eHealth Solutions / Release VA41A / 2021-07-07 / Revision r18-g27975d6

HL7 Conformance Statement

SIEMENS Healthineers

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1 HL7 Communications

The HL7 interface supports HL7v2 and HL7v3 messages, which fall into the following functional groups:

- Patient Administration
  For managing patients within the eHealth Solutions infrastructure.
- Encounter Administration
  For managing patient encounters within the eHealth Solutions infrastructure.
- Document Administration
  For processing documents within the eHealth Solutions infrastructure.

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 HL7 V2 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.

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 specifying 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:

- CWE-1: Identifier/Code, e.g. "F".
- CWE-2: Text, e.g. "Female".
- CWE-3: Name of Coding System, e.g. "Gender".

Example 1: CWE – Language Code

```
en^English^ISO 639
```

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.
- 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^Watson^John^H.^Jr.^Dr.^^^My Local Clinic&1.2.123.27.1974&ISO^L^^^DN^^^^^^^^MD
```

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

```
Watson^John^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) and **VHN** (Vacation Home).
- 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.
- 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. This requirements are stated in the following sections:

- MSH Segment
- EVN Segment
- PID Segment
- PV1 Segment
- MRG Segment
- IN1 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.

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.

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.

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

Table 2: MSH Segment Structure

Table 2: MSH Segment Structure

HL7 Path	Data Type	Repeatable	Presence
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
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. 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 maiden 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, 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 **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*.

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. The eHealth Solutions MPI interprets the first repetition as the *nationality* of the patient, this repetition thus has greater importance then the rest. 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 2.8.

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
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 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.

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
IN1-5 – Insurance Company Address	XAD	Yes	Optional
IN1-36 – Policy Number	ST	No	Optional
IN1-49 – Insured's ID Number	CX	Yes	Optional

1.1.6 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
```

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 accompanying *Error Codes* documentation.
- ERR-8 contains the human-readable error message.

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:sender
11. hl7v3:sender.device

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: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: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 with `1.3.6.1.4.1.21367.13.10.218` being an example OID.

Example 19: HL7v3 Message Header - Required Elements and Attributes

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

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">
    <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
    ="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 manual ErrorCodes 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 2.8.

1.3 HL7 FHIR

The Health Data Repository (HDR) is a fully-featured FHIR server in eHealth Solutions 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". This set of supported FHIR resources can be extended by customers at runtime as needed, by using the FHIR profiling mechanism. 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.
(e.g. `https://myfhirserver.com/HealthDataRepository`).

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). The XML and RDF (Turtle) formats are 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 response with the HTTP code:

```
415 - Unsupported Media Type
```

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 the any media type (`*/*`) in the `Accept` header. If neither `*/*` nor one of the media types listed above is specified, the HDR issues an error response with the HTTP code:

```
406 - Not Acceptable
```

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, any other value will result in an error response with the HTTP code:

```
400 - Bad Request
```

Accepted values:

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

The `_format` parameter overrules the `Accept` header if both are present in a request. If neither `_format` parameter nor `Accept` headers are present, 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.

How to Specify the FHIR Version

Clients specify which FHIR version they want to use for a given request by selecting the appropriate endpoint for that FHIR version. For example, a GET request to `[base]/r4/Patient/123` retrieves the `Patient` resource with ID `123` in FHIR version R4. The FHIR version is always part of the request URL, i.e. all absolute URLs on the HDR start with `[base]/[fhir-version]`.

Using this approach clients do not need to specify the FHIR version in either the `Accept` or `Content-Type` HTTP header (see the FHIR Specification chapter "FHIR Version Parameter"). If they still want to provide the version parameter in one of these HTTP headers, the submitted version must match the version indicated by the endpoint. In case this condition is not met, an error response with the following HTTP code is returned:

```
406 - Not Acceptable
```

Note
The explicit listing of the FHIR version in all endpoints provides a stable interface that does not break when future HDR updates introduce support for new FHIR versions. If customers want to continue using FHIR Release 4, they can simply use the same endpoint without any modification. Only if they change the endpoint, they will start using the new FHIR version.

Restriction for Multiple Versions within a Request

As a consequence of the FHIR version being part of the request URL, it is not possible to process resources in different FHIR versions within a single request. For example, it is impossible to retrieve an R4 `Patient` and an R5 `Observation` in a single search response Bundle. The same restriction applies to references/relationships between resources: all parts of a resource relationship must use the same FHIR version. Please refer to the FHIR Specification chapter "Resource References" for further details on this restriction.

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.

1.3.3 Resource Identity

Each resource is uniquely identified by its **logical id**, as described in the FHIR Specification chapter "Logical ID". Logical resource ids are always generated by the HDR itself; it is not possible for clients to supply their own logical ids in create interactions.

If clients attempt to update a resource that does not exist yet, the HDR returns an error response with the HTTP code:

```
405 - Method Not Allowed
```

An exception to this rule are conditional updates that do not yield any matches, see Section 1.3.6.2. Logical resource ids generated by the HDR usually consist of monotonically increasing integers. However, customers should not rely on this format as it may change in the future.

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, i.e. they only exist for the lifetime of a single interaction and thus have no logical id (see chapter "Logical ID").

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]/[fhir version]/[resource-type]/[logical id]/_history/[version id]`

Example 24: HTTP `Location` header

```
https://myfhirserver.com/HealthDataRepository/r4/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 maximum number of versions per resource is configurable, the default value is five versions. Versions are managed on a "first in, first out" basis: the oldest version is deleted permanently once the maximum number of stored versions is exceeded. Deprecated resource versions cannot be searched, i.e. the "history" interaction (see the FHIR Specification chapter "history") is not supported yet.

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:

absolute
: Absolute URLs must start with either `http://` or `https://` and may include a resource version, i.e. the `_history/[version id]` syntax is allowed. Note that using a specific version as reference target may result in dead links at some point in time, because the HDR deletes old resource versions as described in Section 1.3.4. Additionally, references including a resource version are ignored in search interactions.
Not accepted: URNs (e.g. OIDs and UUIDs), see Section 1.3.6.8.

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 HL7 v2 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 stand-alone 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".

