NATIONAL HEALTH INSURANCE SCHEME

Standardized e-claims interface for health providers' Hospital Information Systems (HIS), XML Methodology (ver. 8.6).

THE NATIONAL HEALTH INSURANCE AUTHORITY (NHIA), ACCRA

Document history

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1.0	2012-05-17	Creation	Nearshoring/G. Grabowski
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2.5	2012-11-06	Corrected specification of Claim XML and Feedback XML after tests	G. Grabowski
2.6	2012-12-19	Added element 'MedicineDate'	G. Grabowski
2.7	2013-02-27	Update XML Schema	G. Grabowski
2.8	2013-03-01	Added change log in Appendix X.9	G. Grabowski
2.9	2013-07-25	Added specification of new element 'ReferralNo'	G. Grabowski
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3.1	2013-10-18	Modified description of element: ClaimIdentificationNumber	G. Grabowski
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		specification of Feedback XML	
8.1	2018-01-02	Added ErrorCode: 120, 239	B. Socha, R. Wlazlowski
8.2	2018-01-05	Added Error codes: 240-269	M. Abramczyk
8.3	2018-02-15	Added Error codes: 270-297	B. Socha
8.4	2018-04-10	Error codes related to ICD10 deleted; Infant exception added	B. Socha
8.5	2018-04-25	Error codes added	B. Socha
8.6	2018-08-25	Changed structure of ClaimCheckCode in XML	K. Swat

Contents

ABBREVIATIONS AND GLOSSARY

Below, we are presenting the most common abbreviations and terms used within the project domain.

Name	Definition
Claim XML	Claim XML is an XML generated by HIS Stand Alone application. XML stores information about claims that were generated by one Healthcare Provider.
CPC	Claim Processing Centre- department in the NHIA. CPC is responsible for processing claims delivered by healthcare facilities.
eClaims	System supporting claims processing.
Element	A logical component of a document which begins either with a start-tag and ends with a matching end-tag, or consists only of an empty-element tag. The characters between the start- and end-tags, if any, are the element's *content*, and may contain markup, including other elements, which are called *child elements*. An example of an element is <Greeting>Hello, world.</Greeting>. Another is <line-break/>.
Feedback XML	Feedback XML is an XML generated by eClaims at the end of the vetting process (after Director's verification). Feedback XML should store information about Claims Vetting results.
HL7	Health Level Seven International is a not-for-profit, ANSI-accredited, standards developing organization dedicated to providing a comprehensive framework and related standards for the exchange, integration, sharing, and retrieval of electronic health information that supports clinical practice and management, delivery and evaluation of health services.[1]
Markup and Content	The characters which make up an XML document are divided into *markup* and *content*. Markup and content may be distinguished by the application of simple syntactic rules. All strings which constitute markup either begin with the character "<" and end with a ">", or begin with the character "&" and end with a ";". Strings of characters which are not markup are content.

[1] http://www.hl7.org/about/index.cfm?ref=nav, page viewed on 31.05.2012

Name	Definition
Nearshoring	Nearshoring Partners BV and Nearshoring Solutions Sp z o.o. ICT companies responsible for supplying consultants for current project. .
NHIA	Ghana's National Health Insurance Authority.
STL	Supplier of IT Systmes for NHIA.
Tag	A markup construct that begins with "<" and ends with ">". Tags come in three flavours: *start-tags*, for example <section>, *end-tags*, for example </section>, and *empty-element tags*, for example <line-break/>.
Vektis	Dutch organization specializing in standardization in health industry.
XML Declaration	XML documents may begin by providing some information about themselves, as in the following example: <?xml version="1.0" encoding="UTF-8" ?> XML supports the direct use of almost any Unicode character in element names, attributes, comments, character data, and processing instructions (other than the ones that have special symbolic meaning in XML itself, such as the open corner bracket, "<")

I. Introduction

One of the main goals of the eClaims is to reduce paper claims and provide electronic claims exchange between Claims Processing Centre (CPC) and health providers. To achieve this, the standardized e-claims interface must be defined, precisely described and implemented.

Previously, data was saved in the eClaims in HL7 format. However, due to complexity of the format and high impact on local software development companies, the new proposed format was changed to XML. The XML format is more flexible so it is easier to adjust when changes in the eClaims are introduced. Besides, HL7 format was created in the 1980's. Although it is a complex standard that has been adjusted through years, it does not solve all the problems. As Barry Smith (Director of the Institute for Formal Ontology and Medical Information Science (IFOMIS) in Leipzig) wrote: *Some problems are best solved by small simple models*[2]. Other reason for the change is the high cost of HL7 standard implementation.

Therefore, Nearshoring decided to propose new standard of saving data into the XML format. Standard was created on the basis of HL7 and Vektis recommendations and meets all the requirements of the eClaims.

To make claims data exchange automated in both directions (from HCP to CPC and back), specification of response message should also be defined. When claims are not accepted, the automated system of the provider will process a response message with adjustment's and explanations.

Document creation will be continued in next iterations; therefore it is set as 'work in progress'.

II. Document summary

This document is a work in progress and will be extended and adjusted during next iterations.
The document describes the specification of the message exchange interface between Healthcare Providers Systems and eClaims.

Chapter III includes basic information about the XML file format. It describes the XML structure and key rules on high level.

[2] The Rise and Fall of HL7, Barry Smith: http://hl7-watch.blogspot.com/2011/03/rise-and-fall-of-hl7.html, page viewed on 25.05.2012

Chapter IV contains the detailed XML specification. The following attributes were used to specify every XML field:

- Mandatory/Optional/Conditional/Empty
- Data type
- Pattern (formats)
- Tables with possible values
- Maximal length

Chapter IV also includes a remark that no dummy codes will be used in the standard.

Chapter VII describes the XML control mechanism. This mechanism will be implemented to prevent errors, fraud and abuse.

Chapter IX contains a list of resources used to create this document.

Chapter X presents Appendices related to this document:

- Specification of Claim XML elements
- Specification of Feedback XML elements
- One claim with one treatments and one medicine – XML file example
- 2 examples of Feedback XMLs
- Schema XSD

III. Basic information about the XML file.

The goal of this chapter is to present basic information about the XML file. Chapter III.1 describes key rules concerning the XML file. Chapter III.2 describes the XML file structure.

Appendix 0 presents an example of the XML file.

III.1. Key rules

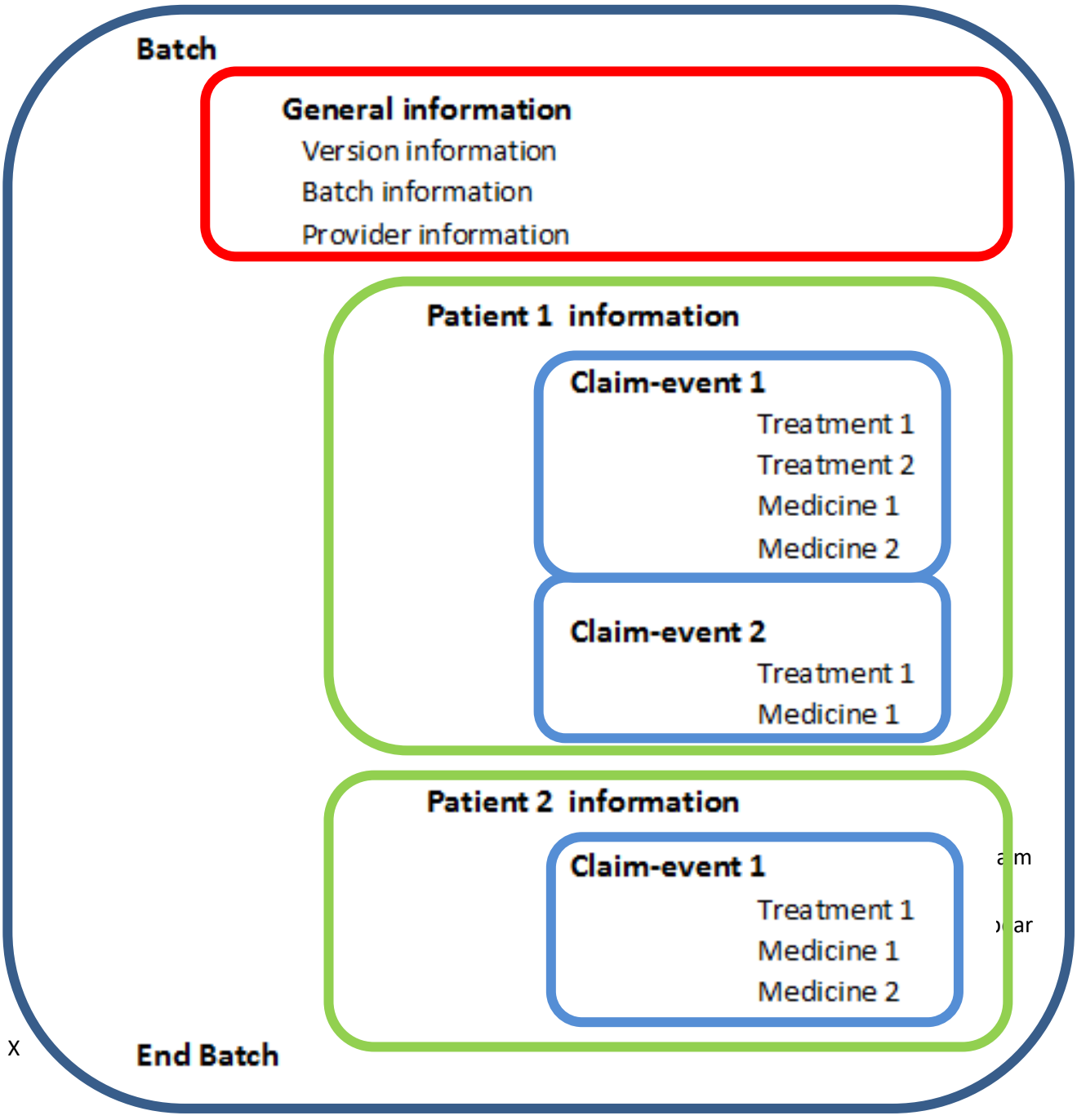
- XML document contains only properly-encoded legal Unicode characters.
- None of the special syntax characters such as "<" and "&" appear, except when performing their markup-delineation roles.
- Begin, end, and empty-element tags, which delimit the elements, are correctly nested, with none missing and none overlapping.
- Element tags are case-sensitive; beginning and end tags must match exactly.
- There is a single "root" element which contains all the other elements.

III.2. XML file structure

File starts with standard XML declaration:

```
<?xml version="1.0" encoding="UTF-8" ?>
```

The "root" element is called **batch.** It contains following elements elements:



X

IV. Claim XML file specification

The goal of this chapter is to present the specification of each XML elements. The specification table is presented in Appendix X.1.

One row of the table presents the attributes of one XML element. Column 'Parent Element' indicates which part of the Claim XML file belongs to the particular Element. Column 'Element name' presents the element name that appears in the tag. Column 'Important remarks' stores other remarks concerning the XML specification. Other columns' description is included in the subchapters presented below.

Appendix X.3 presents the XML Schema.

IV.1. Dummy codes

According to Vektis standards, it is recommended to define dummy codes for particular fields in the data file. Dummy code is a code imitating the proper code.
For example, when Healthcare Provider does not know how to fill in a particular field in the Claim form, he fills the field with the dummy code. The reason for using the dummy code is to enable the user to go through the claim registration process without the need to know the particular code.

Nearshoring consulted Stephen Bewong from Claims Processing Centre on assignment of dummy codes to particular XML fields. Every XML field was analysed. Eventually, it has been concluded that no XML field requires a dummy code.

