swissmedic

Handbook

Swissmedic IDMP Implementation Guide

Version:	2.0
Valid from:	TBD

List of contents

Glossary

ARA: Assessment Report for Applicants

ATC code: Anatomical Therapeutic Chemical code

BL: Boolean

CD: Coded Data

CH: Confoederatio Helvetica (Schweiz)

CH-OMS: Swiss Organisation Management Services

CH-RMS: Swiss Referentials Management Services

CTD: Common Technical Document

DOCX: Office Open XML

eAF: electronic Application Form

EC: European Commission

EDQM: European Directorate for the Quality of Medicines & HealthCare

EMA: European Medicines Agency

FDA: U.S. Food and Drug Administration

FHIR: Fast Healthcare Interoperability Resources

FOPH: Federal Office of Public Health

GSRS: Global Substance Registration System

HL7: Health Level 7

ID: Identifier

IDMP: Identification of Medicinal Products

IG: Implementation Guide

IHP: Information for Healthcare Professionals

ISO: International Organization for Standardization

LLT: Lowest Level Terms from the Medical Dictionary for Regulatory Activities

LOC ID: Location Identifier

MA: Marketing Authorisation

MAH: Marketing Authorisation Holder

MedDRA: Medical Dictionary for Regulatory Activities

OMS: Organisations Management Service

ORG ID: Organisation Identity

PDF: Portable Document Format

PQ: Physical Quantity

PE: Packaging Element

PI: Information for Patients

PT: Preferred Term from the Medical Dictionary for Regulatory Activities

RMS: Referentials Management Services

RTO: Ratio

ST: String

TPA: Federal Act of 15 December 2000 on Medicinal Products and Medical Devices (SR 812.21)

TI: Therapeutic indication

TPLRO: Ordinance of the Swiss Agency for Therapeutic Products of 9. November 2001 on the Licensing Requirements for Therapeutic Products (SR 812.212.22)

TS: Time stamp

TSP: Transformation of Swissmedic platforms

UCUM: Unified Code for Units of Measure UNII: Unique Ingredient Identifier

UoP: Unit of presentation

URI: Uniform Resource Identifier

URL: Uniform Resource Locator

WHO: World Health Organization

Scope

This document provides guidance on the data elements for the submission of data on medicinal products to Swissmedic in accordance with the International Organisation for Standardisation (ISO), Identification of Medicinal Products (IDMP). ISO IDMP standards specify the use of standardised definitions for the identification and description of medicinal products for human use.

Work in progress:
Please note that this document only applies to a first pilot project and the data fields that have been specified for the exchange of IDMP data between selected MAH(s), FOPH and Swissmedic.
Several data fields and their contents are still being discussed.
News and updates will be published on the Swissmedic Website.

CH-RMS:
A Swissmedic Referential Management System (CH-RMS) for Swiss specific lists is being developed. For the moment the lists are provided via an excel file. For Swiss specific terms a 15-digit code is included in the excel file. For EMA and international list such a code will be provided at a later point in time.

Swissmedic Portal:
A new submission Portal for medicinal products is being developed as part of the TSP-Program at Swissmedic.

Submission of medicinal product data using FHIR

Medicinal product data shall be submitted using the FHIR messaging format. The data elements for medicinal products presented in this guidance are based on the following reference information:

- medicinal product information;
- relevant sections in module 3 – Quality;

The contents of each document [i.e., module 1 including product information, relevant sections in module 3] supporting the regulatory process shall be aligned, where applicable, to ensure there are no discrepancies between the documents for concerned data elements. The content should enhance the quality of the product data reported in the Swissmedic-Portal.

Swiss legislation medicinal product vs. IDMP medicinal product

The Swiss legislation (Therapeutic Products Act, TPA) defines a medicinal product as follows: *Medicinal products mean products of chemical or biological origin which are intended or claimed to have a medicinal effect on the human or animal organism, in particular in the diagnosis, prevention or treatment of diseases, injuries and handicaps; blood and blood products are also considered to be medicinal products*.

Medicinal products according to Swiss legislation consist of one or more dosage strengths, which are the equivalent of an IDMP medicinal product.

In this guideline, the term "medicinal product" is used in the sense of an IDMP medicinal product.

Swissmedic (Pre-IDMP)	Swissmedic (IDMP)	Example	Identifier
Medicinal product	-	Ibuprofen Sandoz, film-coated tablets	Marketing authorisation number (old) 48164
Dosage strengths	**Medicinal product**	Ibuprofen Sandoz 400, film-coated tablets	Marketing authorisation number (old) concatenated with the dosage strength number (old) each supplemented with a zero. 048164007

Identifiers

RMS/OMS-identifiers and other identifiers of terminologies

For the implementation of IDMP standards, Swissmedic will align as far as possible to EMA. Swissmedic will ensure the data sovereignty of pharmaceutical and organizational data with its own databases.
Swissmedic will accept RMS and OMS identifiers for IDMP submission as well as the original identifiers of the respective terminologies. For data sovereignty a Swissmedic identifier will have to be assigned to each term. This is part of the development of the Swissmedic CH-RMS and CH-OMS respectively and will be done at a later point in time.

Examples:

Term	*Swissmedic-ID*	*EDQM-Code*	*RMS-ID*
Blister	*tba*	*15007000*	*200000002109*
Oral solution	*tba*	*10105000*	*100000073646*

Medicinal Product Identifier (MPID)

A Medicinal Product Identifier (MPID) is a supplementary ID governed by the elements defined in ISO standard ISO11615 and is assigned in addition to any existing authorisation number by Swissmedic. The MPID is automatically generated by Swissmedic.
MPIDs are composed of the following elements:

- country code segment (ISO 3166-1 alpha-2 code elements);
- marketing authorisation holder (i.e., organisation ID) code segment;
- medicinal product code segment (i.e., a unique system generated medicinal product ID).

Any change of the initially submitted values related to these three code segments during the life cycle of the medicinal product results in the assignment of a new MPID generated by the system.

The **country code segment** of the MPID reflects the country where the medicinal product is authorised and is assigned in line with the ISO 3166-1 alpha-2 code elements. For Medicinal Products authorized in Switzerland the value “CH” is used.

The 8-digit **marketing authorisation holder code segment** of the MPID is the MAH ID assigned by a **Swiss** Organisations Management Service (CH-OMS).

A 13-digit **unique medicinal product ID code segment** is the unique part of the MPID assigned to the medicinal product according to the following defining attributes:

- Medicinal Product name: 1.5.1 Full Name;

    - Translations of the medicinal product name for medicinal products covered by the same marketing authorisation (MA) number are considered to be the same in terms of medicinal product name
- the [authorised] pharmaceutical dose form(s) [refer to section 1.1.2 (Authorised) pharmaceutical form];
- the active substance (s)/active moieties and their corresponding strength;
- therapeutic indication(s) as authorised;
    - Any changes to the listed therapeutic indications of the Medicinal Product as authorised may result in the assignment of a new MPID.
    - Where a change to the listed therapeutic indication(s) of the Medicinal Product as authorised is introduced with the aim to modify an existing indication(s) (i.e., reword of the indication), a new MPID will not be assigned.
    - Where a change to the listed therapeutic indication(s) of the Medicinal Product as authorised is introduced with the aim to extend or introduced in a completely new indication/target disease, a new MPID will be assigned.

marketing authorisation number (refer to section 0 **Example(s):**

Marketing authorisation, Export authorisation

- Marketing authorisation number);
- legal status of supply (refer to section 2.1.4 Legal status of supply);

The unique medicinal product ID code segment consists of the 9-digit **Example(s):**

Marketing authorisation, Export authorisation
Marketing authorisation number with an additional 4 trailing digits to accommodate updates. These 4 digits start at 0000; changes to the medicinal product ID code segment are reflected by consecutive numbering.

The unique medicinal product ID code segment is created with a successful data submission and updated with a successful change to the above-mentioned attributes. The value of this segment is meant to guarantee the uniqueness of the MPID in the system.

Examples of MPIDs:
CH-12345678-0662310010000 or CH-12345678-0567780010000

Packaged Medicinal Product Identifier (PCID)

For each Packaged Medicinal Product, a unique PCID shall be assigned by Swissmedic.
There are two components of a PCID:

- MPID for the Medicinal Product;
- package description code segment, which refers to a unique identifier for each package in the context of the MPID e.g., 0001, 0002 etc.

Example of PCIDs:

CH-12345678-0662310010000-0001 or CH-12345678-0567780010000-0001

Any change of the MPID component during the lifecycle of the medicinal product should result in the update of the relevant PCID(s), generated by the system. Package description code segment is assigned according to the following defining attributes:

- package item (container)(s) — the type, quantity (items per package), material(s);
- Manufactured Item(s) — manufactured dose form, unit of presentation, quantity (items per package).

When the above defining attributes (MPID and/or attributes related to Package description code segment) differ in any way a new PCID is assigned automatically by the system.

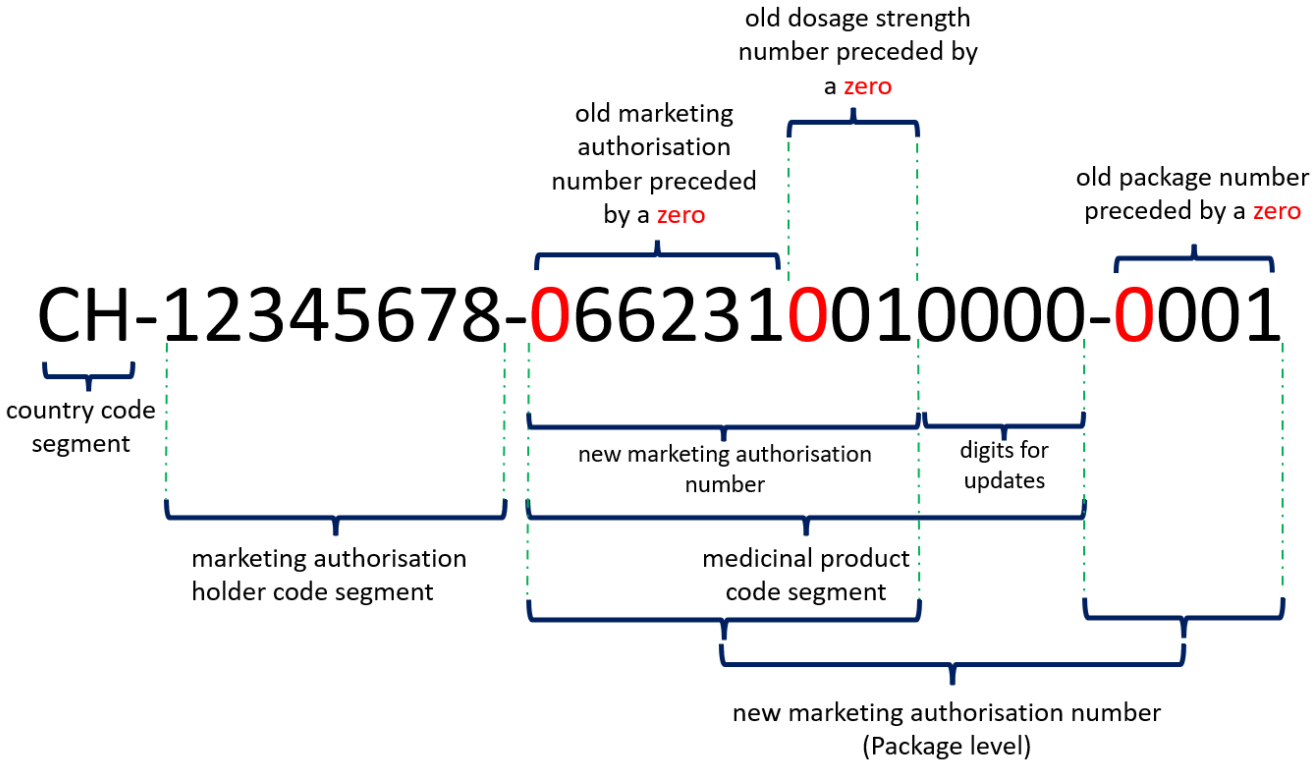

Figure 1: PCID

User Guidance

This section defines the attributes and provides business guidance and conventions for the electronic submission of medicinal product data and documents to be provided into the Swissmedic portal.

To allow the reporting of multiple values some of the data elements available in this guidance are repeatable fields. It is also possible that an entire class of elements may be repeatable, whereas individual elements within the class may or may not. This information is reported in the table of the relevant data element(s). A clear distinction on the possibility to repeat the entire class versus the different attributes of the class is also reported in this chapter.

The description of the requirements for each set of information and each data element is presented in the following tabular format:

Tag	Description
User Guidance	The definition of the data element, the convention and the condition under which the information should be provided in the context of medicinal product data for human use into the Portal. This applies in the context of the regulatory submission (initial submission and maintenance of the product information) as well as notification, data enrichment and nullification of product data.
Repeatable	The cardinality of the data elements specifying whether multiple values for the information can be applied. A class may be repeatable, whereas individual elements within the class may or may not. The complete set of the data fields is repeated in case the class is repeatable.
Conformance	Whether the information should be provided on a mandatory, conditional or optional basis. A class could be conditional and data fields belonging to the class could be mandatory. Once the conditions for the class are fulfilled, all mandatory data fields shall be fulfilled. If the conditions are not fulfilled, none of the data fields belonging to the class shall be provided. ▪ **Mandatory**: the provision of the product data is compulsory; therefore, the field(s) shall be populated with the available information. ▪ **Conditional**: the provision of the product data is compulsory only if the information is applicable. (E.g. Combined Pharmaceutical Dose Form) Therefore, the field(s) shall be populated accordingly. ▪
Data Type	The type of data that should be specified as defined in the FHIR message (e.g., *CodeableConcept* refers to use of controlled terminologies; string refers to free text data; numeric values).
Value(s)	The values applicable to the data element (e.g., reference to the Controlled Vocabulary lists).
ISO Element Name	Any mapping to ISO IDMP standards, when applicable.
ISO Path	The mapping of the ISO IDMP technical specifications, when applicable.
FHIR Element Name	The name of the FHIR element as presented in the FHIR resource list.
FHIR Path	The FHIR data model path as presented in the FHIR resource list.

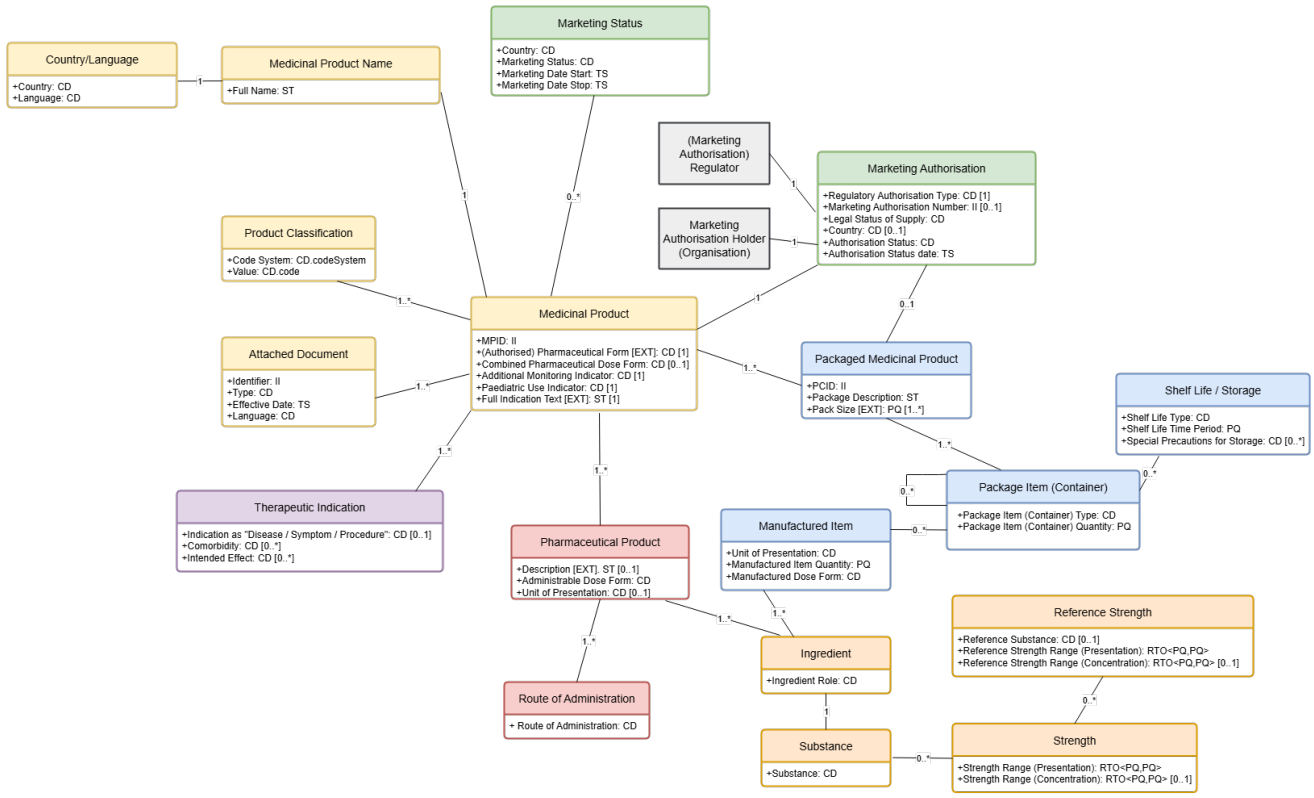

Figure 2: Swissmedic Pilot Scope of ISO IDMP information model for authorized medicinal products

1 Medicinal product

The full information on medicinal product as presented in the FHIR Resource *MedicinalProductDefinition* is presented in the *Figure 3* below. In the context of the pilot scope, only the information highlighted in red is in scope and should be provided according to the rules and guidance as described in this section.

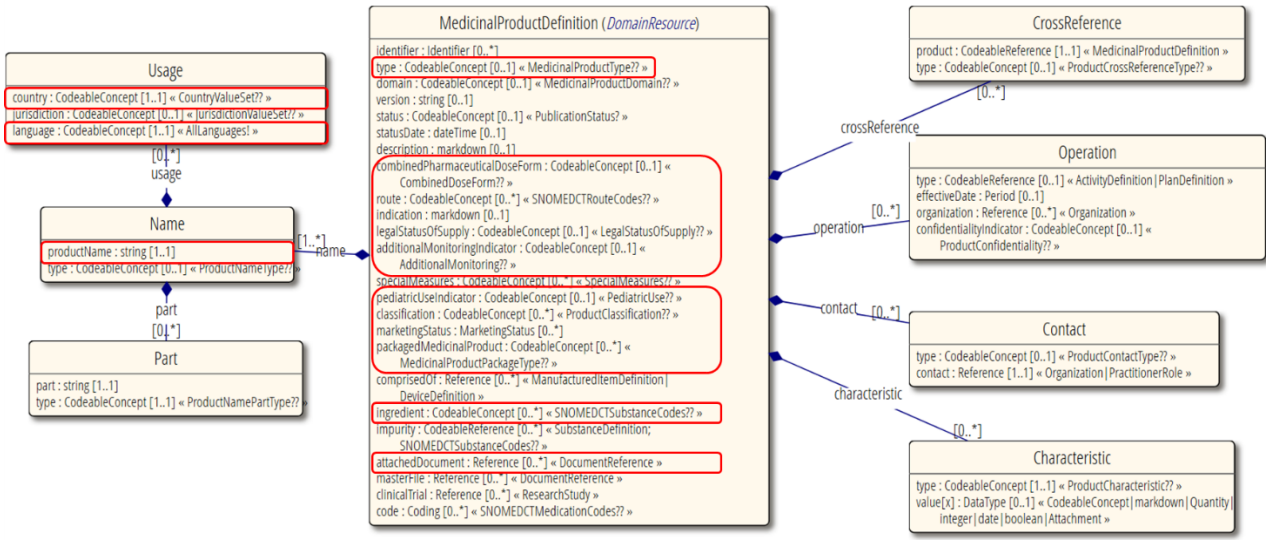

Figure 3: *Resource MedicinalProductDefinition* (source: http://www.hl7.org/fhir/)

The medicinal product definition class and its attributes are mandatory and not repeatable. The individual attributes of this class shall be populated as applicable.

Medicinal Product Definition Class	Description
Repeatable	No
Conformance	Mandatory

1.1 Medicinal product

1.1.1 Medicinal Product Identifier (MPID)

MPID shall be assigned to each authorised medicinal product; it is a supplementary ID to the existing authorisation number.

The MPID is defined by the following segments:

- country code segment (ISO 3166-1 alpha-2 code elements);
- marketing authorisation holder (i.e., organisation ID) code segment;
- medicinal product code segment (i.e., unique medicinal product ID).

Any change of the values related to these three code segments (as described in the Introductory section) should result in the assignment of a new MPID.

This attribute is automatically generated and maintained by Swissmedic.