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. In case a version id is part of the reference ensure that this specific version of the resource still exists. If the existence check fails, the entire interaction fails with HTTP error code

  ```
  422 - Unprocessable Entity
  ```

- 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 enabled, 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 type is not allowed in this location: fail the interaction with an HTTP error code

    ```
    422 - Unprocessable Entity
    ```

    Otherwise, resolve the target resource.
  - **The `Reference.type` element contains no value:**
    - If there is only one allowed target type for the reference: resolve the target resource.
    - If there are multiple possible target types: do not resolve the resource and accept the logical reference as-is.

  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 an HTTP error code

```
422 - Unprocessable Entity
```

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 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.

1.3.6.2 Update

The `update` interaction is implemented as described in the FHIR Specification chapter "update". The HDR does not permit clients to specify their own resource IDs in update interactions, i.e. the "Update as Create" option is not supported. This ensures consistent id generation for optimized reading performance.

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, e.g. translation engines that convert HL7 v2 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 (e.g. for stateless clients) the HDR updates the single matching resource.

1.3.6.3 Patch

The FHIR `patch` interaction (see chapter "patch" of the FHIR Specification for further details) is supported for all resource types.

It is an alternative to the update interaction and can be used for partial updates of a resource. Updates are formulated as `RFC 6902` JSON Patch documents. Malformed JSON Patch documents will result in an error response with the HTTP code:

```
422 - Unprocessable Entity
```

For consistency reasons, the HDR does not allow to change any of the following resource properties in a patch interaction.

- resourceType
- id
- meta element, including all child elements

Each attempt to change one of the following resource properties results in an error response with the HTTP code:

```
422 - Unprocessable Entity
```

This is done to prevent faulty or malicious clients to change a resource's type, id, version id etc.

The aforementioned properties can be used in `test` operations or as the source of `copy` operations in the JSON Patch document. In compliance to the FHIR Specification (see chapter "patch" for details), the patch interaction removes the resource's narrative, the `text` element defined on the `DomainResource` resource type. Customers that wish to retain or regenerate the narrative can do so by specifying an appropriate `add` operation in the JSON Patch document.

The `conditional patch` interaction is supported as well.

Please note that it is not possible to patch a non-existing resource.

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

The `batch interaction` is implemented as described in the FHIR Specification chapter "batch/transaction". The transaction interaction on the other hand is not supported. Please note that `nested batch` interactions (batches submitted as part of a `parent` batch) are not supported. No other special restrictions apply to this interaction. Conditional create/update/patch/delete interactions in a batch interaction are supported as well.

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, however, administrators can choose to enable full-text search support for arbitrary resource types.
- 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 (i.e. the `_history/[version id]` syntax) is not supported. Only version-agnostic references can be queried.

- "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]/[fhir-version]/Patient?_content=TEST`
  - `[base]/[fhir-version]/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]/[fhir-version]/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, e.g.
  `[base]/[fhir-version]/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.

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 `Bundle`s.
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. 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/HealthDataRepository/r4/Patient/123`, the following HTTP headers must be forwarded by the reverse proxy:
>
> ```
> Forwarded: host=fhirproxy.org:1234;proto=https
> X-Forwarded-Prefix: /fhir
> ```

1.3.6.13 Automatic Resource De-Duplication

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, e.g. the `Patient.identifier` element holding a social security number, or the `Observation.identifier` element containing a unique identifier assigned by a laboratory system.

However, the standard does not impose any requirement on FHIR servers to ensure uniqueness of such identifiers, i.e. in standard FHIR it is very well possible to have multiple patients that all share the same "unique" identifier. This situation is not very desirable to many customers, so the HDR provides the possibility to automatically detect if a resource with a given `identifier` already exists. This detection facility works across all create, update, patch and batch interactions - for resources that contain a value in the `identifier` element. More specifically, the HDR processes such resources as follows:

For Create Interactions
If another resource with the same `identifier` already exists: update the existing resource and ignore the create.

For Update and Patch Interactions
If another resource with the same `identifier` already exists: abort the interaction with HTTP error code

```
412 - Precondition Failed
```

For Batch Interactions
Apply the de-duplication logic described above for 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. This occurs 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

With its default configuration the HDR processes `Patient` resources differently than other resource types. This section describes these differences. The described behavior can be switched off via the HDR configuration in case it is not desired.

The following processing is applied:

Create and Update Interactions
: Forward the `Patient` resource to the eHealth Solutions Master Patient Index (MPI). The MPI internally creates/updates a corresponding master patient and forwards that master patient to the HDR. The HDR only stores complete master patients as a result.

Patch and Delete Interactions
: Deny the interaction and return an error response with HTTP code

```
405 - Method Not Allowed
```

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 MPI.

1.3.7 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").
- To define new resource types, including references to base and/or other custom resource types.

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.

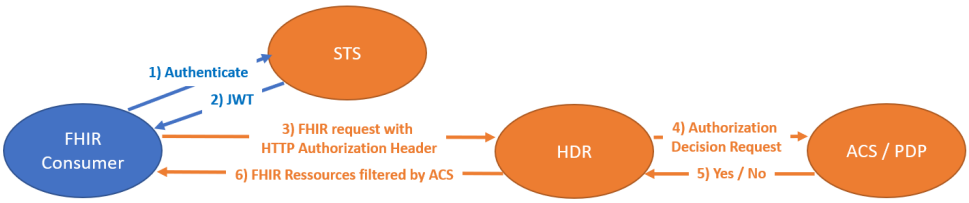
For client systems it is important to know that every custom profile is reflected in the FHIR base URL: `[base]/[fhir-version]/[profile-id]`. For example, adding support for the `Custom Profile` to the HDR may result in the following FHIR endpoint:
`https://myfhirserver.com/HealthDataRepository/r4/customprofile`.

1.3.8 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. As the ACS is role based, the `subjectRole` claim in the `jwt` is important.

For more details on how those tokens look and how they can be obtained, please refer to the Application Node > OAuth2/PKCE Authentication and the Community Node > Data Gateway > JSON Web Token sections in the System Documentation. In later eHealth Solutions revisions, token retrieval and assertion conversion via the STS will be possible.