IV.2. Mandatory/Optional/Conditional/Empty

According to Vektis recommendations, the specification should include division of XML file elements into mandatory, optional, conditional or empty.

The following letters will be used for the description of these elements[3]:

M- element is mandatory. Element needs to be filled in.
O- optional, element does not need to be filled in.
C- conditional element needs to be filled under particular circumstances.
E- field should remain empty.
This feature is described in the Mandatory/Optional/Conditional/Empty column in Appendix X.1.

[3] DECLARATIE PARAMEDISCHE HULP: http://ei.vektis.nl/help/PM304v3.2/PM304V3.2_BERU2.PDF, page viewed on 25.05.2012

IV.3. Data types

IV.3.1. Alphanumeric/numeric data types

Document describes if the value entered in the particular XML element should be numeric or alphanumeric. As recommended by Vektis[4], the data type will be described with the following letters:

AN- Alphanumeric

N- Numeric

The alphanumeric/numeric data types are presented in column 'Data type recommended by Vektis' in Appendix X.1.

IV.3.2. Built-in data type standard recommended by W3C

The document describes data types according to World Wide Web Consortium (W3C) standards. According to the document presented on the World Wide Web Consortium (W3C) webpage[5], data types were assigned to every XML element. Built-in data types are presented in Appendix X.1, column 'Data type recommended by W3C'.

IV.4. Pattern (format's)

As recommended by Vektis[6], the document describes the pattern (format) for values that can be entered to particular XML elements. Column 'Pattern' in Appendix X.1 presents the following patterns:

- NNNN.NN – where N means numeric value
- DD/MM/YYYY - where 'yyyy' means year (i.e. 2010), 'mm' means month number (i.e. 04), 'dd' means day number (i.e. 30)

When table cell is filled with value 'N/A' (not applicable), it means that it is not possible to assign a pattern to the particular XML element.

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[4] DECLARATIE PARAMEDISCHE HULP: http://ei.vektis.nl/help/PM304v3.2/PM304V3.2_BERU2.PDF, page viewed on 25.05.2012

[5] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#built-in-datatypes , page viewed on 28.05.2012

[6] DECLARATIE PARAMEDISCHE HULP: http://ei.vektis.nl/help/PM304v3.2/PM304V3.2_BERU2.PDF, page viewed on 25.05.2012

IV.5. Tables with possible values

Some XML elements should be filled with appropriate codes. These codes should be verified with lists provided by NHIA or other authorised entities. The appropriate version of codes should also be used in the XML. Codes lists will be updated with the use of a mechanism described in the chapter: 'Provide mechanism to keep the system updated with latest version of NHIA Reference Data and Business Rules (code 4.0)'. The procedure for code lists updates should be define and communicate to all Stakeholders.. The tables containing codes' versions should be sent in the XML format.

Column 'Possible values' in Appendix X.1 presents a list of possible values that can be filled in the particular XML element. If it is not possible to assign a list of possible values to the particular element, N/A (not applicable) appears in the 'possible values' column.

IV.6. Maximal length of element content

According to Vektis[7] standards, it is recommended to establish the maximal length of value in each XML element. The column 'Max length of the value' in Appendix X.1 presents the maximal length of values in a particular XML element.

V. Versioning of Master Tables

It is very important to work on the correct version of Master Tables. Therefore the versioning of the Master Table should be established and introduced. The correct versioning will have direct positive impact on number of errors and will decrease communication costs connected with misunderstandings and investigation of misunderstandings.

A particular version of Master Tables is valid for a particular period.

An example scenario is presented below:
There two versions of GDRG Master tables:

- 1st one with validity period (01.01.2012;31.12.2012>

[7] DECLARATIE PARAMEDISCHE HULP: http://ei.vektis.nl/help/PM304v3.2/PM304V3.2_BERU2.PDF, page viewed on 25.05.2012

- 2nd one with validity period from 01.01.2013

Healthcare provider creates a claim on 02.01.2013. Date included in field 1st visit date/ Admission date is 23.12.2012. Healthcare provider must use 1st GDRG Master Tables with validity period 01.01.2012-31.12.2012.

Analogical rule should be applied to other Master Tables (ICD-10 codes, GDRG price lists, Medicines codes, Members)

The information about the Master Tables version should be stored in the correct Parent Element: for versioning.

The current code versions should be available for providers. Information that new versions are available should be communicated to all Stakeholders.

VI. Versioning of XML format

There is a possibility that the format of the XML will be modified. That is why there is a need to create the XML format versioning. When the updated format is planned to be released, the Healthcare Provider and software venders should be informed about it. Healthcare Provider's responsibility will be to update the application so it generates proper XML message.

XML format version has start date and end date of validity. These dates specify, during what period of time the particular version of XML is accepted by eClaims.

Stakeholders should be informed about the XML format change several months before its release. Stakeholders need appropriate amount of time to adjust their system to the new format. This amount of time should depend on the number and complexity of changes made in the XML format. Therefore, it should be decided individually for each release.

Before each release, Stakeholders should receive the XML schema and document describing the XML specification.

VII. Feedback XML

According to Vektis standard[8], feedback information in the medical data exchange process should be defined. Feedback information can be send on paper, but to allow automatic processing within the Healthcare Provider System it is advisable to deliver response also in the XML format. The specification of the XML format is presented in Appendix X.4.

The feedback XML will consist of all the fields that are sent in the XML message (Specification of these fields is presented in the Appendix X.1.) and the fields indicating the Claim Vetting result (Specification of these fields is presented in the Appendix X.4).

VII.1. Levels of verification

eClaims application will have three logical levels of XML message verification. eClaims will generate XML with a feedback. Feedback XML will present the list of potential errors that were identified during parsing and vetting process. The 3 levels of verification are described in the following subchapters.

VII.1.1. 1st verification level

The goal of the 1st verification level is to verify if received file has been created according to the specification and if the file contains correct structure (format). If the file format is not recognized or structure is corrupted the whole file will be rejected. File is verified on the batch level. If there is at least one error identified, whole file is rejected. As it is possible, that parsing mechanism does not recognize file format, in some cases no Feedback XML will be created. If format is recognized but corrupted, empty Feedback XML with first level errors is generated. In all other cases normal Feedback XML is generated.
Examples:

1. No Feedback XML
    a. wrong file format (picture or MS Excel)
    b. completely wrong file structure (XML file but with wrong format)
2. Empty Feedback XML
    a. Information about provider are known, but the rest of the file is corrupted (example: no batch information)
3. Standard Feedback XML

[8] Vektis Feedback document standard http://ei.vektis.nl/help/PM305v3.2/PM305V3.2_BERU2.PDF , page viewed on 10.08.2012

a. File is readable but due to lack of information cannot be process (all claims have no amount or all claims have no mandatory codes)

List of errors that may be identified on 1st verification level is presented in Appendix X.4 in rows where value in column 'Verification level' equals '1'.

VII.1.2. 2nd verification level

Goal of 2nd validation level is to verify the technical aspect of each claim. It should verify if all claim information is correct. This includes checking if values within a claim are considered allowed values, verification of codes formats, checking total counts and amounts, etc. In case 2nd level validation would fail in any point, claim is automatically marked as rejected. Feedback XML is generated after 2nd verification level only when all Claims included in the Claim XML are marked as rejected. If at least one claim is not rejected on 2nd verification level, Feedback XML cannot be generated and batch will proceed to 3rd validation level.

List of errors that may be identified on 2nd verification level is presented in Appendix X.4 in rows where value in column 'Verification level' equals '2'.

Example of feedback XML generated after 2nd verification level is presented in Appendix X.6.

VII.1.3. 3rd verification level

The 3rd level refers to the verification performed by the Vetting Officer role in the eClaims application. Unlike in the 1st and 2nd verification levels, this verification is not performed by the eClaims but Vetting Officer.

List of errors that may be identified on 3rd verification level is presented in Appendix X.4 in rows where value in column 'Verification level' equals '3'.

Example of feedback XML generated after 3rd verification level is presented in Appendix X.7.

VIII. Business process description

Goal of this chapter is to present the business process for Standardized eClaims. Chapter describes all steps that should be performed in Claim XML processing. Appendix X.8 presents the map of the business process. Each process step included in the map is described below.

1) **Healthcare Provider fills claim form in Stand Alone application.**

Healthcare provider employee fills claims in Stand Alone application (HIS class system). Healthcare Provider's Stand Alone application must be verified firstly in Accreditation and Production Test processes. Description of both processes is included in the document: *Deliverable 5.0.2 Review and optimize eClaims CPC Business process and workflow digital claims.* Stand Alone application should have a feature of form to add claim's data.

2) Healthcare Provider extracts batch to Claim XML.

Batch is a group of claims from one healthcare provider and with the same service month. After all the claims belonging to the batch are entered to Stand Alone application, Healthcare Provider employee can extract them to XML file (called Claim XML). Stand Alone application should have a functionality to extract claims' data to XML file. Specification of XML is presented in chapters IV, V, VI.

3) Healthcare Provider uploads Claim XML in Smart Client.

Healthcare Provider employee will have a possibility to upload Claim XML in Smart Client. There should be created a Smart Client role (it does not exist at the moment) for Stand Alone application users. Healthcare Provider employee should be able to log in to Smart Client and upload Claim XML.

There should be implemented two modes of uploading Claim XML both in Fulfilment Officer panel and Smart Client :

- **Testing**- in this mode Healthcare Provider can check how many claims will be accepted by Parsing Mechanism. Uploading Claim XML in this mode does not result in transferring batch from Claim XML to eClaims. However eClaims generate the Testing Feedback XML. Due to this mode Healthcare Provider can have a chance to correct the rejected Claims and upload whole batch later in a Final mode.
- **Final**- when Healthcare Provider employee is sure that Claim XML is correct and wants to transfer data from to eClaims, he/she uses the Final mode.

After Claim XML is uploaded to Smart Client, Healthcare Provider employee should have a possibility to test if the Claim XML file is accepted by Parsing Mechanism.

4) Healthcare Provider delivers Claim XML to CPC.

Healthcare Provider will be also able to deliver Claim XML on one of following physical storage devices: USB driver, CD-ROM disc or DVD-ROM disc. This possibility is given in case when Healthcare Provider is not able to upload Claim XML in Smart Client.

5) Fulfilment Officer (CPC) uploads Claim XML to eClaims.

In case when step 4) occurs, Fulfilment Officer uploads received Claim XML to eClaims. Just after upload is finished, eClaims application parses it. Parsing mechanism should be rebuilt according to the Specification of Claim XML (Appendix X.1) and Feedback XML (X.4).

6) Fulfilment Officer downloads Feedback XML.

When CPC finishes processing of batch sent in Claim XML, Feedback XML is generated. Feedback XML can be delivered to Healthcare Provider on physical storage device (USB Stick, CD-ROM or DVD-ROM). That is why Fulfilment Officer firstly downloads it from eClaims.

7) Attach Feedback XML in Smart Client

There should be implemented a possibility to download Feedback XML from Smart Client. When particular Healthcare Provider has an access to Smart Client, Feedback XML should be automatically attached to his Smart Client account. There should be sent an email notification to Healthcare Provider, that a new feedback XML is generated.

There are three types of Feedback XML:

- **XML with 1st verification level**- such XML stores report with negative result from first verification level. Such Feedback XML is generated, after eClaims parsing mechanism makes a negative verification on 1st level. Decision presented in object D3 in process map (Appendix X.8) refers to 1st verification level. See chapter VII.1.1 for details of this level.
- **XML with 1st and 2nd verification levels**- such XML stores report from 1st and 2nd verification levels. In this XML result of 1st verification level is always 'successful'. Such Feedback XML is generated, after eClaims parsing mechanism makes verification on 2nd level. Verification of all claims stored in the Claim XML must be negative so this type of Feedback XML can be generated. Decision presented in Object D4 in process map (Appendix X.8) refers to this level. See chapter VII.1.2 for details of this level.
- **XML with 1st, 2nd and 3rd verification levels**- such XML stores report from 1st , 2nd and 3rd verification levels. In this XML result of 1st verification level is always 'successful' and at least one Claim must be accepted on 2nd verification level. Such Feedback XML is generated after eClaims parsing mechanism makes verification on 3rd level. Decision presented in Object D6 in process map (Appendix X.8) refers to 3rd verification level. See chapter VII.1.3 for details of this level.