Tag	Description
User Guidance	The MPID is assigned to each authorised medicinal product by Swissmedic.
Repeatable	No
Conformance	For first data submission and data maintenance: Not applicable – ID generated by the system
Data Type	Identifier
Excel	Not applicable
Value(s)	ID generated by the system
ISO Element Name	MPID
ISO Path	/MedicinalProduct/MPID
FHIR Element Name	MedicinalProductDefinition.identifier
FHIR Path	MedicinalProductDefinition.identifier.system

1.1.2 (Authorised) pharmaceutical dose form

The pharmaceutical dose form as submitted for authorisations or as authorised by Swissmedic and as reflected in regulatory documents shall be provided.

Pharmaceutical form might be authorised or submitted for authorisation as follows:

Combined pharmaceutical dose form: when two or more manufactured dose forms that are intended to be combined by HCP and/or patient/care giver to create a single administrable dose form.

Example: powder and solvent for solution for injection

Pharmaceutical dose form: when the authorised pharmaceutical dose form involves a single standard term dose form which does not fall into one of the other categories and which may or may not undergo transformation after supply to and prior to administration to the patient.

Example: Tablet, Capsule, Solution for injection

Combined terms: in special cases (e.g., identical products which may be distinguished only by reference to the container), the information about the immediate container can be included in the authorised pharmaceutical form. In this case the list “Combined Terms” shall be used.

Example: Solution for injection in pre-filled syringe

Combination Package: medicinal products may consist of two Pharmaceutical Products that correspond with two different administrable dose forms (e.g., hard capsule and cream) that form individual entities which do not need combining for administering to the patient.

Example: Cream + vaginal tablet.

Tag	Description
User Guidance	The authorised pharmaceutical dose form(s) or the dose form submit shall be provided as an EDQM term ID.
Repeatable	Yes
Conformance	Mandatory
Data Type	Codable Concept

Excel	EDQM Auth. Pharm. Dose form
Value(s)	As applicable in one of the EDQM lists: ▪ Combined pharmaceutical dose form ▪ Pharmaceutical dose form ▪ Combined term ▪ Combination Package
ISO Element Name	N/A
ISO Path	N/A
FHIR Element Name	authorisedDoseForm
FHIR Path	MedicinalProductDefinition.extension.authorisedDoseForm

1.1.3 Combined pharmaceutical dose form

A 'Combined pharmaceutical dose form' is a single term to describe two or more manufactured dose forms that are intended to be combined to create a single administrable dose form. If there is no combining needed to prepare the administrable dose form (e.g., medicinal product is composed of a single Manufactured Item that equals the administrable dose form) then the 'Combined pharmaceutical dose form' is left blank.

Medicinal products may consist of two Pharmaceutical Products that correspond with two different administrable dose forms (e.g., hard capsule and cream) that **form individual entities which do not need combining for administering to the patient**. In these cases, the **field should be left blank**.

To illustrate this concept, additional examples are reflected below:

Example(s):

- 'Powder' and 'solvent' are two Manufactured Items that shall be combined to create a single Pharmaceutical Product. The administrable dose form that will be created using these two Manufactured Items and administered to the patient will be 'solution for injection'. The combined pharmaceutical dose form to be used in this case is the standard term ‘Powder and solvent for solution for injection’.

- “Film-coated tablet” involves a single Manufactured Item. This Manufactured Item corresponds with the administrable dose form (no previous preparation/combination with other Manufactured Item is needed). Therefore, this field should be left blank.

- “Oral Capsule” & “External Cream” correspond with two different administrable dose forms which do not need combining for administering to the patient. Therefore, this field should be left blank.

Tag	Description
User Guidance	The combined pharmaceutical dose form(s) shall be provided as an EDQM term ID.
Repeatable	No
Conformance	Conditional
Data Type	CodableConcept
Excel	EDQM Comb. Pharm. Doseform
Value(s)	As applicable in the EDQM Combined pharmaceutical dose form list

ISO Element Name	Combined Pharmaceutical Dose Form
ISO Path	/MedicinalProduct/CombinedPharmaceuticalDoseForm
FHIR Element Name	combinedPharmaceuticalDoseForm
FHIR Path	MedicinalProductDefinition.combinedPharmaceuticalDoseForm

1.1.4 Additional monitoring indicator

Indication whether the medicinal product is subject to additional monitoring to allow quick identification of new safety information (black triangle/symbol) in accordance with Art. 14a TPLRO.

Tag	Description
User Guidance	The value indicating whether the medicinal product is subject to additional monitoring should be specified if the medicinal product is subject to additional monitoring.
Repeatable	No
Conformance	Mandatory
Data Type	Boolean
Excel	not applicable
Value(s)	True / False
ISO Element Name	Additional Monitoring Indicator
ISO Path	/MedicinalProduct/AdditionalMonitoringIndicator
FHIR Element Name	additionalMonitoringIndicator
FHIR Path	MedicinalProductDefinition.additionalMonitoringIndicator

Example(s):

▼ Dieses Arzneimittel unterliegt einer zusätzlichen Überwachung. Dies ermöglicht eine schnelle Identifizierung neuer Erkenntnisse über die Sicherheit. Angehörige von Gesundheitsberufen sind aufgefordert, den Verdacht einer neuen oder schwerwiegenden Nebenwirkung zu melden. Hinweise zur Meldung von Nebenwirkungen, siehe Rubrik «Unerwünschte Wirkungen».

ORSERDU® Filmtabletten

In this case as the medicinal product is subject to additional monitoring, the Boolean concept “True” shall be selected.

1.1.5 Paediatric use indicator

The value indicating whether the medicinal product is authorised and explicitly indicated for paediatric use shall be specified.

Example(s):

Example 1: information of paediatric use included in section 4 of the IHP

Section 4: Indications/uses of the IHP states: Levetiracetam-Mepha Teva is indicated as monotherapy in the treatment of partial onset seizures with or without secondary generalisation in adults and adolescents from 16 years of age with epilepsy.

Example 2: information of paediatric use not reflected in section 4 of the IHP but included in section 5 of the IHP

Section 4 Posology and method of administration of the IHP: Adolescents (12 to 17 years) under 40 kg.

Therefore, in both cases, the value ”True” shall be selected.

Tag	Description
User Guidance	Paediatric use indicator shall be completed to indicate whether a medicinal product is authorised for a paediatric indication with the following values: ▪ Authorised for the treatment, diagnosis or prevention in children: shall be selected if an indication for paediatric population (children under the age of 18) is stated in Section 4 Therapeutic indications of the IHP and/or a posology is stated for any subset of the paediatric population in Section 5 Posology and method of administration of the IHP. ▪ Not authorised for the treatment, diagnosis or prevention in children: shall be selected if the medicinal product does not meet any of the above conditions.
Repeatable	No
Conformance	Mandatory
Data Type	Boolean
Excel	Not applicable -
Value(s)	True / False
ISO Element Name	Paediatric Use Indicator
ISO Path	/MedicinalProduct/PaediatricUseIndicator
FHIR Element Name	paediatricUseIndicator
FHIR Path	MedicinalProductDefinition.paediatricUseIndicator

1.1.6 Full indication text

The description of the authorised full therapeutic indication(s) shall be described in text as reflected in Section 4 Indications/Uses of the corresponding IHP or if not available the PI.

Additional examples can be found below.

Tag	Description
User Guidance	The description of the authorised full therapeutic indication(s) shall be described in text as reflected in Section 4 “Indications/Uses” of the corresponding IHP or for medicinal products without IHP the therapeutic indication(s) shall be described in text as reflected in Section 3 “What … is and what it is used for" of the PI.
Repeatable	No
Conformance	Mandatory
Data Type	Markdown
Excel	Not applicable
Value(s)	markdown text
ISO Element Name	Not applicable
ISO Path	Not applicable
FHIR Element Name	Indication
FHIR Path	MedicinalProductDefinition.indication

Example(s):
Kombinationstherapie bei metastasierendem Hodenkarzinom, metastasierendem Ovarialkarzinom, Plattenepithelkarzinom im ORL-Bereich nach Resektion und/oder Strahlentherapie, Osteosarkom und kleinzelligem oder nichtkleinzelligem Lungenkarzinom in Ergänzung zur Operation oder Strahlentherapie.

Monotherapie bei Ovarialkarzinom nach Rezidiv auf nicht-cisplatinhaltige Vortherapie.
Monotherapie oder Kombinationstherapie bei Blasenkarzinom, wenn eine lokale Behandlung nicht mehr in Frage kommt.
Eine palliative Therapie mit Cisplatin ist als Mono- oder Kombinationstherapie bei Zervixkarzinom, Prostatakarzinom, Ösophaguskarzinom, Lymphomen, Sarkomen und malignem Melanom angezeigt, wenn andere Therapiemöglichkeiten nicht in Frage kommen.

1.2 Medicinal product category (Product classification)

The medicinal product category based on the nature of the active substance or combination of substances and based on how it exerts a pharmacological, immunological or metabolic action or whether it has a special classification (e.g., Nucleic acid products, vaccine, etc.) shall be provided.

If multiple values apply to the same medicinal product, then multiple values shall be selected by repeating the field (e.g., A vaccine consisting of a recombinant protein will be classified as immunological and biological medicinal product).

Tag	Description
User Guidance	Indication on the type of medicinal product should be included using the applicable value selected from the term ID as listed in the applicable Swissmedic list based on the nature of active substance or combination of substances. The applicable value(s) shall be selected from the term ID as listed in the applicable Swissmedic list
Repeatable	Yes
Conformance	Mandatory
Data Type	CodeableConcept
Excel	SwissMedicinal product category
Value(s)	Listed in the Medicinal Product Category Swissmedic list
ISO Element Name	Product Classification
ISO Path	/MedicinalProduct/ProductClassification/
FHIR Element Name	classification
FHIR Path	MedicinalProductDefinition.classification

Example(s):

Biologics, Blood product, Synthetic, Tibetan medicinal products

1.3 Authorisation category (Product classification)

The authorisation category for the marketing authorisation shall be provided.

Tag	Description
User Guidance	The legal basis for the marketing authorisation shall be provided as applicable as a term ID. The applicable value shall be selected from the term ID as listed in the applicable Swissmedic list.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept

Excel	Swiss Regulatory Authorisation Category
Value(s)	The System and Code should be specified as listed in the Swiss Regulatory Authorisation Category Type Swissmedic list.
ISO Element Name	Product Classification
ISO Path	/MedicinalProduct/ProductClassification/
FHIR Element Name	classification
FHIR Path	MedicinalProductDefinition.classification

Example(s):

NA parallel import, Extension for NAS, NA phyto traditional

1.4 ATC code (Product classification)

Tag	Description
User Guidance	▪ The ATC code as indicated in section 13.1 ATC Code of the corresponding IHP according to the WHO classification shall be provided (if available). If multiple values apply to the same medicinal product, then multiple values shall be selected by repeating the field. ▪ All five levels of an ATC Code can technically be used; however, the most granular level of information is expected wherever available. ▪ The applicable value(s) shall be selected from the term ID as listed in the applicable WHO list. ▪ If ATC code is not available or is not yet defined this field shall be populated with the WHO ATC Code referring to the substance group of the last available level of the ATC Code.
Repeatable	Yes
Conformance	Mandatory
Data Type	CodeableConcept
Excel	WHO ATC Code
Value(s)	Listed in the Anatomical Therapeutic Chemical classification system - WHO
ISO Element Name	Product Classification
ISO Path	/MedicinalProduct/ProductClassification/
FHIR Element Name	classification
FHIR Path	MedicinalProductDefinition.classification

Example(s):

L02BB06, M05BX04, R05DA04

1.5 Medicinal product name

The Medicinal product name is defined based on the following elements and structure:

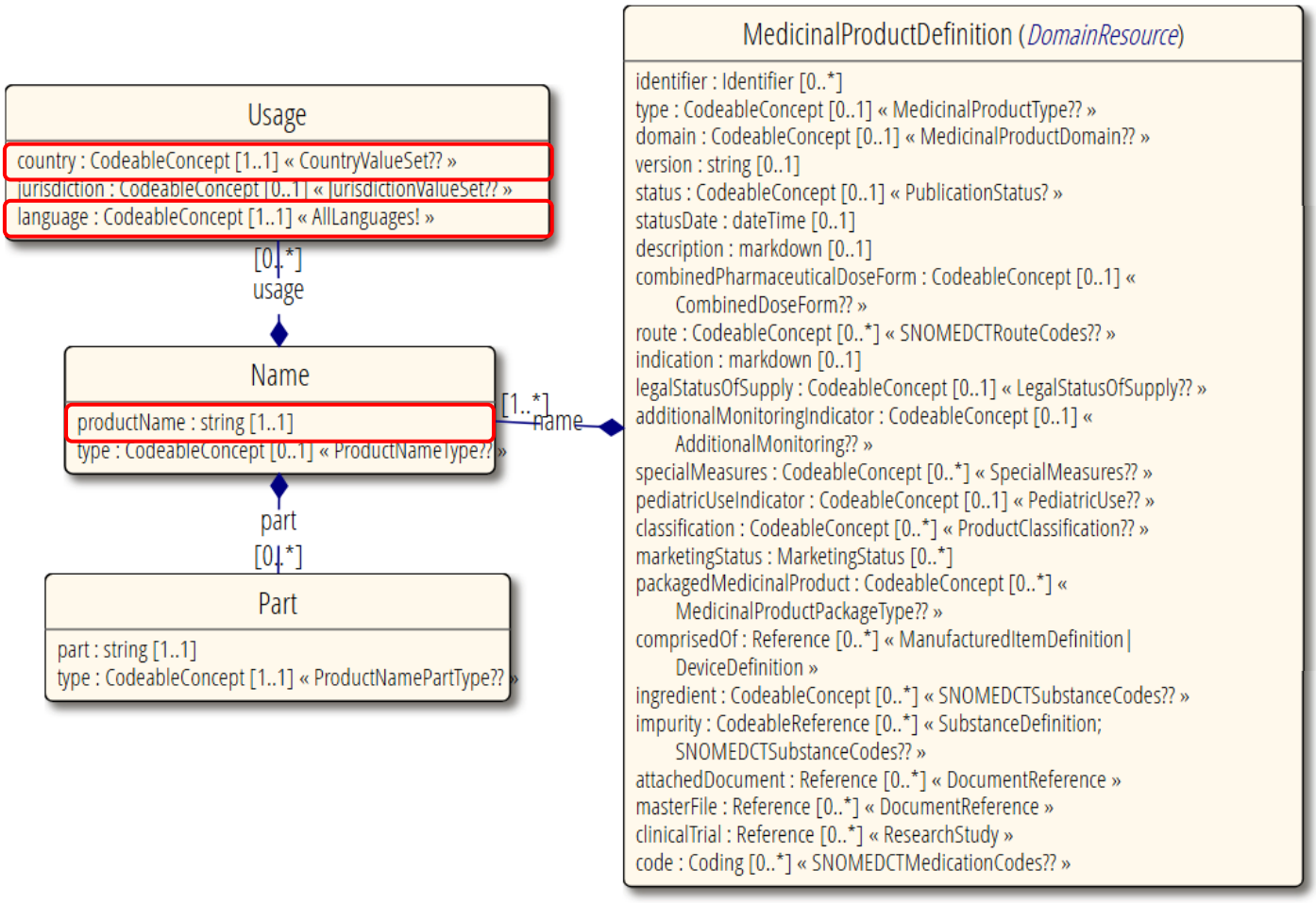

Figure 4: Extract of the Resource MedicinalProductDefinition (source: http://www.hl7.org/fhir)

The class is capturing the full medicinal product name in line with the language.

The medicinal product name class is mandatory and non-repeatable.

Medicinal Product Name Class	Description
Repeatable	No
Conformance	Mandatory

1.5.1 Full name

Tag	Description
User Guidance	The full medicinal product name as indicated in IHP Section 1: Name of the medicinal product and shall be specified, in the language of publication (German, French or Italian)
Repeatable	No
Conformance	Mandatory
Data Type	String
Excel	N/A
Value(s)	The full medicinal product name as free text.
ISO Element Name	FullName
ISO Path	/MedicinalProduct/MedicinalProductName/FullName

FHIR Element Name	productName
FHIR Path	MedicinalProductDefinition.name.productName

Example(s):

- *Abirateron Zentiva 500 mg, Filmtabletten*
- *Keytruda 100 mg/4 ml, Konzentrat zur Herstellung einer Infusionslösung*
- *Pamorelin LA 11.25 mg, poudre et solvant pour suspension injectable à libération prolongée*

1.6 Country/Language

This section describes how to populate information on the language used for the data on the Medicinal product. The class Country/Language is mandatory. For the pilot project the approved language of the approved IHP shall be used.

The Country/Language class and its attributes are mandatory and not repeatable.

Country/Language Class	Description
Repeatable	No
Conformance	Mandatory

1.6.1 Country

Tag	Description
User Guidance	Switzerland as the country shall be specified as a term ID
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	N/A
Value(s)	Default value: ‘Switzerland
ISO Element Name	Country
ISO Path	/MedicinalProduct/MedicinalProductName/Country-Language/Country
FHIR Element Name	Country
FHIR Path	MedicinalProductDefinition.name.countryLanguage.country

Example(s):

Switzerland

1.6.2 Language

Wherever the term ‘language’ is used in this document, it refers to the language used in the medicinal product information submitted to and approved by Swissmedic.

Tag	Description
User Guidance	The language of the medicinal product name used in the medicinal product information, as approved by the regulatory authority shall be specified as a term ID.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	ISO Language

Value(s)	As listed in the Language ISO list ISO 639-3
ISO Element Name	Language
ISO Path	/MedicinalProduct/MedicinalProductName/Country-Language/Language
FHIR Element Name	Language
FHIR Path	MedicinalProductDefinition.name.countryLanguage.language

Example(s):

German, French, Italian, English

1.7 Attached Documents

The medicinal product shall reference at least one document(s) supporting the regulatory process (e.g., initial marketing authorisation, variation, renewal, transfer of marketing authorisation etc.). Working documents of IHP or PI document as well as a PDF of the packaging elements shall be provided.

The FHIR DocumentReference (Figure 5) resource is used to describe documents. In the context of the pilot project, the information in highlighted in red is within the scope and should be provided according to the rules and guidance described in this section:

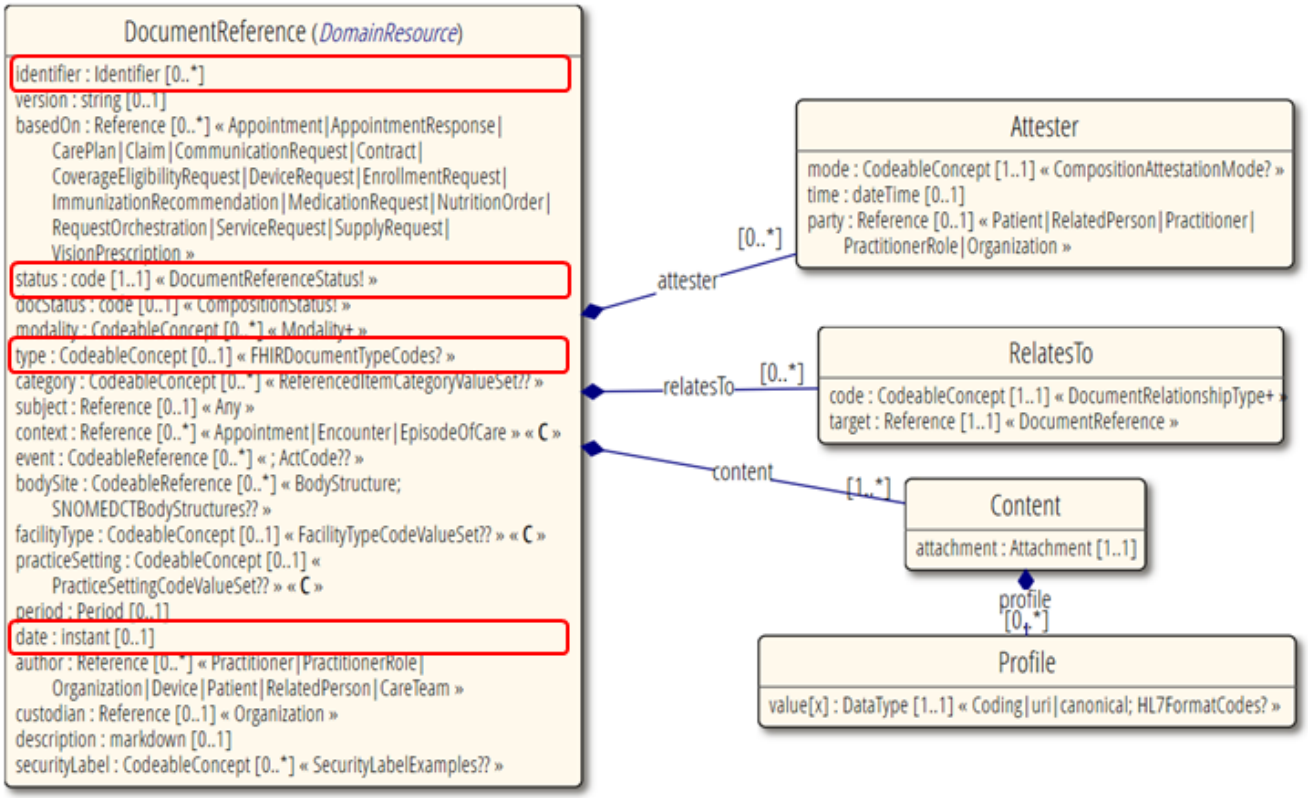

Figure 5: Resource DocumentReference (source: http://www.hl7.org/fhir)

The attached document class is mandatory and repeatable while the individual attributes of this class are not repeatable and shall be populated as applicable.