Figure 1:



2 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 8: Available HL7 Fields/Segments Concerning Patient Properties

HL7 fields/segments	HL7 v2	HL7 v3
the patient insurance information	IN1 segment	-
the patient telecommunication addresses	PID-13 and PID-14 fields	controlActProcess.subject.registration Event.subject1.patient.patientPerson.telecom

2.1 Create Patient

2.1.1 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

- ADT-A28
- ADT-A31

Note
Despite the different trigger events (admit, update etc.) the 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.

2.1.1.1 Message Structure

This section provides an overview and description of the message structure of the Create Patient transaction.

Table 9: 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**
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**.

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.

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.

2.1.1.2 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:

- 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 10: Fields Relevant for the Create Patient Transaction.

HL7-Path	Name	Repeatable	Presence
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

Table 10: Fields Relevant for the Create Patient Transaction.

Table 10: Fields Relevant for the Create Patient Transaction.

HL7-Path	Name	Repeatable	Presence
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
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 27: 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
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||Robinson^Asa
    ||19030930233655|M
PV1||N
CON|1||QUERY_ONLY||||||||A|||19981004010159+0100|20281004010159+0100||||||||Gredler^Andreas
    |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
```

2.1.2 Create Patient -- HL7v3

Example 28: 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>
```

2.1.2.1 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
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.birthTime
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 29: 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"/>
         <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: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="
    ns1: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>
```


2.1.2.2 Outbound Message Structure

See Section 1.2.2.

2.2 Update Patient

2.2.1 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.

2.2.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction Update Patient.

Table 11: 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**
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**.

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.

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.

2.2.1.2 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:

- 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 12: Fields Relevant for the Update Patient Transaction.

HL7-Path	Name	Repeatable	Presence
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

Table 12: Fields Relevant for the Update Patient Transaction.

Table 12: Fields Relevant for the Update Patient Transaction.

HL7-Path	Name	Repeatable	Presence
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

Example 30: 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
EVN||20141001234455|||^unknown
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
PV1||N
CON|1||QUERY_ONLY||||||||A|||19981004010159+0100|20281004010159+0100||||||||Gredler^Andreas
    |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
```

2.2.2 Update Patient -- HL7v3

Example 31: 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>
```

2.2.2.1 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 32: 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>
      </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: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="
   ns1: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>
```

2.2.2.2 Outbound Message Structure

See Section 1.2.2.

2.3 Merge Patients

2.3.1 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.

2.3.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **Merge Patient**.

Table 13: 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 applica-

tions 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.

2.3.1.2 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.

- 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".

- 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 14: Fields Relevant for the Merge Patients Transaction.

HL7-Path	Name	Repeatable	Presence
EVN-2	Recorded Date/Time	No	Not processed

Table 14: Fields Relevant for the Merge Patients Transaction.

Table 14: Fields Relevant for the Merge Patients 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
MRG-1	Patient Identifier List	Yes	Required
MRG-3	Prior Patient Account Number	No	Optional
MRG-7	Prior Patient Name List	Yes	Optional

Example 33:

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
```

2.3.2 Merge Patients -- HL7v3

Example 34: 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>
```

2.3.2.1 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 35: 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>
         </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="
    ns1: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">
               <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>
```


2.3.2.2 Outbound Message Structure

See Section 1.2.2.

2.4 Link Patients

2.4.1 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 execute this transaction:

- ADT-A24

2.4.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **Link Patients**.

Table 15: 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.

2.4.1.2 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 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.

Table 16: 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 36:
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-
  f36a625b2624|P|2.5|||AL|||UNICODE UTF-8
EVN||20180312132909.639+0100|||userId5583^Warren^Karen^^^^^^My Local Clinic
  &1.2.123.27.1974&ISO^L^^^EN
PID|||patientId4436^^^My Local Clinic&1.2.123.27.1974&ISO^PI||Doe^John^^^^^L
PID|||patientId4316^^^My Local Clinic&1.2.123.27.1974&ISO^PI||Denver^John^^^^^L
```

2.5 Unlink Patients

2.5.1 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 execute this transaction:

- ADT-A37

2.5.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **Unlink Patients**.

Table 17: 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 **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.

2.5.1.2 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 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.

Table 18: 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 37:
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-259
  e0a3705e4|P|2.5|||AL|||UNICODE UTF-8
EVN||20180312133336.031+0100|||userId0241^Warren^Karen^^^^^^My Local Clinic
  &1.2.123.27.1974&ISO^L^^^EN
PID|||patientId5795^^^My Local Clinic&1.2.123.27.1974&ISO^PI||Doe^John^^^^^L
PID|||patientId5795^^^My Local Clinic&1.2.123.27.1974&ISO^PI||Doe^John^^^^^L
```

2.6 Master Patient Change

2.6.1 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

2.6.1.1 Message Structure

This section provides an overview and description of the message structure of the transaction **XAD-PID Change**.

Table 19: 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**
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 38:
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
```

2.7 Query Patient IDs

The PIX/PDQ Manager provides two patient query methods: **Query Patient IDs** and **Query Patients** (Section 2.8). 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.

2.7.1 Query Patient IDs -- HL7v2

2.7.1.1 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 20 are required:

Table 20: Query Patient ID Segments

Segment	Description
MSH	Message Header

Table 20: Query Patient ID Segments

Table 20: Query Patient ID Segments

Segment	Description
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

echo 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 21).

Table 21: 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.

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

echo 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.