8) Fulfilment Officer (and Financial Officer) delivers Feedback XML to Healthcare Provider.

After Feedback XML is downloaded to the physical storage device, it is delivered to Healthcare Provider. Nearshoring recommends assigning the delivery task to Financial Officer or Fulfillment Officer or to both of them. Details of delivery depend on the arrangements made between CPC and Healthcare Provider. Nearshoring recommends following delivery flows:

- Healthcare Provider employee comes to CPC to collect the physical storage device with Feedback XML.
- CPC sends the physical storage device with Feedback XML to NHIA Scheme Office where Healthcare Provider belongs. Then Healthcare Provider employee comes to NHIA Scheme to collect the physical storage device.

9) Healthcare Provider receives Feedback XML.

This step can be performed in two ways:

- **Online Flow: Following steps should be performed in online flow:**

1. Healthcare Provider employee receives an email with notification that new Feedback XML is available on Smart Client.
2. Healthcare Provider employee downloads the Feedback XML from Smart Client.

- **Offline Flow:** there are two possibilities:
  - Healthcare Provider employee receives a physical storage device with Feedback XML from Fulfilment Officer in CPC in Accra.
  - Healthcare Provider employee collects the physical storage device in his local Scheme office.

10) Healthcare Provider uploads Feedback XML to Stand Alone application.

After Healthcare Provider employee uploads the feedback XML to Stand Alone application, he/she should see the details of each Claim Vetting. HIS developers and Healthcare Provider decide how data from Feedback XML should be presented in Stand Alone application.

11) Claims Vetting process

Claims are vetted in the same way as in the paper claims processing. Paper claims processing is described in document: *Deliverable 5.0.2 Review and optimize eClaims CPC Business process and workflow standard claims.* Therefore vetting process steps performed by following eClaims roles will look exactly the same as they look in the paper claims processing:

- Vetting Officer
- Clinician
- Vetting Supervisor
- Accountant

12) Director verifies batch vetting.

Director verifies batch Vetting and decides if it is correct or not. If batch vetting is not correct, batch is assigned back to Vetting Process. Details of such assignment are described in the document *Deliverable 5.0.2 Review and optimize eClaims CPC Business process and workflow standard claims.* If batch vetting is correct, batch is assigned to Financial role and feedback XML is generated.

13) Financial sends money transfer

After Director accepts the batch, Financial sends a money transfer to Healthcare Provider.

IX. Bibliography

1) XML Schema Part 2: Datatypes Second Edition, W3C Recommendation 28 October 2004, http://www.w3.org/TR/xmlschema-2
2) DECLARATIE PARAMEDISCHE HULP, PM304, Versie EI-standaard: 3.2, 01-05-2007, http://ei.vektis.nl/help/PM304v3.2/PM304V3.2_BERU2.PDF
3) HL7 Watch Blog by Barry Smith, http://hl7-watch.blogspot.com/2011/03/rise-and-fall-of-hl7.html
4) RETOURINFORMATIE DECLARATIE PARAMEDISCHE HULP, PM305, Versie EI-standaard: 3.2, 01-05-2007.

X. Appendixes

X.1. Specification of Claim XML elements

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
GeneralInformation> VersionInformation	XMLFormatVersion	N	string	N	M	5	Element should store the version which validity period applies to date presented in element BatchGenerationDate.	N/A

[9] Data type recommended by Vektis in: DECLARATIE PARAMEDISCHE HULP: http://ei.vektis.nl/help/PM304v3.2/PM304V3.2_BERU2.PDF, page viewed on 25.05.2012

[10] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#built-in-datatypes , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
GeneralInformation> VersionInformation	MedicineVersion	N	string	N	O	5	Element should store the 'Medicine list' version number which validity period applies to the date stored in element 'AdmissionDate'	Details concerning the versioning will be presented in the chapter: 4.0 **Provide mechanism to keep the system updated with the latest version of NHIA Reference Data and Business Rules**
GeneralInformation> VersionInformation	GDRGVersion	N	string	N	O	5	Element should store the 'GDRG codes' list version number which validity period applies to the date stored in element 'AdmissionDate'	
GeneralInformation> VersionInformation	TariffVersion	N	string	N	O	5	Element should store the 'GDRG Tariff codes' list version number which validity period applies to the date stored in element 'AdmissionDate'	N/A

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
GeneralInformation> VersionInformation	ICDVersion	N	string	N	O	5	Element should store the 'ICD codes' list version number which validity period applies to date stored in element 'AdmissionDate'	N/A
GeneralInformation> VersionInformation	OpenHDDVersion	N	string	N	O	5	Element should store the 'Open HDD table' version number which validity period applies to the month and year presented in the element 'ServiceMonth' and 'ServiceYear'	N/A
GeneralInformation> BatchInformation	BatchNumber	AN	string[11]	N/A	M	30	N/A	BatchNumber from provider

[11] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
GeneralInformation> BatchInformation	BatchAmount	N	decimal	NNNN.NN	M	N/A	N/A	N/A
GeneralInformation> BatchInformation	BatchCurrency	AN	string	N/A	M	5	GHC	Currency code
GeneralInformation> BatchInformation	ClaimsCount	N	int	N	M	5	N/A	N/A
GeneralInformation> BatchInformation	CreationDate	N	string	DD/MM/YYYY	M	10	N/A	Date when the Claim XML is generated.
GeneralInformation> BatchInformation	ServiceYear	N	string	YYYY	M	4	N/A	Element stores information about the year of admission date that appears in most of claims in the particular batch. Admission date is stored in element: AdmissionDate.
GeneralInformation> BatchInformation	ServiceMonth	N	string	MM	M	2	N/A	Element stores information about the month of admission date that appears in most of claims in the particular batch. Admission date is stored in element: AdmissionDate.

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
GeneralInformation> BatchInformation	IDPayer	N	INT	N	O	30	N/A	Element stores ID of institution responsible for batch payment.
GeneralInformation > ProviderInformation	ProviderAccreditationNumber	AN	string[12]	N/A	M	30	List of Health Care Providers accepted by proper authority.	Only Accredited providers will be accepted by CPC
GeneralInformation > ProviderInformation	eClaimAuthorizationNumber	N	INT	N	M	30	List of eClaims Authorizations. List will not be available for Healthcare Providers. eClaim Authorization Number will be delivered to Healthcare Provider in document proving the eClaim delivery Authorization.	N/A

[12] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData	Surname	AN	string[13]	N/A	M	25	List of allowed signs: -spaces, -letters, -dots	N/A
Patients> PatientData	OtherName	AN	string[14]	N/A	M	25	List of allowed signs: -spaces, -letters, -dots	N/A
Patients> PatientData	DateOfBirth	N	string[15]	DD/MM/YYYY	M	10	Difference between value in element AdmissionDate and DateOfBirth must be in range (0:120).	N/A

[13] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

[14] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

[15] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData>	Infant	AN	string[16]	N/A	O	3	Possible values: **YES** **NO**	Value in this element should be set to 'YES', if patient is a child in age below three months and it does not have the member number nor insurance card yet. In such case Claim should include information about card serial number and member number of child's mother. Duplicates validation is ignored when infant value is 'YES'.

[16] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData	MemberNumber	AN	string[17]	N/A	C- Mandatory if element Patients> PatientData> TemporaryCardNumber is empty. In other cases field is optional.	20	List of members (Members Table) accepted by NHIA and delivered by STL.	Element should store value with minimal length: 8
Patients> PatientData	TemporaryCardNumber	AN	string[18]	N/A	C- Mandatory if element Patients> PatientData> MemberNumber is empty. In other cases field is optional.	25	N/A	N/A
Patients> PatientData	HospitalRecordNumber	AN	string[19]	N/A	O	30	N/A	N/A

[17] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012
[18] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012
[19] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData	CardSerialNumber	AN	string[20]	N/A	O	13	List of members (Members Table) accepted by NHIA and delivered by STL.	Card serial number must have length: 13.
Patients> PatientData	Gender	AN	string[21]	N/A	M	1	Possible values: **F** *(female)* **M** *(male)*	N/A
Patients> PatientData> Claims > Claim	ClaimIdentificationNumber	AN	string[22]	N/A	M	50	N/A	Element should store claim number that is unique within the Healthcare Provider.

[20] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012
[21] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012
[22] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData> Claims > Claim	ClaimCheckCode	AN	string[23]	N/A	O	5 / 13	N/A	Length of values in the element is fixed: 13 or 5 characters. 13 Character Number included in the element will be generated automatically in Claims Check Code (biometrical) process or 5 Character Number will be generated automatically in the non-biometric process
Patients> PatientData> Claims > Claim	ServiceType	AN	string[24]	N/A	M	3	Possible values: **OUT** *(outpatient)* **INP** *(inpatient)* **DIA** *(diagnostic)* **CAP** *(capitation)*	N/A

[23] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012
[24] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData> Claims > Claim	PharmacyIncluded	AN	string[25]	N/A	M	5 / 3	Possible values: **YES** **NO**	N/A
Patients> PatientData> Claims > Claim	AllInclusive	AN	string[26]	N/A	M	3	Possible values: **YES** **NO**	N/A
Patients> PatientData> Claims > Claim	OutcomeType	AN	string[27]	N/A	M	3	Possible values: **ABS** *(Absconded)* **DAA** *(Discharged Against Medical Advice)* **DIE** *(Died)* **DIS** *(Discharged)* **TFR** *(Transferred out)*	N/A

[25] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012
[26] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012
[27] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData> Claims > Claim	DurationLength	N	INT[28]	N/A	C For ServiceType=OUT or CAP or DIA, element should not appear. For ServiceType=INP element is mandatory.	4	N/A	24 hour's = 1 day
Patients> PatientData> Claims > Claim	AdmissionType	AN	string[29]	N/A	M	3	Possible values: **CRO** *(Chronic Follow-up)* **EME** *(Emergency)* **ACU** (Acute Episode)	N/A
Patients> PatientData> Claims > Claim	SpecialityCode	AN	string[30]	N/A	M	25	List of specialty codes accepted by NHIA.	N/A

[28] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#int , page viewed on 28.05.2012
[29] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012
[30] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData> Claims > Claim	AdmissionDate	N	string	DD/MM/YYYY	M	10	N/A	N/A
Patients> PatientData> Claims > Claim	DischargeDate	N	string	DD/MM/YYYY	C For ServiceType=OUT or CAP or DIA, element should not appear. For ServiceType=INP element is mandatory.	10	N/A	By death – discharge = death date.
Patients> PatientData> Claims > Claim	OutPatientTariffAmount	N	decimal[31]	NNNN.NN	O	15	N/A	Maximal value that can be entered in this element is: 922337203685477

[31] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#decimal , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData> Claims > Claim	InPatientTariffAmount	N	decimal[32]	NNNN.NN	O	15	N/A	Maximal value that can be entered in this element is: 922337203685477
Patients> PatientData> Claims > Claim	InPatientCode	AN	string	N/A	O	100	N/A	Field should store the primary (billable) GDRG Codes. If element 'OutPatientCode' has a value, element 'InPatientCode' should be empty.
Patients> PatientData> Claims > Claim	OutPatientCode	AN	string	N/A	O	100	N/A	Field should store the primary (billable) GDRG Codes. If element 'InPatientCode' has a value, element 'OutPatientCode' should be empty.