Attachment document Class	Description
Repeatable	Yes

Conformance	Conditional

1.7.1 Attached document identifier

Tag	Description
User Guidance	The Identifier will be a combination of two parts. The first part consisting of the application ID and corresponding milestone will be assigned to the document once it is uploaded on the Portal, the second part can be chosen by the MAH. This identifier is specific to this version of the document.
Repeatable	No
Conformance	Mandatory
Data Type	String
Excel	N/A
Value(s)	Relevant Identifer assigned by the applicant
ISO Element Name	Identifier
ISO Path	/MedicinalProduct/AttachedDocument/Identifier
FHIR Element Name	value
FHIR Path	DocumentReference.identifier.value (referenced from MedicinalProductDefinition.attachedDocument)

Example(s):

102756139-initial submission-Study-IMPROVE-511

1.7.2 (Attached document) Type

Tag	Description
User Guidance	The value indicating the type of document shall be specified as a term ID. The applicable value shall be selected from the term ID as listed in the applicable Swissmedic list.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	Swiss Attached Document Type
Value(s)	As listed in the Swiss Attached Document Type List
ISO Element Name	Type
ISO Path	/MedicinalProduct/AttachedDocument/Type
FHIR Element Name	Type
FHIR Path	DocumentReference.type (referenced from MedicinalProductDefinition.attachedDocument)

Example(s):

Patient Information, Basic information for export

1.7.3 (Attached document) Effective Date

Tag	Description
User Guidance	The date, by which the corresponding updates become effective - Approval date - For changes not requiring regulatory approval to be included in the terms of the marketing authorisation (e.g., Type IA variations), the date of the implementation of this change should be provided.
Repeatable	No

Conformance	Conditional
Data Type	dateTime
Excel	N/A
Value(s)	A date shall be specified using the ISO 8601 date format. ISO 8601 can accommodate year and month, should day of the month not be known. (i.e., YYYY-MM).
ISO Element Name	Effective Date
ISO Path	/MedicinalProduct/AttachedDocument/EffectiveDate
FHIR Element Name	Date
FHIR Path	DocumentReference.context.period.start (referenced from MedicinalProductDefinition.attachedDocument)

1.7.4 (Attached document) Language

The language used in the medicinal product information (IHP or PI) submitted to and approved by Swissmedic.

Tag	Description
User Guidance	The language used in the medicinal product information (IHP or PI) submitted to and approved by Swissmedic.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	ISO Language
Value(s)	As listed in the Language ISO list ISO 639-3
ISO Element Name	Language
ISO Path	/MedicinalProduct/AttachedDocument/Language
FHIR Element Name	valueCodeableConcept
FHIR Path	DocumentReference.content.extension.language(referenced from MedicinalProductDefinition.attachedDocument)

1.7.5 (Attached document) Status

Tag	Description
User Guidance	This field is mandatory in the FHIR specification. The value ‘current’ shall be used always.
Repeatable	No
Conformance	Mandatory
Data Type	code
Excel	N/A
Value(s)	Default value:”current”
ISO Element Name	N/A
ISO Path	N/A
FHIR Element Name	status
FHIR Path	DocumentReference.status (referenced from MedicinalProductDefinition.attachedDocument)

2 Marketing Authorisation Information

In this section, information about the marketing authorisation shall be specified.

A Marketing authorisation is issued by Swissmedic, to an organisation that applied for a marketing authorisation in Switzerland. This is done through a marketing authorisation procedure in order to allow placing a medicinal product on a market in Switzerland. If a marketing authorisation for a medicinal product is granted, the applicant organisation is subsequently referred thereafter as a marketing authorisation holder.

The full information on Marketing Authorisation as presented in the FHIR Resource RegulatedAuthorization is shown in Figure 6 below:

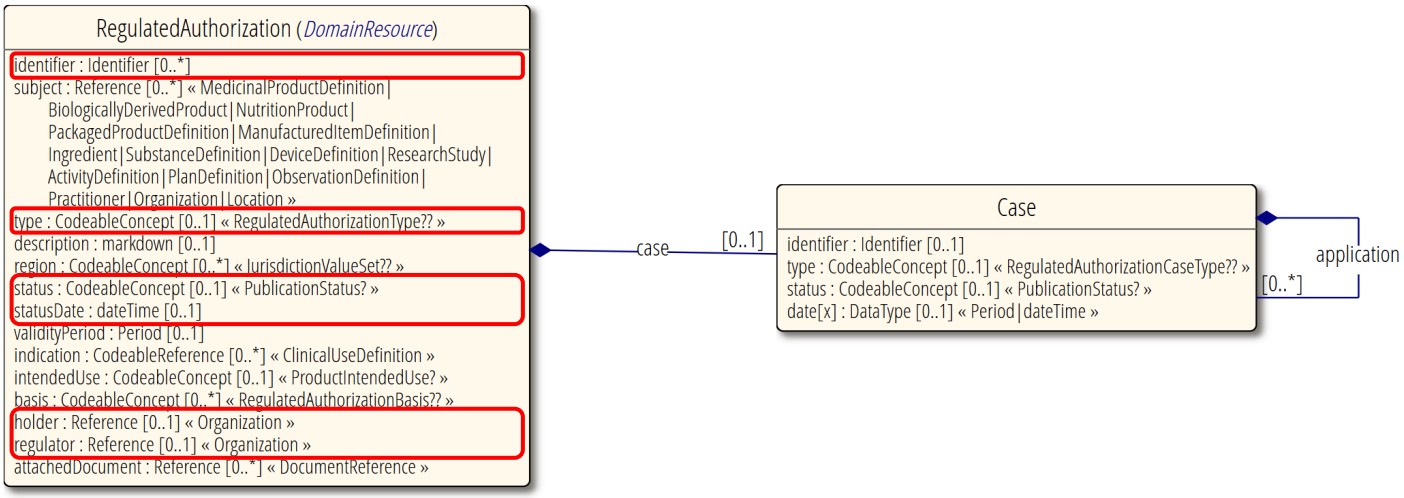

Figure 6: Resource RegulatedAuthorization (source: http://www.hl7.org/fhir)

The Marketing Authorisation class is mandatory and not repeatable while the individual attributes of this class are not repeatable and shall be populated as applicable. In the context of the Swissmedic Pilot, the following elements are in scope and information should be provided according to the rules and guidance described in this section.

Marketing authorisation Class	Description
Repeatable	No
Conformance	Mandatory

2.1 Marketing Authorisation

2.1.1 Regulatory authorisation type

Regulatory applications may be submitted to obtain different types of authorisations or regulatory entitlements.

Tag	Description
User Guidance	The type of regulatory authorisation shall be specified. The applicable value shall be selected from the term ID as available in the applicable Swissmedic term list.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept

Excel	Swiss Regulatory authorisation type
Value(s)	As listed in the Regulatory authorisation type Swissmedic list.
ISO Element Name	Not Applicable
ISO Path	Not Applicable
FHIR Element Name	Type
FHIR Path	RegulatedAuthorization.type

Example(s):

Marketing authorisation, Export authorisation

2.1.2 Marketing authorisation number

Marketing authorisation number or equivalent identifier assigned by Swissmedic as indicated in the certificate of authorisation, shall be specified.

- Only one MA number can be referenced in this data element.
- Marketing authorisation number on the medicinal product level is defined as 6-digit root number and 3-digit strength code (e.g. NNNNNNYYY).

Tag	Description
User Guidance	Marketing Authorisation number shall be specified. ▪ Where the authorisation number is assigned at packaged medicinal product level, the stable “root number” common to all packaged medicinal products shall be specified. This section is to be completed when the information is available. Because the marketing authorisation number is released by Swissmedic during the regulatory authorisation procedure, this data field can only be populated with the necessary information after the initial submission. For migration, the Marketing Authorisation Number will be created by concatenating the currently authorized 5-digit Marketing authorisation number with the currently authorized 2-digit dosage strength number and each of them will be preceded by a zero.
Repeatable	No
Conformance	Conditional
Data Type	Identifier
Excel	N/A
Value(s)	The number as assigned by Swissmedic shall be specified as free text. The format of the Swissmedic number is “NNNNNNYYY”
ISO Element Name	Marketing Authorisation Number
ISO Path	/MedicinalProduct/MarketingAuthorisation/MarketingAuthorisationNumber
FHIR Element Name	Identifier
FHIR Path	RegulatedAuthorization.identifier

Example(s):

056891002, 048164007

2.1.3 Country

Tag	Description
User Guidance	Switzerland as the country shall be specified as a term ID

Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	N/A
Value(s)	Default value: ‘Switzerland
ISO Element Name	Country
ISO Path	/MedicinalProduct/MarketingAuthorisation/Country
FHIR Element Name	Region
FHIR Path	RegulatedAuthorization.region

2.1.4 Legal status of supply

Tag	Description
User Guidance	The legal status of supply of the medicinal product shall be specified using a term ID. The applicable value shall be selected from the term ID as available in the applicable Swissmedic term list. ▪ In the scenario that legal status of supply differs at package level (different legal status for different package sizes of the same medicinal product), the information at medicinal product level is to be populated with the Swissmedic term: o “B/D: Dispensed on prescription by a physician or veterinarian (B)/Dispensed following expert advice (D)” ▪ In this case, the legal status of supply shall also be entered at package level (4.2.3– Legal Status of Supply (Package).
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	Swiss Legal Status of Supply
Value(s)	As listed in the Legal Status for the Supply Swissmedic list.
ISO Element Name	Legal Status of Supply
ISO Path	/MedicinalProduct/MarketingAuthorisation/LegalStatusOfSupply
FHIR Element Name	legalStatusOfSupply
FHIR Path	MedicinalProductDefinition.legalStatusOfSupply

Example(s):

A: Medicinal product subject to medical or veterinary prescription single dispensation, D: Dispensation after consultation

2.1.5 Authorisation status

Tag	Description
User Guidance	The status of the marketing authorisation of the medicinal product throughout its lifecycle shall be specified as a term ID. The applicable value shall be selected from the term ID as listed in the applicable Swissmedic list. A different authorisation status can apply to each package of the same medicinal product (e.g., one package can be expired while another is still valid). The authorisation status of the medicinal product can only be one.

	Therefore, the following rules shall be followed to fill the authorisation status field at medicinal product level: Valid > limited authorisation > applied for > suspended > limited authorisation expired > expired. If all the packages have the same authorisation status, this value should be used at product level.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	Swiss Authorisation Status
Value(s)	As listed in the Authorisation Status Swissmedic list.
ISO Element Name	Authorisation Status
ISO Path	/MedicinalProduct/MarketingAuthorisation/AuthorisationStatus
FHIR Element Name	Status
FHIR Path	RegulatedAuthorization.status

Example(s):

Valid, Expired

2.1.6 Authorisation status date

Tag	Description
User Guidance	The date at which the authorisation status has become effective shall be specified if available.
Repeatable	No
Conformance	Conditional
Data Type	dateTime
Excel	N/A
Value(s)	A date shall be specified using the ISO 8601 date format. ISO 8601 can accommodate year and month should day of the month not be known. (i.e., YYYY-MM).
ISO Element Name	Authorisation Status Date
ISO Path	/MedicinalProduct/MarketingAuthorisation/AuthorisationStatusDate
FHIR Element Name	statusDate
FHIR Path	RegulatedAuthorization.statusDate

2.2 Marketing status

This section provides information on the marketing status of the medicinal product. Marketing status considers the concepts of placing in the market and market cessation. Swissmedic has very limited information on this subject. It is mandatory for the MAH to notify Swissmedic in case of no marketing or interruption of distribution / resumption of distribution of authorised medicinal products according to Art. 16a TPA and Art. 11 TPO.

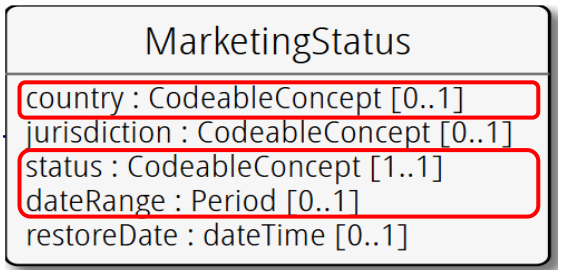

Figure 7: Marketing Status (source: http://www.hl7.org/fhir)

This class is conditional and not repeatable while the individual attributes of this class are not repeatable and shall be populated as applicable.

Marketing Status Class	Description
Repeatable	No
Conformance	Conditional

2.2.1 Country

Tag	Description
User Guidance	The Swiss country code shall be specified as a term ID.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	N/A
Value(s)	Hardcoded to “Switzerland”
ISO Element Name	Country
ISO Path	/MedicinalProduct//MarketingStatus/Country
FHIR Element Name	Country
FHIR Path	MedicinalProductDefinition.marketingStatus.country

2.2.2 Marketing status

Tag	Description
User Guidance	The marketing status of the medicinal product shall be specified as a term ID. The applicable value shall be selected from the term ID as listed in the applicable Swissmedic list.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	Swiss Marketing Status
Value(s)	As listed in the Marketing Status Swissmedic list.
ISO Element Name	Marketing Status
ISO Path	/MedicinalProduct//MarketingStatus/Status
FHIR Element Name	Status
FHIR Path	PackagedProductDefinition.marketingStatus.status

Example(s):

No interruption of distribution reported, Distribution interruption

2.2.3 (Marketing Status) start date

Tag	Description
User Guidance	The date at which the marketing status of the package medicinal product has become effective shall be specified.
Repeatable	No
Conformance	Mandatory
Data Type	dateTime
Excel	Not applicable
Value(s)	A date shall be specified using the ISO 8601 date format. ISO 8601 can accommodate year and month should day of the month not be known. (i.e., YYYY-MM).
ISO Element Name	Marketing Date Start
ISO Path	/MedicinalProduct/MarketingStatus/MarketingDateStart
FHIR Element Name	dateRange.start
FHIR Path	MedicinalProductDefinition.marketingStatus.dateRange.start

2.2.4 (Marketing Status) end date

Tag	Description
User Guidance	The date at which the marketing status of the package medicinal product has ceased to be effective shall be specified. This section is to be completed when the information is available.
Repeatable	No
Conformance	Conditional
Data Type	dateTime
Excel	Not applicable
Value(s)	A date shall be specified using the ISO 8601 date format. ISO 8601 can accommodate year and month should day of the month not be known. (i.e., YYYY-MM).
ISO Element Name	Marketing Date Stop
ISO Path	/MedicinalProduct//MarketingStatus/MarketingDateStop
FHIR Element Name	dateRange.end
FHIR Path	MedicinalProductDefinition.marketingStatus.dateRange.end

2.3 Marketing authorisation holder (Organisation)

The information on the holder of the marketing authorisation of the medicinal product shall be specified as an identifier.

Tag	Description
User Guidance	The Marketing authorisation holder shall be specified using the location identifier (LOC ID) linked to the organisation as listed in the Organisation Management System (OMS) following a successful registration of the organisation's details. If the required organisation and/or related location are not available, the addition of the organisation and/or related location should be requested from OMS, using the process

	described in the OMS Web User Manual available in the 'Documents' section of the Organisation Management System (OMS). When the LOC ID is specified, the system would give the information to which ORG ID the selected location is linked in the back end.
Repeatable	No
Conformance	Mandatory
Data Type	Identifier
Excel	N/A
Value(s)	As listed in OMS (LOC-ID)
ISO Element Name	MarketingAuthorisationHolder(Organisation)
ISO Path	MedicinalProduct/MarketingAuthorisation/MarketingAuthorisationHolder(Or ganisation)
FHIR Element Name	Authorisation.holder
FHIR Path	RegulatedAuthorization.holder

2.4 Medicines Regulatory Agency (Organisation)

Tag	Description
User Guidance	Medicines Regulatory Agency shall be specified using the organisation identifier (ORG ID) and the related location identifier (LOC ID) as listed in the Organisation Management System (OMS).
Repeatable	No
Conformance	ORG ID: Mandatory LOC ID: Conditional
Data Type	Identifier
Excel	N/A
Value(s)	Default value: Swissmedic Swiss Agency for Therapeutic Products ▪ ORG-100006583 ▪ LOC-100010911
ISO Element Name	Identifier
ISO Path	MedicinalProduct/MarketingAuthorisation/Organisation (MedicinesRegulatoryAgency)/Identifier
FHIR Element Name	Regulator
FHIR Path	RegulatedAuthorization.regulator

3 Therapeutic indication

Therapeutic indications will be implemented using the FHIR *ClinicalUseIssue Resource* (Figure 8). In the context of the pilot of the Swissmedic implementation, the elements in red rectangle are in scope and shall be provided according to the rules and guidance described in this section.

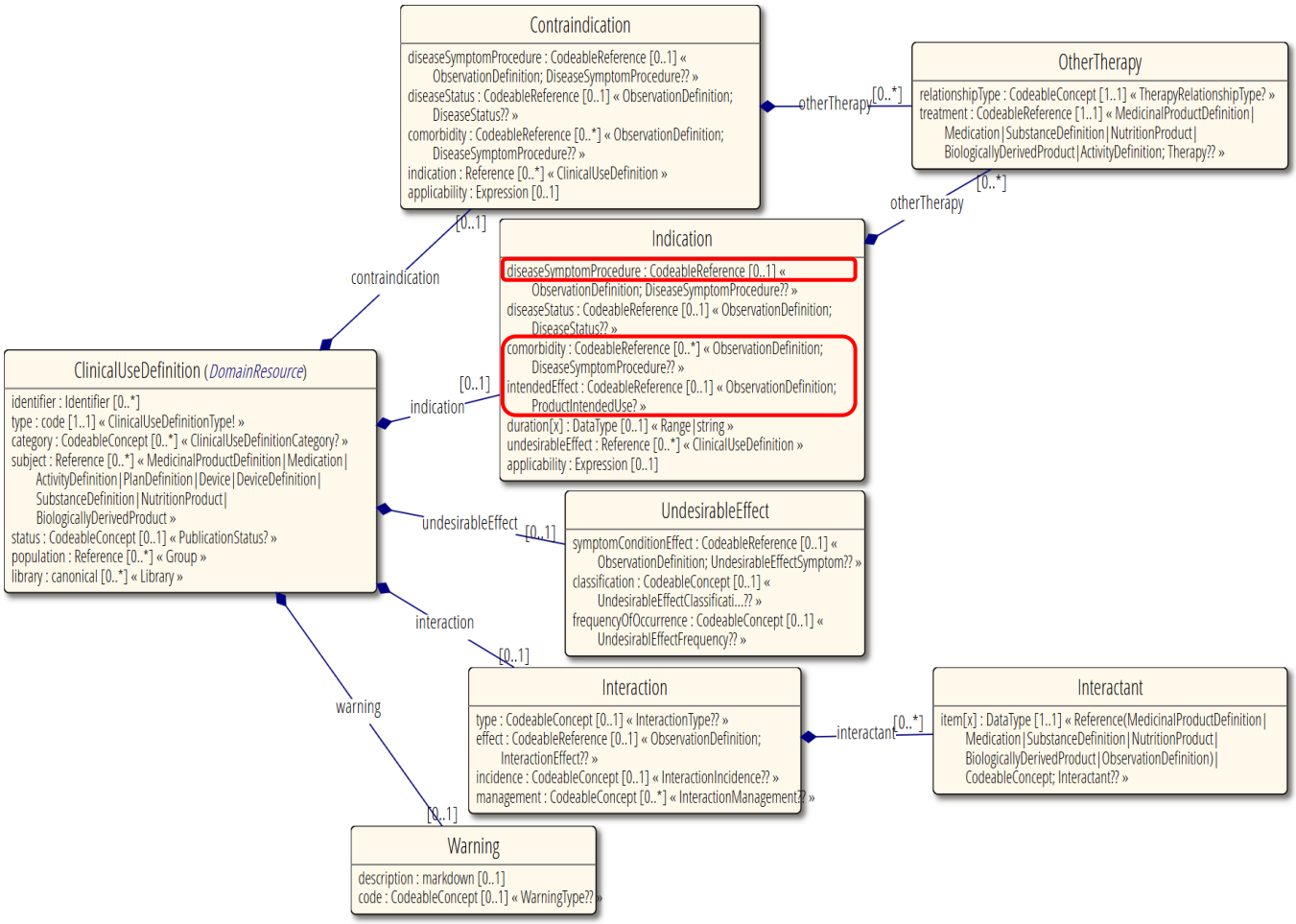

Figure 8: Resource ClinicalUseIssue ((source : http://www.hl7.org/fhir)

The therapeutic indication class is mandatory and repeatable while the different attributes shall be populated as applicable and are not repeatable (except for the Co-morbidity data element).

