not found, "value" itself is used.
If performer "type" is not set to "Organization"		
meta	1..1	
source	1..1	Used for SVS/HPD search in institutions. If not found, "source" itself is used.

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Table 152: FHIR Elements for the “Status” in the Physiological Parameters Widget

Name	Cardinality	Comment
Status	1..1	

9.8 Procedures

The **Procedures** table uses `Procedure` FHIR resources. Refer to the FHIR documentation (Procedure) for further details.

Table 153, Table 154, Table 155, Table 156, and Table 157 explain the use of the relevant FHIR elements by the **Procedures** widget.

Table 153: FHIR Elements for the “Type” Column in the Procedures Widget

Name	Cardinality	Comment
code	1..1	If not available, the entry will not be displayed in the table.
coding	1..*	If not available, the entry will not be displayed in the table.
system	0..1	The combination of “system” and “code” is used for SVS search. If at least one is found, the translation is used.
code	0..1	The combination of “system” and “code” is used for SVS search. If at least one is found, the translation is used.
display	0..1	Used if “system” and “code” are not found in SVS and “text” is also not available. If “display” is not available, <**Unknown**> is displayed.
text	0..1	Used if “system” and “code” are not found in SVS.

Table 154: FHIR Elements for the “Institution” Column in the Procedures Widget

Name	Cardinality	Comment
performer	0..*	The first entry where the “actor” is of “type” “Organization” is used. If no “actor” of this “type” is found, the first “onBehalfOf” of “type” “Organization” is used.
actor	1..1	`(Reference)` Only used if the “type” is set to “Organization”.
type	1..1	Only used if it is set to “Organization”.
identifier	0..1	
value	0..1	Used for SVS/HPD search in institutions.
display	0..1	Used if the “identifier” is empty or not resolvable in SVS. If not found, “value” itself is used.
onBehalfOf	0..1	Used as fallback if no “actor” is of type “Organization”. “onBehalfOf” is only used if it is set to “Organization”.
type	1..1	Only used if set to “Organization”.
identifier	0..1	
value	0..1	Used for SVS/HPD search in institutions.
display	0..1	Used if the “identifier” is empty or not resolvable in SVS. If not found, “value” itself is used.
If none of the above applies:		
meta	1..1	
source	1..1	Used for SVS/HPD search in institutions. If not found, “source” itself is used.

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Table 155: FHIR Elements for the "Date" Column in the Procedures Widget

Name	Cardinality	Comment
performed[x]	1..1	"performedDateTime" or "performedPeriod" is used, depending on which is available. If neither is provided, <**Unknown**> is displayed.
performedDateTime	0..1	
performedPeriod	0..1	
start	0..1	

Table 156: FHIR Elements for the "Status" Column in the Procedures Widget

Name	Cardinality	Comment
status	1..1	

Table 157: FHIR Elements for the "Perfomed by" Column in the Procedures Widget

Name	Cardinality	Comment
performer	0..*	`(Reference)` The first entry where the "actor" is of "type" "Practitioner" is used. If no "actor" of this "type" is found, the first entry is used. If no entry is present, <**Unknown**> is displayed.
actor	1..1	
identifier	0..1	
value	0..1	Used for SVS/HPD search in institutions. If not found, "value" itself is used. If "value" is also not available, <**Unknown**> is displayed

9.9 Vaccinations

The **Vaccination** table uses `Immunization` FHIR resources. Refer to the FHIR documentation (Immunization) for further details.

Table 158, Table 159, Table 160, Table 161, Table 162, and Table 163 explain the use of the relevant FHIR elements by the **Vaccinations** widget.

Table 158: FHIR Elements for the "Type" Column in the Vaccinations Widget

Name	Cardinality	Comment
vaccineCode	1..1	If not available, the entry will not be displayed in the table.
coding	1..*	If not available, the entry will not be displayed in the table.
system	0..1	The combination of "system" and "code" is used for SVS search. If at least one is found, the translation is used.
code	0..1	The combination of "system" and "code" is used for SVS search. If at least one is found, the translation is used.
display	0..1	Used if "system" and "code" are not found in SVS and "text" is also not available. If "display" is not available, <**Unknown**> is displayed.
text	0..1	Used if "system" and "code" are not found in SVS.

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Table 159: FHIR Elements for the "Institution" Column in the Vaccinations Widget

Name	Cardinality	Comment
performer	0..*	Only if one is available, the following applies:
actor	1..1	`(Reference)` Only used if the "type" is set to "Organization".
type	1..1	Only used if it is set to "Organization".
identifier	0..1	
value	0..1	Used for SVS/HPD search in institutions. If not found, "display" is used. If "display" is also not provided, the "value" itself is used.
Reference		
display	1..1	Used if SVS/HPD search with "value" is not successful.
performer		
function	0..1	Only used if "performer" is present more than once.
coding	0..1	
code	1..1	Organizations of type "AP" are preferred. If there are multiple "AP" organizations, the first one is used. If there is no "AP" organization, the first from the list is used.
If none of the above applies:		
meta	1..1	
source	1..1	Used for SVS/HPD search in institutions. If not found, the "source" itself is used.