[32] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#decimal , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData> Claims > Claim	InvestigationCode	AN	string	N/A	O	100	N/A	Field should store the primary (billable) GDRG Codes.
Patients> PatientData> Claims > Claim	TotalCost	N	decimal[33]	NNNN.NN	M	15	N/A	Maximal value that can be entered in this element is: 922337203685477
Patients> PatientData> Claims > Claim	TreatmentsCount	N	INT	N	M	5	N/A	Element stores number of treatments included in Claim.
Patients> PatientData> Claims > Claim	MedicinesCount	N	INT	N	M	5	N/A	Element stores number of medicines included in Claim.
Patients> PatientData> Claims > Claim	ReferralNo	AN	string	N/A	O	25	N/A	Element stores number of referral assigned to the claim.

[33] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#decimal , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData> Claims > Claim> Treatments >	Treatment	N/A	N/A	N/A	C- If value in element: ServiceType is 'OUT', 'INP', or 'CAP', at least one treatment node with '**Diagnosis'** in element Type should appear.	N/A	N/A	There may be more than one Treatment node within the Treatments node.

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData> Claims > Claim> Treatments > Treatment	Date	N	string	DD/MM/YYYY	C- Mandatory when Treatment Type= PROCEDURE or INVESTIGATION. When Treatment Type= DIAGNOSIS, element should be left empty.	10	N/A	N/A
Patients> PatientData> Claims > Claim> Treatments > Treatment	Type	AN	string[34]	N/A	M	13	Possible values: **Diagnosis** **Procedure** **Investigation**	N/A

[34] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData> Claims > Claim> Treatments > Treatment	TreatmentCode	AN	string[35]	N/A	M	10	Values in this element should be checked with the GDRG_codes Master Table. Mater Table version's validity period should be consistent with date in element 'AdmissionDate'..	N/A

[35] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData> Claims > Claim> Treatments > Treatment	ICDCode	AN	string[36]	N/A	C- For Treatment Type= DIAGNOSIS element is mandatory For Treatment Types = PROCEDURE or INVESTIGATION element should be empty.	10	When Treatment Type=DIAGNOSIS, values in element should be consistent with the list of ICD-10 codes presented in ICD-10 Master Table. Mater Table version's validity period should be consistent with date in element 'AdmissionDate'.	In one Treatment node ICDCode must be related to TreatmentCode according to appropriate version of ICD-10 Master Table.

[36] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData> Claims > Claim> Treatments > Treatment	Tariff	N	decimal[37]	NNNN.NN	C- For Treatment Type = DIAGNOSIS element is Conditional (must be filled in if there is no Procedure or Investigation.) For Treatment Types = PROCEDURE or INVESTIGATION element should be mandatory. For ServiceType= CAP, element should not appear.	15	N/A	Maximal value that can be entered in this element is: 922337203685477

[37] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#decimal , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData> Claims > Claim> Medicines	Medicine	N/A	N/A	N/A	N/A	N/A	N/A	There may be more than one Medicine node within the Medicines node.

Patients> PatientData> Claims > Claim> Medicines > Medicine	MedicineCode	AN	string[38]	N/A	M	10	Value in element should be checked with the list of medicine codes presented in the Medicine Master Table. Mater Table version's validity period should be consistent with date in element 'AdmissionDate'. Medicine level of particular MedicineCode must be equal or lower than Level of prescribing assigned to Healthcare Provider.	When there is medicine, it must be filled in. If there is no medicine given parent element Medicine should not be included in the XML file.

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData> Claims > Claim> Medicines > Medicine	Quantity	N	decimal	N/A	M	18	N/A	N/A
Patients> PatientData> Claims > Claim> Medicines > Medicine	UnitPrice	N	decimal[39]	NNNN.NN	M	15	N/A	Maximal value that can be entered in this element is: 922337203685477
Patients> PatientData> Claims > Claim> Medicines > Medicine	MedicineTotal	N	decimal[40]	NNNN.NN	M	15	N/A	Element should be equal to: Quantity * UnitPrice. If it is not equal it will be flagged. Maximal value that can be entered in this element is: 922337203685477

[38] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#string , page viewed on 28.05.2012

[39] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#decimal , page viewed on 28.05.2012

[40] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#decimal , page viewed on 28.05.2012

Parent element	Element name	Data type recommended by Vektis[9]	Data type recommended by W3C[10]	Pattern	Mandatory/ Optional/ Conditional	Max length of the value	Possible values	Important remarks
Patients> PatientData> Claims > Claim> Medicines > Medicine	MedicineDate	N	string	DD/MM/YYYY	M	10	N/A	N/A

X.2. Claim XML file example.

```
<?xml version="1.0" encoding="utf-8" ?>
<Batch>
	<GeneralInformation>
		<VersionInformation>
			<XMLFormatVersion>1</XMLFormatVersion>
			<MedicineVersion>1</MedicineVersion>
			<GDRGVersion>1</GDRGVersion>
			<TariffVersion>1</TariffVersion>
			<ICDVersion>1</ICDVersion>
			<OpenHDDVersion>1</OpenHDDVersion>
		</VersionInformation>
		<BatchInformation>
			<BatchNumber>1</BatchNumber>
			<BatchAmount>113.25</BatchAmount >
			<BatchCurrency>GHC</BatchCurrency >
			<ClaimsCount>1</ClaimsCount>
			<CreationDate>30/08/2012</CreationDate>
			<ServiceYear>2012</ServiceYear>
			<ServiceMonth>5</ServiceMonth>
			<IDPayer></IDPayer>
		</BatchInformation>
		<ProviderInformation>
			<ProviderAccreditationNumber>4563</ProviderAccreditationNumber>
			<eClaimAuthorizationNumber>12345567890</eClaimAuthorizationNumber>
		</ProviderInformation>
	</GeneralInformation>
	<Patients>
		<PatientData>
			<Surname>MWINYELE</Surname>
			<OtherName>DOMOKYIRE</OtherName>
			<DateOfBirth>16/05/1987</DateOfBirth>
			<Infant>No</Infant>
			<MemberNumber>59340265</MemberNumber>
			<TemporaryCardNumber></TemporaryCardNumber>
			<HospitalRecordNumber>876876</HospitalRecordNumber>
			<CardSerialNumber>UWJPL120A0093</CardSerialNumber>
			<Gender>M</Gender>
			<Claims>
				<Claim>
					<ClaimIdentificationNumber>12345</ClaimIdentificationNumber>
					<ClaimCheckCode>4654351214657</ClaimCheckCode>
						Or
					<ClaimCheckCode>14587</ClaimCheckCode>
					<ServiceType>INP</ServiceType>
					<PharmacyIncluded>YES</PharmacyIncluded>
					<AllInclusive>YES</AllInclusive>
					<OutcomeType>DIS</OutcomeType>
```

```
                                        <DurationLength>2</DurationLength>
                                        <AdmissionType>EME</AdmissionType>
                                        <SpecialityCode>ORTH</SpecialityCode>
                                        <AdmissionDate>14/05/2012</AdmissionDate>
                                        <DischargeDate>16/05/2012</DischargeDate>
                                        <OutPatientTariffAmount>0</OutPatientTariffAmount>
                                        <OutPatientCode>ORTH06C</OutPatientCode>
                                        <TotalCost>113.25</TotalCost>
                                        <TreatmentsCount>1</TreatmentsCount>
                                        <MedicinesCount>1</MedicinesCount>
                                        <ReferralNo>124kk233</ReferralNo>
                                        <Treatments>
                                                <Treatment>
                                                        <Type>Diagnosis</Type>
                                                        <TreatmentCode>ORTH06C</TreatmentCode>
                                                        <ICDCode>A00.9</ICDCode>
                                                        <Tariff >105.75</Tariff>
                                                </Treatment>
                                        </Treatments>
                                        <Medicines>
                                                <Medicine>
                                                        <MedicineCode>5FLUORIN1</MedicineCode>
                                                        <Quantity>15</Quantity>
                                                        <UnitPrice>0.50</UnitPrice>
                                                        <MedicineTotal>7.50</MedicineTotal>
                                                        <MedicineDate>16/05/2012</MedicineDate >
                                                </Medicine>
                                        </Medicines>
                                </Claim>

                        </Claims>
                </PatientData>
        </Patients>
</Batch>
```

