

BelRAI 2.0 Cookbook

Description of the BelRAI 2.0 web services

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1 Document management

Version	Date	Status	Description of the alterations/comments
1	23/02/2018	Draft	Initial version of the cookbook
1.1	02/03/2018	Draft	Additional input Michel Legrand and Dirk Vanneste
1.2	03/03/2018	Draft	Start description of web services validation and errors
1.3	08/03/2018	Draft	KMEHR message: request updated (id_encryption_actor & cd_encryption_actor)
1.3.1	14/03/2018	Draft	Updates to the lay-out of the document: changing footer & document name
1.4	26/03/2018	Draft	Addition of the sequence diagram (procedure to invoke the web services) Addition of transaction types Corrections to KMEHR examples Adding JSON of full assessment Explanation of encrypted data
1.4.1	06/04/2018	Draft	Adjusting of method examples to interface v1
1.5	11/04/2018	Draft	Renewing of method examples to interface v1
1.5.1	21/06/2018	Final	Small adjustments because of comparison with Dutch cookbook. Examples of each method were added to the document.

2 Purpose of this document

The purpose of this cookbook is to make BelRAI accessible to **organisations** that wish to make use of the BelRAI web services. The document is aimed at developers who want to integrate BelRAI web services into an external software application.

2.1 Description of BelRAI

The BelRAI 2.0 project fits into action point 8 of the eHealth Action Plan for the years 2013 to 2018, "Introduction of a uniform assessment tool", with the following objectives:

- Generalise use of BelRAI in Belgium for all vulnerable people who are confronted with complex and multidimensional problems (medical and/or mobility problems, food, hygiene, disability, etc.).
- Have an IT tool that is user-friendly, can be adapted to the environment of the field actors and facilitates multidisciplinary cooperation.

The "BelRAI 2.0" project aims to fully support action point 8 of the eHealth plan, by rolling out a web application, web service, mobile app, demo application and a database, which will allow to scale the vulnerability, care needs and self-reliance of people. It is a multidisciplinary application which transcends regions and communities. BelRAI 2.0 aims to measure a person's care needs in a standardised and structured manner. The figure below shows the different interfaces offered by BelRAI. This cookbook only deals with the web service for the care provider.

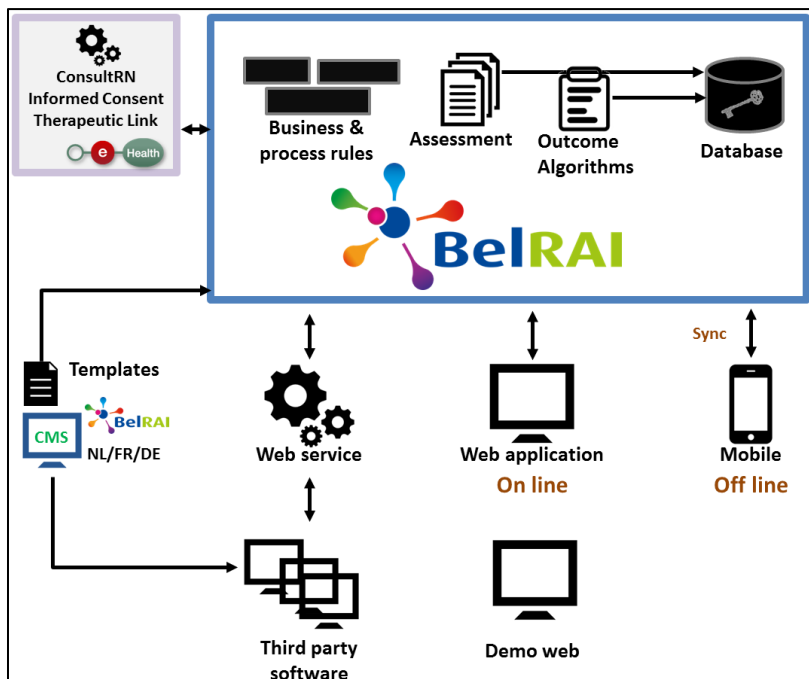


Figure 1: High level architecture BelRAI

3 Invoking the BelRAI web services

This chapter discusses the conditions and procedure for invoking the BelRAI web services. The conditions are discussed first, followed by an explanation of the process. If the conditions are not respected, the web services will not be accessible.

3.1 Conditions

3.1.1 Circle of trust

Unlike the BelRAI web application, the web services do not verify the identity of the user from the organisation. The responsibility of user management lies with the organisation that invokes the web service.

A Circle of Trust ensures that only organisations with a strict security policy can use the BelRAI web services.

Organisations (with INAMI/RIZIV number) that can invoke the web service¹:

- Hospital (hospital)
- Homecare (homecare)
- Retirement home (retirement)
- Residential Care Centres (residentialcare)
- Psychiatric Care Centres (psych_house)

3.1.2 Application for eHealth certificate for the organisation

In order to access the BelRAI web services, an eHealth Secure Token Service (STS) token is required. This token will authenticate the user, and will be used for all interactions with the BelRAI web services during the started session.

A token can only be obtained when the organisation has applied for a certificate from the eHealth platform.

3.1.3 Software requirements

The application that the BelRAI web service wishes to use, can only be used if the BelRAI questionnaires are built in. The outlines of these lists are available on the BelRAI Content Management System. As a supplier of customised software, you must meet the accreditation criteria as set out in the BelRAI terms of use. These are available on the BelRAI website or on the content management system.

¹ This list will be extended in the future in line with the integration of authentic sources of recognised legal entities.

3.2 Procedure

Once the organisation meets all the conditions, the methods offered can be invoked. The procedure is explained in the sequence diagram below.