Therapeutic (product) indication Class	Description
Repeatable	Yes
Conformance	Mandatory

3.1 Indication as "Disease/Symptom/Procedure"[1]

Tag	Description
User Guidance	The coding of the authorised indication(s) as disease, symptom or procedure as reflected in Section 4 Indications/Uses of the corresponding IHP or other regulatory document shall be specified as an MedDRA term. ▪ The applicable Lowest Level Terms (LLT) from the Medical Dictionary for Regulatory Activities (MedDRA) value(s) shall be selected from the term ID as available in applicable Swissmedic list. ▪ The chosen MedDRA term should be as specific as possible, targeting to capture the most detailed level of information presented in the indication section. Note: To achieve a greater specificity of the coded term, it is recommended to select the MedDRA term that accounts for as much information as possible, such as: ▪ Both the disease and its cause as provided in the IHP, (e.g., 'Osteoporosis steroid-induced'); ▪ Aspects of 'Disease status specification' (e.g., Pancreatic adenocarcinoma metastatic); ▪ Details related to the target population (e.g., 'Osteoporosis postmenopausal) ▪ Timing/duration (e.g., 'Hepatitis chronic persistent')
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
URI/URLs	https://tools.meddra.org/wbb/
Value(s)	As listed in the Medical Dictionary For Regulatory Activities list (MedDRA)
ISO Element Name	Indication as "Disease / Symptom / Procedure"
ISO Path	/MedicinalProduct/TherapeuticIndication/IndicationAsDisease-Symptom- Procedure
FHIR Element Name	diseaseSymptomProcedure
FHIR Path	ClinicalUseIssue.indication.diseaseSymptomProcedure

Example(s):

Migraine, Pain relief, Diarrhea

3.2 Co-morbidity

Tag	Description
User Guidance	The description of any comorbidity [i.e., concurrent condition(s)] or co- infections included in the authorised indication(s) as reflected in Section 4 Indications/Uses of the corresponding IHP may be specified using the Swissmedic term ID. This refers to further conditions (concurrent conditions or co-infections) that define the patient population apart from the 'Disease/symptoms/procedure' aspect of the indication. ▪ The applicable Lowest Level Terms (LLT) from the Medical Dictionary for Regulatory Activities (MedDRA) value(s) shall be selected from the term ID as available in applicable Swissmedic list.

[1] Description of the authorised full therapeutic indication(s) as text, as reflected in Section 4 Indications/Uses of the corresponding IHP or other regulatory document, has been described in section 3.1

	▪ The chosen MedDRA term should be as specific as possible, targeting to capture the most detailed level of information presented in the indication section.
Repeatable	Yes
Conformance	Conditional
Data Type	CodeableConcept
URI/URLs	https://tools.meddra.org/wbb/
Value(s)	As listed in the Medical Dictionary For Regulatory Activities list (MedDRA)
ISO Element Name	Comorbidity
ISO Path	/MedicinalProduct/Contraindication/Comorbidity
FHIR Element Name	comorbidity
FHIR Path	ClinicalUseIssue.indication.comorbidity

To exemplify the separation between 'Indication as Disease/Symptom/Procedure' and 'Comorbidity/concurrent disease', where the indication text states: "Treatment of pancreatic insufficiency in patients with cystic fibrosis", then 'pancreatic insufficiency' needs to be included as indication, whereas 'cystic fibrosis' represents the 'Comorbidity/concurrent conditions' aspect of the indication and it should not be included at this stage in the indication field.

Careful consideration of the drug's mechanism of action and impact on the disease is required when assessing whether the diseases mentioned in the indication text are considered to be 'comorbidity' or whether they constitute the therapeutic indication (and need to be included). Treatment of typical signs and symptoms of a disease may represent treatment of the disease.

Looking at an example where indication states: "For the treatment of hyperglycaemia in type II diabetes", then it needs to be considered that treatment of hyperglycaemia (i.e., achieving normoglycaemia), is the goal of all antidiabetic treatment, and type II diabetes should therefore be considered as the indication for treatment and not a concurrent disease.

Example(s):

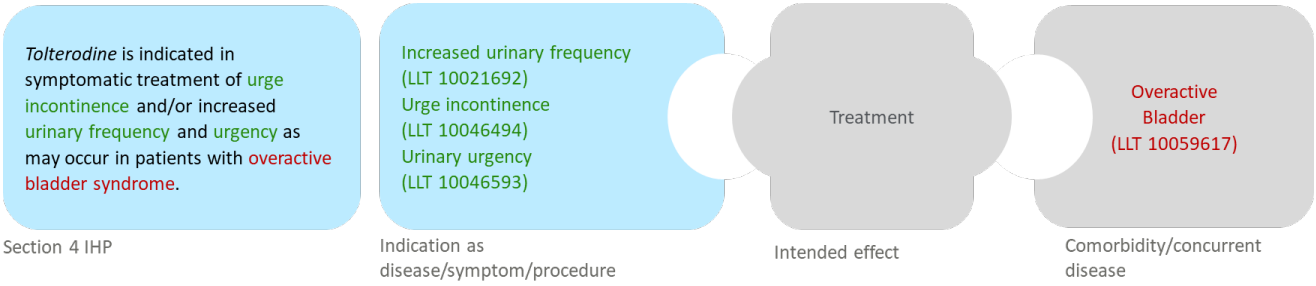

Figure 9: Section 4 IHP, Indication as disease/symptom/procedure, Intended effect, Comorbidity/concurrent disease

As general principle, one *ClinicalUseIssue* resource shall be created per each of the listed therapeutic indications. In the example reported in Figure 9 there are three therapeutic indications, one intended effect and one comorbidity, therefore three *ClinicalUseIssue* resource shall be created:

- TI (Increased urinary frequency) + Intended effect (Treatment) + Comorbidity (Overactive bladder);
- TI (Urge incontinence) + Intended effect (Treatment) + Comorbidity (Overactive bladder)
- TI (Urinary urgency) + Intended effect (Treatment) + Comorbidity (Overactive bladder)

An example where both indications as captured in IHP are to be coded:

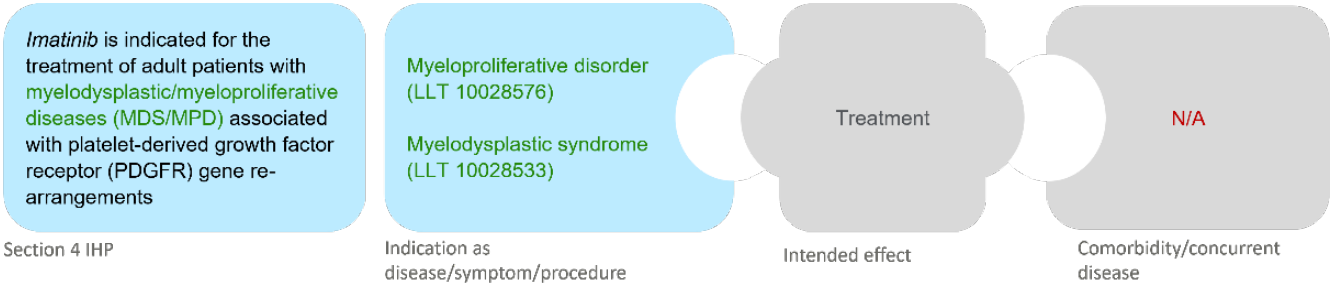

Figure 10: Coding both indications as captured in IHP

An example where most detailed information is captured, also capturing the context of the symptom (comorbidity/concurrent disease).

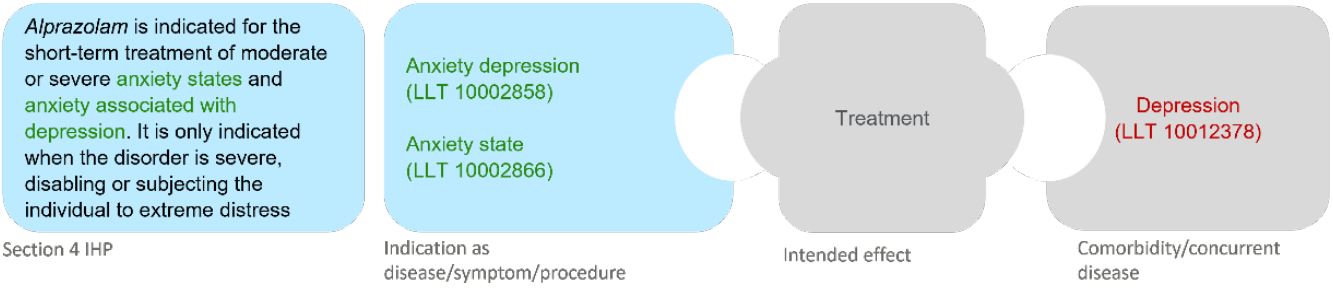

Figure 11: Detailed information as captured together with the context of the symptom (comorbidity/concurrent disease)

3.3 Intended effect

Tag	Description
User Guidance	The intended effect (i.e., the part of the indication that describes the result/type of outcome intended for the target condition), aim or strategy to be achieved by the indication as reflected in Section 4 Indication/Uses of the corresponding IHP or other regulatory document shall be specified using an Swissmedic term ID. Note: Special attention should be given to situations where a drug is indicated also for treatment and not only for prevention. If a medicinal product is also authorised for the treatment of a disease, then the respective disease should also be coded.
Repeatable	Yes
Conformance	Mandatory
Data Type	CodeableConcept
Excel	EMA Intended Effect
Value(s)	As listed in the Medicine Profile RMS List
ISO Element Name	Intended Effect
ISO Path	MedicinalProduct/TherapeuticIndication/IndicationAsDisease-Symptom-Procedure
FHIR Element Name	Intended Effect
FHIR Path	/MedicinalProduct/TherapeuticIndication/IntendedEffect

Example(s):

therapeutic, preventive, diagnostic / imaging

Figure 12 shows an example where the indication needs to be carefully considered in its context (migraine is not a concurrent condition in this case - it represents the disease to be treated). Also shows how the intended effect should be captured:

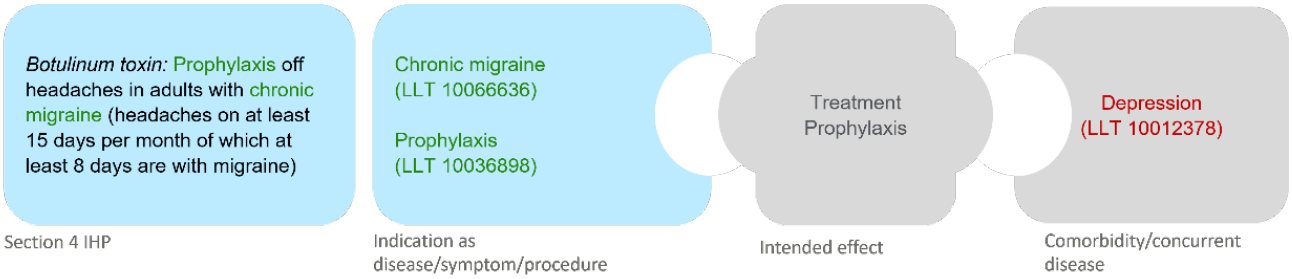

Figure 12: Example where indication needs to be carefully considered in its context

Figure 13 shows an example where both treatment and prophylaxis are to be coded in indication section, as the medicinal product is used for both purposes.

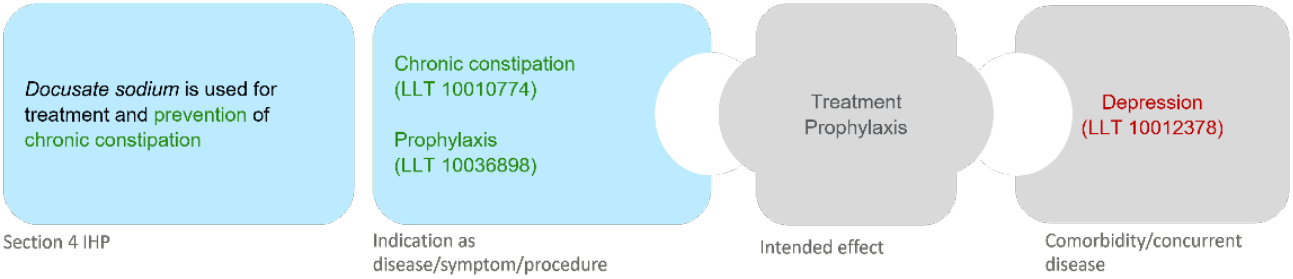

Figure 13: Treatment and prophylaxis coded in indication section

Figure 14 shows an example where the capturing of indication of a replacement therapy is presented:

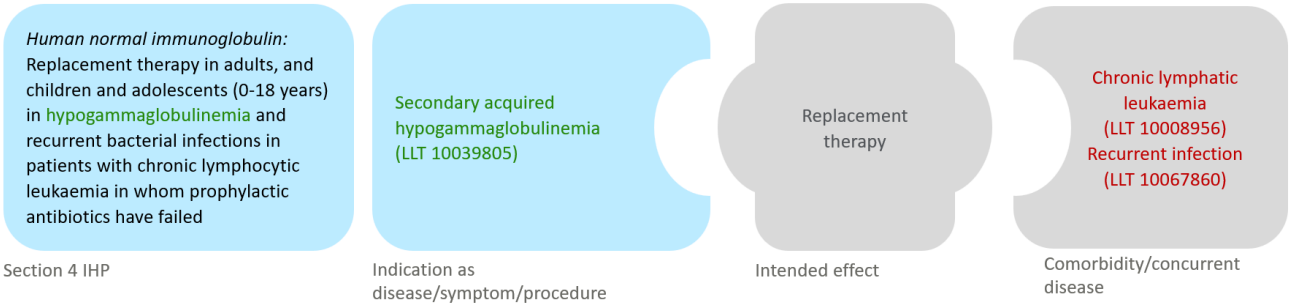

Figure 14: Capturing of indication of a replacement therapy

4 Packaged medicinal product information

This section describes the packaging and container information of a medicinal product as supplied for sale or distribution/supply. This section should be completed as follows:

- a Medicinal Product shall be associated to one or more Packaged Medicinal Products

The package of the medicinal product shall be described from the outer to inner part of the medicinal product and down to the individual ingredient(s) of each packaged Manufactured Item. For this purpose, the following classes apply:

- The Packaged Medicinal Product class: overarching class
  - The Package Item (Container) class [i.e., the outer and inner primary and secondary package(s)]
  - The Manufactured Item/ingredient(s) class [i.e., the individual pharmaceutical form(s)/ingredient(s)]
  - Shelf life / Storage Conditions associated to the Packaged Medicinal ProductProduct.

The **Packaged Medicinal Product class** is the overarching class which collects all information on the individual package within the medicinal product i.e., the 'Package Item (Container)' class for each separate item packaged.

The **Package Item (Container) class** allows for a recursive relationship, which is required to be used when there are packages within packages, e.g., cartridges within a blister sleeve within a box.

Manufactured Item is defined by individual Ingredients and Physical Characteristics and is linked to specific package item containers (Physical Characteristics and Container are out of scope of the pilot project).

In addition, the Packaged Medicinal Product will have be associated with a Shelf life / Storage Conditions as this is associated to the Package Item Container.

The full information on Packaged Medicinal Product, as described by ISO 11615, is implemented based on the HL7 FHIR Resource *PackagedProductDefinition*, as shown in Figure 15.

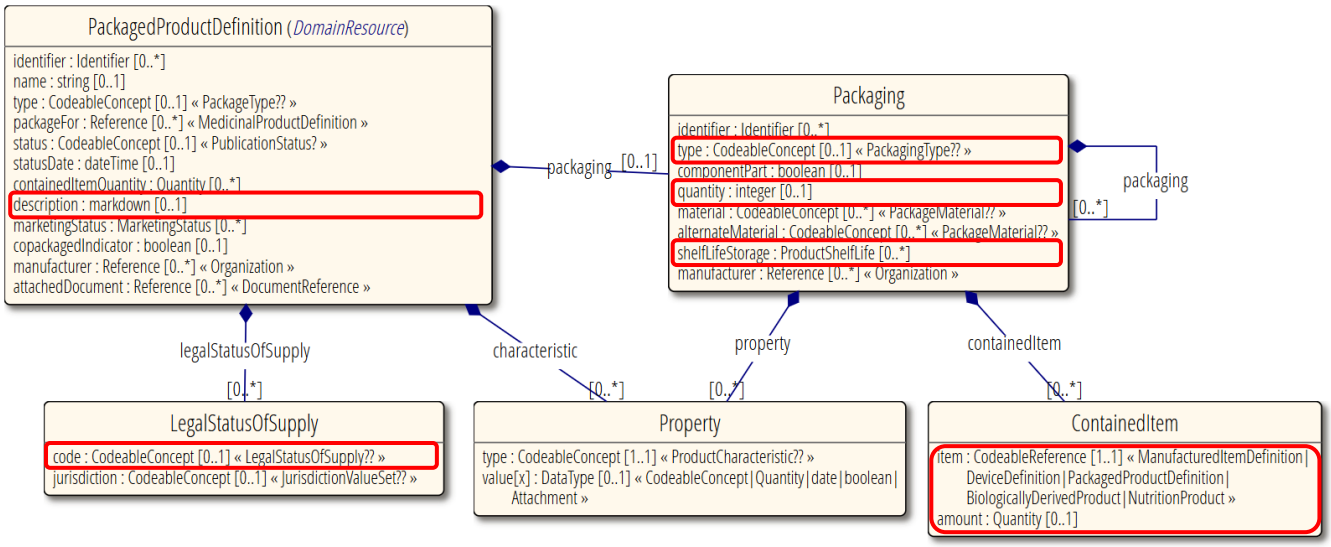

Figure 15: Resource PackagedProductDefinition (Source: www.hl7.org/fhir)

The Packaged Medicinal Product class is a mandatory and repeatable while the individual attributes of this class are repeatable and shall be populated as applicable.

Packaged Medicinal Product Class	Description
Repeatable	Yes
Conformance	Mandatory

Based on the above principle, the IHP as authorised/to be authorised is the main document of reference for data entry purposes.

4.1 Packaged medicinal product

4.1.1 Packaged Medicinal Product Identifier (PCID)

Tag	Description
User Guidance	For each Packaged Medicinal Product, a unique PCID is assigned by Swissmedic. It is supplementary to any existing authorisation/approval number at package level . There are two components of a PCID: • MPID for the Medicinal Product; • Package description code segment, which refers to a unique identifier for each package e.g., 0001, 0002 etc. Any changes of the values related to these code segments shall result in the assignment of a new PCID. A unique PCID is assigned according to the following defining attributes of the package code segment: • package item (container)(s) — the type, quantity (items per package), material(s); • Manufactured Item(s) — manufactured dose form, unit of presentation, quantity (items per package). When the above defining attributes differ in any way a new PCID is assigned automatically by the system.

Repeatable	No
Conformance	For first data submission and data maintenance: Not applicable – ID generated by the system.
Data Type	Identifier
Excel	Not applicable
Value(s)	ID generated by the system
ISO Element Name	PCID
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/PCID
FHIR Element Name	Identifier
FHIR Path	PackagedProductDefinition.identifier

Example(s):

CH-12345678-0662310010000-0001 or CH-12345678-0567780010000-0001

4.1.2 Package Description

Tag	Description
User Guidance	A description of the packaged medicinal product in relation to the pack size(s) in line with the information indicated in section 18: *Packs* of the corresponding IHP or other regulatory document shall be specified as text. The package description is to be provided in the language of the medicinal product information (IHP or PI) submitted to and approved by Swissmedic.
Repeatable	Yes
Conformance	Mandatory
Data Type	Markdown
Excel	Not applicable
Value(s)	The description of the packaged medicinal product shall be provided as text.
ISO Element Name	Package description
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/PackageDescription
FHIR Element Name	Description
FHIR Path	PackagedProductDefinition.description

Example(s):

Injektionskit mit Durchstechflasche 25 mg und Fertigspritze mit Lösungsmittel

Injektionslösung (Fertigspritze)

Packung mit 4 Einzeldosispackungen bestehend aus:

- *1 Fertigspritze à 0,5 ml Injektionslösung*
- *1 Injektionskanüle zur intramuskulären (i.m.) Injektion (B)*

4.1.2.1 Language

This section described how to populate information related to the language of the package description. The provision of the language is mandatory.

