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Health informatics — Identification of medicinal products — Data elements and structures for unique identification and exchange of regulated pharmaceutical product information

Informatique de santé — Identification des médicaments — Éléments de données et structures pour l'identification unique et l'échange d'informations réglementées sur les produits pharmaceutiques

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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Foreword

ISO (the International Organization for Standardisation) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organisations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardisation.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 215, *Health informatics*.

This second edition cancels and replaces the first edition (ISO 11616:2012), which has been technically revised.

Introduction

This document was developed in response to a worldwide demand for internationally harmonised specifications for Medicinal Products. It is part of a set of five ISO Standards and four ISO Technical Specifications which together provide the basis for the unique Identification of Medicinal Products (IDMP).

These sets of standards and technical specifications comprise:

— ISO 11615;

— ISO/TS 20443;

— ISO 11616;

— ISO/TS 20451;

— ISO 11238;

— ISO/TS 19844;

— ISO 11239;

— ISO/TS 20440;

— ISO 11240.

The purpose of this document is to present data elements, structures and their relationships in order to uniquely identify and exchange regulated pharmaceutical product information. This document provides an accurate and consistent mechanism to fully represent the relationship of pharmaceutical product identifier(s) (PhPID) with the following:

— Medicinal Product Identifier(s) (MPIDs);

— Package Component Identifier(s) (PCIDs);

— Investigational Medicinal Product Identifier(s) (IMPIDs);

— Investigational Package Component Identifier(s) (IPCIDs).

These standards and technical specifications for the identification of Medicinal Products support the activities of medicines regulatory agencies worldwide by region. These include a variety of regulatory activities related to development, registration and life cycle management of Medicinal Products, as well as pharmacovigilance and risk management.

To meet the primary objectives of the regulation of medicines and pharmacovigilance, it is necessary to reliably exchange Medicinal Product information in a robust and consistent manner. The IDMP standards therefore support, at a minimum, the following interactions:

— regulatory medicines authority to regulatory medicines authority;

— pharmaceutical company to regulatory medicines authority;

— sponsor of a clinical trial to regulatory medicines authority;

— regulatory medicines authority to other stakeholders (as applicable);

— regulatory medicines authority to worldwide-maintained data sources.

The necessary messaging specifications are included as an integral part of the IDMP standards to secure the interactions above. This is critical to describing and protecting the integrity of the interactions listed above for the submission of regulated Medicinal Product information in the context of unique product identification and acknowledgement of receipt (which includes the validation of transmitted information).

Unique identifiers produced in conformance with the IDMP standards are aimed at supporting applications where it is necessary to reliably identify and trace the use of Medicinal Products.

There are many terms in use to describe basic concepts in the regulatory, pharmaceutical and healthcare standards development domain for different purposes and in different contexts. The terms and definitions given in this document are to be applied for the concepts which are required to uniquely identify, characterise and exchange regulated Medicinal Products and associated information.

The terms and definitions adopted in this document are intended to facilitate the interpretation and application of legal and regulatory requirements but they are without prejudice to any legally binding document. In case of doubt or potential conflict, the terms and definitions contained in legally binding documents prevail.

This document has been developed in conjunction with the Common Product Model (CPM) and Structured Product Labelling (SPL) in HL7.

Health informatics — Identification of medicinal products — Data elements and structures for unique identification and exchange of regulated pharmaceutical product information

1 Scope

This document is intended to provide specific levels of information relevant to the identification of a Medicinal Product or group of Medicinal Products. It defines the data elements, structures and relationships between data elements that are required for the exchange of regulated information, in order to uniquely identify pharmaceutical products. This identification is to be applied throughout the product lifecycle to support pharmacovigilance, regulatory and other activities worldwide. In addition, this document is essential to ensure that pharmaceutical product information is assembled in a structured format with transmission between a diverse set of stakeholders for both regulatory and clinical (e.g. e-prescribing, clinical decision support) purposes. This ensures interoperability and compatibility for both the sender and the recipient.

This document is not intended to be a scientific classification for pharmaceutical products. Rather, it is a formal association of particular data elements categorised in prescribed combinations and uniquely identified when levelling degrees of information are incomplete. This allows for Medicinal Products to be unequivocally identified on a global level.

References to other normative IDMP and messaging standards for pharmaceutical product information are included in Clause 2, to be applied in the context of this document.