Table 160: FHIR Elements for the "Date" Column in the Vaccinations Widget

Name	Cardinality	Comment
occurrence[x]	1..1	"occurrenceDateTime" or "occurenceString" is used, depending of which is available. If neither is provided, <**Unknown**> is displayed. Entries with date as string or not provided are listed at the bottom of the table.
occurrenceDateTime	0..1	Preferred option as it does not interfere with sorting and filtering of data.
occurenceString	0..1	If the date is sent as a string, the entry will not be displayed in the table once the date filter is applied.

Table 161: FHIR Elements for the "Series" Column in the Vaccinations Widget

Name	Cardinality	Comment
protocolApplied	0..*	If not available, <**Unknown**> is displayed.
series	0..1	If the string has the specific format `OID|Code|Display`, the combination of "OID" and "Code" is used for SVS/HPD search. If there is no match, the "Display" part of the string is displayed. If this specific format is not detected, the whole string is displayed. If no string is present, <**Unknown**> is displayed.

Table 162: FHIR Elements for the "Target Disease" Column in the Vaccinations Widget

Name	Cardinality	Comment
protocolApplied	0..*	If not present, <**Unknown**> is displayed.
targetDisease	0..*	If there are multiple entries, the first one is used. If none is available, <**Unknown**> is displayed.
coding	0..1	

Table 162: FHIR Elements for the "Target Disease" Column in the Vaccinations Widget

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Name	Cardinality	Comment
system	1..1	The combination of "system" (OID) and "code" is used for SVS search. If found, the translation is used.
code	1..1	The combination of "system" (OID) and "code" is used for SVS search. If found, the translation is used.
display	1..1	Used if "system" and "code" is not found in SVS. If "display" is also not available, <**Unknown**> is displayed.

Table 163: FHIR Elements for the "Dose" Column in the Vaccinations Widget

Name	Cardinality	Comment
protocolApplied	0..*	If there are multiple entries, the first one is used. If none is available, <**Unknown**> is displayed.
doseNumber[x]	1..1	"doseNumberPositiveInt" or "doseNumberString" is used, depending on which is available.
doseNumberPositiveInt	0..1	
doseNumberString	0..1	If the string has the specific format `OID|Code|Display`, the combination of "OID" and "Code" is used for SVS/HPD search. If there is no match, the "Display" part of the string is displayed. If the specific format is not detected, the whole string is displayed. If no string is available, <**Unknown**> is displayed.
seriesDoses[x]	0..1	If available, it is appended after "of", so the displayed entry has the format "X of Y". "seriesDosesPositiveInt" or "seriesDosesString" is used, depending on which is available.
seriesDosesPositiveInt	0..1	
seriesDosesString	0..1	If the string has the specific format `OID|Code|Display`, the combination of "OID" and "Code" is used for SVS/HPD search. If there is no match, the "Display" part of the string is displayed. If the specific format is not detected, the whole string is displayed.

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10 Laboratory Reports

The **Laboratory Reports** use `DiagnosticReport` FHIR resources and `Observation` FHIR resources as referenced `DiagnosticReport.result`. Only observations that are linked to a diagnostic report are displayed. Refer to the FHIR documentation (DiagnosticReport) and FHIR documentation (Observation) for further details.

The **Laboratory Reports** support the resolving of references. The FHIR elements that can be used as a reference are labelled in the tables by a `(Reference)` tag.

The **Laboratory Reports** table contains an implicit `Filter` that restricts the FHIR resources shown in the table.

- The latest `DiagnosticReport` that has a `status` different to "cancelled" or "entered-in-error" and references at least one `Observation` resource in the `result` with `category` "laboratory" defines the scope of the table.
- All reports that match the "Date" and "Institution" of this report are used as information source.
- The `result` entries display only `Observation` resources that fulfill all following requirements:
  - The `category` is set to "laboratory".
  - The `status` is set to either "final", "amended" or "corrected".
  - The `effective[x]` is provided.

10.1 Filter

In the **Laboratory Reports** a filter can be applied to restrict the displayed results. For the filter implementation details refer to Section 9.1.

Table 164, Table 165, Table 166, Table 167, Table 168, Table 169, and Table 170 explain the use of the relevant FHIR elements by the **Laboratory Reports** table.

Table 164: FHIR Elements for the "Component" Column Group in the Laboratory Reports

Name	Cardinality	Comment
DiagnosticReport		
category	0..*	If not available, <**Unspecified**> is displayed. If there are multiple entries, the first "text" is used.
text	0..1	
coding	0..*	If not available, <**Unknown**> is displayed. If there are multiple entries, the first one is used.
display	0..1	Used if "text" is not available. If "display" is not available, <**Unknown**> is displayed.

Table 165: FHIR Elements for the "Component" Column Entry in the Laboratory Reports

Name	Cardinality	Comment
Observation		`(Reference)`
code	1..1	If not available, the entry will not be displayed in the table.
coding	1..*	If not available, the entry will not be displayed in the table.