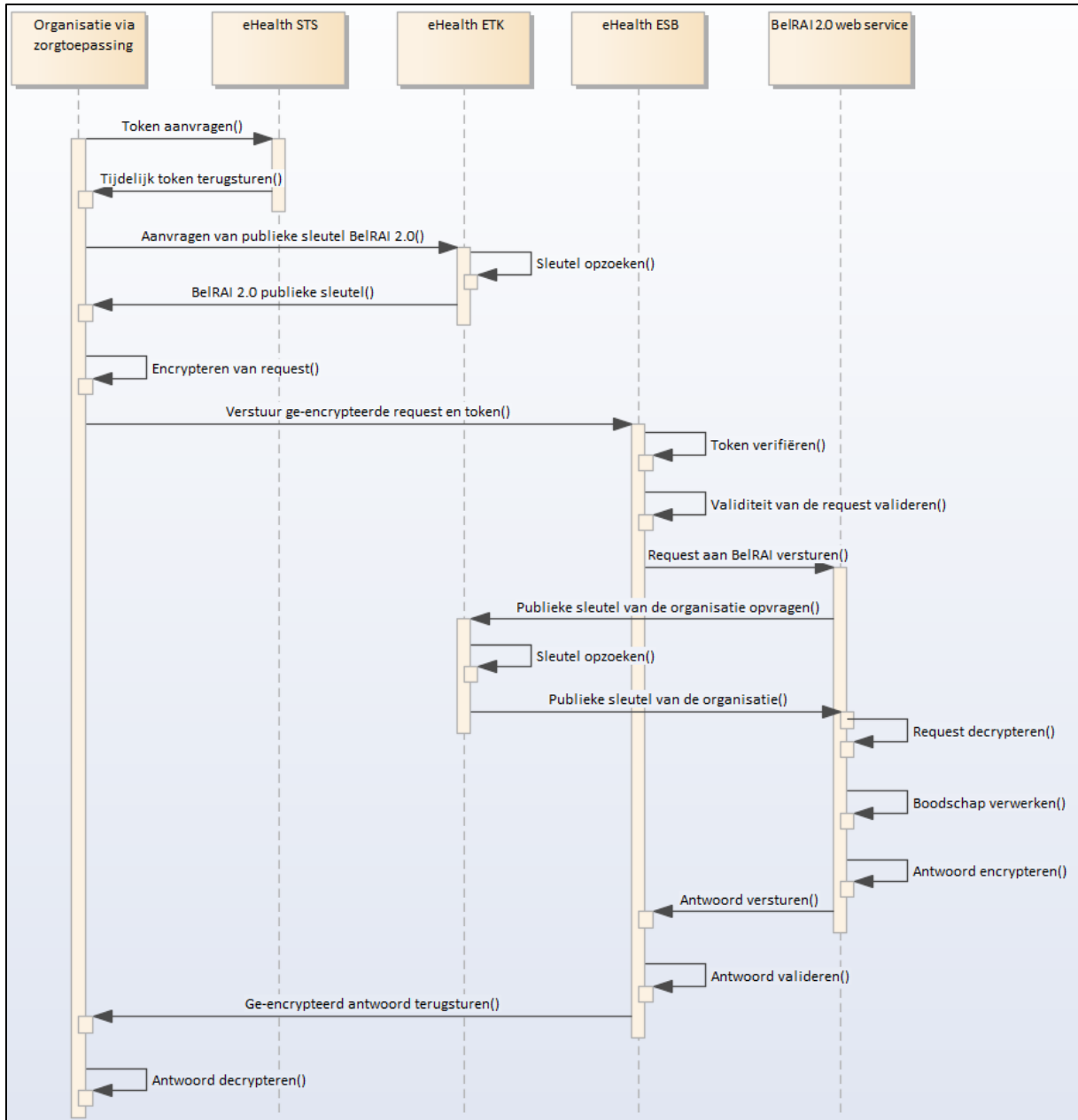


Figure 2: Sequence diagram: using the BelRAI 2.0 web services

4 Principles for using the web services

The BelRAI web services are aimed at exchanging BelRAI assessments between organisations' own software and the BelRAI database. The characteristics of the assessments exchanged are as follows:

- All assessments exchanged are final and concluded and cannot be modified, overwritten or deleted.
- CAPs and scales are calculated centrally after uploading of the assessment. If you have calculated CAPs and care scales locally, they will not be adopted.
- Multidisciplinary assessments are not possible via the web services

4.1 Access to patient data

Patient assessments can be retrieved from and uploaded to the BelRAI database, using the BelRAI web services. However, this should take into account the informed consent of the patient for the electronic sharing of health data. An explanation of informed consent is available on the eHealth website.

4.1.1 Informed consent

"[...] is the permission that you, as a patient, give for the electronic and secure sharing of your health data between the persons treating you. These data are only shared in the context of the continuity and quality of medical care, taking into account the regulations for the protection of your private life. These are your data and they will be protected. You can at any time decide whether or not to share these data" (eHealth, 2018)²

If a patient has not given their informed consent, their health data may not be shared between healthcare providers. The web service can still be used between the local application and the central BelRAI database.

4.2 Retrieving templates and labels

The templates and labels are indispensable for the implementation of the BelRAI 2.0 web services. These can be retrieved from the CMS system (see 3.1.3). This makes it possible to:

- Make the templates available, and have them filled in by employees;
- Interpret the results obtained with the correct conclusions.

BelRAI 2.0 is responsible for the storage of the evaluations, and for the calculation of the algorithms associated with these evaluations. Communication with BelRAI is therefore based on key-value pairs (see 5.2).

²More information on informed consent can be found at: <https://www.ehealth.fgov.be/nl/egezondheid/patienten/patientconsent> (in Dutch, German or French only)

5 Methods offered

BelRAI offers 3 methods, namely:

- **GetTransactionList**: requesting a patient assessment list;
- **GetTransaction**: requesting a specific assessment;
- **PutTransaction**: uploading an assessment.

Each of the assessments requested or uploaded is complete, this goes for all three methods. It is not possible to download or upload an incomplete assessment. Methods offered in the past but not mentioned in this cookbook are outdated and are no longer used.

5.1 Types of BelRAI assessments

BelRAI 2.0 accommodates different types of assessments. A BelRAI assessment is typified by CD-TRANSACTION = belrai_evaluation. This type is included in some of the KMEHR passages. The table below lists all types available in BelRAI, including the corresponding CD-TRANSACTION type.

Assessment	CD-TRANSACTION TYPE
Palliative screener	palliative_screener
Palliative Care	palliative_care
Mental Health	mental_health
Long Term Care Facilities	long_term_care_facilities
Home Care	home_care
Community Mental Health	community_mental_health
BelRAI screener	belrai_screener
Acute Care - Discharge Assessment	acute_care_discharge_assessment
Acute Care - Comprehensive Geriatric Assessment Review	acute_care_comp_geriatric_assessment_review
Acute Care - Comprehensive Geriatric Assessment Pre-morbid	acute_care_comp_geriatric_assessment_premorbid
Acute Care - Comprehensive Geriatric Assessment Discharge	acute_care_comp_geriatric_assessment_discharge
Acute Care - Comprehensive Geriatric Assessment Admission	acute_care_comp_geriatric_assessment_admission
Acute Care - Admission Assessment	acute_care_admission_assessment

An assessment that is uploaded to or downloaded from BelRAI via the web services should be encrypted (this has already been mentioned in 3 and made concrete in 3.2 of this cookbook). The structure of the encrypted assessment is explained below.

5.2 Format of the exchanged assessment

As explained earlier, BelRAI offers two methods for exchanging the contents of an assessment, namely PutTransaction and GetTransaction (see 5). The two methods are compared below. PutTransaction is aimed at sending an assessment to the BelRAI database, GetTransaction retrieves a completed assessment from the BelRAI database.

Method	Explanation	Results in transaction
PutTransaction	Uploads an assessment to the BelRAI database; when uploaded the results are calculated.	[0]
GetTransaction	Downloads an assessment from the BelRAI 2.0 database	[0-*]

Due to the different nature of the data exchanged (results versus no results), the evaluation exchanged looks somewhat different.

5.2.1 PutTransaction

The assessments from the BelRAI system are displayed as JSON. The JSON groups key-value pairs. The keys are the iCodes from the iMatrix of BelRAI. As already described in the principles, BelRAI 2.0 calculates the results of an assessment itself. This means that any results which may already have been calculated in an external software system are not necessary when uploading. The example below is illustrative, but gives an idea of what the JSON looks like.

```
{
  "responses" : {
    "MOD1":1,
    "iG1aa":3,
    "iG1ab":3,
    "iG1ba":3,
    "iG1bb":3,
    "iG1ca":4,
    "iG1cb":4,
    "iG1da":5,
    "iG1db":6,
    "iG1ea":1,
    "iG1eb":2,
    "iG1fa":0,
    "iG1fb":0,
    "iG1ga":5,
    "iG1gb":5,
    "iG1ha":6,
    "iG1hb":5,
    "MOD2":0,
    "MOD3":0,
    "MOD4":0,
    "MOD5":0
  }
}
```

Figure 3: JSON without results

5.2.2 GetTransaction

As described in the principles, only finished assessments can be retrieved from BelRAI. Therefore, when an assessment is downloaded from BelRAI, this assessment will also include the calculated results. This means that the download will not only contain "responses", but "scores" as well. The example below is illustrative, but gives an idea of what the JSON looks like.

```
{
  "responses" : {
    "iN2a" : "2",
    "iK1bb" : "180",
    "iN2b" : "2",
    "iN2c" : "3",
    "iN2d" : "2",
    "iN2e" : "3",
    "iN2f" : "2",
    "iN2g" : "3",
  },
  "scores" : {
    "sPURS" : {
      "value" : "0",
      "label_translation_id" : 13000,
      "min_value" : "0",
      "max_value" : "8",
    }
  }
}
```

Figure 4: JSON with results

The score shall contain:

- iCode [1]: Refers to the type of score (sPURS)
- Value [1]: The calculated score has value 0
- Label_translation_id [0-1]: reference to the corresponding label
- Min_value [0-1]: the score's minimum value
- Max_value [0-1]: the score's maximum value

6 Structure of the KMEHR message

Each transaction should be drawn up following the KMEHR structure. This chapter will show you what this structure looks like by means of xsd-schemes and tables.

6.1 General information

The xsd schema below shows the general information that is included in both KMEHR requests and responses. The general information is repeated in each of the methods described below.