Tag	Description
User Guidance	The language of the package description as specified in previous section shall be specified as a term ID.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	ISO Language
Value(s)	As listed in the Language ISO ISO 639-3 list
ISO Element Name	Not Applicable
ISO Path	Not Applicable
FHIR Element Name	valueCode
FHIR Path	PackagedProductDefinition.description.extension.language

Example(s):

German, French, Italian

4.1.3 Pack size

Tag	Description
User Guidance	For each Packaged Medicinal Product, the pack size defined as the total number of units of the Manufactured Item or package item and represented per unit of presentation shall be provided. Medicinal products with **one Pharmaceutical Product** the pack size shall indicate the unit of presentation of the Manufactured Item/package item. *Example 1: 8 tablets – In this case the pack size field is populated with the quantity (8) and unit of presentation referring to tablet.* For **medicinal products with multiple Pharmaceutical Products** (e.g., tablet and cream) the pack size shall be differentiated and repeated by Manufactured Item/package item. *Example 1: 28 tablets and 1 tube (cream) – In this case the pack size field is repeated including quantity and unit of presentation for tablets and quantity and unit of presentation (tube) for the cream.* For medicinal products in **solid dosage forms with multiple Pharmaceutical Products that present the same unit of presentation** (e.g., contraceptive tablets of different colours and formulation), the pack size shall be accounted as the total number of tablets. *Example 2: 28 film coated tablets containing:* *2 dark yellow tablets each containing 3 mg estradiol valerate* *5 red tablets each* containing 2 *mg estradiol valerate and 2 mg dienogest* *17 light yellow tablets each containing 2 mg estradiol valerate and 3 mg dienogest* *2 dark red tablets each containing 1 mg estradiol valerate* *2 white tablets do not contain active substance* In this case the pack size field is completed with the following value: 28 tablets. Note: The details of each individual Manufactured Item will be recorded in the applicable Manufactured Item section (in this example those attributes which shall be recorded in other section includes the number of tablets per manufacturing item and description including colour).

	For **liquid formulations requiring reconstitution** (e.g., powder and solvent for solution for injection), the unit of presentation shall be differentiated, and this data field is repeated per Manufactured Item. *Example 3: powder (25 mg vial) and solvent (1 ml pre-filled syringe). In this case the pack size field is repeated including quantity and unit of presentation for the powder (vial) and quantity and unit of presentation (syringe) for the solvent.* Value: 1 vial + 1 pre-filled syringe The applicable numeric value(s) and unit of presentation shall be selected from the term ID as listed in the applicable Swissmedic list.
Repeatable	Yes
Conformance	Mandatory
Data Type	Quantity
Excel	EDQM Pack Size Unit
Value(s)	Numeric value and unit. The units shall be specified as a Term ID listed in EDQM's Units of Presentation list as applicable
ISO Element Name	Not applicable
ISO Path	Not applicable
FHIR Element Name	containedItemQuantity
FHIR Path	PackagedProductDefinition.extension.containedItemQuantity

Example(s):

- *20 tablets*
- *1 vial (solvent) + 1 vial (powder)*
- *1 tube (cream) + 27 tablets*
- *150 (15 x 10 x 1) capsules (unit dose) (multipack)*

Note: Content between brackets is for information and it is not included when completing this field

4.1.3.1 Quantity Operator

Tag	Description
User Guidance	The applicable value corresponding to the quantity operator shall be specified as term ID. The applicable value shall be selected from the term ID as listed in the EMA Quantity Operator list.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	EMA Quantity Operator
Value(s)	As listed in the EMA Quantity Operator list. If the term can be mapped to a FHIR Quantity comparator, the FHIR comparator field should also be specified for interoperability.
ISO Element Name	Not applicable
ISO Path	Not applicable
FHIR Element Name	quantityOperator
FHIR Path	PackagedProductDefinition.extension.containedItemQuantity.extension.quantityOperator PackagedProductDefinition.extension.containedItemQuantity.comparator

4.2 Marketing authorisation (Package level)

There are cases where marketing authorisation is assigned at the level of packaged medicinal product. If any information related to the Marketing Authorisation is regulated by Swissmedic at the level of the individual pack of the medicinal product and is different for the other packages (i.e., different from the entire medicinal product), the applicable information shall be specified according to the FHIR Resource *RegulatedAuthorization* and guidance provided in section 2. Marketing Authorisation Information.
The package medicinal product authorisation number is defined as a 9-digit root number (see section 2.1.2) and a 4-digit package code (as described in section 4.2.2). The individual package authorisation number part shall be specified for the individual package in this section including the root number.
Furthermore, it is mandatory to provide the marketing authorisation number at packaged medicinal product level as described in this section.

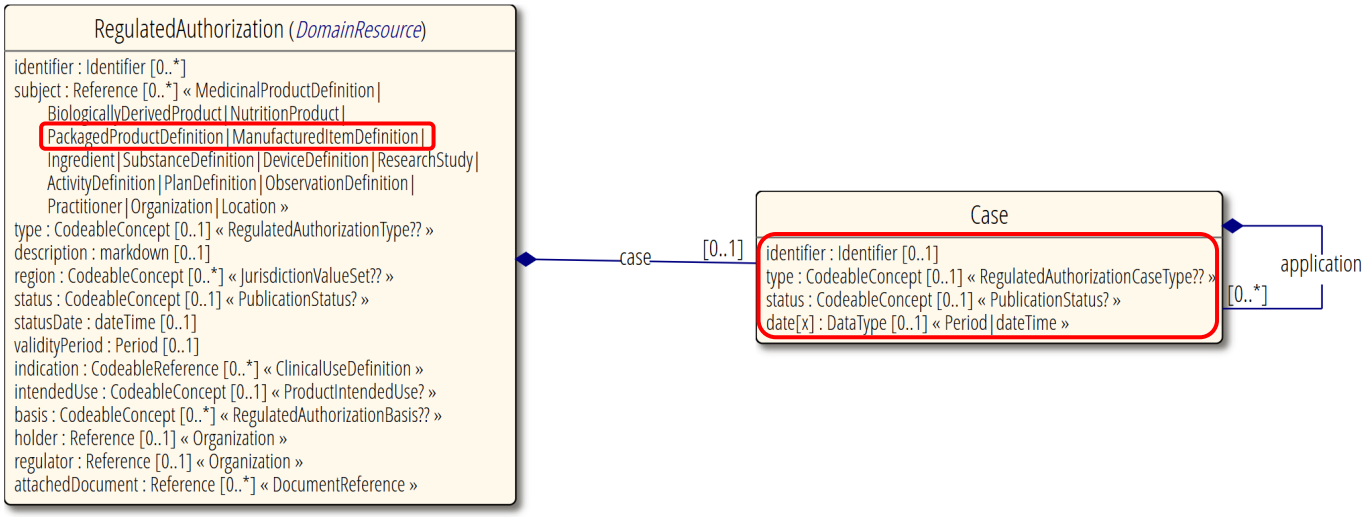

Figure 16: Resource RegulatedAuthorization (source: www.hl7.org/fhir)

The Marketing authorisation (Package level) class is mandatory and not repeatable while the individual attributes of this class are not repeatable and shall be populated as applicable.

Marketing Authorisation (Package level)	Description
Repeatable	No
Conformance	Mandatory

4.2.1 Regulatory authorisation type

Tag	Description
User Guidance	The type of regulatory authorisation shall be specified when the marketing authorisation is assigned at the level of packaged medicinal product. Please note that the RegulatedAuthorization type shall be set as Marketing Authorisation. The applicable value shall be selected from the term ID as available in the applicable Swissmedic term list.
Repeatable	No
Conformance	Conditional
Data Type	CodeableConcept

Excel	Swiss Regulatory authorisation type
Value(s)	As listed in the Regulatory authorisation type Swissmedic list.
ISO Element Name	Not Applicable
ISO Path	Not Applicable
FHIR Element Name	Type
FHIR Path	RegulatedAuthorization.type

4.2.2 Marketing authorisation number (Package level)

Tag	Description
User Guidance	Marketing authorisation number or equivalent identifier as assigned by Swissmedic to the medicinal product package shall be specified. This section is to be completed when the information is available. The Marketing authorisation number or equivalent identifier is released by Swissmedic during or after the end of the regulatory procedure, this data field can only be populated with the necessary information upon formal conclusion of the regulatory procedure as this information will not be available at the time of the submission of the FHIR message (initial sequence). For migration the Marketing Authorisation Number (Package level) will be created by concatenating the currently authorized 5-digit Marketing authorisation number with the currently authorized 2-digit dosage strength number and currently authorized the 3-digit Package code and each of them will be preceded by a zero.
Repeatable	No
Conformance	Conditional
Data Type	Identifier
Excel	Not applicable
Value(s)	The number assigned Swissmedic shall be specified as free text. ▪ The format of the CH number shall be NNNNNNYYY-XXXX
ISO Element Name	Marketing Authorisation Number
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/MarketingAuthorisation/MarketingAuthorisationNumber
FHIR Element Name	Identifier
FHIR Path	RegulatedAuthorization.identifier

Example(s):

056891002-0003, 048164007-0103

4.2.3 Legal status of supply (Package)

Tag	Description
User Guidance	The legal status of supply of the packaged medicinal product, as authorised by Swissmedic and applicable to the individual package should be specified.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	Swiss Legal Status of Supply
Value(s)	As listed in the Legal Status for the Supply Swissmedic list
ISO Element Name	LegalStatusOfSupply
ISO Path	/MedicinalProduct/ PackagedMedicinalProduct/MarketingAuthorisation/LegalStatusOfSupply
FHIR Element Name	legalStatusOfSupply

FHIR Path	PackagedProductDefinition.legalStatusOfSupply

Example(s):

A: Medicinal product subject to medical or veterinary prescription single dispensation, D: Dispensation after consultation

4.2.4 Country

Tag	Description
User Guidance	The Swiss country code shall be specified as a term ID.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	N/A
Value(s)	Hardcoded to 'Switzerland
ISO Element Name	Country
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/MarketingAuthorisation/Country
FHIR Element Name	Region
FHIR Path	RegulatedAuthorization.region

4.2.5 Authorisation Status

Tag	Description
User Guidance	The status of the marketing authorisation of the packaged medicinal product throughout its lifecycle shall be specified as a term ID. The applicable value shall be selected from the term ID as listed in applicable the Swissmedic list.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	Swiss Authorisation Status
Value(s)	As listed in the Authorisation Status_Swissmedic list
ISO Element Name	Authorisation Status
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/MarketingAuthorisation/ AuthorisationStatus
FHIR Element Name	Status
FHIR Path	RegulatedAuthorization.status

Example(s):

applied for, expired, valid

4.2.6 Authorisation Status Date (Package level)

Tag	Description
User Guidance	The date at which the authorisation status of the package medicinal product has become effective shall be specified.
Repeatable	No

Conformance	Conditional
Data Type	dateTime
Excel	Not applicable
Value(s)	A date shall be specified using the ISO 8601 date format. ISO 8601 can accommodate year and month should day of the month not be known. (i.e., YYYY-MM).
ISO Element Name	Authorisation Status Date
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/MarketingAuthorisation/ AuthorisationStatusDate
FHIR Element Name	statusDate
FHIR Path	RegulatedAuthorization.statusDate

4.3 Package Item (Container)

The description of the container(s) of the manufactured medicinal product shall be described in this section. Container can be described as an item holding or carrying another item of the medicinal product. Therefore, containers can involve the primary or secondary packaging of the medicinal product.
The package item can be a single item, or a package of multiple items (e.g., two vials contained in a carton box, three blisters contained in a carton box or a single individual bottle).

For instance, a Packaged medicinal product consisting of a blister within a box will contain two Package items. One Package item will be the carton box, and the second container will be the blister, which is considered a sub-container.

Example(s):
A carton box (secondary packaging) containing a cardboard wallet, containing a blister with a 125 mg capsule and second blister with two 80 mg capsules. This packaged medicinal product contains therefore 4 package item containers (1) carton, (2) wallet, (3) blister and (4) blister.

056359002, Emend, capsule-hard	
Field	**Value**
PCID	CH-01003060-0563590020000-0002
Package Item Container (1)	Box
Package Item Container Quantity	1
Packaged Item Reference	Reference to Package item 2
Manufacturing item Reference	Not Applicable
Package Item Container (2)	Cardboard wallet

Package Item Container Quantity	1
Packaged Item Reference	Reference to Package item 3 and Package item 4
Manufacturing item Reference	Not Applicable
Package Item Container (3)	Blister
Package Item Container Quantity	1
Packaged Item Reference	Not Applicable
Manufacturing item Reference	Not Applicable
Package Item Container (3)	Blister
Package Item Container Quantity	1
Packaged Item Reference	Not Applicable
Manufacturing item Reference	Not Applicable

A carton box (secondary packaging) containing two vials; solvent and powder (primary packaging). This packaged medicinal product contains therefore three package item containers (1) carton, (2) vial containing powder and (3) vial containing solvent.

066279001, BiCNU 100 mg, Powder and solvent for solution for infusion	
Field	**Value**
PCID	CH-01100828-0662790010000-0001
Package Item Container (1)	Box
Package Item Container Quantity	1
Packaged Item Reference	Reference to Package item 2 and Package item 3
Manufacturing item Reference	Not Applicable

Package Item Container (2)	Vial
Package Item Container Quantity	1
Packaged Item Reference	Not Applicable
Manufacturing item Reference	Solvent for solution for infusion
Package Item Container (3)	Vial
Package Item Container Quantity	1
Packaged Item Reference	Not Applicable
Manufacturing item Reference	Powder for solution for infusion

The Package item (container) class is mandatory and repeatable. Some of the individual attributes of this class are not repeatable and shall be populated as applicable except for the package item (container) type and material data elements which are mandatory.

Package Item (Container) Class	Description
Repeatable	Yes
Conformance	Mandatory

4.3.1 Package item (container) type

Tag	Description
User Guidance	This element describes the physical type of the container of the medicinal product and shall be specified using a term ID. The applicable value shall be selected from the term ID as listed in applicable the Swissmedic list.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	EDQM Packaged Item Type
Value(s)	As listed in the EDQM Packaged Item Type list
ISO Element Name	Package item (container) type
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/PackageItem_Container/PackageItem_ContainerType
FHIR Element Name	Type
FHIR Path	PackagedProductDefinition.package.type

Example(s):

Inhaler, Ampoule, Blister, Bottle

4.3.2 Package item reference(s)

Relationships among package items in the scenario that a package item container (e.g., carton, secondary packaging) contains one or more package item such as additional secondary packaging or primary packaging only (e.g., vials or blisters within a carton) needs to be indicated.

This structure is only applicable in a parent/child relationship and not the opposite (child/parent relationship). This means that the relationship is established at the level of the package item acting as a container for other package container and not the opposite.

Tag	Description
User Guidance	This is not a regular attribute but a reference to a list of package items contained within a package item (if applicable). For example, a cardboard carton box that contains 2 vials will carry the reference to the 2 vials contained within the box. This is also applicable to reference the relationships of a single or multiple components contained within a package container. This field is only applicable in a parent/child relationship and not the opposite (child/parent relationship).
Repeatable	Yes
Conformance	Conditional
Data Type	BackboneElement
Excel	Not applicable
Value(s)	Structured data elements referencing the included packages
ISO Element Name	Package item (container)
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/PackageItemContainer/
FHIR Element Name	Package
FHIR Path	PackagedProductDefinition.package.package

4.3.3 Manufactured Item reference(s)

Relationships among package items and Manufactured Items need to be completed. This attribute is for mandatory completion where the package item is/contains the manufacturing item (e.g., a vial containing the pharmaceutical form powder for solution for injection).

If the package item does not contain any Manufactured Item (e.g., empty vial, carton), this field is to be left blank.

Tag	Description
User Guidance	This is not a regular attribute but a reference to a Manufactured Item contained within a package item (if applicable) For example, a vial containing powder will carry the reference to manufacturing item powder for solution for injection. This structure is only applicable at the level of package item involves the primary packaging and contains a manufacturing item.
Repeatable	Yes
Conformance	Conditional
Data Type	BackboneElement
Excel	Not applicable

Value(s)	Structured data elements referencing the included Manufactured Items and the respective quantities.
ISO Element Name	Manufactured Item
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/PackageItemContainer/Manuf acturedItem
FHIR Element Name	Containeditem
FHIR Path	PackagedProductDefinition.package.containeditem.item

4.3.4 Package item (Container) quantity

The number of the package item containers shall be specified. Because the package item class may contain recursive relationships to describe containers within containers, the first container (top-level package item/outer-most packaging) will always have a quantity of one (i.e., '1').

Example 1: Medicinal product A 500mg tablets with 30 tables in 3 blisters (10 tablets per blister) packaged in a single carton box.

- *Box x 1*
  - *Blister x 3*

There is no need to indicate the number of tablets since this information is included in section 4.5.2 Manufactured Item quantity. Note: If the same packaged medicinal product contains different configurations (e.g., Medicinal Product ABC 500mg 30 tablets contained in either 2 blisters of 15 tablets each or 3 blisters of 10 tablets per blister) which are not defined in the terms of the marketing authorisation or packaged description, Package item (container) quantity at the level of the immediate packaging is to be left blank.

Example 2: Medicinal product B comprises combined pharmaceutical form powder (40 micrograms) and solvent (1 ml) for solution for injection. This package example consists of two vials with solvent and two vials with powder, all vials packaged in a single carton box.

- *Box x 1*
  - *Vial (solvent) x 2*
  - *Vial (powder) x 2*

There is no need to indicate the content of each vial since this information is included in section Manufactured Item.

4.4 Shelf Life / Storage

The description of the shelf life and storage information of the packaged medicinal product, as approved in the terms of the marketing authorisation, should be specified. The storage conditions/scenarios should be listed in the IHP section 16 and the shelf life in module 3. This includes shelf life and storage conditions as packaged for sale, shelf life/storage conditions after dilution or reconstitution or any other scenario.

This entity is repeatable to allow the introduction of different shelf life/storage conditions in the same product (e.g., shelf life and storage conditions for medicinal products as packaged for sale and after dilution or reconstitution). An example is shown below:

Example(s):

Packaged Medicinal Product	
Package description	Type I glass vial with rubber stopper containing 100 mg of *active substance abc*. Pack of 1 vial.
Description (as per IHP)	**<u>Unopened vial</u>** Do not store above 30ºC **Reconstituted and infusion solutions** When prepared as directed, reconstituted and infusion solutions of *Medicine ABC* contain no antimicrobial preservatives. Chemical and physical in-use stability of reconstituted and infusion solutions of *Medicine ABC* were demonstrated for *24 hours at refrigerated temperature.* From a microbiological point of view, the product should be used immediately. If not used immediately, in-use storage times and conditions prior to use are the responsibility of the user and would not be longer than 24 hours at 2°C to 8°C.
Shelf life type (1)	Shelf life of the medicinal product as packaged for sale
Shelf life time and Period (1)	3 years
Storage Conditions (1)	Do not store above 30ºC
Shelf life type (2)	Shelf life after dilution or reconstitution according to directions
Shelf life time and Period (2)	24 hours
Storage Conditions (2)	Store in a refrigerator (2ºC – 8ºC)

Shelf life/ Storage Condition should be linked to the Package Item Container representing the overall packaged medicinal product (outer-most package item) unless different shelf life and storage conditions for different packaged items are specified in section 16 – Other Information of the relevant IHP. In this case the Shelf Life/ Storage Conditions should be linked to the most relevant Package Item Container.