X.3. Claim XML Schema

```
<?xml version="1.0"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">

	<xs:simpleType name="DecimalType">
		<xs:restriction base="xs:decimal">
			<xs:fractionDigits value="2"/>
			<xs:minInclusive value="0"/>
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="DateType">
		<xs:restriction base="xs:string">
			<xs:pattern value="[0-3][0-9]/[0-1][0-9]/[1-9][0-9][0-9][0-9]"/>
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="DateYearType">
		<xs:restriction base="xs:string">
			<xs:pattern value="[1-9][0-9][0-9][0-9]"/>
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="DateMonthType">
		<xs:restriction base="xs:string">
			<xs:pattern value="[0-1][0-9]"/>
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="BooleanType">
		<xs:restriction base="xs:string">
			<xs:enumeration value="Yes"/>
			<xs:enumeration value="No"/>
		</xs:restriction>
	</xs:simpleType>

	<xs:simpleType name="GenderEnum">
		<xs:restriction base="xs:string">
			<xs:enumeration value="F"/>
			<xs:enumeration value="M"/>
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="ServiceTypeEnum">
		<xs:restriction base="xs:string">
			<xs:enumeration value="OUT"/>
			<xs:enumeration value="INP"/>
			<xs:enumeration value="DIA"/>
			<xs:enumeration value="CAP"/>
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="OutcomeTypeEnum">
		<xs:restriction base="xs:string">
```

```
                    <xs:enumeration value="ABS"/>
                    <xs:enumeration value="DAA"/>
                    <xs:enumeration value="DIE"/>
                    <xs:enumeration value="DIS"/>
                    <xs:enumeration value="TFR"/>
                </xs:restriction>
        </xs:simpleType>
        <xs:simpleType name="AdmissionTypeEnum">
                <xs:restriction base="xs:string">
                    <xs:enumeration value="CRO"/>
                    <xs:enumeration value="EME"/>
                    <xs:enumeration value="ACU"/>
                </xs:restriction>
        </xs:simpleType>
        <xs:simpleType name="TreatmentTypeEnum">
                <xs:restriction base="xs:string">
                    <xs:enumeration value="Diagnosis"/>
                    <xs:enumeration value="Procedure"/>
                    <xs:enumeration value="Investigation"/>
                </xs:restriction>
        </xs:simpleType>
        <xs:simpleType name="FirstVerificationLevelErrorCodeEnum">
                <xs:restriction base="xs:int">
                    <xs:enumeration value="101"/>
                    <xs:enumeration value="102"/>
                    <xs:enumeration value="103"/>
                    <xs:enumeration value="104"/>
                    <xs:enumeration value="105"/>
                    <xs:enumeration value="106"/>
                    <xs:enumeration value="107"/>
                    <xs:enumeration value="108"/>
                    <xs:enumeration value="109"/>
                    <xs:enumeration value="110"/>
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                    <xs:enumeration value="116"/>
                    <xs:enumeration value="117"/>
                    <xs:enumeration value="118"/>
                    <xs:enumeration value="119"/>
                    <xs:enumeration value="120"/>
                </xs:restriction>
        </xs:simpleType>
        <xs:simpleType name="PatientSecondVerificationLevelErrorCodeEnum">
                <xs:restriction base="xs:int">
                    <xs:enumeration value="200"/>
                    <xs:enumeration value="201"/>
```

```
                        <xs:enumeration value="202"/>
                        <xs:enumeration value="203"/>
                        <xs:enumeration value="204"/>
                        <xs:enumeration value="205"/>
                        <xs:enumeration value="235"/>
                        <xs:enumeration value="236"/>
                </xs:restriction>
        </xs:simpleType>
        <xs:simpleType name="ClaimSecondVerificationLevelErrorCodeEnum">
                <xs:restriction base="xs:int">
                        <xs:enumeration value="206"/>
                        <xs:enumeration value="207"/>
                        <xs:enumeration value="208"/>
                        <xs:enumeration value="209"/>
                        <xs:enumeration value="210"/>
                        <xs:enumeration value="211"/>
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                        <xs:enumeration value="218"/>
                        <xs:enumeration value="219"/>
                        <xs:enumeration value="220"/>
                        <xs:enumeration value="221"/>
                        <xs:enumeration value="234"/>
                </xs:restriction>
        </xs:simpleType>
        <xs:simpleType name="TreatmentSecondVerificationLevelErrorCodeEnum">
                <xs:restriction base="xs:int">
                        <xs:enumeration value="222"/>
                        <xs:enumeration value="223"/>
                        <xs:enumeration value="224"/>
                        <xs:enumeration value="225"/>
                        <xs:enumeration value="226"/>
                </xs:restriction>
        </xs:simpleType>
        <xs:simpleType name="MedicineSecondVerificationLevelErrorCodeEnum">
                <xs:restriction base="xs:int">
                        <xs:enumeration value="227"/>
                        <xs:enumeration value="228"/>
                        <xs:enumeration value="229"/>
                        <xs:enumeration value="230"/>
                        <xs:enumeration value="231"/>
                </xs:restriction>
        </xs:simpleType>

        <xs:complexType name="AmountValidationType">
```

```
                <xs:all>
                        <xs:element name="ReasonCode" type="xs:string" minOccurs="0"/>
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                <xs:sequence>
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                        <xs:element name="ErrorCode " type="FirstVerificationLevelErrorCodeEnum" minOccurs="0"
maxOccurs="unbounded"/>
                </xs:sequence>
        </xs:complexType>
        <xs:complexType name="PatientSecondVerificationLevelType">
                <xs:sequence>
                        <xs:element name="Accepted" type="BooleanType" minOccurs="0"/>
                        <xs:element name="ErrorCode " type="PatientSecondVerificationLevelErrorCodeEnum"
minOccurs="0" maxOccurs="unbounded"/>
                </xs:sequence>
        </xs:complexType>
        <xs:complexType name="ClaimSecondVerificationLevelType">
                <xs:sequence>
                        <xs:element name="Accepted" type="BooleanType" minOccurs="0"/>
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minOccurs="0" maxOccurs="unbounded"/>
                </xs:sequence>
        </xs:complexType>
        <xs:complexType name="TreatmentSecondVerificationLevelType">
                <xs:sequence>
                        <xs:element name="Accepted" type="BooleanType" minOccurs="0"/>
                        <xs:element name="ErrorCode " type="TreatmentSecondVerificationLevelErrorCodeEnum"
minOccurs="0" maxOccurs="unbounded"/>
                </xs:sequence>
        </xs:complexType>
        <xs:complexType name="MedicineSecondVerificationLevelType">
                <xs:sequence>
                        <xs:element name="Accepted" type="BooleanType" minOccurs="0"/>
                        <xs:element name="ErrorCode " type="MedicineSecondVerificationLevelErrorCodeEnum"
minOccurs="0" maxOccurs="unbounded"/>
                </xs:sequence>
        </xs:complexType>
        <xs:complexType name="ClaimThirdVerificationLevelType">
                <xs:sequence>
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                        <xs:element name="ClaimRejectionReason" type="xs:string" minOccurs="0"/>
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minOccurs="0" maxOccurs="unbounded"/>
                        <xs:element name="InPatientTariffAmountValidation" type="AmountValidationType"
minOccurs="0" maxOccurs="unbounded"/>
                        <xs:element name="TotalCostValidation" type="AmountValidationType" minOccurs="0"
```

```
maxOccurs="unbounded"/>
                </xs:sequence>
        </xs:complexType>
        <xs:complexType name="TreatmentThirdVerificationLevelType">
                <xs:sequence>
                        <xs:element name="TariffValidation" type="AmountValidationType" minOccurs="0"
maxOccurs="unbounded"/>
                </xs:sequence>
        </xs:complexType>
        <xs:complexType name="MedicineThirdVerificationLevelType">
                <xs:sequence>
                        <xs:element name="MedicineTotalValidation" type="AmountValidationType" minOccurs="0"
maxOccurs="unbounded"/>
                </xs:sequence>
        </xs:complexType>

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                        <xs:element name="GDRGVersion" type="xs:string" minOccurs="0"/>
                        <xs:element name="TariffVersion" type="xs:string" minOccurs="0"/>
                        <xs:element name="ICDVersion" type="xs:string" minOccurs="0"/>
                        <xs:element name="OpenHDDVersion" type="xs:string" minOccurs="0"/>
                </xs:all>
        </xs:complexType>
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                        <xs:element name="BatchAmount" type="DecimalType"/>
                        <xs:element name="BatchCurrency" type="xs:string"/>
                        <xs:element name="ClaimsCount" type="xs:int"/>
                        <xs:element name="CreationDate" type="DateType"/>
                        <xs:element name="ServiceYear" type="DateYearType"/>
                        <xs:element name="ServiceMonth" type="DateMonthType"/>
                        <xs:element name="IDPayer" type="xs:int" minOccurs="0"/>
                </xs:all>
        </xs:complexType>
        <xs:complexType name="ProviderInformationType">
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                </xs:all>
        </xs:complexType>
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                        <xs:element name="Infant" type="BooleanType" minOccurs="0"/>
```

```
                        <xs:element name="DateOfBirth" type="DateType"/>
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                        <xs:element name="TemporaryCardNumber" type="xs:string" minOccurs="0"/>
                        <xs:element name="HospitalRecordNumber" type="xs:string" minOccurs="0"/>
                        <xs:element name="CardSerialNumber" type="xs:string" minOccurs="0"/>
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                        <xs:element name="SecondVerificationLevel" type="PatientSecondVerificationLevelType"
minOccurs="0"/>
                        <xs:element name="Claims">
                                <xs:complexType>
                                        <xs:sequence>
                                                <xs:element name="Claim" type="ClaimType"
maxOccurs="unbounded"/>
                                        </xs:sequence>
                                </xs:complexType>
                        </xs:element>
                </xs:all>
        </xs:complexType>
        <xs:complexType name="ClaimType">
                <xs:all>
                        <xs:element name="ClaimIdentificationNumber" type="xs:string"/>
                        <xs:element name="ServiceType" type="ServiceTypeEnum"/>
                        <xs:element name="PharmacyIncluded" type="BooleanType"/>
                        <xs:element name="AllInclusive" type="BooleanType"/>
                        <xs:element name="OutcomeType" type="OutcomeTypeEnum"/>
                        <xs:element name="DurationLength" type="xs:int" minOccurs="0"/>
                        <xs:element name="AdmissionType" type="AdmissionTypeEnum"/>
                        <xs:element name="SpecialityCode" type="xs:string"/>
                        <xs:element name="AdmissionDate" type="DateType"/>
                        <xs:element name="DischargeDate" type="DateType" minOccurs="0"/>
                        <xs:element name="InPatientCode" type="xs:string" minOccurs="0"/>
                        <xs:element name="OutpatientCode" type="xs:string" minOccurs="0" />
                        <xs:element name="InvestigationCode" type="xs:string" minOccurs="0" />
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                        <xs:element name="InPatientTariffAmount" type="DecimalType" minOccurs="0"/>
                        <xs:element name="TotalCost" type="DecimalType"/>
                        <xs:element name="ReferralNo" type="xs:string" minOccurs="0"/>
                        <xs:element name="TreatmentsCount" type="xs:int"/>
                        <xs:element name="MedicinesCount" type="xs:int"/>
                        <xs:element name="SecondVerificationLevel" type="ClaimSecondVerificationLevelType"
minOccurs="0"/>
                        <xs:element name="ThirdVerificationLevel" type="ClaimThirdVerificationLevelType"
minOccurs="0"/>
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                                                <xs:element name="Treatment" type="TreatmentType"
maxOccurs="unbounded"/>
                                        </xs:sequence>
```

```
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                                </xs:element>
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maxOccurs="unbounded"/>
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                                <xs:element name="TreatmentCode" type="xs:string"/>
                                <xs:element name="ICDCode" type="xs:string" minOccurs="0"/>
                                <xs:element name="Tariff" type="DecimalType" minOccurs="0"/>
                                <xs:element name="SecondVerificationLevel" type="TreatmentSecondVerificationLevelType"
minOccurs="0"/>
                                <xs:element name="ThirdVerificationLevel" type="TreatmentThirdVerificationLevelType"
minOccurs="0"/>
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                                <xs:element name="Quantity" type="DecimalType"/>
                                <xs:element name="UnitPrice" type="DecimalType"/>
                                <xs:element name="MedicineTotal" type="DecimalType"/>
                                <xs:element name="SecondVerificationLevel" type="MedicineSecondVerificationLevelType"
minOccurs="0"/>
                                <xs:element name="ThirdVerificationLevel" type="MedicineThirdVerificationLevelType"
minOccurs="0"/>
                        </xs:all>
                </xs:complexType>

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                                <xs:all>
                                        <xs:element name="FirstVerificationLevel" type="FirstVerificationLevelType"
minOccurs="0"/>
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                                                <xs:complexType>
                                                        <xs:all>
                                                                <xs:element name="VersionInformation"
type="VersionInformationType"/>
                                                                <xs:element name="BatchInformation"
```

```
type="BatchInformationType"/>
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type="ProviderInformationType"/>
                                                </xs:all>
                                            </xs:complexType>
                                        </xs:element>
                                        <xs:element name="Patients">
                                            <xs:complexType>
                                                <xs:sequence>
                                                    <xs:element name="PatientData" type="PatientDataType"
maxOccurs="unbounded"/>
                                                </xs:sequence>
                                            </xs:complexType>
                                        </xs:element>
                                </xs:all>
                            </xs:complexType>
                    </xs:element>

</xs:schema>
```

Figure 1 Schema XSD

X.4. Specification of feedback XML elements

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
1	FirstVerificationLevel	Accepted	AN	String	N/A	M	3	YES NO	N/A
1	FirstVerificationLevel	ErrorCode	N	INT	n/a	C Mandatory if value in element Accepted (parent element: FirstVerificationLevel) is 'YES'. In other cases it should be left empty.	3	**101-** error concerning the file structure **102-** XML file does not store any claims **103-**wrong version of XML format is used to create the XML **107-** version stored in element OpenHDDVersion is inconsistent with month and year stored in elements ServiceYear and ServiceMonth **108-**value in element BatchNumber is inconsistent with the specification **109-** value presented in element BatchAmount does not equal to sum of the values presented in elements TotalCost	There may be more than one ErrorCode element within the SecondVerificationLevel node.If at least one values is presented in this element, whole Claim

[41] Data type recommended by Vektis in: DECLARATIE PARAMEDISCHE HULP: http://ei.vektis.nl/help/PM304v3.2/PM304V3.2_BERU2.PDF, page viewed on 25.05.2012
[42] Built-in datatypes recommended by World Wide Web Consortium (W3C): http://www.w3.org/TR/xmlschema-2/#built-in-datatypes , page viewed on 28.05.2012

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VAT PL9570902738, Reg 220007262

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
								110- value in element BatchCurrency is inconsistent with the specification **111-** number of Claims in element ClaimsCount does not equal to actual number of claims in the XML **112-** value in element CreationDate is inconsistent with the specification **113-** value in element ServiceYear is inconsistent with the specification **114-** value in element ServiceMonth is inconsistent with the specification **115-** value in element IDPayer is inconsistent with the specification **116-** if element ProviderAccreditationNumber stores number that was not assigned by NHIA **117-** if element eClaimAuthorizationNumber store number that was not assigned by NHIA **118-** if number in element ProviderAccreditationNumber is assigned to different Healthcare Provider than number in element eClaimAuthorizationNumber **120**- if values in element ServiceYear	XML is rejected.