Table 165: FHIR Elements for the "Component" Column Entry in the Laboratory Reports

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Table 165: FHIR Elements for the "Component" Column Entry in the Laboratory Reports

Name	Cardinality	Comment
system	0..1	The combination of "system" and "code" is used for SVS search. If at least one is found, the translation is used.
code	0..1	The combination of "system" and "code" is used for SVS search. If at least one is found, the translation is used.
display	0..1	Used if "system" and "code" are not found in SVS and "text" is also not available. If "display" is not available, <**Unknown**> is displayed.
text	0..1	Used if "system" and "code" are not found in SVS.

Table 166: FHIR Elements for the "Range" Column in the Laboratory Reports

Name	Cardinality	Comment
Observation		`(Reference)`
referenceRange	0..*	If not available, nothing is displayed. If there are multiple entries, the first one is used.
low	0..1	If not available, but "high" is available, "<" is displayed. If not available and also "high" is not available, "text" is displayed.
high	0..1	If not available, but "low" is available, ">" is displayed. If not available and also "low" is not available, "text" is displayed.
text	0..1	If not available, nothing is displayed.

Table 167: FHIR Elements for the "Date" Column Header in the Laboratory Reports

Name	Cardinality	Comment
DiagnosticReport		
effective[x]	1..1	"effectiveDateTime" or "effecivePeriod" is used, depending of which is available. If not available, the entry will not be displayed in the table.
effectiveDateTime	0..1	
effectivePeriod	0..1	
start	0..1	If not available, <**Unknown**> is displayed.
end	0..1	If not available, <**Unknown**> is displayed. If identical to "start", only "start" is displayed.

Table 168: FHIR Elements for the "Institution" Column Header in the Laboratory Reports

Name	Cardinality	Comment
DiagnosticReport		
performer	0..*	`(Reference)` Only if at least one is available, the following applies, if there are multiple entries, the first one is used.
type	1..1	Only used if it is set to "Organization".
identifier	0..1	
value	0..1	Used for SVS/HPD search in institutions. If not found, "Organization.name" is used.
Organization.name	0..1	Only used if the reference to the "Organization" could be resolved and the name is present. Otherwise, "display" is used.
display	0..1	If not available, "source" is used.
If none of the above applies:		

Table 168: FHIR Elements for the "Institution" Column Header in the Laboratory Reports

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Table 168: FHIR Elements for the "Institution" Column Header in the Laboratory Reports

Name	Cardinality	Comment
meta	1..1	
source	1..1	Used for SVS/HPD search in institutions. If not found, "source" itself is used.

Table 169: FHIR Elements for the "Value" Column in the Laboratory Reports

Name	Cardinality	Comment
Observation		`(Reference)`
value[x]	0..1	If not available or none of the following value types is available, <**Unknown**> is displayed.
valueQuantity	0..1	
valueString	0..1	
valueCodeableConcept	0..1	
text	0..1	If not available, "display" is used.
coding	0..*	If not available, <**Unknown**> is displayed. If there are multiple entries, the first one is used.
display	0..1	If not available, <**Unknown**> is displayed.
valueBoolean	0..1	
valueInteger	0..1	
valueRange	0..1	
low	0..1	If not available but "high" is available, "<" is displayed. If not available and also "high" is not available, <**Unknown**> is displayed.
high	0..1	If not available but "low" is available, ">" is displayed. If not available and also "low" is not available, <**Unknown**> is displayed.
valueRatio	0..1	
numerator	0..1	If not available and "denominator" not available, <**Unknown**> is displayed.
denominator	0..1	If not available and "numerator" not available, <**Unknown**> is displayed.
value	0..1	If not available or set to 0, <**Unknown**> is displayed.

Table 170: FHIR Elements for the "Out of Range Indicator" in the Laboratory Reports

Name	Cardinality	Comment
Observation		`(Reference)`
interpretation	0..*	If not available, no indicator is displayed. If there are multiple entries, the first one is used.
coding	0..*	If not available, no indicator is displayed. If there are multiple entries, the first one is used.
code	0..1	If one of "HH", "H", "L" or "LL", the criticality is shown by one or two arrows. If "N", no indicator is displayed. Otherwise, the "code" itself is displayed.

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11 Health-App Data

The *Patient Portal Mobile App* stores vital signs recorded by supported health apps on mobile devices in the HDR. This is done via FHIR `Observation` resources (see official FHIR documentation (Observation resource)).

Table 171 shows the relevant FHIR elements used to store vital signs and Example 155 provides an example of a stored FHIR `Observation`.