Medicinal products for veterinary use are out of scope of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes*

ISO 11238, *Health informatics — Identification of Medicinal Products — Data elements and structures for the unique identification and exchange of regulated information on substances*

ISO 11239, *Health informatics — Identification of Medicinal Products — Data elements and structures for the unique identification and exchange of regulated information on pharmaceutical dose forms, units of presentation, routes of administration and packaging*

ISO 11240, *Health informatics — Identification of Medicinal Products — Data elements and structures for the unique identification and exchange of units of measurement*

ISO 11615:2017, *Health informatics — Identification of Medicinal Products — Data elements and structures for the unique identification and exchange of regulated Medicinal Product information*

ISO/TS 19844, *Health informatics — Identification of Medicinal Products — Implementation guidelines for data elements and structures for the unique identification and exchange of regulated information on substances*

ISO/TS 20440, *Health informatics — Identification of Medicinal Products — Implementation guide for ISO 11239 data elements and structures for the unique identification and exchange of regulated information on pharmaceutical dose form, units of presentation, routes of administration and packaging*

ISO/TS 20443, *Health informatics — Identification of Medicinal Products — Implementation guidelines for ISO 11615 data elements and structures for the unique identification and exchange of regulated Medicinal Product information*

ISO/TS 20451, *Health informatics — Identification of Medicinal Products — Implementation guidelines for ISO 11616 data elements and structures for the unique identification and exchange of regulated pharmaceutical product information*

HL7 Version 3 Standard, Common Clinical Product Model

HL7 Version 3 Standard, Common Product Model CMETS

HL7 Version 3 Standard, Regulated Product Submission

HL7 Version 3 Standard, Structured Product Labelling

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardisation at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1.1
adjuvant
component that potentiates the immune response to an antigen and/or modulates it towards the desired immune response

3.1.2
administrable dose form
pharmaceutical dose form (3.1.7) for administration to the patient, after any necessary transformation of the *manufactured items* (3.1.17) and their corresponding *manufactured dose forms* (3.1.16) has been carried out

Note 1 to entry: The administrable dose form is identical to the manufactured dose form in cases where no transformation of the manufactured item is necessary [i.e. where the manufactured item is equal to the *pharmaceutical product* (3.1.24)].

Note 2 to entry: Administered dose form and pharmaceutical administrable dose form are synonyms of administrable dose form.

3.1.3
clinical trial
any investigation in human subjects intended to discover or verify the clinical, pharmacological and/or other pharmacodynamic effects of an investigational product(s), and/or to identify any adverse reactions to an *investigational Medicinal Product(s)* (3.1.12), and/or to study absorption, distribution, metabolism and excretion of investigational Medicinal Product(s) with the object of ascertaining its safety and/or efficacy

Note 1 to entry: The terms clinical trial and clinical study are synonymous.

3.1.4
controlled vocabulary
finite set of values that represent the only allowed values for a data item

Note 1 to entry: These values may be codes, text, or numeric.

[SOURCE: CDISC Clinical Research Glossary V10, 2016, modified — "These values may be codes, text, or numeric" has been set as note to entry.]

3.1.5
controlled vocabulary term identifier
concept *identifier* (3.1.10) intended to be used as the preferred unique identifier for that concept in that code system and which is published by the author of a code system

Note 1 to entry: The TermID remains constant over time, independent of the particular version of the knowledge resource.

Note 2 to entry: This definition is adapted from HL7 Core Principles.

Note 3 to entry: TermID is a synonym of controlled vocabulary term identifier.

3.1.6
designation
symbolic representation of a concept

3.1.7
dose form
[illegible]sical manifestation of a *Medicinal Product* (3.1.19) that contains the active ingredient(s) and/or inactive ingredient(s) that are intended to be delivered to the [illegible]ent

Note 1 to entry: Dose form, dosage form and pharmaceutical dose form are synonymous.

Note 2 to entry: "Pharmaceutical dose form" can refer to the [illegible]*inistrable dose form* (3.1.2) or the *manufactured dose form* (3.1.16). The terms pha[illegible]ceutical dose and dosage form are syn[illegible]mous.

3.1.8
globally unique identifier
identifier (3.1.10) that is different from any other such identifier in any domain namespace

3.1.9
healthcare professional
person entrusted with the direct or indirect provision of defined healthcare services to a subject of care or a population of subjects of care

[SOURCE: ENV 1613:1995, 3.13, modified — "who is" has been removed and "subject or population of subjects" has been replaced by "subject of care or a population of subjects of care".]