2.7.1.2 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 4. 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 22: 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 39:

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
```

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
```

Query Patient IDs

Example 40: 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>
```

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.

Example 41: 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>
   <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 42: 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>
```

Example 43: 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"/>
  <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="
    ns1: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="
    ns1: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"
    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 44: 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>
      <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>
```

HL7v2

HL7v3

Example 45:

```
      <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>
```

Example 46:

```
   <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>
```

Query Patients

Section 2.7

The Query

Table 25

Table 23: 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

Query Parameter Definition

Response Control Parameter

Continuation Pointer

The Response

Table 24

Table 24: 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

Message Acknowledgement

Error

- Query Acknowledgement
- QPD Segment
- PID Segment
- Continuation Pointer

Table 2 Table 4

Table 4

- QPD-1
- QPD-2
- QPD-3
- QPD-8
- RCP-1
- RCP-2
- DSC-1
- DSC-2

Table 25: 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

Table 25: List of data set in the QPD segment to query patients.

Table 25: List of data set in the QPD segment to query patients.

HL7-Path	Name	Repeatable	Presence
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

<seg>

<field no>

<component no>

<subcomponent no>

Example 47:

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:

```
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-297
    c5ca2ac10^^^XDS
Affinity Domain 1&1.1.1&ISO^GPI||MARKLEY^Julie^^^^^L~MARKLEY^Julie^^^^^L||20120518|F
```

Query Patients

Example 48: 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>
```

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.

Example 49: 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>
```

```
                <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>
```

Example 50: 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
    ="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="
    ns1: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="
    ns1: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="
ns1:II" root="1.2.3.3.3.2.1"/>
              </ns1:scopingOrganization>
            </ns1:asOtherIDs>
            <ns1:asOtherIDs classCode="PAT">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns1:
II" root="1.2.3.3.3.2.2" 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="
ns1: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="
ns1: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="
ns1: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="
ns1: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="
ns1: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="
ns1: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: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="
ns1: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="
ns1: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">
              <ns1:id xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="
ns1: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="
ns1: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="
ns1: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="
ns1: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="
ns1: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="
ns1: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="
ns1: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="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 51: 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"
  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="
  ns1: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="
ns1: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
    ">
            <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>
```

3 Encounter Administration

- Admit Inpatient
- Register Outpatient
- Discharge Patient
- Cancel Admit Inpatient/Outpatient
- Cancel Discharge Patient
- Transfer Patient
- Cancel Transfer Patient
- Change Outpatient To Inpatient
- Change Inpatient To Outpatient
- Change Patient Identifier List
- Change Attending Doctor
- Cancel Change Attending Doctor
- Begin Leave of Absence
- Cancel Begin Leave of Absence
- End Leave of Absence
- Cancel End Leave Of Absence
- Move Account Information
- Update Encounter Event
- Cancel Encounter Event
- Merge Patients/Encounters

Table 26: Available HL7 Fields/Segments Concerning Encounter Properties

HL7 fields/segments	HL7 v2	HL7 v3
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	-

Admit Inpatient

Admit Inpatient

Table 27: 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

EVN Segment

IN1 Segment

- PID Segment
- PV1 Segment
- ZBE Segment

Table 2 Table 4 Table 4

- EVN-2
- EVN-5
- EVN-7
- PV1-2
- PV1-3
- PV1-19
- PV1-44
- PV1-51

ZBE-1

ZBE-2

ZBE-4

Table 27

ZBE-5

Table 27

Table 28: 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
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 52:

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-
  aaa0743d3dd2|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306154052.781+0100|||userId9277^Warren^Karen^^^^^^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||Doe^John^^^^^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^Dorian^John^^^^^^Medical
  Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|doctor7763^House^Gregory^^^^^^
  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-a239-976
  e2213f4bd|P|2.5|||AL|||UNICODE UTF-8
```

```
  EVN||20180313135112.535+0100|||userId0103^Warren^Karen^^^^^^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||Doe^John^^^^^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^Dorian^John^^^^^^Medical
    Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|doctor4412^House^Gregory^^^^^^
    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
```

Admit Inpatient

Example 53: 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>
```

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26.

Example 54: 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>
      <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>
```

Section 1.2.2

Register Outpatient

Register Outpatient

Table 29: Begin Outpatient Visit Segments

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

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4

Table 4

- EVN-2
- EVN-5
- EVN-7
- PV1-2
- PV1-3
- PV1-19
- PV1-44
- ZBE-1
- ZBE-2
- ZBE-4

Table 27

- ZBE-5

Table 27

Table 30: 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
ZBE-5	Historical Movement Indicator	No	Required for Historic Movement Management

Example 55:

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-
  f4713beb9852|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||Doe^John^^^^^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^Dorian^John^^^^^^Medical
  Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|doctor7834^House^Gregory^^^^^^
  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-
  bb58896ebb1b|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313135304.181+0100|||userId5361^Warren^Karen^^^^^^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||Doe^John^^^^^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^Dorian^John^^^^^^Medical
  Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|doctor2948^House^Gregory^^^^^^
  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
```

Register Outpatient

Example 56: 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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Example 57: 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 3.1.2 Admit Inpatient – HL7v3.

Section 1.2.2

Discharge Patient

Discharge Patient

Table 31: 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

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

- ZBE Segment

Table 2 Table 4
Table 4

- EVN-2
- EVN-5
- EVN-7
- PV1-2
- PV1-19
- PV1-45
- PV1-51
- ZBE-1
- ZBE-2
- ZBE-4

Table 27

ZBE-5

Table 27

Table 32: 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
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 58:

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-
  fdd02d535a7e|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||Doe^John^^^^^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^Dorian^John^^^^^^Medical
  Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|doctor8830^House^Gregory^^^^^^
  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-
  f5c8dc85baae|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313140434.906+0100|||userId8867^Warren^Karen^^^^^^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||Doe^John^^^^^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^Dorian^John^^^^^^Medical
  Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|doctor6530^House^Gregory^^^^^^
  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
```

Discharge Patient

Example 59: 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>
```

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Example 60: 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>
        <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>
```

Section 1.2.2

Cancel Admit Inpatient/Outpatient

Table 33: 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**

MSH Segment

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4

- EVN-2
- EVN-5
- EVN-7
- PV1-2
- PV1-19
- PV1-51
- ZBE-1
- ZBE-2
- ZBE-4

Table 27

- ZBE-5

Table 27

Table 34: 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

Table 34: Fields relevant for the Cancel Patient Visit Transaction.

Table 34: Fields relevant for the Cancel Patient Visit Transaction.

HL7-Path	Name	Repeatable	Presence
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 61:

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-9
  c4847d7cc52|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||Doe^John^^^^^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-6
  ce297610cfc|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313135514.035+0100|||userId5418^Warren^Karen^^^^^^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||Doe^John^^^^^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
```