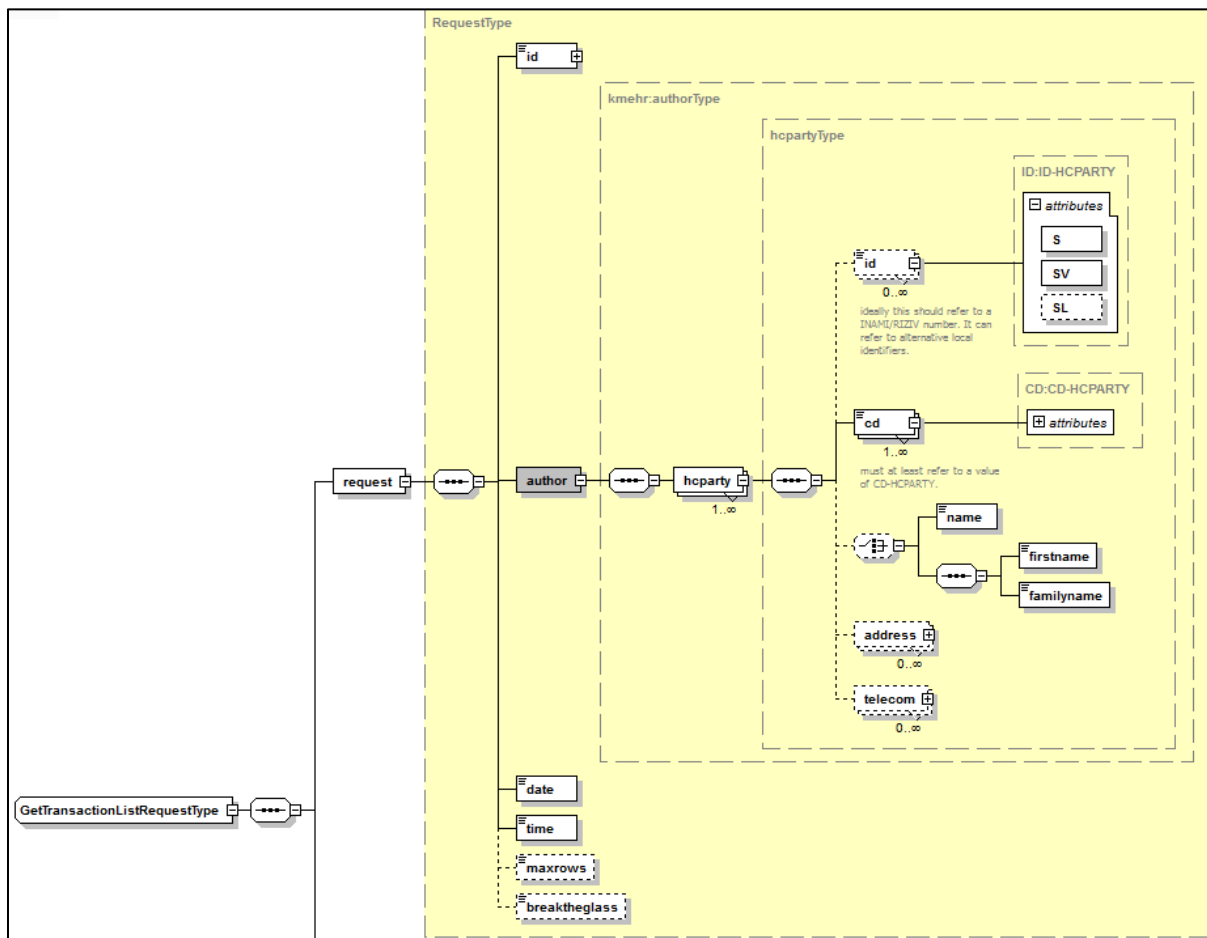


Figure 5: xsd schema: general information

This table provides an overview of the interpretation of the schema shown above:

<p>Id [1-1]</p>	<p>ID-KMEHR, consists of:</p> <ul style="list-style-type: none"> • The first Hcparty of the sender (see Hcparty below) • A dot • A local unique identifier within the system sending the request/response <p>This composition is used when the ID-KMEHR is a part of the HEADER. If the ID-KMEHR occurs in the FOLDER, TRANSACTION, HEADING, or ITEM element, the value is a sequential number beginning with 1.</p>
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Author	A transaction request or response is given by an organisation. This organisation must be identified. In the case of a request, the identity of the person making the request must also be provided.
Hcparty [2-2]	Generic element representing the healthcare party. For BelRAI web services there will be one or more hcparty, namely: Fields [as an organisation] [1-1]: <ul style="list-style-type: none"> • ID-HCPARTY: INAMI/RIZIV number [1-1]. • ID-ENCRYPTION-ACTOR: INAMI/RIZIV number [1-1]. • CD-HCPARTY: Type of organisation [1-1]. • CD-ENCRYPTION-ACTOR: type of ID in ID_ENCRYPTION ACTOR [1-1]. • Name of the organisation: Name [1-1]. Fields [as individual] [1-1]: <ul style="list-style-type: none"> • Id: INAMI/RIZIV [0-1]. • Id: SSIN [1-1] • Cd: CD-HCPARTY: Type of individual [1-1] • Name [0-1] • First name [0-1]
Date [1-1]	Date of the transaction
Time [1-1]	Time of the transaction

Specifically for a response, the following fields will be returned as well:

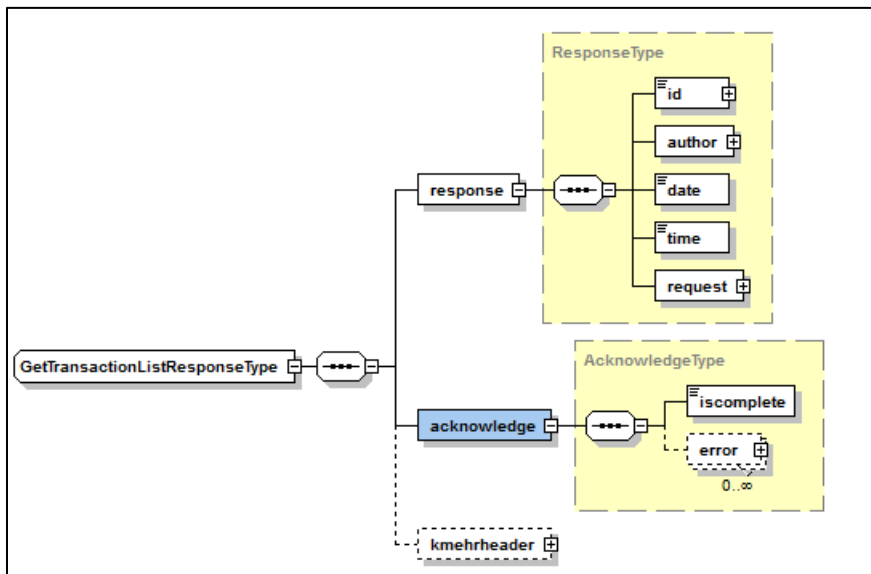


Figure 6: xsd schema: general information in a response

Request	Each response repeats the request.
Acknowledge	iscomplete [1-1] if this is true then the response will be displayed.
Error [0-*]	The error type is displayed here.

6.2 Encrypting the assessment

BelRAI assessments are sent with Base64EncryptedData. Base64EncryptedData contains an encrypted KMEHR, with the structure of the folder from the KMEHR message. This folder contains the exchanged assessment. The schema below shows the structure of this folder.

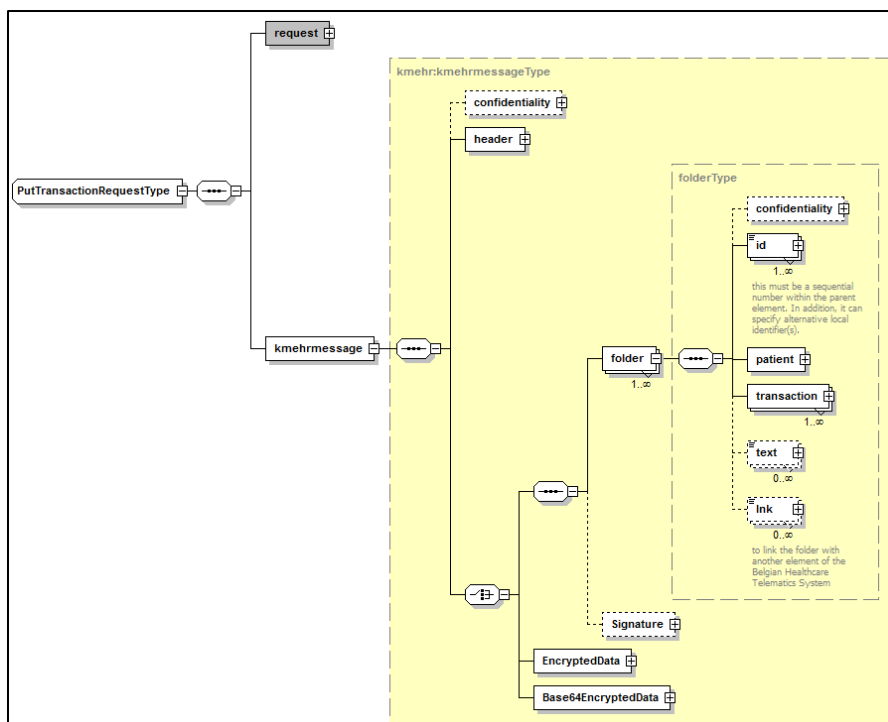


Figure 7: structure of the folder

This structure contains the following information:

<p>Id [1-1]</p>	<p>ID-KMEHR, consists of:</p> <ul style="list-style-type: none"> • The first Hcparty of the sender (see Hcparty below) • A dot • A local unique identifier within the system sending the request/response <p>This composition is used when the ID-KMEHR is a part of the HEADER.</p> <p>If the ID-KMEHR occurs in the FOLDER, TRANSACTION, HEADING, or ITEM element, the value is a sequential number beginning with 1.</p>
<p>Patient ID [1-1].</p>	<p>National Register Number of the client to which the assessment applies.</p>
<p>Transaction [1-1]</p>	<p>This contains the assessment with its metadata:</p> <ul style="list-style-type: none"> • ID [1-1]: Local ID of the transaction, this is not taken into account in BelRAI; • CD-TRANSACTION [1-1]: belrai-evaluation indicates that it concerns an assessment for BelRAI. • CD-TRANSACTION-TYPE [1-1]: this contains the type of the assessment (see 5.1) • Date [1-1]: Date on which the assessment was carried out • Time [1-1]: Time at which the assessment was carried out • Author [1-1]: the author of the assessment, with their data: <ul style="list-style-type: none"> ○ National Register Number [1-1] ○ Name [1-1] • Iscomplete [1-1] • Invalidated [1-1] • Item-Text: this contains the Base64 encoded evaluation. The structure of this evaluation is described in 5.2.1 and 5.2.2.

</folder>

Figure 8: content of encrypted message

6.3 GetTransactionList

In addition to the general information discussed above, the following elements must be added to the GetTransactionList request:

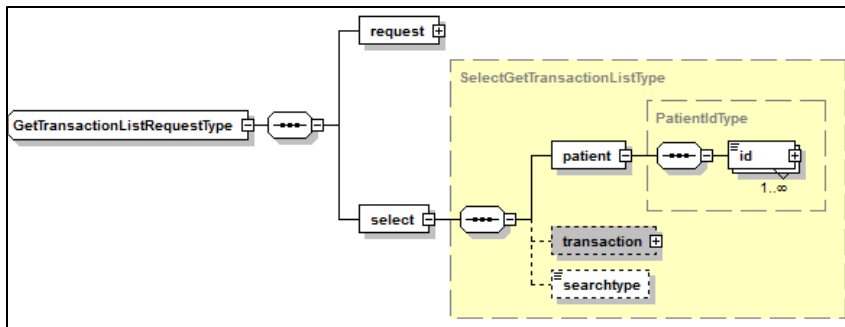


Figure 9: xsd schema: GetTransactionList request

Patient	<p>Assessments are linked to a patient (client). This patient is identified by their National Register Number. If you want to request the list of patient assessments, the patient must be included in the request.</p> <ul style="list-style-type: none"> • Id: Patient National Register Number (SSIN) [1-1].
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6.3.1 GetTransactionList Response

In addition to the general information described above, GetTransactionList's response provides a list of assessments performed on behalf of the client. These assessments can be found in the response as follows.

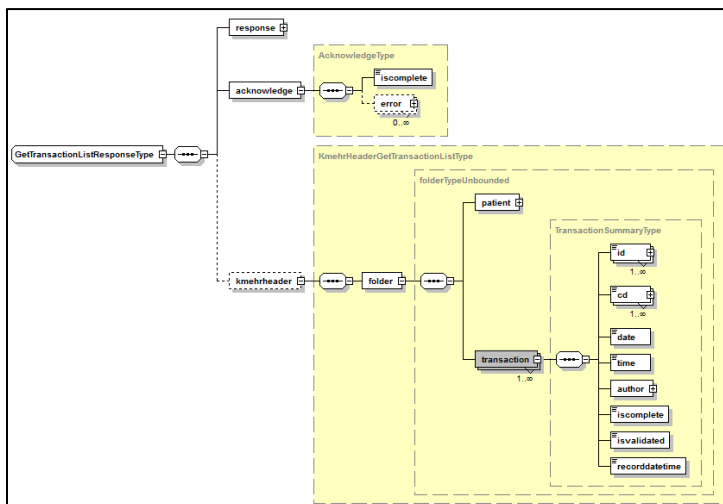


Figure 10: xsd schema: GetTransactionList response

kmehrheader [0-1]	<p>If the request is processed successfully, a kmehrheader is returned. This kmehrheader contains a folder with:</p> <ul style="list-style-type: none"> • Patient identification data • Multiple transactions: this is a list of assessments that have taken place on behalf of the client.
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6.4 GetTransaction

The structure of the GetTransaction request is largely the same as that of the GetTransactionList. The major difference, however, is that with this method a specific assessment is requested.

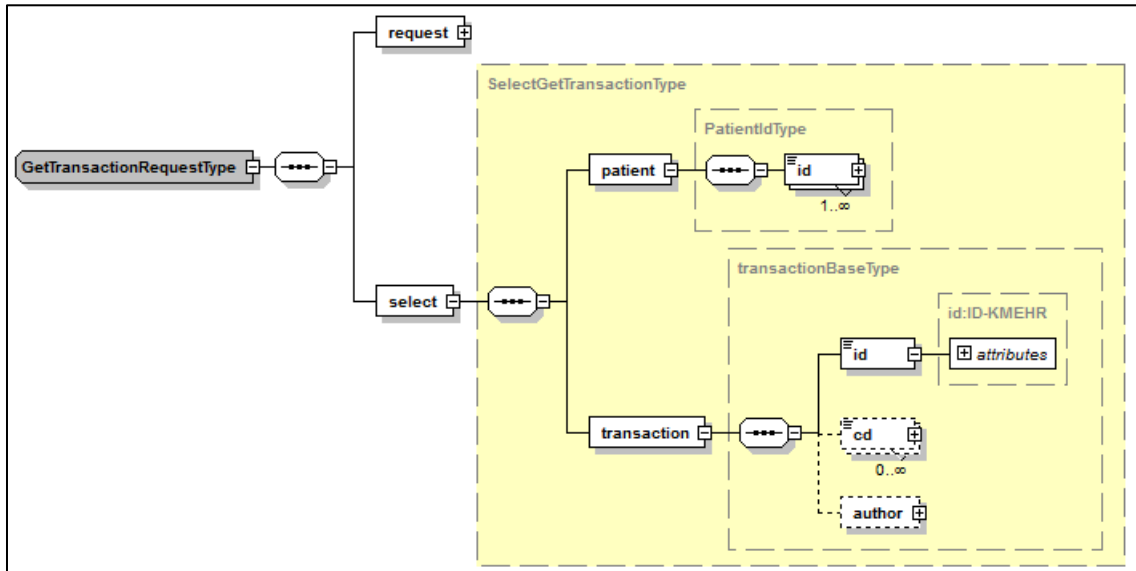


Figure 11: xsd schema: GetTransaction request

Id	TRANSACTION ID: this is the id of the BelRAI assessment [1-1].
----	----------------------------------------------------------------