3.1.10
identifier
description that is sufficient to represent an object in a given environment

Note 1 to entry: In the context of this document, this is a list of identifying characteristics that together unambiguously identify a *Medicinal Product* (3.1.19), *pharmaceutical product* (3.1.24), *substance* (3.1.35), *specified substance* (3.1.32), pharmaceutical *dose form* (3.1.7) or any other element which requir[illegible] be uniquely identified.

[SOURCE: ENV 12610:1998]

3.1.11
investigational code
code assigned by a m*edicines regulatory agency* (3.1.22) to a *sponsor's* (3.1.33) investigational new drug application prior to the initiation of a *clinical trial* (3.1.3)

Note 1 to entry: Sponsor code is a synonym of investigational code.

3.1.12
investigational Medicinal Product
any *pharmaceutical product* (3.1.24) or combination of pharmaceutical products or placebo(s) being tested or used as a reference in a *clinical trial* (3.1.3), including products already with a marketing authorisation but used or assembled (packaged) in a way different from the authorised form, used for an unauthorised indication, or used to gain further information about the authorised form

3.1.13
investigational Medicinal Product identifier
unique *identifier* (3.1.10) allocated to an *investigational Medicinal Product* (3.1.12) supplementary to any existing identifier as ascribed by a *medicines regulatory agency* (3.1.22) in a *region* (3.1.31)/*jurisdiction* (3.1.15) or a *sponsor* (3.1.33) of a *clinical trial* (3.1.3)

Note 1 to entry: This is an alphanumeric text field.

Note 2 to entry: This is for indexing purposes and to contribute to improving patient safety by allowing for the unique identification of *Medicinal Products* (3.1.19) worldwide.

3.1.14
investigational Medicinal Product package identifier
unique *identifier* (3.1.10) allocated to an Investigational *packaged Medicinal Product* (3.1.23) at package level supplementary to any existing identifier as ascribed by a *medicines regulatory agency* (3.1.22) in a *region* (3.1.31)/*jurisdiction* (3.1.15) or a *sponsor* (3.1.33) of a *clinical trial* (3.1.3)

Note 1 to entry: This is for indexing purposes and to contribute to improving patient safety by allowing for the unique identification of Medicinal Products worldwide.

3.1.15
jurisdiction
geographical area within a country/*region* (3.1.31) or subject matter to which the *medicines regulatory agency* (3.1.22) applies

3.1.16
manufactured dose form
pharmaceutical dose *form* (3.1.7) of a *manufactured item* (3.1.17) as manufactured and, where applicable, before transformation into the *pharmaceutical product* (3.1.24)

Note 1 to entry: The manufactured dose form is identical to the *administrable dose form* (3.1.2) in cases where no transformation of the manufactured item is necessary (i.e. where the manufactured item is equal to the pharmaceutical product).

3.1.17
manufactured item
qualitative and *quantitative composition* (3.1.27) of a product as contained in the packaging of the *Medicinal Product* (3.1.19) as put on the market or *investigational Medicinal Product* (3.1.12) as used in a *clinical trial* (3.1.3)

Note 1 to entry: A Medicinal Product may contain one or more manufactured items. In many instances, the manufactured item is equal to the *pharmaceutical product* (3.1.24). However, there are instances where the manufactured item(s) undergo a transformation before being administered to the patient (as the pharmaceutical product) and the two are not equ

3.1.18
medical device
any instrument, apparatus, appliance, software, material or other article, whether used alone or in combination, including the software intended by its manufacturer to be used specifically for diagnostic and/or therapeutic purposes and necessary for its proper application, intended by the manufacturer to be used for human beings for the purpose of:

— diagnosis, prevention, monitoring, treatment or alleviation of disease;

— diagnosis, monitoring, treatment, alleviation of or compensation for an injury or handicap;

— investigation, replacement or modification of the anatomy or of a physiological process;

— control of conception, and which does not achieve its principal intended action in or on the human body by pharmacological, immunological or metabolic means, but which may be assisted in its function by such means.

Note 1 to entry: This definition is applicable for the purposes of this and related standards alone (ISO 11238, ISO 11239, ISO 11240, ISO 11615 and this document).