Cancel Admit Inpatient/Outpatient

Example 62: 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>
```

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Example 63: 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>
```

Section 1.2.2

Cancel Discharge Patient

Cancel

Discharge Patient

Table 35: 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**

MSH Segment

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

- ZBE Segment

Table 2 Table 4

- EVN-2
- EVN-5
- EVN-7
- PV1-2
- PV1-19
- PV1-51
- ZBE-1
- ZBE-2
- ZBE-4

Table 27

- ZBE-5

Table 27

Table 36: 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
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 64:

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-
  d7fec1969376|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||Doe^John^^^^^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|69e96337-9d78-4734-8c23-395
  c95443af0|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313135820.874+0100|||userId7526^Warren^Karen^^^^^^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||Doe^John^^^^^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
```

Cancel Discharge Patient

Example 65: 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>
```

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Example 66: 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" />
              </ns0:item>
            </ns0:name>
          </ns0:assignedPerson>
        </ns0:assignedPerson>
      </ns0:discharger>
    </ns0:encounterEvent>
  </ns0:subject>
</ns0:controlActProcess>
```


Section 1.2.2

Transfer Patient

Transfer Patient

Table 37: 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

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4

Table 4

EVN-2

EVN-5

EVN-7

PV1-2

PV1-3

PV1-6

PV1-19

PV1-44

PV1-51

ZBE-1

ZBE-2

ZBE-4

Table 27

ZBE-5

Table 27

Table 38: 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

Table 38: Fields relevant for the Transfer Patient Transaction

Table 38: Fields relevant for the Transfer Patient Transaction

HL7-Path	Name	Repeatable	Presence
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 67:

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-03
  bb121e7556|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306175226.599+0100|||userId4616^Warren^Karen^^^^^^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
  Security Association&1.2.123.27.1974&ISO^SS||Doe^John^^^^^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^Dorian^John^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|
  doctor9813^House^Gregory^^^^^^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^Warren^Karen^^^^^^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||Doe^John^^^^^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^Dorian^John^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|
  doctor5441^House^Gregory^^^^^^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
```

Transfer Patient

Example 68: 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>
```

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Example 69: 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>
```

Section 1.2.2

Cancel Transfer Patient

Transfer Patient

Table 39: 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

Table 39: Delegate Patient Visit Segments

Table 39: Delegate Patient Visit Segments

Segment	Description
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**

MSH Segment

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4

EVN-2

- EVN-5
- EVN-7
- PV1-2
- PV1-3
- PV1-19
- PV1-51
- ZBE-1
- ZBE-2
- ZBE-4

Table 27

- ZBE-5

Table 27

Table 40: 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

Table 40: Fields relevant for theCancel Transfer Patient Transaction

Table 40: Fields relevant for theCancel Transfer Patient 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 70:
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-2
  fa895dde58e|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306190456.216+0100|||userId6626^Warren^Karen^^^^^^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||Doe^John^^^^^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-
  e05b6c01b345|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313140020.883+0100|||userId3744^Warren^Karen^^^^^^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||Doe^John^^^^^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
```

Change Outpatient To Inpatient

Change Outpatient To Inpatient

Table 41: 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

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4

Table 4

EVN-2

- EVN-5
- EVN-7
- PV1-2
- PV1-3
- PV1-6
- PV1-19
- PV1-44
- PV1-51
- MRG-1
- MRG-3
- MRG-7
- ZBE-1

ZBE-2

ZBE-4

Table 27

ZBE-5

Table 27

Table 42: 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

Example 71:
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^Warren^Karen^^^^^^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||Doe^John^^^^^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^Dorian^John^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M
  .D.|doctor0077^House^Gregory^^^^^^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-
  eb12bf29a943|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313140335.883+0100|||userId3804^Warren^Karen^^^^^^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||Doe^John^^^^^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^Dorian^John^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M
  .D.|doctor2376^House^Gregory^^^^^^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
```

Change Outpatient To Inpatient

Section 3.1.2 Admit Inpatient – HL7v3

Example 72: HL7v3 Change Outpatient to Inpatient Root Element

See Section 3.1.2 Admit Inpatient – HL7v3.

Example 73: HL7v3 Change Outpatient to Inpatient Payload

Change the `encounterEvent.code` to “IMP”, which refers to stationary patients (in-patients).

See Section 3.1.2 Admit Inpatient – HL7v3.

Change Inpatient To Outpatient

Change Inpatient To Outpatient

Table 43: 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

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4 Table 4

EVN-2

- EVN-5
- EVN-7
- PV1-2
- PV1-3
- PV1-6
- PV1-19
- PV1-44
- PV1-51
- MRG-1
- MRG-3
- MRG-7
- ZBE-1

ZBE-2

ZBE-4

Table 27

ZBE-5

Table 27

Table 44: 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 74:

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-
  c1855e339d17|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306172412.257+0100|||userId3513^Warren^Karen^^^^^^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||Doe^John^^^^^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^Dorian^John^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M
  .D.|doctor4898^House^Gregory^^^^^^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|499cfba4-0606-4cb6-8287-727
  a2367cde2|P|2.5|||AL|||UNICODE UTF-8
```