6.4.1 GetTransaction Response

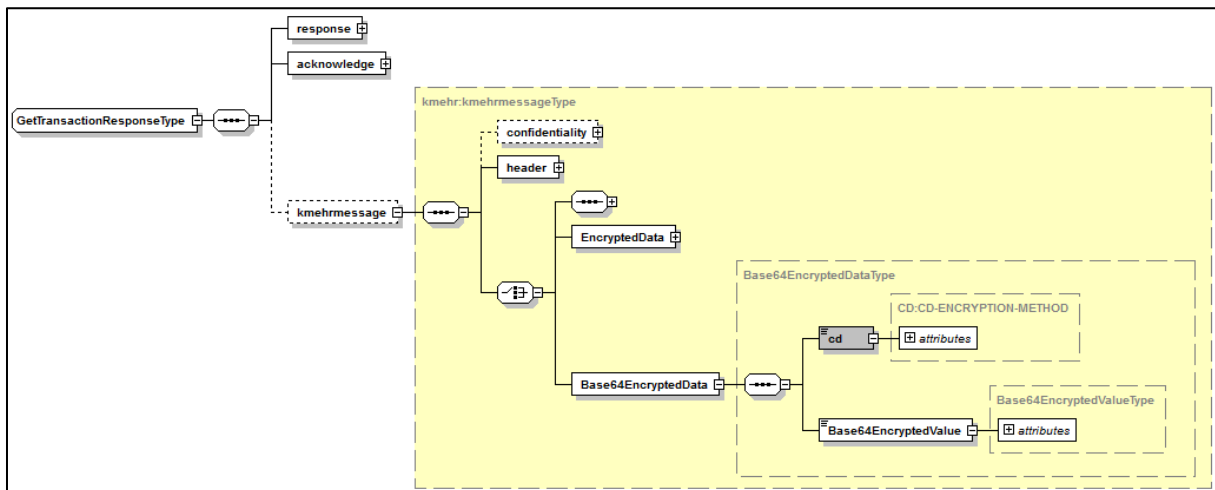


Figure 12: xsd schema: GetTransaction response

The GetTransaction response largely contains the same general fields as described above. Unlike GetTransactionList (where the list of transactions was requested), here a specific assessment is requested. Since sensitive information is exchanged during this process, the assessment is encrypted and included in the Base64EncryptedData. The actual assessment is additionally encrypted.

6.5 PutTransaction

The PutTransaction request is structured in the same way as the GetTransaction and GetTransactionList request. With this specific web service, however, an assessment is uploaded to BelRAI. The following information can be found in the kmehrmessage of PutTransaction:

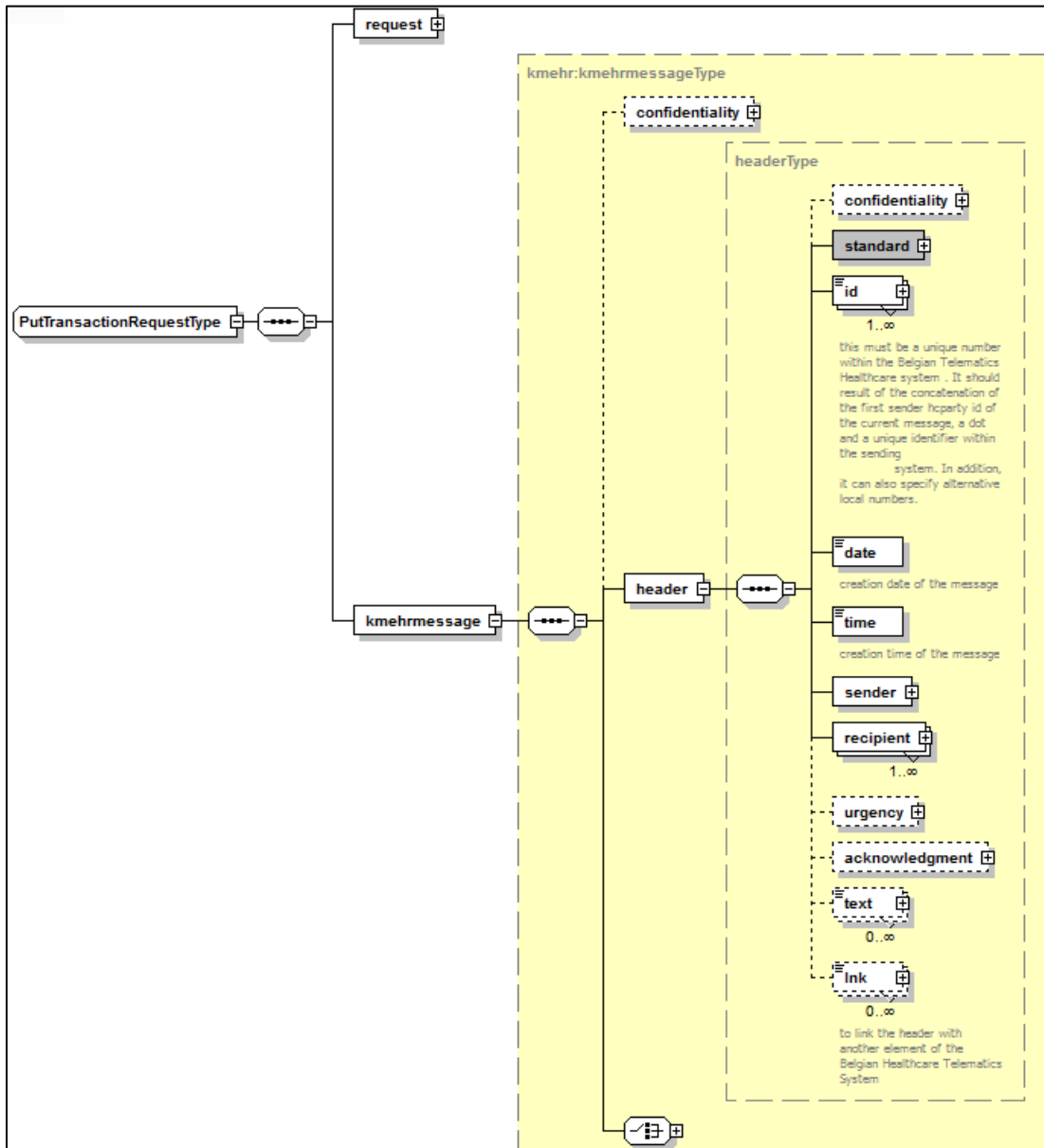


Figure 13: xsd schema: PutTransaction request

Standard	Header Standard: this is the version of the KMEHR specification used. [1-1]
Id [1-1]	<p>ID-KMEHR, consists of:</p> <ul style="list-style-type: none"> • The first Hcparty of the sender (see Hcparty below) • A dot • A local unique identifier within the system sending the request/response <p>This composition is used when the ID-KMEHR is a part of the HEADER.</p>

	If the ID-KMEHR occurs in the FOLDER, TRANSACTION, HEADING, or ITEM element, the value is a sequential number beginning with 1.
Date [1-1]	Date of the assessment
Time [1-1]	Time of the assessment
Sender [2-2]	It should be indicated here who is sending the assessment and who has completed the assessment. Both are mandatory. The sender consists of one or more hcparty, namely: Fields [as an organisation] [1-1]: <ul style="list-style-type: none"> • ID-HCPARTY: INAMI/RIZIV number [0-1]. • CD-HCPARTY: Type of organisation [1-1]. • Name of the organisation: Name [1-1]. Fields [as individual] [1-1]: <ul style="list-style-type: none"> • INAMI/RIZIV [0-1] • SSIN [1-1] • CD-HCPARTY: Type of individual [1-1] • Name [0-1] • First name [0-1]
Recipient [1-1]	This is the recipient of the transaction, in this case the BelRAI application.
Base64EncryptedData [1-1]	Herein the encrypted assessment is stored in a base64 encoded format. The criteria for this assessment are as follows: <ul style="list-style-type: none"> • It should be valid (the type of assessment must be known, all questions and answers must be known in the form type); • It may not include results, these are calculated in BelRAI.

6.5.1 PutTransaction Response

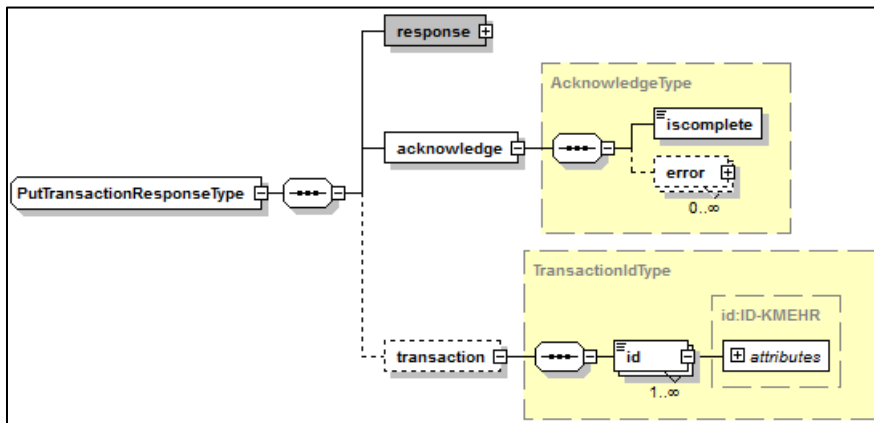


Figure 14: xsd schema: PutTransaction response

An assessment without a version will be interpreted by BelRAI as the most recently known version. A successful PutTransaction will be answered by BelRAI with a transaction ID. This transaction ID corresponds to the ID of the uploaded assessment in BelRAI.