[SOURCE: EC Directive 2007/47 on Medical Devices]

3.1.19
Medicinal Product
any *pharmaceutical product* (3.1.24) or combination of pharmaceutical products that may be administered to human beings (or animals) for treating or preventing disease, with the aim/purpose of making a medical diagnosis or to restore, correct or modify physiological functions

Note 1 to entry: A Medicinal Product may contain in the packaging one or more *manufactured items* (3.1.17) and one or more pharmaceutical products. In certain *regions* (3.1.31), a Medicinal Product may also be defined as any *substance* (3.1.35) or combination of substances which may be used to make a medical diagnosis. The provisions of this document apply to proprietary Medicinal Products for human use intended to be placed on the market and to industrially manufactured Medicinal Products, the marketing of which has been authorised by a *medicines regulatory agency* (3.1.22). However, the provisions do not apply to: i) Medicinal Products prepared according to prescription (e.g. prepared in a pharmacy from a prescription intended for a specific patient), ii) Medicinal Products prepared in accordance with an official formula (e.g. prepared in a pharmacy in accordance with the instructions in a pharmacopoeia and intended to be given direct to the patient by the pharmacy), iii) Medicinal Products intended for research and development trials, and iv) intermediate products intended for subsequent processing by an authorised manufacturer.

3.1.20
Medicinal Product identifier
unique *identifier* (3.1.10) allocated to a *Medicinal Product* (3.1.19) supplementary to any existing authorisation number as ascribed by a *medicines regulatory agency* (3.1.22) in a *region* (3.1.31)

Note 1 to entry: This is an alphanumeric text field.

Note 2 to entry: This is for indexing purposes and to contribute to improved patient safety by allowing for the unique identification of Medicinal Products worldwide.

3.1.21
Medicinal Product package identifier
unique *identifier* (3.1.10) allocated to a *packaged Medicinal Product* (3.1.23) supplementary to any existing authorisation number as ascribed by a *medicines regulatory agency* (3.1.22) in a *region* (3.1.31)

Note 1 to entry: This is for indexing purposes and to contribute to improving patient safety by allowing for the unique identification of Medicinal Products worldwide.

3.1.22
medicines regulatory agency
institutional body that, according to the legal system under which it has been established, is responsible for the granting of marketing authorisations, *clinical trial* (3.1.3) authorisations and manufacturing authorisations for *Medicinal Products* (3.1.19)

Note 1 to entry: In certain *regions* (3.1.31), the role of the institutional body which according to the legal system grants the marketing authorisation of Medicinal Products may be complemented by an additional institutional body responsible for the evaluation and supervision of Medicinal Products. For example, in the EU, the European Commission is the institutional body that grants the marketing authorisation of Medicinal Products and the European Medicines Agency is the body responsible for the evaluation and supervision of Medicinal Products.

3.1.23
packaged Medicinal Product
Medicinal Product (3.1.19) in a container being part of a package, representing the entirety that has been packaged for sale or supply

3.1.24
pharmaceutical product
qualitative and *quantitative composition* (3.1.27) of a *Medicinal Product* (3.1.19) in the *dose form* (3.1.7) approved for administration

Note 1 to entry: In many instances, the pharmaceutical product is equal to the *manufactured item* (3.1.17). However, there are instances where the manufactured item must undergo a transformation before being administered to the patient (as the pharmaceutical product) and the two are not eq

3.1.25
pharmaceutical product identifier
unique *identifier* (3.1.10) for a *pharmaceutical product* (3.1.24)

3.1.26
pharmacovigilance
process and science of monitoring the safety of medicines and taking action to reduce the risks and increase the benefits of medicines

Note 1 to entry: Pharmacovigilance is a key public health function which comprises:

— collecting and managing data on the safety of medicines;

— looking at the data to detect "signals" (any new or changing safety issue);

— evaluating the data and making decisions with regard to safety issues;

— acting to protect public health (including regulatory action);

— communicating with stakeholders;

— auditing of both the outcomes of action taken and the key processes involved.

Note 2 to entry: Those directly involved in pharmacovigilance include:

— patients as the users of medicines;

— doctors, pharmacists, nurses and all other *healthcare professionals* (3.1.9) working with medicines and regulatory authorities responsible for monitoring the safety of medicines;

— pharmaceutical companies and companies importing or distributing medicines.

3.1.27
quantitative composition
amount of *substance* (3.1.35) and *specified substance* (3.1.32) constituents of the investigational or authorised *Medicinal Product* (3.1.19) expressed on a ratio scale

Note 1 to entry: It is necessary for the quantitative composition of the substance(s) or the specified substance descriptions of the finished investigational or authorised Medicinal Products (depending on the pharmaceutical form concerned) to specify the mass, or the number of units of biological activity, either per dosage unit or per unit of mass or volume, of each substance or specified substance. Substance or specified substance descriptions present in the form of compounds or derivatives are always designated quantitatively by the total mass and, if necessary or relevant, by the mass of active entity, or entities, of the molecule. The term strength is a synonym of quantitative composition.