Table 171: FHIR Observation Resource for Health-App Data

Name	Cardinality	Comment
resourceType	1..1	"Observation"
contained	0..*	
resourceType	1..1	"Device"
id	1..1	
identifier	0..*	
type	0..1	
coding	0..*	
system	0..1	"http://loinc.org"
code	0..1	"74711-3"
display	0..1	Unique device identifier
value	0..1	For example, "iPhone-14-Pro"
udiCarrier	0..*	
deviceIdentifier	1..1	For example, "com.apple.health"
deviceName	0..*	
type	1..1	"user-friendly-name" or "model-name"
name	1..1	For example "John's iPhone" / "Apple Health" or "Health Connect".
identifier	0..*	
system	0..1	"http://ehs/patient-portal-application/observation-id"
value	0..1	
status	1..1	
category	0..*	
coding	0..*	
system	0..1	"http://terminology.hl7.org/CodeSystem/observation-category"
code	0..1	"vital-signs", "activity", or "laboratory"
display	0..1	"Vital Signs", "Activity", or "Laboratory"
code	1..1	
coding	0..*	
system	0..1	"http://loinc.org"
code	0..1	LOINC value for the respective vital sign, for example 85354-9 for blood pressure.
display	0..1	Taken from LOINC code definition.
effectiveDateTime	0..1	Time of the recording of the corresponding health data.
device	0..1	
reference	1..1	"#0"
component	0..*	For the vital sign "Blood Pressure (LOINC 85354-9)".
code	0..1	
coding	0..1	
system	0..1	"http://loinc.org"
code	0..1	Either "8480-6" (systolic blood pressure) or "8462-4" (diastolic blood pressure).

Table 171: FHIR Observation Resource for Health-App Data

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Table 171: FHIR Observation Resource for Health-App Data

Name	Cardinality	Comment
display	0..1	Taken from LOINC code definition.
valueQuantity	0..1	
value	0..1	
unit	0..1	
code	0..1	
system	0..1	“http://unitsofmeasure.org”

Example 155: Health-App Data

```
{

"resourceType": "Observation",
"contained": [
  {
    "resourceType": "Device",
    "id": "0",
    "identifier": [
      {
        "type": {
          "coding": [
            {
              "system": "http://loinc.org",
              "code": "74711-3",
              "display": "Unique device identifier"
            }
          ]
        },
        "value": "iPhone-14-Pro"
      }
    ],
    "udiCarrier": [
      {
        "deviceIdentifier": "com.apple.health"
      }
    ],
    "deviceName": [
      {
        "name": "John's iPhone",
        "type": "user-friendly-name"
      },
      {
        "name": "Apple Health",
        "type": "model-name"
      }
    ]
  }
],
"identifier": [
  {
    "system": "http://ehs/patient-portal-application/observation-id",
    "value": "test-uuid-1"
  }
],
"status": "final",
"category": [
  {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/observation-category",
```

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```
        "code": "vital-signs",
        "display": "Vital Signs"
      }
    ]
  }
],
"code": {
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "85354-9",
      "display": "Blood pressure panel with all children optional"
    }
  ]
},
"effectiveDateTime": "2025-11-20T09:23:04.062748Z",
"device": {
  "reference": "#0"
},
"component": [
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "8480-6",
          "display": "Systolic Blood Pressure"
        }
      ]
    },
    "valueQuantity": {
      "value": 118,
      "unit": "mmHg",
      "system": "http://unitsofmeasure.org",
      "code": "mm[Hg]"
    }
  },
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "8462-4",
          "display": "Diastolic Blood Pressure"
        }
      ]
    },
    "valueQuantity": {
      "value": 76,
      "unit": "mmHg",
      "system": "http://unitsofmeasure.org",
      "code": "mm[Hg]"
    }
  }
]

