

FHIR data export format

of the digital health application "BabyCare -
Gesund & Schwanger"
by FBE Forschung Beratung Evaluation GmbH

Validity: BabyCare App as of version 3.1.4

1. Introduction

1.1. Document history

Version	Date	Authors
1.0	10. 02. 2022	SNK, JT

1.2. Goal

This document serves to describe the interoperability of the digital health application "BabyCare - Gesund & Schwanger". With this document, the manufacturer FBE Forschung Beratung Evaluation GmbH discloses the interoperable format and coding used as a compilation over several HL7 FHIR profile definitions.

The standards and profiles used to establish the interoperability of the digital health application are published in the FHIR Registry Simplifier and the vesta interoperability directory and can be used without discrimination. In addition to this interoperable export format as FHIR, another export format as JSON is also defined and available in the vesta information portal.

According to Section 388 (4) of the Fifth Book of the German Social Code (SGB V), providers of an electronic health care application according to Section 306 (1) Sentence 2 Number 2 SGB V or of an electronic application that is fully or partially financed by funds of the statutory health insurance must submit an application according to Section 388 (1) SGB V. Since no suitable interface is available in the interoperability directory pursuant to Section 385 SGB V at the time the document is created, the digital health application supports another disclosed and documented interface which is either listed in the interoperability directory pursuant to Section 385 SGB V or for which a corresponding application has been submitted by the manufacturer.

1.3. Scope

This data export standard applies to the digital health application "BabyCare - Gesund & Schwanger" by FBE Forschung Beratung Evaluation GmbH.

2. FHIR format (JSON)

The data is encoded in the FHIR standard (HL7 FHIR R4). This established standard, which is internationally recognized in the healthcare industry, enables a defined and at the same time flexible output of the most diverse types of data.

The output of FHIR-compatible data is in JSON format. JSON is an internationally recognized interface and semantics standard (RFC 8259, ECMA-404 as well as ISO/IEC 21778:2017).

The individual entries in the exported FHIR bundle are listed and explained below.

An overview of the FHIR resources used is also available in the FHIR Registry Simplifier at <https://simplifier.net/fbebabycareapp/>.

2.1. Basic structure of a bundle

The bundle represents the current state of the app at the time of export. It contains any collection of Quicktest and Analysis entries.

Name	Type	Description
identifier	string	A persistent identifier for the bundle
type	code	Indicates the purpose of this bundle
timestamp	timestamp	The date/time that the bundle was assembled
quicktest	array of objects	Contains several observations from the app's quicktests
analysis	array of objects	Contains several observations from the app's detailed analysis

2.2. Quicktest Entry (Observation)

Inputs from the "Tests" app area are serialized here as Observation.

Name	Type	Description
fullUrl	uri	URI for resource (URI for UUID/OID)
resource	object	Resource that represents user given answer
resource.identifier	string	Identifier that is used in the app
resource.resourceType	code	„Observation“
resource.status	code	Status of the observation: <i>preliminary</i> <i>final</i>
resource.interpretation	object	Further information to help interpret the values

resource.interpretation.text	string	The actual question the values belong to
resource.value	object	None-one or multiple values the user reported
resource.value.valueString	string (optional)	Actual value in string format: „Rauche derzeit“
resource.value.valueInteger	Integer (optional)	Actual value in integer format: 4
resource.values.value.valueDecimal	decimal (optional)	Actual value in decimal format: 1,5

2.3. Analysis (Observation)

Inputs from the „Ausführliche Analyse“ (Detailed Analysis) app area are serialized here as Observation.

Name	Type	Description
fullUrl	uri	URI for resource (URI for UUID/OID)
resource	object	Resource that represents user given answer
resource.identifier	string	Identifier that is used in the app
resource.resourceType	code	„ <i>Observation</i> “
resource.status	code	Status of the observation: <i>preliminary</i> <i>final</i>
resource.interpretation	object	Further information to help interpret the values
resource.interpretation.text	string	The actual question the values belong to
resource.values	array of objects	Collection of value entries
resource.values.value	object	None, one or multiple values the user reported
resource.values.value.valueString	string (optional)	Actual value in string format: „ <i>Bin schwanger</i> “
resource.values.value.valueInteger	integer (optional)	Actual value in integer format: 7
resource.values.value.valueDecimal	decimal (optional)	Actual value in decimal format: 1,5