The full information on Storage / Shelf Life is shown in Figure 17 below. Only the elements inside the red rectangle apply for the pilot scope:

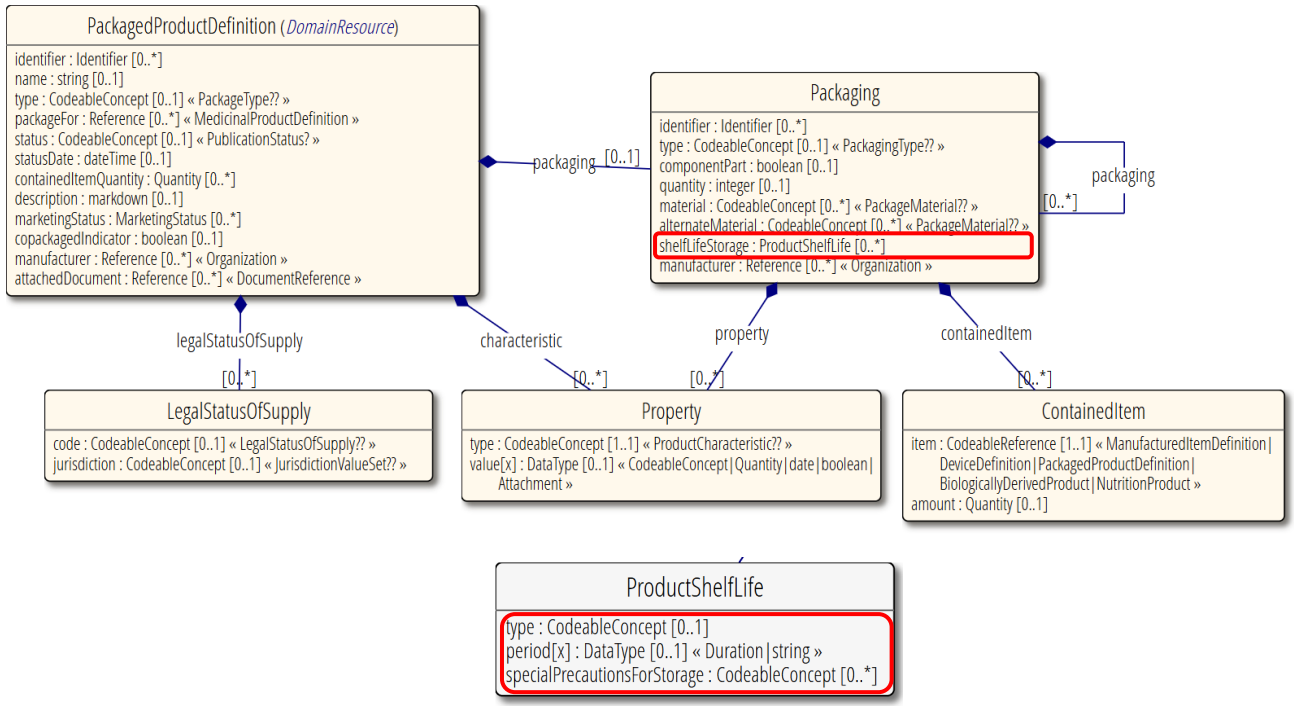

Figure 17: Shelf Life / Storage as captured by FHIR (source: http://www.hl7.org/fhir)

The Shelf life/storage class is conditional and repeatable while the individual attributes of this class are not repeatable (with the exception of special precaution for storage data element) and are mandatory to be populated.

Shelf Life / Storage Class	Description
Repeatable	Yes
Conformance	Mandatory

4.4.1 Shelf life type

Tag	Description
User Guidance	The type of the shelf life such as the shelf life applicable to the whole Packaged Medicinal Product itself, or more granular values such as the shelf life after transformation, shelf life after the initial opening of a bottle or any other scenario covered in the product information, shall be specified as a term ID from the EMA shelf life type list. This field is repeatable to cover multiple different shelf life conditions
Repeatable	No
Conformance	Mandatory

Data Type	CodeableConcept
Excel	EMA shelf life type
Value(s)	As listed in the Shelf Life Type list
ISO Element Name	Shelf life type
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/PackageItem_Container/Shelf Life-Storage/ShelfLifeType
FHIR Element Name	Type
FHIR Path	PackagedProductDefinition.package.shelfLifeStorage.type

Example(s):

Shelf life of the medicinal product as packaged for sale, Shelf life after first opening the immediate packaging

4.4.2 Shelf life time period and units

Tag	Description
User Guidance	The shelf life time period shall be specified using a (1) numerical value for the period and (2) its unit of time measurement. Multiple shelf life periods may be listed for different types. This field is repeatable to cover multiple different shelf life conditions. This field is an attribute within Shelf Life Type.
Repeatable	No
Conformance	Mandatory
Data Type	Quantity
Excel	UCUM Shelflife Time Period Unit
Value(s)	Value is a numerical value with implicit precision and should be reflected accordingly. The units shall be specified as a Term ID as listed in the UCUM Shelflife Time Period Unit list.
ISO Element Name	Shelf Life Time Period
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/PackageItem_Container/Shelf Life-Storage/ShelfLifeTimePeriod
FHIR Element Name	Period
FHIR Path	PackagedProductDefinition.package.shelfLifeStorage.period

Example(s):
5 Year(s), 12 Month(s), 24 Hour(s)

4.4.3 Special precautions for storage

Tag	Description
User Guidance	Special precautions for storage of the relevant package item container of the packaged medicinal product should be specified using the appropriate value(s). The controlled term and the controlled term identifier shall be specified. This information is to be completed as per section 16 – Other Information of the relevant

	IHP. This field is repeatable to cover different storage conditions per shelf life. This field is an attribute within shelf life type.
Repeatable	Yes
Conformance	Mandatory
Data Type	CodeableConcept
Excel	Swiss Special Precaut. Storage
Value(s)	As listed in the Special Precaution for Storage Swissmedic list
ISO Element Name	Storage.SpecialPrecautionsforStorage
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/PackageItem_Container/Shelf Life-Storage/SpecialPrecautionsForStorage
FHIR Element Name	specialPrecautionsForStorage
FHIR Path	PackagedProductDefinition.package.shelfLifeStorage.specialPrecautionsFor Storage

Example(s):

Do not store above 25 °C, Do not store above 30 °C, Do not freeze, in the refrigerator (2°C - 8°C)

4.5 Manufactured Item

The product as it is authorised and, where applicable, before transformation into the administrable pharmaceutical form shall be described in this section. There after referred to as the Manufactured Item, as contained in the packaged medicinal product.

A medicinal product may contain, in the packaging, one or more Manufactured Items and corresponding to one or more Pharmaceutical Products.

Examples of single Manufactured Item and single Pharmaceutical Product:

- “Film-coated tablet” involves a single Manufactured Item. This Manufactured Item corresponds with the administrable dose form and Pharmaceutical Product (no previous preparation/combination with other Manufactured Item is needed).
- Solution for Injection involves a single Manufactured Item. This Manufactured Item corresponds with the administrable dose form and Pharmaceutical Product.

Examples of multiple Manufactured Items and single Pharmaceutical Products:

- Powder for solution for injection and Solvent for Solution for injection in combined pharmaceutical form Powder and Solvent for Solution for injection. This involves two Manufactured Items that should be combined to prepare the administrable dose form and Pharmaceutical Product.

Examples of multiple Manufactured Items and multiple Pharmaceutical Products:

- “Oral Capsule” & “External Cream” correspond to two different administrable dose forms which do not need combining for administration to the patient.

The full information on Manufactured Item as presented in the FHIR *ManufacturedItemDefinition* is shown in the Figure 18 below. Only the elements described below are within the scope of the pilot:

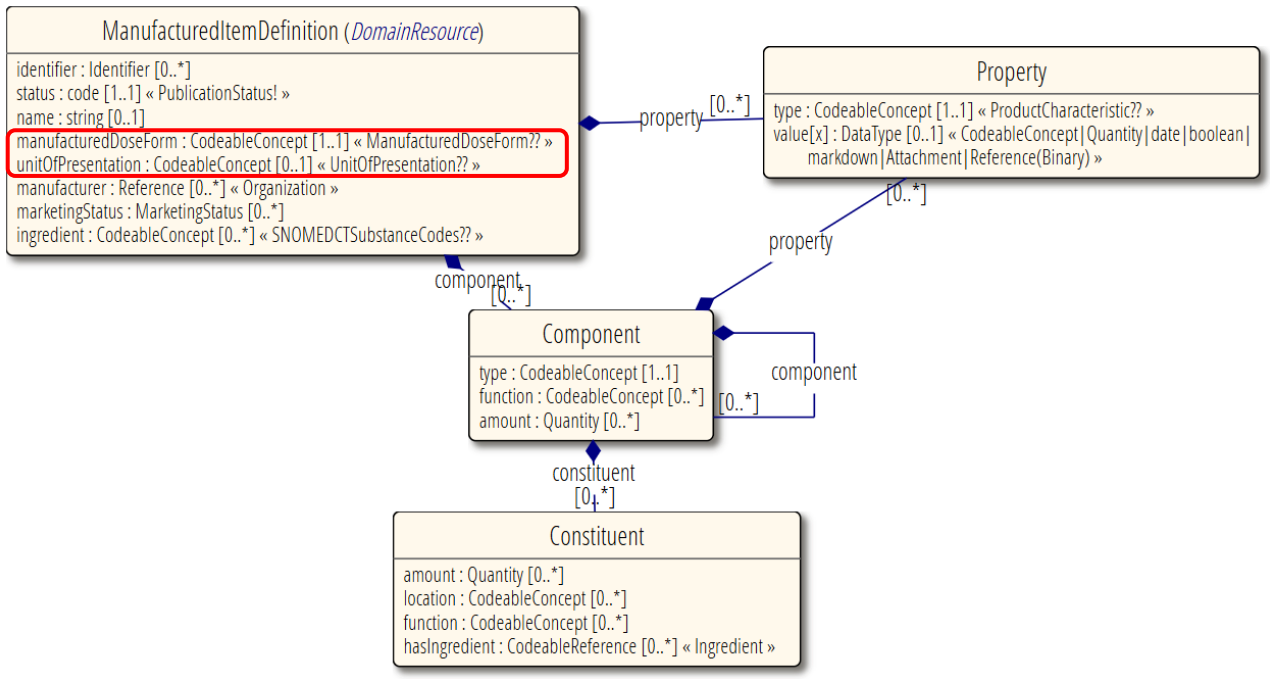

Figure 18: Resource ManufacturedItemDefinition captured by FHIR (source: http://www.hl7.org/fhir)

The Manufactured Item class is mandatory and repeatable while the individual attributes of this class are not repeatable (except for Ingredient class of data elements) and shall be populated as applicable.

Manufactured Item Class	Description
Repeatable	Yes
Conformance	Mandatory

4.5.1 Unit of presentation

Tag	Description
User Guidance	The unit of presentation describing the unit in which a Manufactured Item is presented to describe the strength, or quantity shall be specified as a term ID. The Unit of Presentation reported in this field should be equal to the Unit of Presentation specified in section 5 Ingredient when specifying the product composition at presentation strength level.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	EDQM Manufactured Item UoP
Value(s)	As listed in the Units of presentation EDQM list.
ISO Element Name	Unit of presentation
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/PackageItem_Container/ManufacturedItem/UnitOfPresentation
FHIR Element Name	unitOfPresentation
FHIR Path	ManufacturedItemDefinition.unitOfPresentation

Example(s):

Actuation, Patch, Tablet

4.5.2 Manufactured Item quantity

Tag	Description
User Guidance	The quantity (or count number) of the Manufactured Item in the immediate container package, shall be specified as a value and units as per section 18 of the IHP. For solid dose forms and other items measured by counting (i.e., tablets, capsules), discrete countable entities, the unit for quantity is the term “countable unit” from the EDQM units of measurements List and the “unit of presentation” is the item counted within the immediate container to be populated in the data element 4.5.1 Unit of presentation. For formulations contained in a vial, the unit for quantity is volume/quantity expressed with the relevant units of measurement term (i.e., mg, ml) and the “unit of presentation” is the discrete countable entity, in which a Pharmaceutical Product or Manufactured Item is presented. This last data to be reported in the data element 4.5.1 Unit of presentation. Example: ▪ In case of tablets/capsules the number of tablet/capsules in the immediate packaging shall be specified: 28 tablets, 24 capsules are to be populated as 28 and 24 countable unit(s) respectively. The UoP “tablets” and “capsules” are to be included in 4.5.1 respectively. ▪ In case of formulations contained in a vial (e.g., liquids) the total quantity/volume should be expressed: 5 mg, 2 mL are to be populated as 5 mg and 2 mL respectively. The UoP “vial” is to be included in 4.5.1. ▪ In case of lyophilised formulations contained in a vial (e.g., powder), the total quantity/volume should be expressed: 1 vial is to be populated as 1 countable unit(s). The UoP “vial” is to be included in 4.5.1.
Repeatable	No
Conformance	Mandatory
Data Type	Quantity

Excel	UCUM Manuf. Item Quantity Unit
Value(s)	Numeric value and unit. The units shall be specified as a Term ID listed in the Units of Measurement EDQM list as applicable.
ISO Element Name	Manufactured Item Quantity
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/PackageItem_Container/ManufacturedItem/ManufacturedItemQuantity
FHIR Element Name	amountQuantity
FHIR Path	PackagedProductDefinition.package.containedItem.amountQuantity

Example(s):

28 dispersible tablets should be encoded as:

Manufactured Item	
Unit of presentation	Tablet
Manufactured Item quantity	28 countable unit(s)
Manufactured dose form	Dispersible tablet

25 ml solution for injection in a syringe should be encoded as:

Manufactured Item	
Unit of presentation	Syringe
Manufactured Item quantity	25 ml
Manufactured dose form	Solution for injection

4.5.2.1 Quantity Operator

Tag	Description
User Guidance	The applicable value corresponding to the quantity operator shall be specified as term ID. The applicable value shall be selected from the term ID as listed in the EMA Quantity Operator list.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	EMA Quantity Operator
Value(s)	As listed in the EMA Quantity Operator list. If the term can be mapped to a FHIR Quantity comparator, the FHIR comparator field should also be specified for interoperability.
ISO Element Name	Not applicable
ISO Path	Not applicable
FHIR Element Name	quantityOperator
FHIR Path	PackagedProductDefinition.package.containedItem.amountQuantity.extension.quantityOperator PackagedProductDefinition.package.containedItem.amountQuantity.comparator

4.5.3 Manufactured dose form

The manufactured dose form corresponds to the dose form presented in the Manufactured Item. See the following examples:

Example 1:

Medicinal Product ABC 20mg/ml powder and solvent for solution for injection (combined pharmaceutical form) in a vial will contain two types of Manufactured Items with the following dose forms:

- Powder for solution for injection
- Solvent for solution for injection

Example 2:

Medicinal Product DEF 500 mg tablets contain a single type of Manufactured Item with the following manufactured dose form:

- Tablet

Tag	Description
User Guidance	The manufactured dose form associated with the authorised pharmaceutical form(s) in Section 3 of the IHP shall be specified as a term ID. ▪ The required authorised pharmaceutical form shall be specified as a term ID as listed in the applicable EDQM list. ▪ Deprecated (i.e., non-current) dose form terms may be referenced.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	EDQM Manufactured Doseform
Value(s)	Listed in the Pharmaceutical Dose Form Swissmedic list
ISO Element Name	Manufactured Dose Form
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/PackageItem_Container/ManufacturedItem/ManufacturedDoseForm
FHIR Element Name	ManufacturedDoseForm
FHIR Path	ManufacturedItemDefinition.manufacturedDoseForm

Example(s):

Manufactured pharmaceutical forms **identical** to the administrable pharmaceutical form: solution for injection, tablet, capsule, inhalation powder.

Manufactured pharmaceutical forms **not identical** to the administrable pharmaceutical form: powder and solvent for solution for injection, gel in sachet, syrup in sachet, emulsion for injection/infusion in pre-filled syringe.

The manufactured dose form will be chosen only from the Swissmedic list Pharmaceutical Dose Form and not from the other three Swissmedic lists that are also used for the Authorised Dose Form (Combined pharmaceutical dose form, Combined terms or Combination Packs, section 1.1.1 (Authorised) pharmaceutical form).

4.5.4 Ingredient

The ingredient(s) of a Manufactured Item shall be specified by selecting the relevant ingredients present in the Manufactured Item, from the Ingredient lists based on the Resource Ingredient as

outlined in section 5. The Ingredient class is mandatory. For further details relating to technical information and business rules, please refer to section 5. This value is an attribute within Packaged Product domain.

Tag	Description
User Guidance	The reference to the ingredient(s) of the Pharmaceutical Product shall be selected from the list of ingredients recorded in sections 5. Ingredient. Only active substances and excipients which are listed in the IHP or 3.2.P.1 shall be provided. Processing aids or solvents removed during processing shall not be reported.
Repeatable	Yes
Conformance	Mandatory
Data Type	Reference
Excel	Not applicable
Value(s)	Structured data elements referencing the included ingredients in the Manufactured Item
ISO Element Name	Ingredient
ISO Path	/MedicinalProduct/PackagedMedicinalProduct/PackageItem/ManufacturedItem/Ingredient
FHIR Element Name	Ingredient
FHIR Path	ManufacturedItemDefinition.ingredient

5 Ingredient

The full information on ingredient(s) of a Manufactured Item and of the Pharmaceutical Product is described by the FHIR Resource Ingredient as shown in Figure 19 below. Note that when describing ingredients of Manufactured Item (section 4.5) and Pharmaceutical Product (section 6), applicable ingredients shall be selected from the list of ingredients relevant to the medicinal product as described in this section. Also, the same ingredient can be referenced ingredient can be referenced in both the Manufactured Item and Pharmaceutical Product, when needed. The class is mandatory. In the context of the pilot of the Swissmedic Portal implementation, the following elements are in scope and information should be provided according to the rules and guidance described in this section.

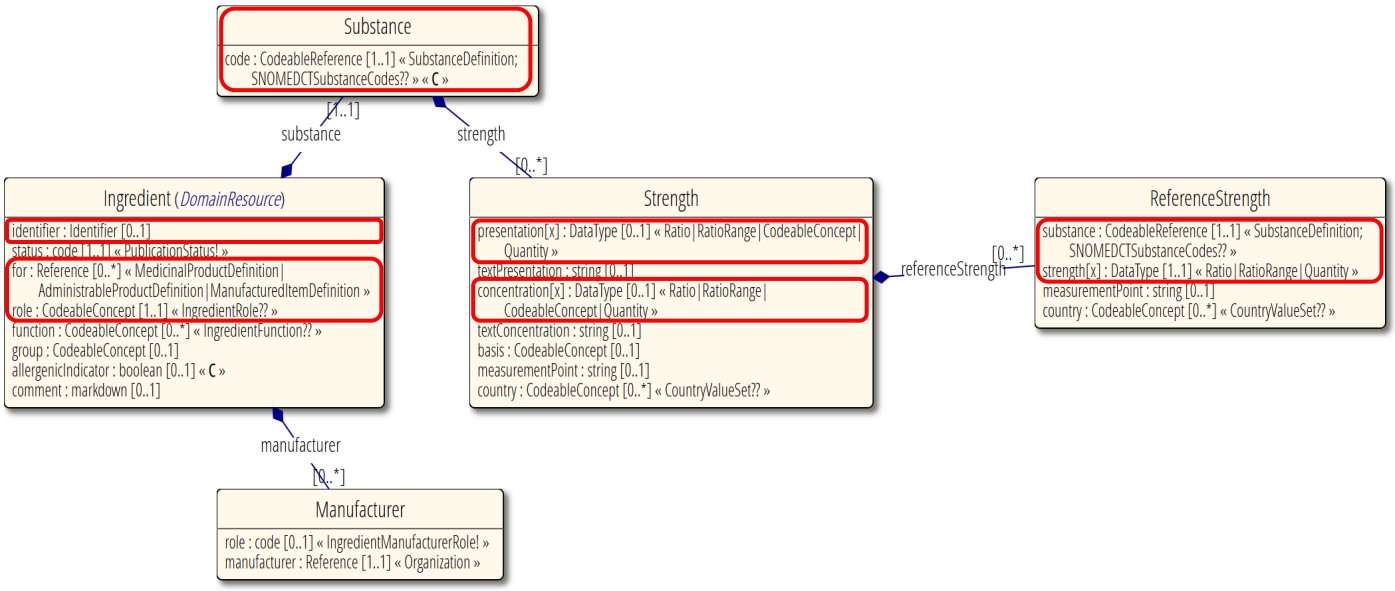

Figure 19: Resource Ingredient (Source: http://www.hl7.org/fhir)

The entire Ingredient class is mandatory and repeatable while the individual attributes of this class are not repeatable and shall be populated as applicable.

Substance Class	Description
Repeatable	Yes
Conformance	Mandatory

5.1 Ingredient role

Tag	Description
User Guidance	The role of the ingredient as part of the Manufactured Item/Pharmaceutical Product shall be specified as a term ID. The applicable value(s) shall be selected from the term ID as listed in the applicable Swissmedic list.
Repeatable	No

Conformance	Mandatory
Data Type	CodeableConcept
Excel	Swiss Ingredient Role
Value(s)	As listed in the Ingredient Role Swissmedic list
ISO Element Name	Ingredient Role
ISO Path	For the Manufactured Item, the ISO path is: /MedicinalProduct/PackagedMedicinalProduct/PackageItem/ManufacturedItem/Ingredient/IngredientRole For the Pharmaceutical Product, the ISO path is: /MedicinalProduct/PharmaceuticalProduct/Ingredient/IngredientRole
FHIR Element Name	Role
FHIR Path	Ingredient.role

Example(s):

Active, Excipient, Excipient of particular interest

5.2 Substance

The entire Substance sub-class is mandatory and not repeatable while the individual attributes shall be repeated and populated as applicable.

Ingredient Class	Description
Repeatable	No
Conformance	Mandatory

5.2.1 Substance

The reported substances should be aligned with the section 2 of the IHP and *module 3.2.P.1 – Description and Composition of the Drug Product* which indicates the composition of Pharmaceutical Product(s) or Manufactuered Item within the medicinal product.

Each pharmaceutical product or Manufactured Item shall contain information on:

- Active ingredient(s) - active ingredient substance name(s). For the Pharmaceutical Product, or the Manufactuered Item the active ingredient(s) can be found in section 2 of the IHP and module 3.2.P.1 of the dossier.
- Excipient(s) - excipient substance name(s). For the Pharmaceutical Product, or the Manufactuered Item the excipient(s) can be found in in section 2 of the IHP and module 3.2.P.1 of the dossier.