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
								and ServiceMonth are not matching at least 50% of claims services dates	
2	Patients> PatientData> SecondVerificationLevel	Accepted	AN	String	N/A	C Mandatory if value in element Accepted (parent element: FirstVerificationLevel) is 'YES'. In other cases it should be left empty.	3	YES NO	N/A
2	Patients> PatientData> SecondVerificationLevel	ErrorCode	N	INT	n/a	C Mandatory if value in element Accepted (parent element: Patients> PatientData> SecondVerific	3	**200** - value in element Surname is inconsistent with specification **201** - value in element OtherName is inconsistent with specification **202**- Difference between value in element AdmissionDate and element DateOfBirth is not in range (0:120) or date format is inconsistent with the specification **203**- value in element MemberNumber	There may be more than one ErrorCode element within the SecondVerificationLevel node.If there are no errors

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
						ationLevel) is 'NO'. In other cases it should be left empty.		is inconsistent with the specification. **204**- value in element CardSerialNumber is inconsistent with value in element MemberNumber according to Members Master Table **205-** value in element Gender is inconsistent with the specification **232**- Validity period of Members Mater Table version is not consistent with date in element 'AdmissionDate' **235**- value in element TemporaryCardNumber is inconsistent with specification **236** – none of the elements TemporaryCardNumber and MemberNumber are filled with data	identified, no value is presented.
2	Patients> PatientData> Claims> Claim> SecondVerificationLevel	Accepted	AN	String	N/A	C Mandatory if value in element Accepted (parent element: FirstVerificati	3	YES NO	N/A

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
						onLevel) is 'YES'. In other cases it should be left empty.			
2	Patients> PatientData> Claims> Claim> SecondVerificationLevel	ErrorCode	N	INT	n/a	C Mandatory if value in element Accepted (parent element: Patients> PatientData> Claims> Claim> SecondVerificationLevel) is 'NO'. In other cases it should be left empty.	3	**206-** value in element ClaimIdentificationNumber is inconsistent with specification **207-** value in element ServiceType is inconsistent with specification **208-** value in element PharmacyIncluded is inconsistent with specification **209-** value in element AllInclusive is inconsistent with specification **210-** value in element OutcomeType is inconsistent with specification **211-**value in element DurationLength is inconsistent with specification **212**- value in element AdmissionType is inconsistent with specification **213-** value in element SpecialityCode is inconsistent with specification **214-** value in element AdmissionDate is inconsistent with specification	There may be more than one ErrorCode element within the SecondVerificationLevel node.

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
								215- value in element DischargeDate is inconsistent with specification **216-** value in element OutPatientTariffAmount is inconsistent with specification **217**- value in element InPatientTariffAmount is inconsistent with specification **218-** value in element TotalCost is inconsistent with specification **219-** number of treatments included in Parent element Treatments (within one claim) is different than number presented in element TreatmentsCount **220-** number of Medicines included in Parent element Medicines (within one claim) is different than number presented in element MedicinesCount **221-** no Treatment has value Diagnosis in element Type **234-** value in element ReferralNo is inconsistent with specification **237** – value in element ClaimCheckCode is inconsistent with specification	

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
								238 – value in element TotalCost does not equal to sum of values in the following elements: OutPatientTariffAmount, InPatientTariffAmount, Tariff (only from nodes that store treatments with value 'Investigation' in element 'Type'), MedicineTotal. **239** - if a list of claims contains duplicate (same member number, dates of service provision and total cost) **240** - Each claim that specifies diagnostic type of service must specify at least one investigation. **241** - A claim that specifies outpatient or inpatient type of service must not specify an investigation. **242** - Each claim that specifies outpatient type of service must specify exactly one G-DRG code for outpatient service. **243** - Each claim that specifies inpatient type of service must specify exactly one G-DRG code for inpatient service. **244** - Each claim that specifies	

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
								outpatient type of service must specify exactly one amount claimed for outpatient service. **245** - Each claim that specifies outpatient or diagnostic type of service must not specify amount claimed for inpatient service. **246** - Each claim that specifies inpatient type of service must specify exactly one amount claimed for inpatient service. **247** - Each claim that specifies inpatient or diagnostic type of service must not specify amount claimed for outpatient service. **248** - The combination of medicine code and dispensing date specified for each medicine (if any) in each claim must be different from the combination of medicine code and dispensing date specified for any other medicine in that claim. **252** - Each claim must specify exactly one hospital folder number. **253** - Each claim that specifies outpatient or diagnostic type of service	

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
								must specify exactly one visit date for the set of dates of service provision. **254** - Each claim must specify exactly one amount claimed for each investigation (if any). **255** - The date of birth specified for the patient in each claim must be no earlier than 150 years before visit date (if any) or admission date (if any) specified for the dates of service provision in that claim. **256** - The visit date (if any) specified for the set of service provision dates in each claim must be no earlier than date of birth specified for the patient in that claim and no earlier than 01/04/2013. **257** - The combination of admission date (if any) and discharge date (if any) specified for the set of service provision dates in each claim must be such that discharge date is no earlier than admission date. **265** - The G-DRG code for outpatient service (if any) specified in each claim must be a valid full G-DRG code.	

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
								266 - The G-DRG code for inpatient service (if any) specified for the claim summary in each claim must be a valid full G-DRG code. **267** - A claim that specifies diagnostic type of service must not specify a procedure. **268** - A claim that specifies diagnostic type of service must not specify a diagnosis. **269** - A claim that specifies diagnostic type of service must not specify a medicine. **270** - A claim must not specify a procedure if that claim specifies any of the following specialty codes 'INVE', or 'MEDI'. **271** - The specialty code specified for the claim that specifies outpatient or inpatient type of service must be one of the following: 'ASUR', 'DENT', 'ENTH'', 'MEDI', 'OBGY', 'OPDC', 'OPHT', 'ORTH', 'PAED', 'PSUR', 'RSUR', or 'ZOOM'. **272** - The specialty code specified for the claim that specifies diagnostic type	

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
								of service must be 'INVE'. **273** - The claim number specified in each claim must be represented using a valid claim number. **274** - The hospital record number specified in each claim must be represented using a valid hospital record number. **292** - Each claim that specifies inpatient type of service must specify exactly one duration of spell. **293** - Each claim that specifies outpatient or diagnostic type of service must not specify duration of spell. **294** - Each claim must specify exactly one specialty code. **295** - The specialty code specified in each claim must be one of the following: 'ASUR', 'DENT', 'ENTH', 'INVE', 'MEDI', 'OBGY', 'OPDC', 'OPHT', 'ORTH', 'PAED', 'PSUR', 'RSUR', or 'ZOOM'. **296** - Each claim that specifies outpatient or inpatient type of service must specify exactly one type of attendance.	

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
								297 - The type of attendance specified in each claim must be 'chronic follow-up' , 'emergency' or 'acute episode'.	
2	Patients> PatientData> Claims> Claim> Treatments> Treatment> SecondVerificationLevel	Accepted	AN	String	N/A	C Mandatory if value in element Accepted (parent element: FirstVerificationLevel) is 'YES'. In other cases it should be left empty.	3	YES NO	N/A
2	Patients> PatientData> Claims> Claim> Treatments> Treatment> SecondVerificationLevel	ErrorCode	N	INT	n/a	C Mandatory if value in element Accepted (parent element: Patients> PatientData>	3	**222-** value in element Date is inconsistent with specification **223-** value in element Type is inconsistent with specification **224-** value in element TreatmentCode is inconsistent with specification **226-** value in element Tariff is inconsistent with specification **258** - The performance date specified	There may be more than one ErrorCode element within the SecondVerificationLevel node.

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
						Claims> Claim> Treatments> Treatment> SecondVerificationLevel) is 'NO'. In other cases it should be left empty.		for each procedure (if any) in each claim that specifies outpatient type of service must be equal to or one day after the visit date specified for dates of service provision in that claim. **259** - The performance date specified for each procedure (if any) in each claim that specifies inpatient type of service must be no earlier than the admission date and no later than the discharge date specified for the set of dates of service provision in that claim. **260** - The performance date specified for each investigation (if any) in each claim must be equal to any visit date specified for the set of dates of service provision in that claim. **261** - The amount claimed specified for each investigation (if any) specified in each claim must be more than 0. **275** - The G-DRG code specified for each procedure (if any) in each claim must be the code of one of the G-DRGs effective on visit date (if any) or admission date (if any) specified for dates of service	

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
								provision in that claim. **276** - The G-DRG code specified for each procedure (if any) in each claim must be the code of one of the G-DRGs grouped under specialty specified in that claim and effective on visit date (if any) or admission date (if any) specified for dates of service provision in that claim. **278** - The G-DRG code specified for each diagnosis (if any) in each claim must be the code of one of the G-DRGs effective on visit date (if any) or admission date (if any) specified for dates of service provision in that claim. **280** - The G-DRG code specified for each investigation (if any) in each claim must be the code of one of the G-DRGs grouped under specialty 'INVE' and effective on visit date specified in that claim. **282** - Each claim must specify exactly one G-DRG code for each procedure (if any). **283** - Each claim must specify exactly one G-DRG code for each investigation	

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
								(if any). **284** - Each claim must specify exactly one G-DRG code for each diagnosis (if any). **285** - The G-DRG code specified for each procedure (if any) in each claim must be a valid full G-DRG code. **286** - The G-DRG code specified for each investigation (if any) in each claim must be represented using a valid full G-DRG code. **287** - The G-DRG specified for each diagnosis (if any) in each claim must be represented using a valid full G-DRG code.	
2	Patients> PatientData> Claims> Claim> Medicines> Medicine> SecondVerificationLevel	Accepted	AN	String	N/A	C Mandatory if value in element Accepted (parent element: FirstVerificationLevel) is 'YES'. In other	3	YES NO	N/A

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
						cases it should be left empty.			
2	Patients> PatientData> Claims> Claim> Medicines> Medicine> SecondVerificationLevel	ErrorCode	N	INT	n/a	C Mandatory if value in element Accepted (parent element: Patients> PatientData> Claims> Claim> Medicines> Medicine> SecondVerificationLevel) is 'NO'. In other cases it should be left empty.	3	**227-** value in element MedicineCode is inconsistent with specification **228-** value in element Quantity is inconsistent with specification **229-** value in element UnitPrice is inconsistent with specification **230 -** value in element MedicineTotal is inconsistent with specification **231**- value in element MedicineCode has assigned higher prescribing level than prescribing level assigned to Healthcare Provider **233** - value in element Medicine Date is inconsistent with the specification **249** - The dispensing date specified for each medicine (if any) in each claim that specifies inpatient type of service must be no earlier than the admission date and no later than the discharge date specified for the set of dates of service provision in that claim. **250** - The dispensed quantity specified	There may be more than one ErrorCode element within the SecondVerificationLevel node.