3. Sample export

```
{
  "identifier": "4c2622e3-a257-4125-94c2-08779e4a12cf",
  "type": "collection",
  "timestamp": "2022-02-03T15:00:24+01:00",
  "quicktest": [
    {
      "fullUrl": "urn:uuid:523cfd2-40fa-46a9-9ab9-c01faf65902c",
      "resource": {
        "identifier": "app_height_self",
        "resourceType": "Observation",
        "status": "final",
        "interpretation": {
          "text": "Körpergröße der Nutzerin in Zentimetern"
        }
      },
      "value": {
        "integerValue": 170
      }
    },
    {
      "fullUrl": "urn:uuid:fed9db50-5d20-4021-b5a6-def60e2a40da",
      "resource": {
        "identifier": "app_weight_pre_preg",
        "resourceType": "Observation",
        "status": "final",
        "interpretation": {
          "text": "Körpergewicht der Schwangeren vor der Geburt in Kilogramm"
        }
      },
      "value": {
        "integerValue": 50
      }
    },
    {
      "fullUrl": "urn:uuid:7a75cdc2-69b7-4306-bce9-248b10822bf6",
      "resource": {
        "identifier": "app_weight_preg",
        "resourceType": "Observation",
        "status": "final",
        "interpretation": {
          "text": "Wie hoch ist dein Gewicht aktuell?"
        }
      },
      "value": {
        "integerValue": 55
      }
    },
    {
      "fullUrl": "urn:uuid:8533b34f-cf92-437d-8f1d-9c203b249014",
      "resource": {
        "identifier": "app_alcohol_beer_intake",
        "resourceType": "Observation",
        "status": "final",
        "interpretation": {
          "text": "Wie viele Gläser Bier (0,3l) hast du heute und in den letzten sechs Tagen insgesamt
getrunken?"
        }
      },
      "value": {
        "integerValue": 4
      }
    },
    {
      "fullUrl": "urn:uuid:635dfa57-3d53-4062-8349-3ffb196d5c1d",
      "resource": {
        "identifier": "app_alcohol_wine_intake",
        "resourceType": "Observation",
        "status": "final",
        "interpretation": {
          "text": "Wie viele Gläser Wein/Sekt (0,125l) hast du heute und in den letzten sechs Tagen
insgesamt getrunken?"
        }
      },
      "value": {
        "integerValue": 4
      }
    }
  ]
}
```

```

        "value": {
          "integerValue": 0
        }
      },
    {
      "fullUrl": "urn:uuid:f1edb3cf-ffd4-4dcc-b13e-886f12add64e",
      "resource": {
        "identifler": "app_alcohol_spirits_intake",
        "resourceType": "Observation",
        "status": "final",
        "interpretation": {
          "text": "Wie viele Gläser Spirituosen (2cl) hast du heute und in den letzten sechs Tagen
insgesamt getrunken?"
        },
        "value": {
          "integerValue": 1
        }
      }
    },
    {
      "fullUrl": "urn:uuid:e33a7207-3e06-4eb3-b398-1041deb333da",
      "resource": {
        "identifler": "app_alcohol_intake_7d",
        "resourceType": "Observation",
        "status": "final",
        "interpretation": {
          "text": "Gesamtalkoholmenge pro Woche in Gramm"
        },
        "value": {
          "integerValue": 57
        }
      }
    },
    {
      "fullUrl": "urn:uuid:ab56e383-f7eb-4db7-9267-7a451a409f37",
      "resource": {
        "identifler": "app_smoking",
        "resourceType": "Observation",
        "status": "final",
        "interpretation": {
          "text": "Thema Rauchen - Was trifft auf dich zu?"
        },
        "value": {
          "stringValue": "Rauche derzeit",
          "integerValue": 4
        }
      }
    }
  ],
  "analysis": [
    {
      "fullUrl": "urn:uuid:23580e6d-8286-49ac-93e0-65a557d694b6",
      "resource": {
        "identifler": "1",
        "resourceType": "Observation",
        "status": "preliminary",
        "interpretation": {
          "text": "Sind Sie schwanger oder planen Sie eine Schwangerschaft?"
        },
        "values": [
          {
            "stringValue": "Bin schwanger",
            "integerValue": 1
          }
        ]
      }
    }
  ],
  {
    "fullUrl": "urn:uuid:b40b23c0-d560-4bfe-a4a7-fca9868c7f08",
    "resource": {
      "identifler": "28a",
      "resourceType": "Observation",
      "status": "preliminary",
      "interpretation": {
        "text": "Wie oft betreiben Sie im Laufe einer Woche üblicherweise Gymnastik oder Sport?"
      }
    }
  }