}
```


Table 172 shows all results from the supported health apps that can be stored in the HDR as vital signs.

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Table 172: LOINC Codes for Vital Signs

Health-App Data	LOINC Code
Steps	41950-7
Heart rate	8867-4
Weight	29463-7
Height	8302-2
Glucose (mass/volume)	2339-0
Blood pressure	85354-9
Oxygen saturation	2708-6
Sleep (awake)	103215-0
Sleep (light)	93830-8
Sleep (deep)	93831-6
Sleep (REM)	93829-0

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12 Data Donation

Patients can consent to donate their data for research purposes. The following sections describe the relevant FHIR resources:

- FHIR ResearchStudy
- FHIR Consent
- FHIR Bundle

12.1 FHIR ResearchStudy

For each research purpose, a FHIR `ResearchStudy` needs to be available. For general information on FHIR research studies, see the official FHIR documentation (ResearchStudy resource).

eHealth Solutions supports the following types of research studies:

Undirected
: Patients can add restrictions to the consent they give (for example, restrict geographically where their data can be used). Refer to Table 173 and Example 156 for an explanation of the required FHIR elements and an example for an undirected research study.

Directed
: Patients cannot add additional restrictions to the consent they give. eHealth Solutions uses the information given in the FHIR resource to create the consent. Refer to Table 173 and Example 157 for an explanation of the required FHIR elements and an example for an directed research study.

Table 173: FHIR Elements for the ResearchStudy Resource

Name	Cardinality	Comment
ResearchStudy	1..1	
status	1..1	Needs to be "active" to be proposed to patients.
category	0..*	Required for directed studies; ignored otherwise.
coding	0..*	For a directed study, a "coding" element with the following `code` and `system` must be added: › Set `code` to "targeted". › Set `system` to "eHealth-Solutions-Research-Studies". Additionally, "coding" elements for different research types can be added.
system	0..1	For example, "eHealth-Solutions-DataDonate-Purpose"
code	0..1	By default, the research types "academic-research" and "industry-research" are available in the `system` "eHealth-Solutions-DataDonate-Purpose". These research types are value sets and can be adapted. Additional research types can be added in the eHealth Solutions *Terminology Server*.
display	0..1	
condition	0..*	Required for directed studies; ignored otherwise.
coding	0..*	For a directed study, "coding" elements for different documents can be added.
system	0..1	For example, "http://loinc.org"
code	0..1	› The code of the required document. › Codes that are not available in the value set "classCode" in the eHealth Solutions *Terminology Server* are ignored.
display	0..1	
relatedArtifact	0..1	If available more than once, eHealth Solutions only uses the first one.
type	1..1	Set it to "documentation".
url	0..1	Is displayed to the patient for additional information.

Table 173: FHIR Elements for the ResearchStudy Resource

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Table 173: FHIR Elements for the ResearchStudy Resource

Name	Cardinality	Comment
location	0..*	Required for directed studies; ignored otherwise.
coding	0..*	For a directed study, "coding" elements for different regions can be added.
system	0..1	For example, "urn:iso:std:iso:3166:-2"
code	0..1	By default, the regions "EU" and "US" are available. These regions are value sets and can be adapted. Additional regions can be added in the eHealth Solutions *Terminology Server*.
display	0..1	
period	0..1	
sponsor	1..1	The identifier of the referenced organization must be available as institution OID in eHealth Solutions.

Example 156: Undirected Research Study

```
{
  "resourceType": "ResearchStudy",
  "id": "3132a7cd-b3cf-4c9b-9321-ff99149575ee",
  "title": "A Study of the Effects of Drug X on Condition Y",
  "status": "active",
  "description": "This study aims to evaluate the efficacy and safety of Drug X in treating
    patients with Condition Y.",
  "identifier": [
    {
      "value": "3132a7cd-b3cf-4c9b-9321-ff99149575ee"
    }
  ],
  "relatedArtifact": "relatedArtifact": [
    {
      "type": "documentation",
      "url": "https://www.example.com"
    }
  ],
  "period": {
    "start": "2025-01-01",
    "end": "2026-12-31"
  },
  "sponsor": {
    "reference": "Organization/8d1c08fc-b784-45da-aaa9-d004f2209b94"
  }
}
```

Example 157: Directed Research Study

```
{
  "resourceType": "ResearchStudy",
  "id": "e9fe09c5-1571-4e22-a1b7-8b23d6dc6e73",
  "meta": {
    "versionId": "2",
    "lastUpdated": "2025-06-05T11:39:38.341+00:00"
  }
  "identifier": [
    {
      "value": "89a0cd2a-0be1-4b54-9255-66c6556a2fc8"
    }
  ],
  "title": "Directed Study",
  "status": "active",
  "category": [
```

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```
    {
      "coding": [
        {
          "system": "eHealth-Solutions-Research-Studies",
          "code": "targeted",
          "display": "Directed Study indicator"
        }
      ]
    },
    {
      "coding": [
        {
          "system": "eHealth-Solutions-DataDonate-Purpose",
          "code": "academic-research",
          "display": "Academic Research"
        }
      ]
    }
  ],
  "condition": [
    {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "11502-2",
          "display": "Laboratory report"
        }
      ]
    },
    {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "18842-5",
          "display": "Discharge summary"
        }
      ]
    }
  ],
  "relatedArtifact": "relatedArtifact": [
    {
      "type": "documentation",
      "url": "https://www.example.com"
    }
  ],
  "location": [
    {
      "coding": [
        {
          "system": "urn:iso:std:iso:3166:-2",
          "code": "EU",
          "display": "European Union"
        }
      ]
    },
    {
      "coding": [
        {
          "system": "wrongLocationSystem",
          "code": "wrongLocationValue",
          "display": "Should not be displayed"
        }
      ]
    }
  ],
```