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
								for each medicine (if any) specified in each claim must be more than 0. **251** - The unit amount claimed specified for each medicine (if any) specified in each claim must be at least 0. **262** - The dispensing date specified for each medicine (if any) in each claim that specifies outpatient type of service must be no earlier than the earliest visit date and no later than the latest visit date specified for the set of dates of service provision in that claim. **263** - The dispensing date specified for each medicine (if any) in each claim that specifies inpatient type of service must be no earlier than the admission date and no later than the discharge date specified for the set of dates of service provision in that claim. **281** - The medicine code specified for each medicine (if any) in each claim must be the code of one of the medicines effective on dispensing date specified for that medicine. **290** - Each claim must specify exactly	

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
								one medicine code for each medicine (if any). **291** - The medicine code specified for each medicine (if any) in each claim must be represented using a valid medicine code. **298** - The amount claimed specified for each investigation (if any) specified in each all-inclusive claim must be equal to 0. **299** - The performance date specified for each investigation (if any) in each claim that specifies inpatient type of service must be no earlier than the admission date and no later than the discharge date specified for the set of dates of service provision in that claim.	
3	Patients> PatientData> Claims> Claim> ThirdVerificationLevel	Accepted	AN	string	N/A	C- If values in elements: 'Accepted' that are assigned to the particular PatientData	3	YES NO	N/A

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
						level and in parent element FirstVerificationLevel, are 'YES' , this element should be Mandatory. In other cases it should be left empty.			
3	Patients> PatientData> Claims> Claim> ThirdVerificationLevel	ClaimRejectionReason	N	string	NNN	O	3	See reason codes in Appendix X.5.	Element informs about the general reason for claim rejection.
3	Patients> PatientData> Claims> Claim> ThirdVerificationLevel	OutPatientTariffAmountValidation	N/A	N/A	N/A	N/A	N/A	N/A	There may be more than one OutPatientTariffAmountValidation node within the

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
									ThirdVerificationLevel node.
3	Patients> PatientData> Claims> Claim> ThirdVerificationLevel > OutPatientTariffAmountValidation	ReasonCode	N	string	NNN	O	3	See reason codes in Appendix X.5.	Element presents the reason for correction made in the element 'OutPatientTariffAmount' in the Claim XML. More than one reason code may be assigned.
3	Patients> PatientData> Claims> Claim> ThirdVerificationLevel > OutPatientTariffAmountValidation	Adjustment Value	N	decimal	NNNN.NN	O	19	n/a	Element presents the amount of corrections made in the element 'OutPatientTariffAmount' in the Claim

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
									XML. More than one amount correction may be assigned.
3	Patients> PatientData> Claims> Claim> ThirdVerificationLevel >	InPatientTariffAmountValidation	N/A	N/A	N/A	N/A	N/A	N/A	There may be more than one InPatientTariffAmountValidation node within the ThirdVerificationLevel node.
3	Patients> PatientData> Claims> Claim> ThirdVerificationLevel > InPatientTariffAmountValidation	ReasonCode	N	string	NNN	O	3	See reason codes in Appendix X.5.	Element presents the reason for correction made in the element 'InPatientTariffAmount' in the Claim XML.

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
									More than one reason code may be assigned.
3	Patients> PatientData> Claims> Claim> ThirdVerificationLevel > InPatientTariffAmount Validation	Adjustment Value	N	decimal	NNNN.NN	O	19	n/a	Element presents the amount of corrections made in the element 'InPatientTariffAmount' in the Claim XML. More than one amount correction may be assigned.
3	Patients> PatientData> Claims> Claim> ThirdVerificationLevel	TotalCostValidation	N/A	N/A	N/A	N/A	N/A	N/A	There may be more than one TotalCostValidation node within the

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
									ThirdVerificationLevel node.
3	Patients> PatientData> Claims> Claim> ThirdVerificationLevel > TotalCostValidation	ReasonCode	N	string	NNN	O	3	See reason codes in Appendix X.5.	Element presents the reason for correction made in the element 'TotalCost' in the Claim XML. More than one reason code may be assigned.
3	Patients> PatientData> Claims> Claim> ThirdVerificationLevel > TotalCostValidation	Adjustment Value	N	decimal	NNNN.NN	O	19	n/a	Element presents the amount of corrections made in the element 'TotalCost' in the Claim XML. More than

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
									one amount correction may be assigned.
3	Patients> PatientData> Claims> Claim> Treatments> Treatment> ThirdVerificationLevel	TariffValidation	N/A	N/A	N/A	N/A	N/A	N/A	There may be more than one TariffValidation node within the ThirdVerificationLevel node.
3	Patients> PatientData> Claims> Claim> Treatments> Treatment> ThirdVerificationLevel > > TariffValidation	ReasonCode	N	string	NNN	O	3	See reason codes in Appendix X.5.	Element presents the reason for correction made in the parent element 'Treatment', element 'Tariff' in the Claim XML. More than one reason

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
									code may be assigned.
3	Patients> PatientData> Claims> Claim> Treatments> Treatment> ThirdVerificationLevel > > TariffValidation	Adjustment Value	N	decimal	NNNN.NN	O	19	n/a	Element presents the amount of corrections made in the element 'Treatment', element 'Tariff' in the Claim XML. More than one amount correction may be assigned.
	Patients> PatientData> Claims> Claim> Medicines> Medicine> ThirdVerificationLevel	MedicineTotalValidation	N/A	N/A	N/A	N/A	N/A	N/A	There may be more than one MedicineTotalValidation node within the ThirdVerificati

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
									onLevel node.
3	Patients> PatientData> Claims> Claim> Medicines> Medicine> ThirdVerificationLevel > >MedicineTotalValidation	ReasonCode	N	string	NNN	O	3	See reason codes in Appendix X.5.	Element presents the reason for correction made in the parent element 'Medicine', element 'MedicineTotal' in the Claim XML. More than one reason code may be assigned.
3	Patients> PatientData> Claims> Claim> Medicines> Medicine> ThirdVerificationLevel > >MedicineTotalValidation	Adjustment Value	N	decimal	NNNN.NN	0	19	n/a	Element presents the amount of corrections made in the parent element 'Medicine',

Verification level	Parent element	Element name	Data type recommended by Vektis[41]	Data type recommended by W3C[42]	Pattern	Mandatory / Optional/ Conditional	Max length of the value	Possible values	Important remarks
									element 'MedicineTotal' in the Claim XML. More than one amount correction may be assigned.

X.5. Reason codes

Reason code	Meaning
000	A new row added to the form (this code can be used only in parent elements: TariffValidation and MedicineTotalValidation)
001	No referral
002	No Procedure
003	No diagnosis
004	No clinical evidence of diagnosis
005	No discharge/admission dates
006	Over prescription
007	Overbilling/Services
008	Overbilling/Drugs
009	Invalid referral
010	Programme drug
011	Treatment/Diagnosis Mismatch
012	Procedure without diagnosis
013	Unclear Diagnosis
014	Duplication of claims i.e. same date/person/diagnosis, or same date/person/different diagnosis.
015	Missing bio-data of patient
016	Inactive Member
017	Wrong GDRG
018	Not on NHIS medicines list
019	Medicines dispensed outside admission period
020	Benefit not covered under NHIS
021	Polypharmacy
022	Illegible handwriting
023	Previous referral used for new and totally unrelated diagnosis

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VAT 814942490 B 01, kvk 24380007

Nearshoring Solutions Sp. z o.o.
Polanki 136, 80-322 Gdansk
VAT PL9570902738, Reg 220007262

X.6. Feedback XML file example- generated after 2nd verification level.

```
<?xml version="1.0" encoding="utf-8" ?>
<Batch>
	<GeneralInformation>
		<VersionInformation>
			<XMLFormatVersion>1</XMLFormatVersion>
			<MedicineVersion>1</MedicineVersion>
			<GDRGVersion>1</GDRGVersion>
			<TariffVersion>1</TariffVersion>
			<ICDVersion>1</ICDVersion>
			<OpenHDDVersion>1</OpenHDDVersion>
		</VersionInformation>
		<BatchInformation>
			<BatchNumber>1</BatchNumber>
			<BatchAmount >369.55</BatchAmount >
			<BatchCurrency>GHC</BatchCurrency >
			<ClaimsCount>25</ClaimsCount>
			<CreationDate>30/08/2012</CreationDate>
			<ServiceYear>2012</ServiceYear>
			<ServiceMonth>5</ServiceMonth>
			<IDPayer></IDPayer>
		</BatchInformation>
		<ProviderInformation>
			<ProviderAccreditationNumber>12345</ProviderAccreditationNumber>
			<eClaimAuthorizationNumber>12345567890</eClaimAuthorizationNumber>
		</ProviderInformation>
	<FirstVerificationLevel >
			<Accepted>YES</Accepted>
			<ErrorCode></ErrorCode>
	</FirstVerificationLevel >
	</GeneralInformation>
	<Patients>
		<PatientData>
			<Surname>Doe</Surname>
			<OtherName>Joe</OtherName>
			<DateOfBirth>01/10/1995</DateOfBirth>
			<Infant>No</Infant>
			<MemberNumber>86596596pp</MemberNumber>
			<TemporaryCardNumber></TemporaryCardNumber>
			<HospitalRecordNumber>876876</HospitalRecordNumber>
			<CardSerialNumber></CardSerialNumber>
			<Gender>t</Gender>
			<SecondVerificationLevel >
				<Accepted>NO</Accepted>
				<ErrorCode>203</ErrorCode>
```

```
                <ErrorCode>205</ErrorCode>
        </SecondVerificationLevel >
        <Claims>
                <Claim>
                        <ClaimIdentificationNumber>12345</ClaimIdentificationNumber>
                        <ServiceType>INPE</ServiceType>
                        <PharmacyIncluded>YES</PharmacyIncluded>
                        <AllInclusive>pp</AllInclusive>
                        <OutcomeType>DIS</OutcomeType>
                        <DurationLength>2</DurationLength>
                        <AdmissionType>EME</AdmissionType>
                        <SpecialityCode>ORTH</SpecialityCode>
                        <AdmissionDate>14/05/2012</AdmissionDate>
                        <DischargeDate>16/05/2012</DischargeDate>
                        <OutPatientTariffAmount>0</OutPatientTariffAmount>
                        <OutPatientCode>ORTH06C</OutPatientCode>
                        <TotalCost>113.25</TotalCost>
                        <TreatmentsCount>1</TreatmentsCount>
                        <MedicinesCount>1</MedicinesCount>
                        <ReferralNo>124kk233</ReferralNo>
                        <SecondVerificationLevel >
                                <Accepted>NO</Accepted>
                                <ErrorCode>207</ErrorCode>
                                <ErrorCode>209</ErrorCode>
                        </SecondVerificationLevel >
                        <Treatments>
                                <Treatment>
                                        <Date>11.05/2012</Date>
                                        <Type>Diagnosix</Type>
                                        <TreatmentCode>ORTH06C</TreatmentCode>
                                        <ICDCode>B18.2</ICDCode>
                                        <Tariff >105.75</Tariff>
                                        <SecondVerificationLevel >
                                            <Accepted>NO</Accepted>
                                            <ErrorCode>222</ErrorCode>
                                            <ErrorCode>223</ErrorCode>
                                        </SecondVerificationLevel >
                                </Treatment>
                        </Treatments>
                        <Medicines>
                                <Medicine>
                                        <MedicineCode>145</MedicineCode>
                                        <Quantity>15</Quantity>
                                        <UnitPrice>0,50</UnitPrice>
                                        <MedicineTotal>7.50</MedicineTotal>
                                        <MedicineDate>16/05/2012</MedicineDate>
                                        </SecondVerificationLevel >
                                            <Accepted>NO</Accepted>
                                            <ErrorCode>227</ErrorCode>
```

```
                                                    <ErrorCode>229</ErrorCode>
                                                </SecondVerificationLevel >
                                            </Medicine>
                                        </Medicines>
                                    </Claim>
                                </Claims>
                            </PatientData>
                        </Patients>
</Batch>
```