```

```

    },
    "values": [
      {
        "stringValue": "Mache nie Gymnastik oder Sport",
        "integerValue": 6
      }
    ]
  }
},
{
  "fullUrl": "urn:uuid:dc681f69-8c76-45de-9d23-613afca0feaf",
  "resource": {
    "identifizier": "29",
    "resourceType": "Observation",
    "status": "preliminary",
    "interpretation": {
      "text": "Wie würden Sie Ihren Gesundheitszustand im Allgemeinen beschreiben?"
    },
    "values": [
      {
        "stringValue": "Gut",
        "integerValue": 2
      }
    ]
  }
},
{
  "fullUrl": "urn:uuid:cb352b79-e8bf-463f-8cfb-2e762a46a298",
  "resource": {
    "identifizier": "30a",
    "resourceType": "Observation",
    "status": "preliminary",
    "interpretation": {
      "text": "Welche der Krankheiten auf der nachfolgenden Liste hatten Sie in den letzten 12
Monaten?"
    },
    "values": [
      {
        "stringValue": "Eisenmangel"
      }
    ]
  }
},
{
  "fullUrl": "urn:uuid:c4b4a86e-fa1f-4ca5-b179-a5487082dac6",
  "resource": {
    "identifizier": "31a",
    "resourceType": "Observation",
    "status": "preliminary",
    "interpretation": {
      "text": "Welche der folgenden Erkrankungen der Geschlechtsorgane hatten Sie jemals?"
    },
    "values": [
      {
        "stringValue": "Harnwegsinfektionen (Blasenentzündung)"
      }
    ]
  }
},
{
  "fullUrl": "urn:uuid:e394ef35-5370-424a-9144-ac7149c77aef",
  "resource": {
    "identifizier": "31e",
    "resourceType": "Observation",
    "status": "preliminary",
    "interpretation": {
      "text": "Wie viele Vaginalinfektionen, die behandelt werden mussten, hatten Sie ungefähr in
Ihrem Leben?"
    },
    "values": [
      {
        "integerValue": 0
      }
    ]
  }
},

```

```

{
  "fullUrl": "urn:uuid:808b195f-df2d-4fc0-9c33-59919f301c1b",
  "resource": {
    "identifler": "42a",
    "resourceType": "Observation",
    "status": "preliminary",
    "interpretation": {
      "text": "Planen Sie in der Zeit der Schwangerschaft (oder w\u00e4hrend der
Kinderwunschbehandlung) eine Fernreise in au\u00dfereurop\u00e4ische L\u00e4nder?"
    },
    "values": [
      {
        "stringValue": "Nein",
        "integerValue": 2
      }
    ]
  }
},
{
  "fullUrl": "urn:uuid:444ceb5d-d65f-4ec1-a2b9-8591745b1a28",
  "resource": {
    "identifler": "61",
    "resourceType": "Observation",
    "status": "preliminary",
    "interpretation": {
      "text": "In welcher Schwangerschaftswoche befinden Sie sich?"
    },
    "values": [
      {
        "integerValue": 15
      }
    ]
  }
},
{
  "fullUrl": "urn:uuid:347285ae-99cf-4180-aa93-7f1b14e42d62",
  "resource": {
    "identifler": "68",
    "resourceType": "Observation",
    "status": "preliminary",
    "interpretation": {
      "text": "In welcher Krankenkasse sind Sie versichert?"
    },
    "values": [
      {
        "integerValue": [
          "IKK classic"
        ]
      }
    ]
  }
},
{
  "fullUrl": "urn:uuid:5b35f316-bd5e-45f1-882f-ebaff9ec4377",
  "resource": {
    "identifler": "69",
    "resourceType": "Observation",
    "status": "preliminary",
    "interpretation": {
      "text": "Wie alt sind Sie?"
    },
    "values": [
      {
        "integerValue": 16
      }
    ]
  }
}
],
"resourceType": "Bundle"
}

```