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```
  "description": "This study aims to evaluate the efficacy and safety of Drug X in treating
    patients with Condition Y.",
  "period": {
    "start": "2025-01-01",
    "end": "2026-12-31"
  },
  "sponsor": {
    "reference": "Organization/8d1c08fc-b784-45da-aaa9-d004f2209b94",
    "type": "Organization"
  }
}
```

12.2 FHIR Consent

eHealth Solutions uses FHIR consents to track the details of the consent the patient has given. Table 174 describes which information is used by eHealth Solutions to create a valid consent. For general information on FHIR consents, see the official FHIR documentation (Consent resource). Example 158 is an example where the consent has been given with several restrictions.

Table 174: Consent for Data Donation

Name	Comment
Consent	
identifier	
status	
code	
category	
provision	
type	
actor	
role	
reference	
purpose	
system	
code	The receiving system's URI to the `ResearchStudy`.
provision	
type	
code	› Used for the region the data can be used in. › For each region, a separate `CodeableConcept` entry with a single `coding` element is added. › By default, the regions "EU" and "US" are available. These regions are value sets and can be adapted. Additional regions can be added in the eHealth Solutions *Terminology Server*.
provision	
type	
code	› Used for the research type the data can be used for. › For each authorized research type, a separate `CodeableConcept` entry with a single `coding` element is added. › By default, the research types "academic-research" and "industry-research" are available. These research types are value sets and can be adapted. Additional research types can be added in the eHealth Solutions *Terminology Server*.
provision	
type	
code	Used to determine whether the data can be used after the donor's death or not. `coding.code` contains either "granted" or "denied" depending on whether data usage after death is granted or denied.

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Example 158: FHIR Consent for Data Donation

```
{
  "resourceType": "Consent",
  "status": "active",
  "scope": {
    "coding": [ {
      "system": "http://terminology.hl7.org/CodeSystem/consentscope",
      "code": "research"
    } ]
  },
  "category": [
    {
      "coding": [
        {
            "system": "http://loinc.org",
            "code": "59284-0",
            "display": "Consent Document"
        }
      ]
    }
  ],
  "provision": {
    "type": "permit",
    "actor": [
      {
        "role": {
          "coding": [ {
            "system": "http://terminology.hl7.org/CodeSystem/v3-RoleCode",
            "code": "GRANTEE",
            "display": "grantee"
          } ]
        },
        "reference": {
          "type": "Organization",
          "identifier": {
            "value": "urn:oid:1.1.1.2.3"
          },
          "display": "General Hospital"
        }
      }
    ],
    "purpose": [
      {
        "system": "urn:ehealth-solutions:purposeofuse",
        "code": "ResearchStudy/12334"
      }
    ],
    "provision": [
      {
        "type": "permit",
        "code": [
          {
            "coding": [
              {
                "system": "urn:iso:std:iso:3166:-2",
                "code": "at",
                "display": "Austria"
              }
            ]
          },
          {
            "coding": [
              {
                "system": "urn:iso:std:iso:3166:-2",
```

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```
              "code": "eu",
              "display": "European Union"
            }
          ]
        }
      ],
      "provision": [
        {
          "type": "permit",
          "code": [
            {
              "coding": [
                {
                "system": "eHealth-Solutions-DataDonate-Purpose",
                "code": "academic-research",
                "display": "Academic Research"
                }
              ]
            },
            {
              "coding": [
                {
                  "system": "eHealth-Solutions-DataDonate-Purpose",
                  "code": "industry-research",
                  "display": "Research (partially) financed by industry"
                }
              ]
            }
          ],
          "provision": [
            {
              "type": "permit",
              "code": [
                {
                  "coding": [
                    {
                      "system": "urn:ehealth-solutions:afterdeath",
                      "code": "granted",
                      "display": "granted access after death"
                    }
                  ]
                }
              ],
              "provision": [
                {
                  "type": "permit",
                  "code": [
                    {
                      "coding": [
                        {
                          "system": "eHealth-Solutions-DataDonate-Diagnosis",
                          "code": "diabetes",
                          "display": "Diabetes"
                        }
                      ]
                    },
                    {
                      "coding": [
                        {
                          "system": "eHealth-Solutions-DataDonate-Diagnosis",
                          "code": "cancer",
                          "display": "Cancer"
                        }
                      ]
                    }
```

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```
                    ]
                  }
                ]
              }
            ]
          }
        ]
      }
    ]
  }
}
```

12.3 FHIR Bundle

eHealth Solutions forwards the donated data (CDA documents) together with the FHIR consent via an MHD `Minimal Provide Document Bundle`. Table 175 explains the relevant elements and Example 159 is an example of such a bundle.

Table 175: FHIR Bundle for Data Donation

Name	Comment
resourceType	See the official documentation on Bundles for more information
type	
entry	Contains several `resource` elements with `resourceType` as follows: › "Consent"; see Section 12.2 for detailed information › "List" of `SubmissionSets`; see the official documentation on SubmissionSets › "DocumentReference"; see the official documentation on DocumentReference › "Binary"; see the official documentation on Binaries

Example 159: FHIR Bundle for Data Donation

```
{
  "resourceType": "Bundle",
  "id": "minimalProvideDocumentBundle",
  "meta": {
    "profile": [ "https://profiles.ihe.net/ITI/MHD/StructureDefinition/IHE.MHD.Minimal.
    ProvideBundle" ]
  },
  "type": "transaction",
  "entry": [
    {
      "resource": {
        "resourceType": "Consent",