```
EVN||20180313140213.169+0100|||userId8903^Warren^Karen^^^^^^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||Doe^John^^^^^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^Dorian^John^^^^^^Medical Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M
  .D.|doctor3422^House^Gregory^^^^^^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
```

Change Inpatient To Outpatient

Example 75: HL7v3 Change Inpatient to Outpatient Root Element

See Section 3.1.2 Admit Inpatient – HL7v3.

Example 76: 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 3.1.2 Admit Inpatient – HL7v3.

Section 1.2.2

Change Patient Identifier List

Change Patient Identifier List

Table 45: 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

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4

Table 4

EVN-2

EVN-5

EVN-7

PV1-2

PV1-19

PV1-51

Table 46: 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

Change Attending Doctor

Change Attending Doctor

Table 47: 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

Table 47: Change Attending Doctor Segments

Table 47: Change Attending Doctor Segments

Segment	Description
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

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4

Table 4

EVN-2

EVN-5

EVN-7

PV1-2

PV1-7

PV1-19

PV1-51

ZBE-1

ZBE-2

ZBE-4

Table 27

ZBE-5

Table 27

Table 48: 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
PV1-51	Visit Indicator	No	Optional
ZBE-1	Movement ID	No	Required for Historic Movement Management

Table 48: Fields relevant for the Change Attending Doctor Transaction

Table 48: Fields relevant for the Change Attending Doctor 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 77:

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-9
  f2601491e7e|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306171409.784+0100|||userId3093^Warren^Karen^^^^^^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||Doe^John^^^^^L
PV1||N|||||doctor5555^Dorian^John^^^^^^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-
  c3f104ff4a5a|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313140117.548+0100|||userId0566^Warren^Karen^^^^^^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||Doe^John^^^^^L
  ||||||||||||||||||N||||||N
PV1||N|||||doctor1155^Dorian^John^^^^^^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
```

Cancel Change Attending Doctor

Cancel Change Attending Doctor

Table 49: 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**

MSH Segment

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4

- EVN-2
- EVN-5
- EVN-7
- PV1-2
- PV1-7
- PV1-8
- PV1-15
- PV1-19
- PV1-51
- ZBE-1

ZBE-2

ZBE-4

Table 27

ZBE-5

Table 27

Table 50: 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 78:

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^Warren^Karen^^^^^^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||Doe^John^^^^^L
PV1||N|||||doctor1804^Dorian^John^^^^^^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^Warren^Karen^^^^^^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||Doe^John^^^^^L
PV1||N|||||doctor4565^Dorian^John^^^^^^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
```

Begin Leave of Absence

Begin Leave of Absence

Table 51: 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

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4

Table 4

- EVN-2
- EVN-5
- EVN-7
- PV1-2
- PV1-19
- PV1-51
- ZBE-1
- ZBE-2
- ZBE-4

Table 27

- ZBE-5

Table 27

Table 52: 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 52: Fields relevant for the Begin Leave of Absence Transaction

Table 52: 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 79:

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-
  cf94e02ddaab|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306161712.247+0100|||userId6762^Warren^Karen^^^^^^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||Doe^John^^^^^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-
  daefd90c391f|P|2.5|||AL|||UNICODE UTF-8
EVN||20180313135414.026+0100|||userId6205^Warren^Karen^^^^^^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||Doe^John^^^^^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
```

Begin Leave of Absence

Cancel Begin Leave of Absence

Table 53: 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**

MSH Segment

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4

- EVN-2
- EVN-5
- EVN-7
- PV1-2
- PV1-19
- PV1-51
- ZBE-1
- ZBE-2
- ZBE-4

Table 27

- ZBE-5

Table 27

Table 54: 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

Table 54: Fields relevant for the Cancel Begin Leave of Absence Transaction

Table 54: Fields relevant for the Cancel Begin Leave of Absence Transaction

HL7-Path	Name	Repeatable	Presence
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 80:

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-28
  db4dcb2070|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||Doe^John^^^^^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-a737-2
  d2d114223fe|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||Doe^John^^^^^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
```

End Leave of Absence

End Leave of Absence

Table 55: 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 **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

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4

Table 4

EVN-2

EVN-5

EVN-7

PV1-2

PV1-19

PV1-51

ZBE-1

ZBE-2

ZBE-4

Table 27

ZBE-5

Table 27

Table 56: 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 81:

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|
  P|2.5|||AL|||UNICODE UTF-8
EVN||20180306173425.879+0100|||userId4264^Warren^Karen^^^^^^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||Doe^John^^^^^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^Warren^Karen^^^^^^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||Doe^John^^^^^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
```

End Leave of Absence

Cancel End Leave Of Absence

Cancel End Leave Of Absence

Table 57: 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

MSH Segment

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4

EVN-2

EVN-5

EVN-7

PV1-2

PV1-19

PV1-51

Table 58: 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 82:

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^Warren^Karen^^^^^^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||Doe^John^^^^^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^Warren^Karen^^^^^^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||Doe^John^^^^^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
```

Move Account Information

Move Account Information

Table 59: 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

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4 Table 4

EVN-2

EVN-5

EVN-7

PV1-2

PV1-19

PV1-51

MRG-1

MRG-3

MRG-7

Table 60: 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 83:
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-89c6-5
  d9098bc57b8|P|2.5|||AL|||UNICODE UTF-8
EVN||20180306174815.292+0100|||userId9885^Warren^Karen^^^^^^My Local Clinic
  &1.2.123.27.1974&ISO^L^^^EN
PID|||patientId3526^^^My Local Clinic&1.2.123.27.1974&ISO^PI~12850234581018^^^Social
  Security Association&1.2.123.27.1974&ISO^SS||Doe^John^^^^^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
```

Update Encounter Event

Update Encounter Event

Table 61: 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

EVN Segment

IN1 Segment

- PID Segment
- PV1 Segment
- ZBE Segment

Table 2 Table 4 Table 4

- EVN-2
- EVN-5
- EVN-7
- PV1-2
- PV1-19
- PV1-51
- ZBE-1
- ZBE-2

ZBE-4

Table 27

ZBE-5

Table 27

Table 62: 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 84:
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^Warren^Karen^^^^^^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||Doe^John^^^^^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^Dorian^John^^^^^^Medical
  Staff&1.2.123.27.1974.185.23&ISO^L^^^DN^^^^^^^^M.D.|doctor7659^House^Gregory^^^^^^
  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
```

Cancel Encounter Event

Cancel Encounter Event

Table 63: 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**
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**

MSH Segment

EVN Segment

IN1 Segment

PID Segment

PV1 Segment

ZBE Segment

Table 2 Table 4

EVN-2

EVN-5

EVN-7

PV1-2

PV1-19

PV1-51

ZBE-1

ZBE-2

ZBE-4

Table 27

ZBE-5

Table 27

Table 64: 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

Table 64: Fields relevant for the Cancel Encounter Event Transaction

Table 64: Fields relevant for the Cancel Encounter Event 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

Merge Patients/Encounters

Merge Patients/Encounters

Table 65: 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

EVN Segment

IN1 Segment

- PID Segment
- PV1 Segment
- ZBE Segment
- MRG Segment

Table 2 Table 4 Table 4

- EVN-2
- EVN-5
- EVN-7
- MRG-1
- MRG-3
- MRG-7
- PV1-2
- PV1-19

Table 66: 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 85:
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-
  a0305d9d0713|P|2.3.1|||AL|||UNICODE UTF-8
EVN||20180312153358.894+0100|||userId8374^Karen Warren ^^^^^^^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||Doe^John^^^^^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||||||Doe^John^^^^^L
PV1||N
```

4 Document Administration

Table 67

Table 67: 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.