The results of the uploaded assessment are not automatically included in PutTransaction response. This ID can be used in GetTransaction to obtain the assessment and its results.

6.6 Possible errors

belrai_001	Request not defined The 'request' element is missing or incomplete in the sent KMEHR structure.
belrai_002	Syntax error, missing hcparty. Must contain at least one orghospital and one persphysician This error can occur in the request of any method or in the PutTransaction KMEHR message.
belrai_003	No valid syntax on persphysician hcparty This error message indicates that an invalid National Registration Number has been included for the person in hcparty.
belrai_004	No valid syntax on orghospital hcparty This error message indicates that an invalid RIZIV/INAMI number or CBE number has been included in the hcparty.
belrai_005	Syntax error on the decrypted folder Error that may occur with PutTransaction. The encrypted message contains an error.
belrai_006	Form not found in local database with the specified id Error that may occur with GetTransaction. The requested assessment was not found in BelRAI.
belrai_007	The specified form id fetched a form but this one doesn't match with the selected patient SSIN Error that may occur with GetTransaction. The requested assessment was found in BelRAI, but does not belong to the patient who was mentioned in the request.
belrai_008	The selected patient does not have any closed form yet Error that may occur with GetTransactionList. There are no finalised assessments for this patient yet.
belrai_009	The transaction does not contain data Error that may occur with GetTransaction. The transaction does not contain the identifier of the requested form.
belrai_010	No valid syntax on Transaction Error that may occur with GetTransaction. The syntax of the requested identifier is not recognized by BelRAI.
belrai_011	The folder should contain at least one valid kmehr Id, at least one Patient and only one Transaction Error that may occur with PutTransaction. The message included does not contain the necessary information.

belrai_012	The Kmehrmessage should not be null Error that may occur with PutTransaction. The KMEHR message included (which contains the assessment) is empty.
belrai_013	Kmehrmessage should contain a Base64-encoded and end-to-end-encrypted businessdata Error that may occur with PutTransaction. The KMEHR message included was not correctly encrypted or encoded as Base64.
belrai_014	No valid syntax on Kmehrmessage Generic response in the event of an error in the transmitted KMEHR message. This error may occur with PutTransaction.
belrai_015	No Patient SSIN specified Error that may occur with all methods. If no National Registration Number is specified for the patient, no assessments can be retrieved or uploaded.
belrai_016	Patient not found in local database with the specified SSIN Error that may occur with PutTransaction. The patient was not found, which means the assessment cannot be stored in BelRAI.
belrai_017	Unknown error, contact the support team
belrai_018	Error occurs while decryption/encryption folder Error that occurs during the encryption or decryption of the assessment.

7 Method examples

Here you will find some examples of each method discussed above. These examples may help to construct the KMEHR message. The examples are listed in order of the proposed methods, and each consists of a pair (request-response).

7.1 GetTransactionList – Request

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
                  xmlns="http://www.ehealth.fgov.be/kmehrs/services/protocol/v1"
                  xmlns:kc="http://www.ehealth.fgov.be/kmehrs/services/core/v1"
                  xmlns:k="http://www.ehealth.fgov.be/standards/kmehr/schema/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <GetTransactionListRequest >
      <kc:request>
        <kc:id S="ID-KMEHR" SV="1.0">71071801.12345</kc:id>
        <kc:author>
          <k:hcparty>
            <k:id S="ID-HCPARTY" SV="1.0">71071801</k:id>
            <k:id SV="1.0" S="ID-ENCRYPTION-ACTOR">0206653946</k:id>
            <k:cd SV="1.1" S="CD-HCPARTY">orghospital</k:cd>
            <k:cd SV="1.0" S="CD-ENCRYPTION-ACTOR">CBE</k:cd>
            <k:name>Hôpital civil de Test</k:name>
          </k:hcparty>
          <k:hcparty>
            <k:id S="ID-HCPARTY" SV="1.0">10000001</k:id>
            <k:id S="INSS" SV="1.0">71050643439</k:id>
            <k:cd S="CD-HCPARTY" SV="1.12">persphysician</k:cd>
            <k:firstname>Toto</k:firstname>
            <k:familyname>LeHéros</k:familyname>
          </k:hcparty>
        </kc:author>
        <kc:date>2017-11-08</kc:date>
        <kc:time>13:45:12</kc:time>
        <kc:maxrows>10</kc:maxrows>
      </kc:request>
      <kc:select>
        <kc:patient>
          <kc:id S="INSS" SV="1.0">93110828946</kc:id>
        </kc:patient>
      </kc:select>
    </GetTransactionListRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

7.2 GetTransactionList – Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns5:GetTransactionListResponse xmlns="http://www.ehealth.fgov.be/kmehrs/services/core/v1"
      xmlns:ns2="http://www.ehealth.fgov.be/standards/kmehr/schema/v1"
      xmlns:ns3="http://www.w3.org/2000/09/xmldsig#" xmlns:ns4="http://www.w3.org/2001/04/xmleenc#"
      xmlns:ns5="http://www.ehealth.fgov.be/kmehrs/services/protocol/v1">
      <response>
        <id S="ID-KMEHR" SV="1.0">29</id>
        <author>
          <ns2:hcparty>
            <ns2:cd S="CD-HCPARTY" SV="1.12">Belrai</ns2:cd>
            <ns2:cd S="CD-APPLICATION" SV="1.1">application</ns2:cd>
          </ns2:hcparty>
        </author>
        <date>2018-04-11+02:00</date>
        <time>07:50:28.546+02:00</time>
        <request>
          <id S="ID-KMEHR" SV="1.0">71071801.12345</id>
          <author>
            <ns2:hcparty>
              <ns2:id S="ID-HCPARTY" SV="1.0">71071801</ns2:id>
              <ns2:id S="ID-ENCRYPTION-ACTOR" SV="1.0">0206653946</ns2:id>
              <ns2:cd S="CD-HCPARTY" SV="1.1">orghospital</ns2:cd>
              <ns2:cd S="CD-ENCRYPTION-ACTOR" SV="1.0">CBE</ns2:cd>
              <ns2:name>Hôpital civil de Test</ns2:name>
            </ns2:hcparty>
            <ns2:hcparty>
              <ns2:id S="ID-HCPARTY" SV="1.0">10000001</ns2:id>
              <ns2:id S="INSS" SV="1.0">71050643439</ns2:id>
              <ns2:cd S="CD-HCPARTY" SV="1.12">persphysician</ns2:cd>
              <ns2:firstname>Toto</ns2:firstname>
              <ns2:familyname>LeHéros</ns2:familyname>
            </ns2:hcparty>
          </author>
          <date>2017-11-08</date>
          <time>13:45:12</time>
          <maxrows>10</maxrows>
        </request>
      </response>
      <acknowledge>
        <iscomplete>true</iscomplete>
      </acknowledge>
      <kmehrheader>
        <folder>
          <patient>
            <ns2:id S="INSS" SV="1.0">93110828946</ns2:id>
            <ns2:firstname>Leonidas</ns2:firstname>
            <ns2:familyname>Rothery</ns2:familyname>
            <ns2:sex>
              <ns2:cd S="CD-SEX" SV="1.1">male</ns2:cd>
            </ns2:sex>
          </patient>
          <transaction>
            <id S="ID-KMEHR" SV="1.0" SL="ID-FORM">4</id>
            <cd S="CD-TRANSACTION" SV="1.11">belrai-evaluation</cd>
            <cd S="CD-TRANSACTION-TYPE" SV="1.11">home_care</cd>
            <date>2018-04-11+02:00</date>
            <time>07:50:28.516+02:00</time>
            <author>
              <ns2:hcparty>
                <ns2:id S="ID-HCPARTY" SV="1.0">10000001</ns2:id>
                <ns2:id S="INSS" SV="1.0">1000000001</ns2:id>
                <ns2:firstname>CareFirst1</ns2:firstname>
                <ns2:familyname>CareLast1</ns2:familyname>
              </ns2:hcparty>
            </author>
            <iscomplete>true</iscomplete>
            <invalidated>true</invalidated>
            <recorddatetime>2018-04-11T07:50:28.516+02:00</recorddatetime>
          </transaction>
        </folder>
      </kmehrheader>
    </ns5:GetTransactionListResponse>
  </soap:Body>
</soap:Envelope>
```