        ... refer to the section "FHIR Consent" for the complete resource

      }
    },
    {
      "resource": {
        "resourceType": "List",
        "meta": {
          "profile": [ "https://profiles.ihe.net/ITI/MHD/StructureDefinition/IHE.MHD.Minimal
    .SubmissionSet" ]
        },
        "extension": [
          {
            "url": "https://profiles.ihe.net/ITI/MHD/StructureDefinition/ihe-designationType
    ",
            "valueCodeableConcept": {
```

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```
            "coding": [
              {
                "system": "2.16.840.1.113883.6.1",
                "code": "80563-0",
                "display": "Report"
              }
            ]
          }
        },
        {
          "url": "https://profiles.ihe.net/ITI/MHD/StructureDefinition-ihe-
intendedRecipient.html",
          "valueReference": {
            "reference": "Practitioner/a6453331-fbf1-4190-a1d9-3e38d74f1c2c"
          }
        },
        {
          "url": "https://profiles.ihe.net/ITI/MHD/StructureDefinition/ihe-sourceId",
          "valueIdentifier": {
            "value": "Organization/1.1.8"
          }
        }
      ],
      "status": "current",
      "mode": "working",
      "code": {
        "coding": [
          {
            "system": "https://profiles.ihe.net/ITI/MHD/CodeSystem/MHDlistTypes",
            "code": "submissionset"
          }
        ]
      },
      "date": "2025-05-22T12:40:20+02:00",
      "entry": [
        {
          "item": {
            "reference": "urn:uuid:9d09ccb5-9ff9-4648-9fde-342758638e58"
          }
        }
      ]
    },
    "request": {
      "method": "POST",
      "url": "List"
    }
  },
  {
    "resource": {
      "resourceType": "DocumentReference",
      "id": "9d09ccb5-9ff9-4648-9fde-342758638e58",
      "meta": {
        "profile": [ "https://profiles.ihe.net/ITI/MHD/StructureDefinition/IHE.MHD.Minimal
.DocumentReference" ]
      },
      "masterIdentifier": {
        "system": "urn:ietf:rfc:3986",
        "value": "urn:uuid:9d09ccb5-9ff9-4648-9fde-342758638e58"
      },
      "status": "current",
      "content": [
        {
          "attachment": {
            "contentType": "application/cda+xml",
            "url": "/RetrieveDocument/1.1.1.2.3%7C9d09ccb5-9ff9-4648-9fde-342758638e58"
```


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```
            }
          }
        ]
      },
      "request": {
        "method": "POST",
        "url": "DocumentReference"
      }
    },
    {
      "resource": {
        "resourceType": "Binary",
        "id": "1.1.1.2.3%7C9d09ccb5-9ff9-4648-9fde-342758638e58",
        "contentType": "application/cda+xml",
        "data": "PD94bWwgdmVyc2lvbj0iMS4wIiBlbmNvZG"
         },
      "request": {
        "method": "POST",
        "url": "Binary"
      }
    }
  ]
}
```

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13 User Account Administration

13.1 Deactivate User Account of a Patient

13.1.1 Deactivate User Account of a Patient – HL7v2

The following HL7 messages can be received and processed in order to deactivate the user account of a patient:

- ADT-A01
- ADT-A08

13.1.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Deactivate User Account of a Patient.

Table 176: List of Segments – Deactivate Patient

Segment	Description
MSH	Message Header
MSH-9-1	The message type must be **ADT**.
MSH-9-2	The trigger event must be **A01** or **A08**.
UAC	User Authentication Credential.
CON	Consent Information
EVN	Event Information
IN1	Patient Insurance Information
PID	Patient Information
PV1	Patient Visit Information
PV1-2	The Patient Class should be **N**.
ROL	Role
ROL-2	The Action Code must be **DE**.

MSH Segment

The HL7 MSH segment is present in every HL7 message type and defines the message's source, purpose, destination, and certain syntax specifics like delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

EVN Segment

The EVN segment is used to communicate necessary trigger event information to receiving applications and specifies the type of event contained within the message.

IN1 Segment

The IN1 segment is used to transmit information about the paying body of the health services received by the patient. This could be an insurance or the patient himself. The segment is optional. However, once it is used, the fields marked with *Conditionally Required* are mandatory.

PID Segment

The PID segment contains the relevant patient data.

UAC Segment

The User Authentication Credential (UAC) segment is used to create, update or deactivate the user account of a patient if sent in combination with an ADT-01 or an ADT-08 message as trigger event. Please refer to Section 1.1.5.7 for further information on the UAC segment.

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CON Segment
: The CON segment contains information on patient declarations, such as consents or opt-outs.

PV1 Segment
: The PV1 segment is used by Registration/ADT applications to communicate information on a visit-specific basis. For the Merge Patients transaction, it is sufficient to fill the PV1-2 field.

ROL Segment
: The ROL segment is used to deactivate the user account of a patient if sent in combination with an ADT-01 or an ADT-08 message as trigger event. Note that it is essential that the Action Code field ROL-2 contains the text **DE** which is here used differently than in the HL7 Standard.

13.1.1.2 Field Overview

The data required for the MSH segment can be seen in Table 2, those for PID in Table 4 and those for IN1 in Table 7. For more information on the UAC and the ROL segments, please refer to Table 8 and Table 9. These are the relevant fields of the other segments:

UAC-1-1
: Type of the data submitted in field UAC-2-5. eHealth Solutions limits it to JWT in the context of Patient Administration.

UAC-2-4
: The type of encoding of the data specified in field UAC-2-5. The following options are available: Base64 or A / plain (plain is not recommended).

UAC-2-5
: Data to be sent. eHealth Solutions limits it to JWT in the context of Patient Administration.For further details, refer to chapter *Automation Service* in the eHealth Solutions *Interface Manual*.

EVN-2
: Recorded Date/Time: Time at which the notification has been recorded in the system.

EVN-5
: Operator ID: Identifies the individual that triggered the visit notification (used for logging purposes). In patient admissions, the treating physician should be entered here. Note that the field is mandatory in an ELGA environment (Austria only). Repetitions cannot be processed by eHealth Solutions.

EVN-7
: Event Facility (only supported for Version 2.4 and higher): This field is only processed when PID-34 is empty.

PV1-2
: Patient Class: Determines the type of patient visit. The field should have the value **N** for "not applicable".

ROL-2
: Action Code. eHealth Solutions uses the code **DE** to deactivate an account.

Table 177: Fields Relevant for the Deactivate Patient Transaction

HL7-Path	Name	Repeatable	Presence
UAC-1-1	ST	No	Required
UAC-2-4	ID	No	Required
UAC-2-5	ST	No	Required
EVN-2	Recorded Date/Time	No	Not processed

Table 177: Fields Relevant for the Deactivate Patient Transaction

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Table 177: Fields Relevant for the Deactivate Patient Transaction

HL7-Path	Name	Repeatable	Presence
EVN-5	Operator ID	Yes, but without effect	Conditionally Required
EVN-7	Event Facility	No	Optional
PV1-2	Patient Class	No	Required
ROL-2	ID	No	Required

Example 160: HL7v2 Deactivate Patient Message

Submission:

```
MSH|^~\&|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO|QUA^1.1.1.1.1^ISO|QUA^1.
    1.1^ISO|20141001233656||ADT^A01|1412199415701|P|2.3.1|||AL
UAC|JWT|^application^^A^JWT_TOKEN
EVN||20141001233656|||^unknown
PID|||1412199415782^^^&1.1.1.1.3&ISO^PI~66127483762232^
    ^^NATIONAL SOCIAL SECURITY ASSOCIATION&1.3.6.1.4.1.9784.999200.2.1&ISO^SS||LASTNAME^
    FIRSTNAME||19030930233655|M|||||+435121234567^^CP~^^Internet^bla.bla@ith-icoserve.com
ROL||DE
PV1||N
```

Response:

```
MSH|^~\&|QUA^1.1.1.1.1^ISO|QUA^1.1.1^ISO|ITEH^1.1.2.1.1^ISO|ITEH^1.1.2^ISO
    |20141001233657||ACK^A01|1412199417491285|P|2.3.1
MSA|AA|1412199415701
```

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14 ELGA

In this section the Austrian ELGA-specific implementation of the standards HL7v2, HL7v3, and HL7 FHIR in eHealth Solutions is described.

14.1 ELGA-Specific Administrative Genders

In addition to the HL7 standard gender codes, eHealth Solutions supports reading and storing of the ELGA-specific administrative genders, namely “X” (non-binary), “D” (diverse), and “I” (inter), see Austrian e-Health Terminology Browser for more details.

The mapping of these codes to HL7 standard codes is implemented for HL7v2, HL7v3, and HL7 FHIR (see Example 161).

Example 161: ELGA Administrative Genders Mapping

```
"gender": "other",
    "_gender": {
        "extension": [
            {
                "url": "http://hl7.at/fhir/HL7ATCoreProfiles/4.0.1/StructureDefinition/at-
    core-ext-gender-administrativeGenderAddition%22,
                "valueCoding": {
                    "system": "https://termgit.elga.gv.at/CodeSystem/hl7-at-
    administrativegender-ergaenzung",
                    "code": "I",
                    "display": "Inter"
                }
            }
        ]
    },
```



Note

For the HL7v3 the incoming non-binary administrative gender code “UN” is mapped to “X” in the local database. In outgoing HL7v3 messages the local code “X” is mapped to “UN”.

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15 User-defined Tables

15.1 MDM Tables

15.1.1 Reference ID Type Codes

`urn:ihe:iti:xds:2013:uniqueId`
: Unique ID

`urn:ihe:iti:xds:2013:accession`
: Accession Number

`urn:ihe:iti:xds:2013:referral`
: Referral Number

`urn:ihe:iti:xds:2013:order`
: Order Number

`urn:ihe:iti:xdw:2013:workflowId`
: XDW Workflow ID

`urn:sense:2015:caseId`
: Visit Number/Case ID

`urn:sense:2016:studyInstanceUID`
: DICOM Study Instance UID

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