NTE Segment

UAC Segment

Example 86:

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

ZRI Segment

Section 6.1.1

Example 87: 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

Submit Document

communityNode TransferralService

Section 4.1.1.2

Table 68: 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

Sessioninfo

Table 69

SubmissionInfo

Table 70

DocumentMetadata

Table 71

Document

Table 72

MSH-3-1

MSH-3-2

MSH-4-1

MSH-4-2

EVN-5

Section 1.1.4.5

EVN-5-1 and EVN-5-9

MSH-10

Table 69: 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

PV1-3-4-2

OBR-31-1

OBR-31-2

OBR-31-3

TXA-9-2

TXA-9-3

TXA-16

Table 70: 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.codingScher	Required	-
TXA-9-2	author.lastName	Required	-
TXA-9-3	author.firstName	Required	-
TXA-16	title	Required	-

MSH-6-2

- MSH-19
- PID-3
- PID-3
- PID-5-1
- PID-5-2
- PID-5-3
- PID-5-4
- PID-5-5
- PID-7
- PID-8
- PID-11-1
- PID-11-3
- PID-11-5
- PID-11-6
- PV1-2-1
- PV1-2-2
- PV1-2-3
- PV1-3-4-1
- PV1-3-4-2

- PV1-3-4-2 + TXA-12-1

- PV1-3-7-2
- PV1-3-7-3
- PV1-3-10-1
- PV1-3-10-2
- PV1-3-10-3
- PV1-10-1
- PV1-10-2
- PV1-10-3
- OBR-4
- OBR-7
- OBR-8
- OBR-31
- TXA-2-1
- TXA-2-2
- TXA-2-2
- TXA-2-3

- TXA-2-3
- TXA-3-1
- TXA-3-2
- TXA-3-3
- TXA-3-4
- TXA-6
- TXA-9-2
- TXA-9-3
- TXA-10-2
- TXA-10-3
- TXA-16
- TXA-18-1
- TXA-18-2
- TXA-18-3
- TXA-19
- TXA-23

ZAI-1-1

ZAI-1-2

ZAI-1-3

ZRI-1

ZRI-2

ZRI-3

urn:sense:2015:caseId

Table 71: 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.socialSecurityNuml	Required	-
PID-3	patientInfo.sourcePatientID	Required	-
PID-5-1	patientInfo.familyName	Required	-
PID-5-2	patientInfo.givenName	Required	-
PID-5-3	patientInfo.secondAndFurtherl	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	-
PV1-3-10-2	practiceSettingCode.displayNa	Required	-
PV1-3-10-3	practiceSettingCode.codingSch	Required	-
PV1-10-1	healthcareFacilityTypeCode.va	Required	-

Table 71: Mapping from HL7 MDM message to XDS Data – DocumentMetadata.

Table 71: Mapping from HL7 MDM message to XDS Data – DocumentMetadata.

HL7-Path	Name	Presence	Repeatable
PV1-10-2	healthcareFacilityTypeCode.dis	Required	-
PV1-10-3	healthcareFacilityTypeCode.co	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	Required by eHealth Solutions	-
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].display	Required	-
TXA-18-3	confidentialityCodes[0].coding	Required	-
TXA-19	availabilityStatus	Required	-
TXA-23	intendedRecipient	Conditionally Required	Y
ZAI-1-1	documentTypeCode.value	Conditionally Required	-
ZAI-1-2	documentTypeCode.displayNa	Optional	-
ZAI-1-3	documentTypeCode.codingSch	Optional	-
ZRI-1	set-id.uniqueId	Optional	-
ZRI-2	cx.referenceId	Optional	-
ZRI-3	cwe.identifierTypeCode	Presence	-

OBX-2

OBX-5

Table 72: 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	-

Example 88: 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|||
    JVBERi0xLjQKJcOkw7zDtsOfCjIgMCBvYmoKPDwvTGVuZ3RoIDMgMCBSL0ZpbHRlci9GbGF0ZURlY29kZT4+
    CnN0cmVhbQp4nOUby4okufHeX5HnAdcqpJSUCYuhqqvL+Nj2gD9g7V1jpm1mL/v7ljJDocgIRVX32GYNyzAzSKl
    ....i0kluI|||||||
OBX|2|ED|||bpJEw+Mfu5XSQYsU7VByhF1eDUmARDRBklJkGlwuDNla9nY7pDTpxIKmGMHg31bSacSM7fJg6K+//
    u0xmHT+bw5ol+h4Kds2Q8RK2VYPe+lyp3MsyS+JrhdWRfuFXkVAr4hjonREzBEdbz3CREdJZ2niLu5UMv/
    dKKRViLZSOBK....+A75Tv|||||||
OBX|3|ED|||tE/hm2CElItbsmHJySWssAQvaQn6atqrN1Qz1fcvJid+YEyZI/
    t6HDmHfNH7SeIVUToQKCykidLaiNCOD3OoS1mY979lavhhZjtlWwmmOZEoE+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
```

EVN-5 – Operator ID

EVN-7 – Event Facility

ZAI-1 – Document Type Code

Section 1.1.4

Example 89: 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_T02
    |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/
    Pgo8P3htbC1zdHls...
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
```

Append Document

Table 73: 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

Table 69

Table 70 Table 71 Table 72

Table 74

TXA-13

Table 74: Mapping from HL7 MDM message to XDS Data for Document Addendum.