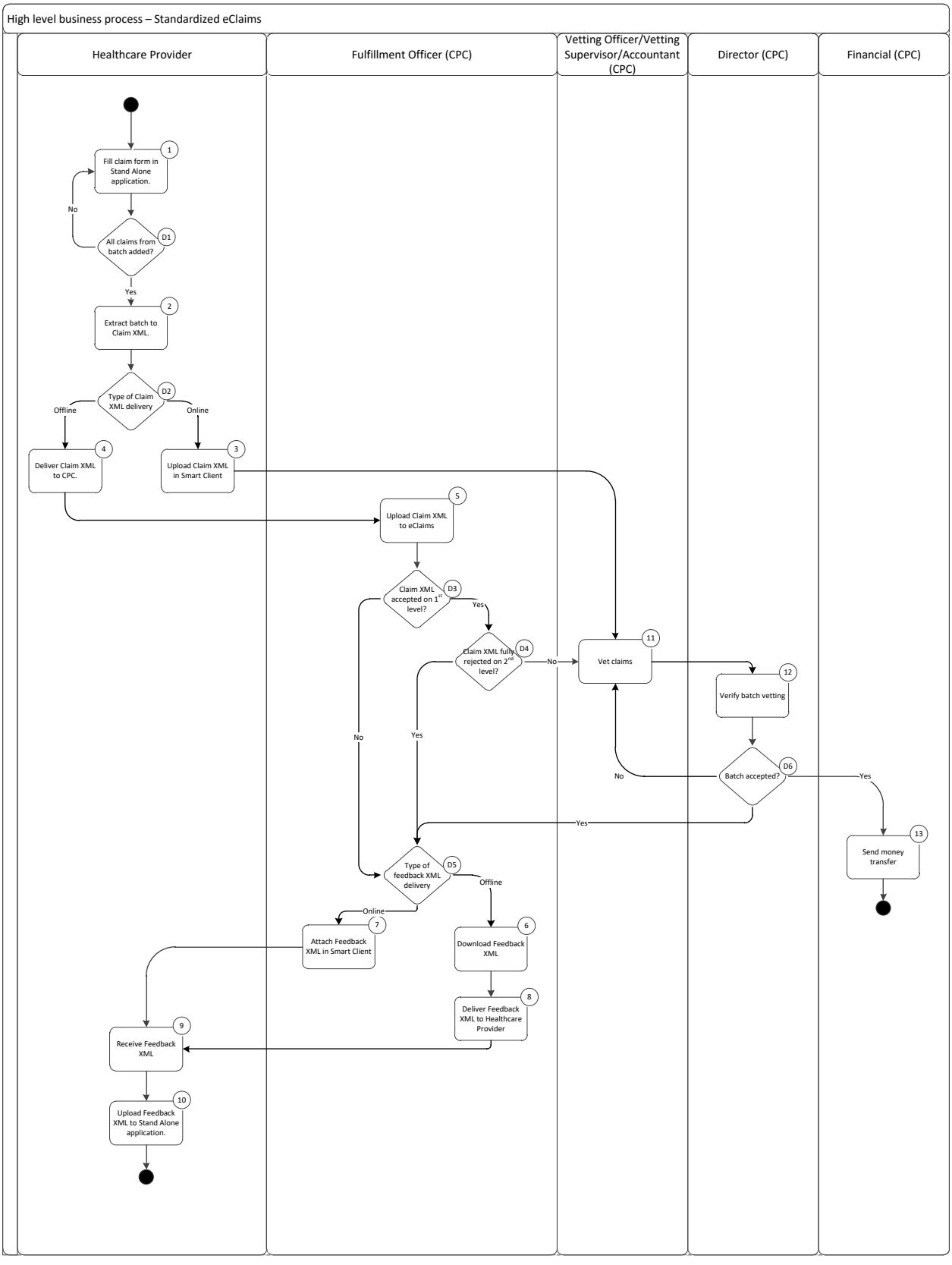
X.7. Feedback XML file example- generated after 3rd verification level.

```
<?xml version="1.0" encoding="utf-8" ?>
<Batch>
	<GeneralInformation>
		<VersionInformation>
			<XMLFormatVersion>1</XMLFormatVersion>
			<MedicineVersion>1</MedicineVersion>
			<GDRGVersion>1</GDRGVersion>
			<TariffVersion>1</TariffVersion>
			<ICDVersion>1</ICDVersion>
			<OpenHDDVersion>1</OpenHDDVersion>
		</VersionInformation>
		<BatchInformation>
			<BatchNumber>1</BatchNumber>
			<BatchAmount >369.55</BatchAmount >
			<BatchCurrency>GHC</BatchCurrency >
			<ClaimsCount>25</ClaimsCount>
				<CreationDate>30/08/2012</CreationDate>
			<ServiceYear>2012</ServiceYear>
			<ServiceMonth>5</ServiceMonth>
			<IDPayer></IDPayer>
		</BatchInformation>
		<ProviderInformation>
			<ProviderAccreditationNumber>12345</ProviderAccreditationNumber>
			<eClaimAuthorizationNumber>12345567890</eClaimAuthorizationNumber>
		</ProviderInformation>
	</GeneralInformation>
		<FirstVerificationLevel >
			<Accepted>YES</Accepted>
			<ErrorCode></ErrorCode>
		</FirstVerificationLevel >
	<Patients>
		<PatientData>
			<Surname>Doe</Surname>
			<OtherName>Joe</OtherName>
			<DateOfBirth>01/10/1995</DateOfBirth>
			<Infant>No</Infant>
			<MemberNumber>8659659659</MemberNumber>
			<TemporaryCardNumber></TemporaryCardNumber>
			<HospitalRecordNumber>876876</HospitalRecordNumber>
			<CardSerialNumber></CardSerialNumber>
			<Gender>M</Gender>
			<Claim>
				<ClaimIdentificationNumber>12345</ClaimIdentificationNumber>
				<ServiceType>INP</ServiceType>
				<PharmacyIncluded>YES</PharmacyIncluded>
				<AllInclusive>YES</AllInclusive>
				<OutcomeType>DIS</OutcomeType>
```

```
<DurationLength>2</DurationLength>
<AdmissionType>EME</AdmissionType>
<SpecialityCode>ORTH</SpecialityCode>
<AdmissionDate>14/05/2012</AdmissionDate>
<DischargeDate>16/05/2012</DischargeDate>
<OutPatientTariffAmount>0</OutPatientTariffAmount>
<OutPatientCode>ORTH06C</OutPatientCode>
<TotalCost>113.25</TotalCost>
<TreatmentsCount>1</TreatmentsCount>
<MedicinesCount>1</MedicinesCount>
<ThirdVerificationLevel >
        <Accepted>NO</ Accepted >
        <ClaimRejectionReason>023</ClaimRejectionReason>
        <OutPatientTariffAmountValidation>
                <ReasonCode>023</ReasonCode>
                <AdjustmentValue>8.45</AdjustmentValue>
        </OutPatientTariffAmountValidation>
        <TotalCostValidation>
                <ReasonCode></ReasonCode>
                <AdjustmentValue>23.45</AdjustmentValue>
        </TotalCostValidation>
</ThirdVerificationLevel >
        <Treatments>
                <Treatment>
                        <Date>11/05/2012</Date>
                        <Type>Diagnosis</Type>
                        <TreatmentCode>ORTH06C</TreatmentCode>
                        <ICDCode>B18.2</ICDCode>
                        <Tariff >105.75</Tariff>
                        <ThirdVerificationLevel >
                                <TariffValidation>
                                        <ReasonCode>023</ReasonCode>
                                        <AdjustmentValue>10.00</AdjustmentValue>
                                </TariffValidation>
                        </ThirdVerificationLevel >
                </Treatment>
        </Treatments>
        <Medicines>
                <Medicine>
                        <MedicineCode>145</MedicineCode>
                        <Quantity>15</Quantity>
                        <UnitPrice>0.50</UnitPrice>
                        <MedicineTotal>7.50</MedicineTotal>
                        <MedicineDate>16/05/2012</MedicineDate >
                        <ThirdVerificationLevel >
                                <MedicineTotalValidation>
                                        <ReasonCode>023</ReasonCode>
                                        <AdjustmentValue>5.00</AdjustmentValue>
                                </MedicineTotalValidation>
```

```
                                                    </ThirdVerificationLevel >
                                                </Medicine>
                                            </Medicines>
                                        </Claim>
                                    </Claims>
                                </PatientData>
                            </Patients>
</Batch>
```

X.8. Process map- Standardized eClaims processing



X.9. Change log

Below list presents changes that were made in the specification of Claim XML and Feedback XML since the last release on 07.09.2012.

1. Updated Claim XML Specification. Updated 'Important remarks' concerning element: ClaimIdentificationNumber.
2. Updated Claim XML Specification. Updated information in column 'Mandatory / Optional / Conditional' for the element 'Date' in node 'Treatment'.
3. Updated Claim XML Specification. Updated the column 'Possible values' for elements:
    a. Patients> PatientData> Claims > Claim> Treatments > Treatment> ICDCode
    b. Patients> PatientData> Claims > Claim> Treatments > Treatment> TreatmentCode
    c. Patients> PatientData> Claims > Claim> Medicines > Medicine > MedicineCode
4. Updated Claim XML Specification. Added rows with description of parent elements:
    a. Patients> PatientData> Claims > Claim> Medicines>Medicine
    b. Patients> PatientData> Claims > Claim> Treatments >Treatment
5. Updated Claim XML Specification. Renamed element 'PatientDatas' to 'Patients'.
6. Updated Feedback XML Specification. Excluded node 'FirstVerificationLevel' from node 'GeneralInformation'.
7. Updated Feedback XML Specification. Updated column 'Important remarks' for element ' Patients>PatientData> Claims> Claim> Treatments> Treatment> SecondVerificationLevel>ErrorCode.
8. Updated Claim XML Specification. Updated data type of element 'Patients> PatientData> Claims > Claim> Medicines > Medicine> Quantity' .
9. Updated Claim XML Specification. Updated max length specification of elements:
    a. 'Patients> PatientData> Claims > Claim> OutPatientTariffAmount'.
    b. 'Patients> PatientData> Claims > Claim> InPatientTariffAmount'
    c. 'Patients> PatientData> Claims > Claim> Treatments > Treatment> Tariff'
    d. Patients> PatientData> Claims > Claim> Medicines > Medicine> MedicineTotal
    e. Patients> PatientData> Claims > Claim> TotalCost
10. Updated Claim XML Specification. Updated 'Important remarks' concerning element: Patients> PatientData> Claims > Claim> Treatments > Treatment> ICDCode
11. Updated Feedback XML Specification. Removed following error codes from FirstVerificationLevel: 104,105,106
12. Updated Reason Codes list.
13. Updated Feedback XML Specification. Added error code 232 and 233.
14. Updated chapter 'Versioning of Master Tables'.
15. Updated Claim XML Specification. Added element Patients> PatientData> Claims > Claim> Medicines > Medicine>MedicineDate
16. Added specification of new element ReferralNo.
17. Added specification of element TemporaryCardNumber. Set element MemberNumber from mandatory to conditional.

18. Modified description of element: ClaimIdentificationNumber
19. Added 'Infant' element to the 'PatientData' node.
20. Added elements: OutPatientCode, InPatientCode and InvestigationCode.
21. Updated Claim XML Specification (column Mandatory/Optional/Conditional) for node Treatment.
22. Added new element to Claim XML: ClaimCheckCode. Added ErrorCode: 237 (related to it).
23. Added error 238 (validation of element TotalCost) to the specification of Feedback XML.
24. Added error 120 to the specification of Feedback XML.
25. Added error 239 (claim duplicated in the same batch) to the specification of Feedback XML
26. Added errors 240 - 269
27. Added errors 270 – 297
28. Deleted error code related to ICD10. Added infant exception.
29. Added errors 298 and 299.