The Substance(s) contained in the Pharmaceutical Product or the Manufactured Item shall be specified as a term ID.

Note: every Pharmaceutical Product shall have at least one ingredient, regardless of the ingredient role. If a Pharmaceutical Product contains no active ingredient, the excipients should be labelled as

excipients and not as active ingredient (example: water for injection as a solvent in a separate container, glucose solution 5%, NaCl solution 0.9%.; contraceptive tablets containing only lactose).

Tag	Description
User Guidance	The substances contained within the medicinal product (either part of the Pharmaceutical Product(s) or the Manufactured Item(s)) shall be specified. Each Pharmaceutical Product or Manufactured Item shall contain information on: ▪ active ingredient(s); ▪ excipient(s); ▪ The substance(s) contained in Pharmaceutical Product or Manufactured Item shall be specified as a term ID. The selected ID refers to a particular substance, and the preferred term (PT) for that substance will always be the name displayed in the GSRS. Note: For the Pilot the UNII shall be used for substance IDs. Every Pharmaceutical Product shall have at least one ingredient. If a Pharmaceutical Product contains no active ingredient, the ingredients shall be labelled as excipient.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	GSRS Substance
Value(s)	As listed in FDA's Global Substance Registration System. If the required substance term and related identifier is not available, the addition of the unlisted term ID should be requested from SMS G-SRS portal
ISO Element Name	Substance
ISO Path	For the Manufactured Item, the ISO path is: /MedicinalProduct/PackagedMedicinalProduct/PackageItem/ManufacturedItem/Ingredient/Substance For the Pharmaceutical Product, the ISO path is: /MedicinalProduct/PharmaceuticalProduct/Ingredient/Substance
FHIR Element Name	codeCodeableConcept
FHIR Path	Ingredient.substance.codeCodeableConcept

5.2.2 Substance strength (quantitative composition)

The Strength (quantitative composition) of the substance (active substances and excipients) should be declared as a quantity of the substance contained in a Manufactured Item or Pharmaceutical Product.
The strength (quantitative composition) shall be provided based on a numerator and denominator value and unit, i.e., unit of presentation or unit of measure/concentration.
When the strength of a medicinal product is described as a technical concept of a "Pharmaceutical Product" that has undergone a transformation (for example reconstitution), it is to be specified using the strength resulting from transformation undertaken exactly in accordance with the regulated product information. Where the active ingredient is an ester or pro-drug, the quantitative composition shall be stated in terms of the quantity of that ester or pro-drug. In this case, the strength of the active moiety should be entered in the reference strength section (refer to section 5.2.3 Substance reference strength (quantitative composition)).

Example(s):

066431001 Zytiga, film-coated tablets	
Field	**Value**
IHP text	Each tablet contains 500 mg Abirateron acetate
Substance	Abirateron acetate
Strength presentation single value or low limit numerator	500 mg
Strength presentation single value or low limit denominator	1 tablet
Reference substance	Abirateron
Reference strength presentation single value or low limit numerator	446 mg
Reference strength presentation single value or low limit denominator	1 tablet

Expression of the strength (quantitative composition)

The strength (quantitative composition) can be expressed as:

- Presentation strength (per unit of presentation) - strength expressed per unit of presentation. The unit of presentation is a qualitative term describing the discrete unit in which a Pharmaceutical Product is presented.

Example:

  - 250 milligrams per tablet
  - 10 mg per vial (for solution for injection)
  - 120 mg per bottle (for powders or granules for liquid preparation)
  - 10 mg per tube (for single use gels)
  - 54 microgram per actuation (for inhaler with individual capsules, delivered dose shall be used)

- Concentration strength (per unit of measure/concentration) – the strength is expressed as the amount of the substance per unit of measurement such as millilitre or gram (not unit of presentation)

  The concentration strength is always expressed per single unit of measurement, e.g., 4 mg/1 ml. A strength expressed as e.g.; 4 mg/0.8 ml is a presentation strength since the 0.8 ml is the amount of the solution in the presentation. The concentration strength equivalent to that would be 5 mg/1 ml.

  Example:

- 10 milligrams per 1 millilitre (for parenteral products)
- 10 milligrams per 24 hours (for transdermal patches)
- 100 countable units per 1 millilitre (for insulins)

The provision of the strength(s) of the active ingredient(s) is mandatory. The strength of the active substance as listed in section 2 of the IHP and in module 3.2.P.1 of the dossier shall be specified. Overall, when expressing the strength of active ingredients, applicants and marketing authorisation holders should abide to the following principles:

- The IHP and should be used as a main reference for expressing the strength in ingredients to be linked both to the Manufactured Item and Pharmaceutical Product.
- The quantitative composition of the active ingredient should be expressed by means of presentation strength and depending on cases concentration strength. If the presentation strength is clearly stated in the relevant IHP or module 3 sections, it shall be populated in addition to the concentration strength if both ways to express the strength are included in IHP/module 3.
- The expression of the strength in module IHP has been approved by a regulatory scientific assessment and therefore should be used in all cases as the main reference to express the strength.
- Where the active ingredient is an ester or pro-drug, the quantitative composition shall follow how the substance is expressed in the IHP and the module 3.2.P.1. If the active moiety is an active substance in an already approved medicinal product, the reference substance should be given in terms of this active moiety. If the active moiety has not been approved separately, then the reference substance should be the ester or pro-drug and not any presumed active moiety. See section 5.2.3 Substance reference strength (quantitative composition).

If the product contains excipient(s) and the amount(s) of the ingredient(s) shall be specified.
In specific cases where the quantitative composition of the excipient(s) of the medicinal product is not reported in the relevant product information (i.e., IHP/PI), the substance strength is to be left empty, and the substance reference strength is to be completed.
If no quantitative information is available neither in the IHP nor in module 3.2.P.1, the substance can be reported without any quantitative information. Note that the quantitative information of the active substance must be provided in all cases.
The strength of the excipient(s) in module 3.2.P.1 of the dossier shall be specified.
The entire Substance Strength (quantitative composition) sub-class is conditional and not repeatable while the individual attributes of this sub-class are not repeatable and shall be populated as applicable.

Substance Strength (quantitative composition) Class	Description
Repeatable	No
Conformance	Conditional

5.2.2.1 Quantity operator

The Strength (quantitative composition) of the substance (active substances and excipients) should be declared as a quantity of the substance contained in a Manufactured Item or Pharmaceutical

Product [for further details refer to section 5.2.2. Substance strength (quantitative composition) and 5.2.3 Substance reference strength (quantitative composition)]. To precisely express the strength of the substance ingredient(s) contained in the medicinal product, the corresponding quantity operator shall be selected.
The quantity operator applies to each of the below data elements based:

- Strength (Presentation) 5.2.2.2.1 Quantity operator
- Strength (Concentration 5.2.2.3.1 Quantity operator

For further information on the technical details of this data element, refer to the below sections 5.2.2.2.1 and 5.2.2.3.1.

Example(s):
Equal to, less than, more than,

5.2.2.2 Strength (presentation)

When the strength of a substance is described as a qualitative term describing the discrete unit, the below fields should be used to enter this information.
The entire Strength (presentation) sub-class is conditional and not repeatable while the individual attributes of this sub-class are not repeatable and shall be populated as applicable.

Strength (presentation) Class	Description
Repeatable	No
Conformance	Conditional

Note: If the Strength (presentation) is clearly stated in the relevant IHP/PI and/or module 3, this field shall be populated.

5.2.2.2.1 Quantity Operator

The Strength (quantitative composition) of the substance (active substances and excipients) should be declared as a quantity of the substance contained in a Manufactured Item or Pharmaceutical Product.
To precisely express the strength of the substance ingredient(s) contained in the medicinal product, the corresponding quantity operator shall be selected.
The quantity operator applies to each of the below data elements based:

Tag	Description
User Guidance	The applicable value corresponding to the quantity operator shall be specified as term ID. The applicable value shall be selected from the term ID as listed in the EMA Quantity Operator list.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	EMA Quantity Operator
Value(s)	As listed in the EMA Quantity Operator list. If the term can be mapped to a

	FHIR Quantity comparator, the FHIR comparator field should also be specified for interoperability.
ISO Element Name	Not applicable
ISO Path	Not applicable
FHIR Element Name	quantityOperator
FHIR Path	Ingredient.substance.strength.extension.quantityOperator Ingredient.substance.strength.concentration.numerator.comparator

Example(s):

Equal to, less than, more than

5.2.2.2.2 Strength (presentation single value or low limit)

Tag	Description
User Guidance	The strength (quantitative composition) of the substances shall be specified in this field with a numerator and denominator. When the strength is expressed as a range, the lower limit for the quantity of the substance in the unit of presentation shall be specified in this field. When the strength is not expressed as a range, the quantity of the substance shall be specified in this field. The numerator should be expressed with a unit (numeric value) and a unit of measurement (e.g., mg). The denominator should be expressed with a unit (numeric value) and a unit of presentation (e.g., tablet, actuation). The Unit of Presentation reported in this field should be equal to the Unit of Presentation specified in section 4.5 Manufactured Item or section 6.3 Pharmaceutical Product, respectively.
Repeatable	No
Conformance	Mandatory
Data Type	Ratio/RatioRange/Quantity
Excel	UCUM Numerator Unit or EDQM Strength (Presentation) Denominator Unit list
Value(s)	The units for the numerator shall be specified as a value and a Term ID as listed in the Units of Measurement Swissmedic list. The units for the denominator shall be specified as a value and a Term ID as listed in the UCUM Numerator Unit UCUM list or in the EDQM Strength (Presentation) Denominator Unit list.
ISO Element Name	Strength (Presentation)
ISO Path	For the Manufactured Item, the ISO path is: /MedicinalProduct/PackagedMedicinalProduct/PackageItem/ManufacturedItem/Ingredient/Substance/Strength/Strength_Presentation For the Pharmaceutical Product, the ISO path is: /MedicinalProduct/PharmaceuticalProduct/Ingredient/Substance/Strength/Strength_Presentation
FHIR Element Name	Presentation
FHIR Path	Ingredient.substance.strength.presentation[x]

5.2.2.2.3 Strength (presentation high limit)

Tag	Description

User Guidance	The strength (quantitative composition) of the substances shall be specified in this field with a numerator and denominator, only applicable when the strength is expressed as a range. In this case, the upper limit for the quantity of the substance in the unit of presentation shall be specified in this field. When the strength is not expressed as a range, this field shall not be populated. The numerator should be expressed with a unit of numeric value and a unit of measurement (e.g., mg). The denominator should be expressed with a unit of numeric value and a unit of presentation (e.g., tablet). The Unit of Presentation reported in this field should be equal to the Unit of Presentation specified in section 4.5 Manufactured Item or section 6.3 Pharmaceutical Product, respectively.
Repeatable	No
Conformance	Conditional
Data Type	Ratio
Excel	UCUM Numerator Unit or EDQM Strength (Presentation) Denominator Unit list
Value(s)	The units for the numerator shall be specified as a value and a Term ID as listed in the Units of Measurement Swissmedic list. The units for the denominator shall be specified as a value and a Term ID as listed in the UCUM Numerator Unit UCUM list or in the EDQM Strength (Presentation) Denominator Unit list.
ISO Element Name	Strength (Presentation)
ISO Path	For the Manufactured Item, the ISO path is: /MedicinalProduct/PackagedMedicinalProduct/PackageItem/ManufacturedItem/Ingredient/Substance/Strength/Strength_Presentation For the Pharmaceutical Product, the ISO path is: /MedicinalProduct/PharmaceuticalProduct/Ingredient/Substance/Strength/Strength_Presentation
FHIR Element Name	PresentationHighLimit
FHIR Path	Ingredient.substance.strength.presentationHighLimit

Example(s):

Tablet 500 mg

Strength presentation single value or low limit: numerator 500 mg, denominator 1 tablet

Strength presentation high limit: <blank>

Powder for solution for injection 88-90 mg in a vial

Strength presentation single value or low limit: numerator 88 mg, denominator 1 vial

Strength presentation high limit: 90 mg, denominator 1 vial

5.2.2.3 Strength (concentration)

When the strength of a substance is expressed as the amount of substance per unit of measurement, such as millilitre or gram, the below fields should be used to enter this information.
The entire Strength (concentration) sub-class is conditional and not repeatable while the individual attributes of this sub-class are not repeatable and shall be populated as applicable.

Strength (concentration) Class	Description
Repeatable	No
Conformance	Conditional

5.2.2.3.1 Quantity Operator (strength)

The Strength (quantitative composition) of the substance (active substances and excipients) should be declared as a quantity of the substance contained in a Manufactured Item or Pharmaceutical Product.
To precisely express the strength of the substance ingredient(s) contained in the medicinal product, the corresponding quantity operator shall be selected.
The quantity operator applies to each of the below data elements based:

Example(s):
Equal to, less than, more than

5.2.2.3.2 Strength (concentration single value or low limit)

Tag	Description
User Guidance	The strength (quantitative composition) of the substances shall be specified in this field with a numerator and denominator. When the strength is expressed as a range, the lower limit for the quantity of the substance in the unit of measurement shall be specified in this field. When the strength is not expressed as a range, the quantity of the substance shall be specified in this field. The numerator and the denominator should be expressed with a unit of numeric value and a unit of measurement (e.g., mg, ml).
Repeatable	No
Conformance	Mandatory
Data Type	Ratio
Excel	UCUM Numerator Unit
Value(s)	The units for the numerator shall be specified as a value and a Term ID as listed in the UCUM Numerator Unit list.
ISO Element Name	Strength (Concentration)
ISO Path	For the Manufactured Item, the ISO path is: /MedicinalProduct/PackagedMedicinalProduct/PackageItem/ManufacturedItem/Ingredient/Substance/Strength/Strength_Concentration For the Pharmaceutical Product, the ISO path is: /MedicinalProduct/PharmaceuticalProduct/Ingredient/Substance/Strength/Strength_Concentration
FHIR Element Name	Concentration
FHIR Path	Ingredient.substance.strength.concentration[x]

5.2.2.3.3 Strength (Concentration high limit)

Tag	Description
User Guidance	The strength (quantitative composition) of the substances shall be specified in this field with a numerator and denominator, only applicable when the strength is expressed as a range. In this case, the upper limit for the quantity of the substance in the unit of measurement shall be specified in this field. When the strength is not expressed as a range, this field shall not be populated. The numerator and the denominator should be expressed with a unit of numeric value and a unit of measurement (e.g., mg, ml).
Repeatable	No
Conformance	Conditional
Data Type	Ratio
Excel	UCUM Numerator Unit
Value(s)	The units for the numerator and the denominator shall be specified as a value and a Term ID as listed in the UCUM Numerator Unit list.
ISO Element Name	Strength (Concentration)
ISO Path	For the Manufactured Item, the ISO path is: /MedicinalProduct/PackagedMedicinalProduct/PackageItem/ManufacturedItem/Ingredient/Substance/Strength/Strength_Concentration For the Pharmaceutical Product, the ISO path is: /MedicinalProduct/PharmaceuticalProduct/Ingredient/Substance/Strength/Strength_Concentration
FHIR Element Name	ConcentrationHighLimit
FHIR Path	Ingredient.substance.strength.concentrationHighLimit

Example(s):

Solution for injection 20 mg/ml

Strength concentration single value or low limit: numerator 20 mg, denominator 1 ml

Strength concentration high limit: <blank>

Powder and solvent for solution for injection 95-100 mg/ml

Strength concentration single value or low limit: numerator 95 mg, denominator 1 ml

Strength concentration high limit: 100 mg, denominator 1 ml

For Stregth ranges only on denominator is allowed.

5.2.3 Substance reference strength (quantitative composition)

Reference strength represents the strength (quantitative composition) of the active moiety of the active substance or of another substance used to express the strength of the product. There are situations when the active substance and active moiety are different resulting in different expression of the strength.

For example, if an active substance is in the form of a salt or hydrate, the reference strength shall be expressed in terms of the mass [or biological activity in International (or other) units where appropriate] of the active moiety (base, acid or anhydrous material).

The reference substance and reference strength of the active substance(s) contained in the Pharmaceutical Product or Manufactured Item can be found in section 2 of the corresponding IHP.

The reference strength should be provided for active substances and is not repeatable. However, there are cases where the reference strength of the active substance may not be provided.

In specific cases where the quantitative composition of the strength of the excipient(s) of the medicinal product is not reported in the relevant product information (i.e., IHP/PI), the substance strength is to be left empty, and the substance reference strength is to be completed.
If no quantitative information is available neither in the IHP nor in module 3.2.P.1, the substance can be reported without any quantitative information. Note that the quantitative information of the active substance must be provided in all cases.

Note that the ISO standards do not explicitly differentiate between Strength (Presentation) versus Strength (Concentration) for Reference Strengths. Swissmedic will do that in the same way as EMA.

Example(s):

Field	**Value**
IHP text	Each tablet contains 500 mg Abirateron acetate
Substance	Abirateron acetate
Substance strength presentation single value or low limit numerator	500 mg
Substance strength presentation single value or low limit denominator	1 tablet

066501001 Pemetrexed Sandoz conc., concentrate for solution for infusion	
Field	**Value**
IHP text	Pemetrexedum ut dinatrii pemetrexedum hemipentahydricum Durchstechflaschen zu 100 mg/4 ml.
Substance	Pemetrexedum dinatricum heptahydricum
Reference substance	Pemetrexedum

Strength presentation	120.8 mg/4 ml
Strength concentration	30.2 mg/ml
Reference strength presentation	100 mg/4 ml
Reference strength concentration	25 mg/ml

In addition, if the active substance is not a salt/hydrate, the strength [Section 5.2.2. Substance strength (quantitative composition)] and reference strength in the product composition will be the same and the strength information shall be repeated in the reference strength (reference strength is mandatory for active substances).

Example(s):

068066001 Vumerity, gastro-resistant capsule, hard	
Field	**Value**
IHP text	Diroximelfumarat Hartkapseln mit magensaftresistenten Mikrotabletten zu 231 mg Diroximelfumarat
Reference substance	Diroximelfumarat
Reference strength presentation single value or low limit numerator	231 mg
Reference strength presentation single value or low limit denominator	1 tablet

The entire Reference strength sub-class is conditional based on the below business rules and not repeatable while the individual attributes of this sub-class are not repeatable and shall be populated as applicable.

Substance reference strength (presentation) Class	Description
Repeatable	No
Conformance	Conditional

5.2.3.1 Reference substance

Tag	Description

User Guidance	The reference substance of the active substance(s) contained in Pharmaceutical Product or Manufactured Item, as expressed in section 2 of the corresponding IHP and in module 3.2.P.1 of the dossier, shall be specified.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	GSRS Substance
Value(s)	As listed in FDA's Global Substance Registration System.
ISO Element Name	Reference Substance
ISO Path	For the Manufactured Item, the ISO path is: /MedicinalProduct/PackagedMedicinalProduct/PackageItem/ManufacturedItem/Ingredient/Substance/Strength/ReferenceStrength/ReferenceSubstance For the Pharmaceutical Product, the ISO path is: /MedicinalProduct/PharmaceuticalProduct/Ingredient/Substance/Strength/ReferenceStrength/ReferenceSubstance
FHIR Element Name	Substance
FHIR Path	Ingredient.substance.strength.referenceStrength.substanceCodeableConcept

5.2.3.2 Quantity Operator

The Strength (quantitative composition) of the substance (active substances and excipients) should be declared as a quantity of the substance contained in a Manufactured Item or Pharmaceutical Product (for further details refer to section 5.2.2 Substance strength (quantitative composition)) and 5.2.3 Substance reference strength (quantitative composition).

To precisely express the strength of the substance ingredient(s) contained in the medicinal product, the corresponding quantity operator shall be selected.

The quantity operator applies to each of the below data elements based:

- Reference strength (Presentation) 5.2.3.3.1 Quantity operator
- Reference strength (Concentration) 5.2.3.4.15.2.3.4.1 Quantity operator

For further information on the technical details of this data element, refer to the below sections 5.2.3.3.1 and 5.2.3.4.1.5.2.3.4.1

Example(s):
Equal to, less than, more than

Tag	Description
User Guidance	The applicable value corresponding to the quantity operator shall be specified as term ID. The applicable value shall be selected from the term ID as listed in the EMA Quantity Operator list.
Repeatable	No
Conformance	Mandatory

Data Type	CodeableConcept
Excel	EMA Quantity Operator
Value(s)	As listed in the EMA Quantity Operator list. If the term can be mapped to a FHIR Quantity comparator, the FHIR comparator field should also be specified for interoperability.
ISO Element Name	Not applicable
ISO Path	Not applicable
FHIR Element Name	quantityOperator
FHIR Path	Ingredient.substance.strength.extension.quantityOperator Ingredient.substance.strength.concentration.numerator.comparator

Example(s):
Equal to, less than, more than

5.2.3.3 Reference strength (Presentation)

When the reference strength of an active substance is described as a qualitative term describing the discrete unit, the below fields shall be used to enter this information.
The entire Reference strength sub-class is conditional and not repeatable while the individual attributes of this sub-class are not repeatable and shall be populated as applicable.