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

Example 90:

```
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|
    parentDocID1309938522620|||HL7v2 TestDocument||N^Normal^2.16.840.1.113883.5.25|F
OBX|1|ED|||
    JVBERi0xLjQKJcOkw7zDtsOfCjIgMCBvYmoKPDwvTGVuZ3RoIDMgMCBSL0ZpbHRlci9GbGF0ZURlY29kZT4+
    CnN0cmVhbQp4nOUby4okufHeX5HnAdcqpJSUCYuhqqvL+Nj2gD9g7V1jpm1mL/v7ljJDocgIRVX32GYNyzAzSKl
    ....i0kluI|||||||
OBX|2|ED|||bpJEw+Mfu5XSQYsU7VByhF1eDUmARDRBklJkGlwuDNla9nY7pDTpxIKmGMHg31bSacSM7fJg6K+//
    u0xmHT+bw5ol+h4Kds2Q8RK2VYPe+lyp3MsyS+JrhdWRfuFXkVAr4hjonREzBEdbz3CREdJZ2niLu5UMv/
    dKKRViLZSOBK....+A75Tv|||||||
```

```
OBX|3|ED|||tE/hm2CElItbsmHJySWssAQvaQn6atqrN1Qz1fcvJid+YEyZI/
    t6HDmHfNH7SeIVUToQKCykidLaiNCOD3OoS1mY979lavhhZjtlWwmmOZEoE+wi35r8VmJVyDl5B3WaM/
    ncLI7WApXIO5h/wzf3iizLzjX1nP/KDP/CX5/qnsX....VPRgo=|||||||
```

Transform Document

Table 75: 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

Table 69

Table 70 Table 71 Table 72

Table 76

TXA-13

Table 76: Mapping from HL7 MDM message to XDS Data for Document Transform.

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

Example 91:

```
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|
    parentDocID1309938522620|||HL7v2 TestDocument||N^Normal^2.16.840.1.113883.5.25|F
OBX|1|ED|||
    JVBERi0xLjQKJcOkw7zDtsOfCjIgMCBvYmoKPDwvTGVuZ3RoIDMgMCBSL0ZpbHRlci9GbGF0ZURlY29kZT4+
    CnN0cmVhbQp4nOUby4okufHeX5HnAdcqpJSUCYuhqqvL+Nj2gD9g7V1jpm1mL/v7ljJDocgIRVX32GYNyzAzSKl
    ....i0kluI|||||||
OBX|2|ED|||bpJEw+Mfu5XSQYsU7VByhF1eDUmARDRBklJkGlwuDNla9nY7pDTpxIKmGMHg31bSacSM7fJg6K+//
    u0xmHT+bw5ol+h4Kds2Q8RK2VYPe+lyp3MsyS+JrhdWRfuFXkVAr4hjonREzBEdbz3CREdJZ2niLu5UMv/
    dKKRViLZSOBK....+A75Tv|||||||
OBX|3|ED|||tE/hm2CElItbsmHJySWssAQvaQn6atqrN1Qz1fcvJid+YEyZI/
    t6HDmHfNH7SeIVUToQKCykidLaiNCOD3OoS1mY979lavhhZjtlWwmmOZEoE+wi35r8VmJVyDl5B3WaM/
    ncLI7WApXIO5h/wzf3iizLzjX1nP/KDP/CX5/qnsX....VPRgo=|||||||
```

Replace Document

Table 77: Replace Document Segments

Segment	Description
MSH	Message Header

Table 77: Replace Document Segments

Table 77: Replace Document Segments

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

Table 69

Table 70 Table 71 Table 72

Table 78

TXA-13

Table 78: Mapping from HL7 MDM message to XDS Data for Document Replacement.

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

Example 92:

```
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|
    parentDocID1309938522620|||HL7v2 TestDocument||N^Normal^2.16.840.1.113883.5.25|F
OBX|1|ED|||
    JVBERi0xLjQKJcOkw7zDtsOfCjIgMCBvYmoKPDwvTGVuZ3RoIDMgMCBSL0ZpbHRlci9GbGF0ZURlY29kZT4+
    CnN0cmVhbQp4nOUby4okufHeX5HnAdcqpJSUCYuhqqvL+Nj2gD9g7V1jpm1mL/v7ljJDocgIRVX32GYNyzAzSKl
    ....i0kluI|||||||
OBX|2|ED|||bpJEw+Mfu5XSQYsU7VByhF1eDUmARDRBklJkGlwuDNla9nY7pDTpxIKmGMHg31bSacSM7fJg6K+//
    u0xmHT+bw5ol+h4Kds2Q8RK2VYPe+lyp3MsyS+JrhdWRfuFXkVAr4hjonREzBEdbz3CREdJZ2niLu5UMv/
    dKKRViLZSOBK....+A75Tv|||||||
OBX|3|ED|||tE/hm2CElItbsmHJySWssAQvaQn6atqrN1Qz1fcvJid+YEyZI/
    t6HDmHfNH7SeIVUToQKCykidLaiNCOD3OoS1mY979lavhhZjtlWwmmOZEoE+wi35r8VmJVyDl5B3WaM/
    ncLI7WApXIO5h/wzf3iizLzjX1nP/KDP/CX5/qnsX....VPRgo=|||||||
```

Deprecate Document

Table 79: 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

Table 69 Table 70 Table 71

Example 93:

```
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
```

5 Observations

Table 80: 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

PID Segment

PV1 Segment

OBR Segment

OBX Segment

NTE Segment

OBR-4

- OBR-7
- OBR-14
- OBR-32
- OBX-2
- OBX-3
- OBX-5
- OBX-6
- OBX-7
- OBX-8
- OBX-11

Table 81: 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 94:

```
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
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
```

6 User-defined Tables

- `urn:ihe:iti:xds:2013:uniqueId`
- `urn:ihe:iti:xds:2013:accession`
- `urn:ihe:iti:xds:2013:referral`
- `urn:ihe:iti:xds:2013:order`
- `urn:ihe:iti:xdw:2013:workflowId`
- `urn:sense:2015:caseId`
- `urn:sense:2016:studyInstanceUID`

Table 82: Reference ID type codes in MDM tables

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