```

<id S="ID-KMEHR" SV="1.0" SL="ID-FORM">3</id>
<cd S="CD-TRANSACTION" SV="1.11">belrai-evaluation</cd>
<cd S="CD-TRANSACTION-TYPE" SV="1.11">belrai_screener</cd>
<date>2018-04-11+02:00</date>
<time>07:50:28.526+02:00</time>
<author>
  <ns2:hcparty>
    <ns2:id S="ID-HCPARTY" SV="1.0">10000001</ns2:id>
    <ns2:id S="INSS" SV="1.0">1000000001</ns2:id>
    <ns2:firstname>CareFirst1</ns2:firstname>
    <ns2:familyname>CareLast1</ns2:familyname>
  </ns2:hcparty>
</author>
<iscomplete>true</iscomplete>
<isvalidated>true</isvalidated>
<recorddatetime>2018-04-11T07:50:28.526+02:00</recorddatetime>
</transaction>
<transaction>
  <id S="ID-KMEHR" SV="1.0" SL="ID-FORM">2</id>
  <cd S="CD-TRANSACTION" SV="1.11">belrai-evaluation</cd>
  <cd S="CD-TRANSACTION-TYPE" SV="1.11">belrai_screener</cd>
  <date>2018-04-11+02:00</date>
  <time>07:50:28.531+02:00</time>
  <author>
    <ns2:hcparty>
      <ns2:id S="ID-HCPARTY" SV="1.0">71071801</ns2:id>
      <ns2:name>Hôpital civil de Test</ns2:name>
    </ns2:hcparty>
  </author>
  <iscomplete>true</iscomplete>
  <isvalidated>true</isvalidated>
  <recorddatetime>2018-04-11T07:50:28.531+02:00</recorddatetime>
</transaction>
<transaction>
  <id S="ID-KMEHR" SV="1.0" SL="ID-FORM">1</id>
  <cd S="CD-TRANSACTION" SV="1.11">belrai-evaluation</cd>
  <cd S="CD-TRANSACTION-TYPE" SV="1.11">belrai_screener</cd>
  <date>2018-04-11+02:00</date>
  <time>07:50:28.545+02:00</time>
  <author>
    <ns2:hcparty>
      <ns2:id S="ID-HCPARTY" SV="1.0">15882264650</ns2:id>
      <ns2:id S="INSS" SV="1.0">80120922112</ns2:id>
      <ns2:firstname>Barry</ns2:firstname>
      <ns2:familyname>Allen</ns2:familyname>
    </ns2:hcparty>
  </author>
  <iscomplete>true</iscomplete>
  <isvalidated>true</isvalidated>
  <recorddatetime>2018-04-11T07:50:28.545+02:00</recorddatetime>
</transaction>
</folder>
</kmehrheader>
</ns5:GetTransactionListResponse>
</soap:Body>
</soap:Envelope>

```


7.3 GetTransaction – Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns="http://www.ehealth.fgov.be/kmehrservices/protocol/v1"
  xmlns:kc="http://www.ehealth.fgov.be/kmehrservices/core/v1"
  xmlns:k="http://www.ehealth.fgov.be/standards/kmehr/schema/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <GetTransactionRequest>
      <kc:request>
        <kc:id S="ID-KMEHR" SV="1.0">11100110010.12345</kc:id>
        <kc:author>
          <k:hcparty>
            <k:id SV="1.0" S="ID-HCPARTY">11100110010</k:id>
            <k:id SV="1.0" S="ID-ENCRYPTION-ACTOR">0206653946</k:id>
            <k:cd SV="1.1" S="CD-HCPARTY">orghospital</k:cd>
            <k:cd SV="1.0" S="CD-ENCRYPTION-ACTOR">CBE</k:cd>
            <k:name>Hospital2</k:name>
          </k:hcparty>
          <k:hcparty>
            <k:id SV="1.0" S="ID-HCPARTY">10082555045</k:id>
            <k:id SV="1.0" S="INSS">71050643439</k:id>
            <k:cd SV="1.1" S="CD-HCPARTY">persphysician</k:cd>
            <k:firstname>Toto</k:firstname>
            <k:familyname>LeHéros</k:familyname>
          </k:hcparty>
        </kc:author>
        <kc:date>2017-11-08</kc:date>
        <kc:time>13:45:12</kc:time>
      </kc:request>
      <kc:select>
        <kc:patient>
          <kc:id S="INSS" SV="1.0">93110828946</kc:id>
        </kc:patient>
        <kc:transaction>
          <kc:id S="LOCAL" SV="1.0">2</kc:id>
          <kc:author>
            <k:hcparty>
              <k:id SV="1.0" S="ID-HCPARTY">NIHII_hospital1</k:id>
              <k:cd SV="1.1" S="CD-HCPARTY">orghospital</k:cd>
              <k:name>Hospital1</k:name>
            </k:hcparty>
            <k:hcparty>
              <k:id SV="1.0" S="ID-HCPARTY">10082555045</k:id>
              <k:id SV="1.0" S="INSS">71050643439</k:id>
              <k:cd SV="1.1" S="CD-HCPARTY">persphysician</k:cd>
              <k:firstname>Toto</k:firstname>
              <k:familyname>LeHéros</k:familyname>
            </k:hcparty>
          </kc:author>
        </kc:transaction>
      </kc:select>
    </GetTransactionRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

7.4 GetTransaction – Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns5:GetTransactionResponse xmlns="http://www.ehealth.fgov.be/kmehrservices/core/v1"
      xmlns:ns2="http://www.ehealth.fgov.be/standards/kmehr/schema/v1"
      xmlns:ns3="http://www.w3.org/2000/09/xmldsig#" xmlns:ns4="http://www.w3.org/2001/04/xmlenc#"
      xmlns:ns5="http://www.ehealth.fgov.be/kmehrservices/protocol/v1">
      <response>
        <id S="ID-KMEHR" SV="1.0">26</id>
        <author>
          <ns2:hcparty>
            <ns2:cd S="CD-HCPARTY" SV="1.12">Belrai</ns2:cd>
            <ns2:cd S="CD-APPLICATION" SV="1.1">application</ns2:cd>
          </ns2:hcparty>
        </author>
        <date>2018-04-10+02:00</date>
        <time>13:18:29.039+02:00</time>
        <request>
          <id S="ID-KMEHR" SV="1.0">11100110010.12345</id>
          <author>
            <ns2:hcparty>
              <ns2:id S="ID-HCPARTY" SV="1.0">11100110010</ns2:id>
              <ns2:id S="ID-ENCRYPTION-ACTOR" SV="1.0">0206653946</ns2:id>
              <ns2:cd S="CD-HCPARTY" SV="1.1">orghospital</ns2:cd>
              <ns2:cd S="CD-ENCRYPTION-ACTOR" SV="1.0">CBE</ns2:cd>
              <ns2:name>Hospital2</ns2:name>
            </ns2:hcparty>
            <ns2:hcparty>
              <ns2:id S="ID-HCPARTY" SV="1.0">10082555045</ns2:id>
              <ns2:id S="INSS" SV="1.0">71050643439</ns2:id>
              <ns2:cd S="CD-HCPARTY" SV="1.1">persphysician</ns2:cd>
              <ns2:firstname>Toto</ns2:firstname>
              <ns2:familyname>LeHéros</ns2:familyname>
            </ns2:hcparty>
          </author>
          <date>2017-11-08</date>
          <time>13:45:12</time>
        </request>
      </response>
      <acknowledge>
        <iscomplete>true</iscomplete>
      </acknowledge>
      <kmehrmessage>
        <ns2:header>
          <ns2:standard>
            <ns2:cd S="CD-STANDARD" SV="1.19">20161209</ns2:cd>
          </ns2:standard>
          <ns2:id S="ID-KMEHR" SV="1.0">27</ns2:id>
          <ns2:date>2018-04-10+02:00</ns2:date>
          <ns2:time>13:18:29.047+02:00</ns2:time>
          <ns2:sender>
            <ns2:hcparty>
              <ns2:cd S="CD-HCPARTY" SV="1.12">Belrai</ns2:cd>
              <ns2:cd S="CD-APPLICATION" SV="1.1">application</ns2:cd>
            </ns2:hcparty>
          </ns2:sender>
        </ns2:header>
        <ns2:Base64EncryptedData>
          <ns2:cd S="CD-ENCRYPTION-METHOD" SV="1.0">CMS</ns2:cd>
          <ns2:Base64EncryptedValue>.....</ns2:Base64EncryptedValue>
        </ns2:Base64EncryptedData>
      </kmehrmessage>
    </ns5:GetTransactionResponse>
  </soap:Body>
</soap:Envelope>
```