Reference strength (presentation) Class	Description
Repeatable	No
Conformance	Conditional

5.2.3.3.1 Quantity Operator

Tag	Description
User Guidance	The applicable value corresponding to the quantity operator shall be specified as term ID. The applicable value shall be selected from the term ID as listed in the EMA Quantity Operator list.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	EMA Quantity Operator
Value(s)	As listed in the EMA Quantity Operator list. If the term can be mapped to a FHIR Quantity comparator, the FHIR comparator field should also be specified for interoperability.
ISO Element Name	Not applicable
ISO Path	Not applicable
FHIR Element Name	quantityOperator
FHIR Path	Ingredient.substance.strength.extension.quantityOperator Ingredient.substance.strength.referenceStrength.strength.numerator.comparator

Example(s):
Equal to, less than, more than

5.2.3.3.2 Reference strength (Presentation single value or low limit)

Tag	Description

User Guidance	The reference strength (quantitative composition) of the active substances (including active substances and excipients as applicable) shall be specified in this field with a numerator and denominator. When the reference strength is expressed as a range, the lower limit for the quantity of the reference substance in the unit of presentation shall be specified in this field. When the strength is not expressed as a range, the quantity of the reference substance shall be specified in this field. The numerator should be expressed with a unit (numeric value) and a unit of measurement (e.g., mg). The denominator should be expressed with a unit (numeric value) and a unit of presentation (e.g., tablet, actuation). The reference strength shall be provided for active substances only. The Unit of Presentation reported in this field should be equal to the Unit of Presentation specified in section 4.5 Manufactured Item or section 6.3 Pharmaceutical Product, respectively.
Repeatable	No
Conformance	Mandatory
Data Type	Ratio/RatioRange/Quantity
Excel	UCUM Numerator Unit or EDQM Strength (Presentation) Denominator Unit list
Value(s)	The units for the numerator shall be specified as a value and a Term ID as listed in the Units of Measurement Swissmedic list. The units for the denominator shall be specified as a value and a Term ID as listed in the UCUM Numerator Unit UCUM list or in the EDQM Strength (Presentation) Denominator Unit list.
ISO Element Name	ReferenceStrength
ISO Path	For the Manufactured Item, the ISO path is: /MedicinalProduct/PackagedMedicinalProduct/PackageItem/ManufacturedItem/Ingredient/Substance/Strength/ReferenceStrength For the Pharmaceutical Product, the ISO path is: /MedicinalProduct/PharmaceuticalProduct/Ingredient/Substance/Strength/ReferenceStrength
FHIR Element Name	Strength
FHIR Path	Ingredient.substance.strength.referenceStrength.strength

5.2.3.3.3 Reference strength (Presentation high limit)

Tag	Description
User Guidance	The reference strength (quantitative composition) of the active substances shall be specified in this field with a numerator and denominator, only applicable when the reference strength is expressed as a range. In this case, the upper limit for the quantity of the reference substance in the unit of presentation shall be specified in this field. When the reference strength is not expressed as a range, this field shall not be populated. The numerator should be expressed with a unit of numeric value and a unit of measurement (e.g., mg). The denominator should be expressed with a unit of numeric value and a unit of presentation (e.g., tablet). The Unit of Presentation reported in this field should be equal to the Unit of Presentation specified in section 4.5 Manufactured Item or section 6.3 Pharmaceutical Product, respectively.

Repeatable	No
Conformance	Conditional
Data Type	Ratio
Excel	UCUM Numerator Unit or EDQM Strength (Presentation) Denominator Unit list
Value(s)	The units for the numerator shall be specified as a value and a Term ID as listed in the Units of Measurement Swissmedic list. The units for the denominator shall be specified as a value and a Term ID as listed in the UCUM Numerator Unit UCUM list or in the EDQM Strength (Presentation) Denominator Unit list.
ISO Element Name	ReferenceStrength
ISO Path	For the Manufactured Item, the ISO path is: /MedicinalProduct/PackagedMedicinalProduct/PackageItem/ManufacturedItem/Ingredient/Substance/Strength/ReferenceStrength For the Pharmaceutical Product, the ISO path is: /MedicinalProduct/PharmaceuticalProduct/Ingredient/Substance/Strength/ ReferenceStrength
FHIR Element Name	StrengthHighLimit
FHIR Path	Ingredient.substance.strength.referenceStrength.strengthHighLimit

5.2.3.4 Reference strength (Concentration)

When the reference strength of an active substance is expressed as the amount of substance per unit of measurement, such as millilitre or gram, the below fields should be used to enter this information. The entire Reference strength (concentration) sub-class is conditional and not repeatable while the individual attributes of this sub-class are not repeatable and shall be populated as applicable.

Reference strength (concentration) Class	Description
Repeatable	No
Conformance	Conditional

Tag	Description
User Guidance	The applicable value corresponding to the quantity operator shall be specified as term ID. The applicable value shall be selected from the term ID as listed in the EMA Quantity Operator list.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	EMA Quantity Operator
Value(s)	As listed in the EMA Quantity Operator list. If the term can be mapped to a FHIR Quantity comparator, the FHIR comparator field should also be specified for interoperability.
ISO Element Name	Not applicable
ISO Path	Not applicable
FHIR Element Name	quantityOperator
FHIR Path	Ingredient.substance.strength.extension.quantityOperator Ingredient.substance.strength.referenceStrength.strength.numerator.comparator

Example(s):

Equal to, less than, more than

5.2.3.4.1 Quantity operator

Tag	Description
User Guidance	The applicable value corresponding to the quantity operator shall be specified as term ID. The applicable value shall be selected from the term ID as listed in the EMA Quantity Operator list.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	EMA Quantity Operator
Value(s)	As listed in the EMA Quantity Operator list. If the term can be mapped to a FHIR Quantity comparator, the FHIR comparator field should also be specified for interoperability.
ISO Element Name	Not applicable
ISO Path	Not applicable
FHIR Element Name	quantityOperator
FHIR Path	Ingredient.substance.strength.extension.quantityOperator Ingredient.substance.strength.referenceStrength.strength.numerator.comparator

Example(s):

Equal to, less than, more than

5.2.3.4.2 Reference strength (Concentration single value or low limit)

Tag	Description
User Guidance	The reference strength (quantitative composition) of the active substances (including active substances and excipients as applicable) shall be specified in this field with a numerator and denominator. When the reference strength is expressed as a range, the lower limit for the quantity of the reference substance in the unit of presentation shall be specified in this field. When the strength is not expressed as a range, the quantity of the reference substance shall be specified in this field. The numerator and the denominator shall be expressed with a unit of numeric value and a unit of measurement (e.g., mg, ml). The reference strength shall be provided for active substances only
Repeatable	No
Conformance	Mandatory
Data Type	Ratio
Excel	UCUM Numerator Unit
Value(s)	The units for the numerator shall be specified as a value and a Term ID as listed in the Units of Measurement Swissmedic list. The units for the denominator shall be specified as a value and a Term ID as listed in the UCUM Numerator Unit UCUM list.
ISO Element Name	ReferenceStrength
ISO Path	For the Manufactured Item, the ISO path is: /MedicinalProduct/PackagedMedicinalProduct/PackageItem/ManufacturedItem/Ingredient/Substance/Strength/ReferenceStrength For the Pharmaceutical Product, the ISO path is: /MedicinalProduct/PharmaceuticalProduct/Ingredient/Substance/Strength/ ReferenceStrength
FHIR Element Name	Strength
FHIR Path	Ingredient.substance.strength.referenceStrength.strength

5.2.3.4.3 Reference strength (Concentration high limit)

Tag	Description
User Guidance	The reference strength (quantitative composition) of the active substances shall be specified in this field with a numerator and denominator, only applicable when the reference strength is expressed as a range. In this case, the upper limit for the quantity of the reference substance in the unit of presentation shall be specified in this field. When the reference strength is not expressed as a range, this field shall not be populated. The numerator and the denominator should be expressed with a unit of numeric value and a unit of measurement (e.g., mg, ml) The reference strength shall be provided for active substances only. This value is an attribute within Reference Strength
Repeatable	No
Conformance	Conditional
Data Type	Ratio
Excel	UCUM Numerator Unit
Value(s)	The units for the numerator shall be specified as a value and a Term ID as listed in the UCUM Numerator Unit list. The units for the denominator shall be specified as a value and a Term ID as listed in the UCUM Numerator Unit list.
ISO Element Name	ReferenceStrength
ISO Path	For the Manufactured Item, the ISO path is: /MedicinalProduct/PackagedMedicinalProduct/PackageItem/ManufacturedItem/Ingredient/Substance/Strength/ReferenceStrength For the Pharmaceutical Product, the ISO path is: /MedicinalProduct/PharmaceuticalProduct/Ingredient/Substance/Strength/ ReferenceStrength
FHIR Element Name	StrengthHighLimit
FHIR Path	Ingredient.substance.strength.referenceStrength.strengthHighLimit

6 Pharmaceutical Product

Each authorised medicinal product shall contain at least one Pharmaceutical Product.
The technical concept of a "Pharmaceutical Product", refers to the qualitative and quantitative composition of a medicinal product in the pharmaceutical form, approved for administration to the patient, in line with the regulated product information.

A medicinal product may contain one or more "Pharmaceutical Product(s)" (e.g., a kit containing vaginal tablets 500 mg and a vaginal cream 10% or a kit containing a combination of norethindrone acetate and ethinyl estradiol tablets and ferrous fumarate tablets). In these instances, a Pharmaceutical Product section is to be completed for each "Pharmaceutical Product".

The administrable pharmaceutical form refers to the pharmaceutical form for administration to the patient, after any necessary transformation of the "manufactured" pharmaceutical form has been carried out. This concept is illustrated in the following examples.

If a product undergoes several transformations before it is given to the patient, intermediate forms that are not given to the patient will not be captured in the data. Only the final form(s) that are given to the patient should be included in the Pharmaceutical Product data.

Example(s):

Example 1:

Medicinal Product ABC 20mg/mL powder and solvent for solution for injection (combined pharmaceutical form) will contain two types of Manufactured Items with the following manufactured dose forms:

- Powder for solution for injection
- Solvent for solution for injection

In this case the medicinal product needs to undergo the necessary transformation prior to the administration to the patient and the pharmaceutical form is as follows:

Administrable dose form	Solution for injection
Strength	20 mg/mL
Unit of Presentation	Vial

Example 2:

Medicinal Product DEF 500 mg tablets contain a single type of Manufactured Item with the following manufactured dose form:

- Tablet

In this case the medicinal product does not need to undergo any transformation prior to the administration to the patient and the administrable dose form equals the manufactured dose form. The pharmaceutical form is as follows:

Administrable dose form	Tablet
Strength	500 mg/unit
Unit of Presentation	Tablet

Each Pharmaceutical Product shall contain information on:

- Active ingredient(s) - active ingredient substance name(s) and its/their amounts(s) can be found in module 3.2.P.1 – Description and Composition of the Drug Product.
- Excipient(s) - excipient substance name(s) and their amount(s) can be found in module 3.2.P.1 – Description and Composition of the Drug Product.
- The ingredient(s) of a Manufactured Item or of the Pharmaceutical Product shall be specified based on the Resource *Ingredient* as outlined below.

Note: The contents of the documents [i.e., module 1, relevant sections in module 3 – Quality, IHP] supporting the regulatory process shall be aligned, where applicable, to ensure the discrepancies between the documents are minimized.

The full information on Pharmaceutical Product as presented in the FHIR *Resource AdministrableProductDefinition* is shown below. In the context of the Pilot of the Portal implementation, the elements included in the red rectangle below are in scope and should be provided according to the rules and guidance described in this section:

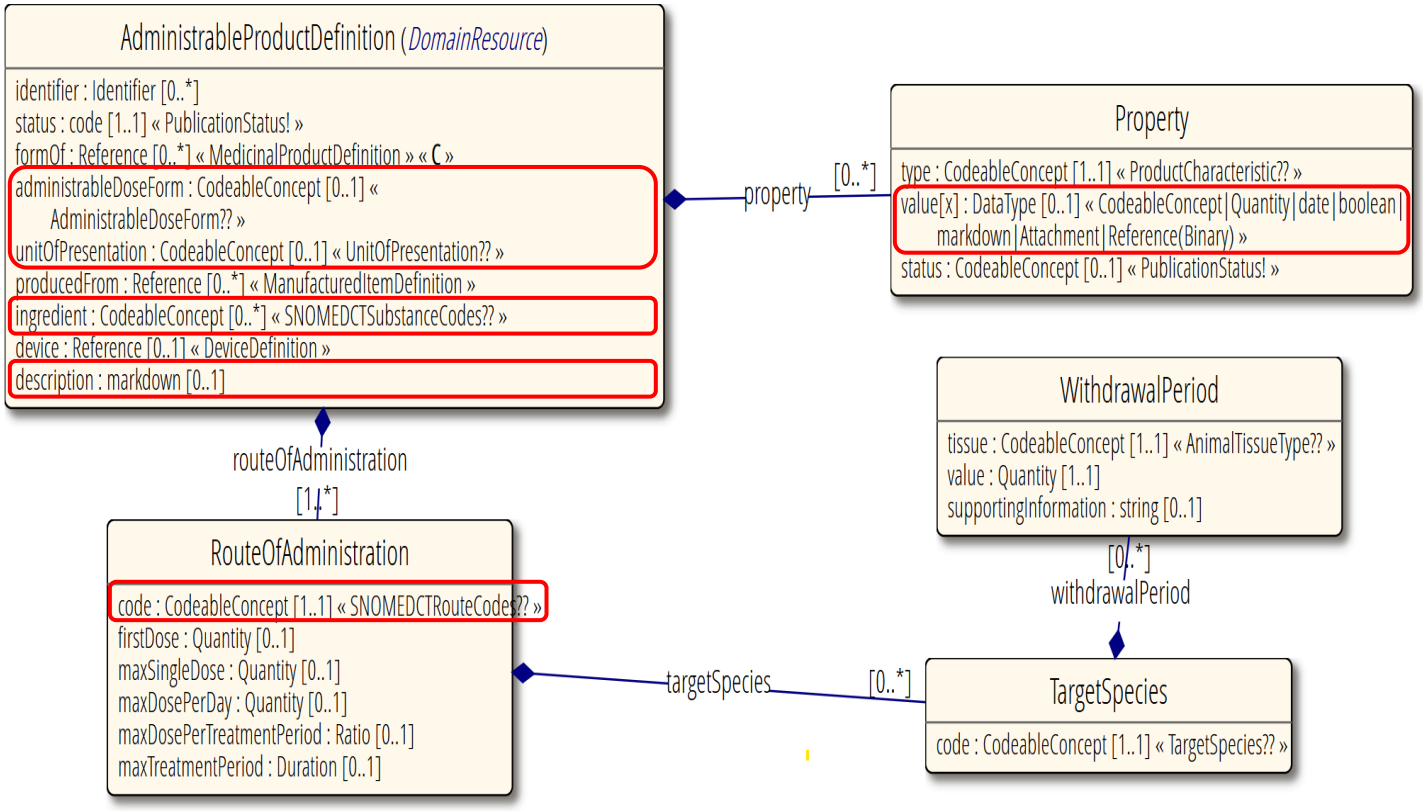

Figure 20: Resource AdministrableProduct (Source:http://www.hl7.org/fhir):

The Pharmaceutical Product class is mandatory and repeatable while the individual attributes of this class are not repeatable (with the exception of the ingredient data elements class) and shall be populated as applicable.

Pharmaceutical Product Class	Description
Repeatable	Yes
Conformance	Mandatory

6.1 Pharmaceutical Product description

The description of Pharmaceutical Product shall be provided whenever the medicinal product contains more than one Pharmaceutical Product in order to allow differentiation in the database.

The provision of Pharmaceutical Product description is not needed for medicinal products with a single Pharmaceutical Product. In medicinal products containing more than one Pharmaceutical Product (e.g., contraceptive having different strengths and fixed dose combination as part of the same medicinal product), differentiation of manufacturing items is not easily visualised with the information provided in the rest of individual data fields (in certain cases it can only be differentiated on specific characteristics of substances including the qualitative and quantitative composition of the Pharmaceutical Product).

Information on Pharmaceutical Product description is free text and should be provided in the form of: “Physical Characteristics” + “Unit of presentation”.

Physical Characteristics of the Pharmaceutical Product item includes colour or shape among others which allow differentiation from remaining Pharmaceutical Products.

Tag	Description
User Guidance	The high-level description of Pharmaceutical Product shall be provided whenever the medicinal product contains more than one Pharmaceutical Product (e.g., different types of tablets in the same package). Information on pharmaceutical item description is free text and should be provided in the form of: “Physical Characteristics” + “Unit of presentation”
Repeatable	Yes
Conformance	Conditional
Data Type	Markdown
Excel	Not applicable
Value(s)	Free text or markdown text for rich content
ISO Element Name	Not applicable
ISO Path	Not applicable
FHIR Element Name	Text
FHIR Path	AdministrableProductDefinition.property.valueCodeableConcept.text

Example(s):
Dark yellow film-coated tablet, Medium red film-coated tablet

6.2 Administrable dose form

Tag	Description

User Guidance	The administrable dose form corresponds with the dose form intended for administration to the patient, after any necessary transformation of the manufactured dose form has been carried out. This information shall be provided in line with the information indicated in Section 5 Dosage/Administration of the corresponding IHP. The applicable value shall be selected from the term ID as listed in the applicable EDQM list.
Repeatable	No
Conformance	Mandatory
Data Type	CodeableConcept
Excel	EDQM Administered Doseform
Value(s)	Listed in the EDQM Administered Doseform list
ISO Element Name	Administrable Dose Form
ISO Path	/MedicinalProduct/PharmaceuticalProduct/AdministrableDoseForm
FHIR Element Name	administrableDoseForm
FHIR Path	AdministrableProductDefinition.administrableDoseForm

Example(s):

Tablets, Solution for injection, Capsule

6.3 Unit of presentation

Tag	Description
User Guidance	The unit of presentation describing the unit in which a "Pharmaceutical Product" is administered to describe the strength or quantity. The unit of presentation shall be specified as a term ID. The value shall be selected from the term ID as listed in the applicable EDQM list. The Unit of Presentation reported in this field should be equal to the Unit of Presentation specified in section 5 Ingredient when specifying the product composition at presentation strength level.
Repeatable	No
Conformance	Conditional
Data Type	CodeableConcept
Excel	EDQM Pharmaceutical Product UoP
Value(s)	As listed in the Units of Presentation EDQM list
ISO Element Name	Unit of Presentation
ISO Path	/MedicinalProduct/PharmaceuticalProduct/UnitOfPresentation
FHIR Element Name	unitOfPresentation
FHIR Path	AdministrableProductDefinition.unitOfPresentation

Example(s):

Patch, Tablet, Vial

6.4 Ingredient

The ingredient(s) of the Pharmaceutical Product shall be selected from the previously recorded list of ingredients based on the Resource Ingredient as outlined in section 5. Ingredient The Ingredient class is mandatory. For further information related to the technical details and business rules please refer to section 5. Ingredient. This value is an attribute within Pharmaceutical Product domain.

Tag	Description
User Guidance	The reference to the ingredient(s) of the Pharmaceutical Product shall be selected from the list of ingredients recorded in section 5. Ingredient
Repeatable	Yes
Conformance	Mandatory
Data Type	Reference
Excel	Not appllicable
Value(s)	Structured data elements referencing the included ingredients in the Manufactured Item
ISO Element Name	Ingredient
ISO Path	For the Pharmaceutical Product, the ISO path is: /MedicinalProduct/PharmaceuticalProduct/Ingredient
FHIR Element Name	Ingredient
FHIR Path	AdministrableProductDefinition.ingredient

6.5 Route of administration

Tag	Description
User Guidance	The route of administration of the pharmaceutical form shall be specified in accordance with Section 5 *Dosage/Administration* of the corresponding IHP as Term ID. Administration route section describes the route(s) of administration i.e., the path by which the medicinal product (described as technical concept of a "Pharmaceutical Product") is taken into or makes contact with the body. The applicable value shall be selected from the term ID as listed in the applicable EDQM list.
Repeatable	Yes
Conformance	Mandatory
Data Type	CodeableConcept
Excel	EDQM Route of Administration
Value(s)	As listed in the EDQM Route of Administrationlist
ISO Element Name	Route of Administration
ISO Path	/MedicinalProduct/PharmaceuticalProduct/RouteOfAdministration/RouteOfA dministration
FHIR Element Name	Code
FHIR Path	AdministrableProductDefinition.routeOfAdministration.code

Example(s):
Oral use, Intravenous use, Ocular use

Change history

Version	Change	sig
1.0	Publication for Review (Pilot Scope)	eur
2.0	Publication (Pilot Scope)	eur