7.5 PutTransaction – Request

```
<?xml version="1.0" encoding="utf-8"?>
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
                  xmlns="http://www.ehealth.fgov.be/kmehrs/services/protocol/v1"
                  xmlns:kc="http://www.ehealth.fgov.be/kmehrs/services/core/v1"
                  xmlns:k="http://www.ehealth.fgov.be/standards/kmehr/schema/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <PutTransactionRequest>
      <kc:request>
        <kc:id SV="1.0" S="ID-KMEHR">100000001.237</kc:id>
        <kc:author>
          <k:hcparty>
            <k:id S="ID-HCPARTY" SV="1.0">71071801</k:id>
            <k:id SV="1.0" S="ID-ENCRYPTION-ACTOR">71071801</k:id>
            <k:cd SV="1.1" S="CD-HCPARTY">orghospital</k:cd>
            <k:cd SV="1.0" S="CD-ENCRYPTION-ACTOR">NIHII-HOSPITAL</k:cd>
            <k:name>Hôpital civil de Test</k:name>
          </k:hcparty>
          <k:hcparty>
            <k:id SV="1.0" S="ID-HCPARTY">100000001</k:id>
            <k:id SV="1.0" S="INSS">1000000001</k:id>
            <k:cd SV="1.1" S="CD-HCPARTY">persphysician</k:cd>
            <k:firstname>Daenerys</k:firstname>
            <k:familyname>Targaryen</k:familyname>
          </k:hcparty>
        </kc:author>
        <kc:date>2009-11-20</kc:date>
        <kc:time>09:09:26</kc:time>
      </kc:request>
      <kc:kmehrmessage>
        <k:header>
          <k:standard>
            <k:cd SV="1.0" S="CD-STANDARD">20090101</k:cd>
          </k:standard>
          <k:id SV="1.0" S="ID-KMEHR">71071801.456</k:id>
          <k:date>2009-01-01</k:date>
          <k:time>12:00:00</k:time>
          <k:sender>
            <k:hcparty>
              <k:id S="ID-HCPARTY" SV="1.0">71071801</k:id>
              <k:cd S="CD-HCPARTY" SV="1.12">orghospital</k:cd>
              <k:name>Hôpital civil de Test</k:name>
            </k:hcparty>
            <k:hcparty>
              <k:id SV="1.0" S="ID-HCPARTY">100000001</k:id>
              <k:id SV="1.0" S="INSS">1000000001</k:id>
              <k:cd SV="1.1" S="CD-HCPARTY">persphysician</k:cd>
              <k:firstname>Daenerys</k:firstname>
              <k:familyname>Targaryen</k:familyname>
            </k:hcparty>
          </k:sender>
          <k:recipient>
            <k:hcparty>
              <k:cd S="CD-HCPARTY" SV="1.3">application</k:cd>
              <k:name>BELRAI</k:name>
            </k:hcparty>
          </k:recipient>
        </k:header>
        <k:Base64EncryptedData>
          <k:cd S="CD-ENCRYPTION-METHOD" SV="1.0">CMS</k:cd>
          <k:Base64EncryptedValue>
```

```
MIAGCSqGSIB3DQEHAqCAMIACAQExDzANBg1ghkgBZQMEAgEFADCBgkqhkiG9w0BBwGggCSABIID6DCABgkqhkiG9w0BBwO
ggDCAAgEAMYIB2zCCAdCAQAwg4wgagxCzAJBgNVBAYTAKJFMRswGQYDVQQKDBJGZWR1cmFsIEEdvdmVybml1bnQxZDZANBgNVBAsMBk
NJVkFSUzEXMBUGA1UECwwOQ00JFPTAyMDY2NTM5NDYxZjAMBGNVBA5MBU1OQU1JMSEWwYDVQQQLDBh1SGVhbHRoLXBsYXRmb3JtIEJ1b
GdpdW0xHzAdBgNVBAMMFkNCRTR0wMjA2NjUzOTQ2LCBDSVZBU1MCEQDPZHJo/Z8+GLh9yCG7qAVIMA0GCSqGSIb3DQEBAQUABIIBAA2r
5fkczj0Ie2Hfaij26iJ16PjFvRgnZEktTlWVRw8xbPp0/NlL3fJRg19rWGM6a415VzF10/61Nlg8v02P3Kk3ZeK1/Sg1TFHB61oIcx
C XDe0lSk9VMeaotKauWu2P1xkQ7g0YNzJw9Qq1Gys1L7y4/JJ+trjBVe8sY7ie5qNXTJHRLWk6GtCMHMNwaNxmAYBS1DJREks3VuQp2Q
2EktwLWYTFvJPEy6zFsrNpNdq1ULuGmUpboDmy9W0cMTs8G2BW57bu6E8xL9HUkR7V6ghsou40+7BCrvH/E3qGs2ztKaRHMBQECEWjX
9b9GVumylVgAmGqM19HTjb0qPI6k8wWgAYJKoZiIhvcNAQcBMB0GCWCGSAF1AwQBAgQQRW/V+7AVZGRfVpaYscUnlqCABIID6Bd33Da1
CeJaXGdTtG0XJoZL8tzyb8jNnR0PNn9heQZz0S4m1zMDkqgKsUmFhTtdEhqNmLgyYpvcH0aJ52e97fqLnIduBmbf0Tdm9anXtmHUbFP
PpBTARTRXbdf4f5sBSjdJwTNfDhdOxqtcthaIEnVuBdfax/sX6d8EnpEeJHqM0114uJHr9kNf+zB21pd2wkV+J8HWK1A9inV2cy0+E
```


7.6 PutTransaction - Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns5:PutTransactionResponse xmlns="http://www.ehealth.fgov.be/kmehrservices/core/v1"
      xmlns:ns2="http://www.ehealth.fgov.be/standards/kmehr/schema/v1"
      xmlns:ns3="http://www.w3.org/2000/09/xmldsig#" xmlns:ns4="http://www.w3.org/2001/04/xmlenc#"
      xmlns:ns5="http://www.ehealth.fgov.be/kmehrservices/protocol/v1">
      <response>
        <id S="ID-KMEHR" SV="1.0">28</id>
        <author>
          <ns2:hcparty>
            <ns2:cd S="CD-HCPARTY" SV="1.12">Belrai</ns2:cd>
            <ns2:cd S="CD-APPLICATION" SV="1.1">application</ns2:cd>
          </ns2:hcparty>
        </author>
        <date>2018-04-10+02:00</date>
        <time>13:22:52.190+02:00</time>
        <request>
          <id S="ID-KMEHR" SV="1.0">71071801.237</id>
          <author>
            <ns2:hcparty>
              <ns2:id S="ID-HCPARTY" SV="1.0">71071801</ns2:id>
              <ns2:id S="ID-ENCRYPTION-ACTOR" SV="1.0">71071801</ns2:id>
              <ns2:cd S="CD-HCPARTY" SV="1.1">orghospital</ns2:cd>
              <ns2:cd S="CD-ENCRYPTION-ACTOR" SV="1.0">NIHII-HOSPITAL</ns2:cd>
              <ns2:name>Hôpital civil de Test</ns2:name>
            </ns2:hcparty>
            <ns2:hcparty>
              <ns2:id S="ID-HCPARTY" SV="1.0">100000001</ns2:id>
              <ns2:id S="INSS" SV="1.0">1000000001</ns2:id>
              <ns2:cd S="CD-HCPARTY" SV="1.1">persphysician</ns2:cd>
              <ns2:firstname>Daenerys</ns2:firstname>
              <ns2:familyname>Targaryen</ns2:familyname>
            </ns2:hcparty>
          </author>
          <date>2009-11-20</date>
          <time>09:09:26</time>
        </request>
      </response>
      <acknowledge>
        <iscomplete>true</iscomplete>
      </acknowledge>
      <transaction>
        <id S="ID-KMEHR" SV="1.0">2</id>
      </transaction>
    </ns5:PutTransactionResponse>
  </soap:Body>
</soap:Envelope>
```