3.1.28
quantity value
value of a quantity number and unit (reference), together expressing magnitude of a quantity

Note 1 to entry: A quantity value expresses the magnitude of a quantity. This expression consists of a numerical value together with a *unit of measurement* (3.1.36). The unit of measurement represents a quantitative scale of reference that relates the measured (or estimated) quantity value to one or more reference quantity values. The numerical value is the result of comparing the measured quantity to this reference scale. The word "magnitude" is not defined in ISO/IEC Guide 99. However, this definition of quantity value indicates that "magnitude" is expressed as a quantity value, i.e. a quantity value is an expression of a magnitude and the same magnitude might be expressed in many quantity values. A reference can be a unit of measurement, a measurement procedure, a reference material, or a combination of such.

3.1.29
radiopharmaceutical kit
preparation to be reconstituted or combined with radionuclides in the final radiopharmaceutical, usually prior to its administration

Note 1 to entry: In the context of a radiopharmaceutical kit, which is to be radio-labelled after supply by the manufacturer, the active *substance* (3.1.35)/*specified substance* (3.1.32) is considered to be that part of the formulation which is intended to carry or bind the radionuclide.

3.1.30
reference strength
strength of active *substance(s)* (3.1.35) and/or *specified substance(s)* (3.1.32) used as a reference from which the strength of an investigational or authorised *Medicinal Product* (3.1.19) is described

Note 1 to entry: The strength of the active substance(s) and/or specified substance(s) shall be described as a quantity of the substance present in a given unit of the *pharmaceutical product* (3.1.24) or *manufactured item* (3.1.17).

3.1.31
region
area, especially part of a country or the world, having definable characteristics but not always fixed boundaries

3.1.32
specified substance
substance (3.1.35) defined by groups of elements that describes multi-substance materials or specifies further information on substances relevant to the description of *Medicinal Product* (3.1.19)

Note 1 to entry: This could include grade, units of measure, physical form, constituents, manufacturer, critical manufacturing processes (e.g. extraction, synthetic or recombinant processes), specification and the analytical methods used to determine whether a substance is in compliance with a specification. There are four different groups of elements that can be used to define a given specified substance and specific relationships between each group of elements.

3.1.33
sponsor
individual, company, institution or organisation, which takes responsibility for the initiation, management and/or financing of a *clinical trial* (3.1.3)

3.1.34
strength range
interval defined by a lower and an upper limit of the amounts of *substance* (3.1.35) and *specified substance* (3.1.32) constituents of the investigational or authorised *Medicinal Product* (3.1.19)

3.1.35
substance
[illegible] matter of defined composition that has discrete existence, whose origin may be biological, mineral or chemical

Note 1 to entry: A substance can be a moiety. A moiety is an entity within a substance that has a complete and continuous molecular structure. The strength of a *pharmaceutical product* (3.1.24) is often based on what is referred to as the active moiety of the molecule, responsible for the physiological or pharmacological action of the drug substance. Chemically, the active moiety of a stoichiometric or non-stoichiometrical substance molecule is considered that part of the molecule that is the base, free acid or ion molecular part of a solvate, hydrate, clathrate, molecular complex or salt.

3.1.36
unit of measurement
real scalar quantity, defined and adopted by convention, with which any other quantity of the same kind can be compared in order to express the ratio of the two quantities as a number

Note 1 to entry: Depending on the nature of the reference scale, the unit of measurement expression may stand either for a physical unit of measurement that is related to a system of quantities (e.g. SI units) or for an arbitrarily defined unit of measurement, which may refer to a certain reference material, a standard measurement procedure, a material measure or even to a combination of those.

3.1.37
unit of presentation
qualitative term describing the discrete countable entity in which a *pharmaceutical product* (3.1.24) or *manufactured item* (3.1.17) is presented, in cases where strength or quantity is expressed referring to one instance of this countable entity

Note 1 to entry: A unit of presentation can have the same name as another *controlled vocabulary* (3.1.4), such as a basic *dose form* (3.1.7) or a container, but the two concepts are not equivalent, and each has a unique *controlled vocabulary term identifier* (3.1.5).

3.1.38
unique device identifier
unique *identifier* (3.1.10) assigned to a *Medicinal Product* (3.1.19) as defined by the International Medical Device Regulators Forum (IMDRF)

3.1.39
unitage
specification of the amount constituting a unit

3.1.40
vocabulary
terminological dictionary which contains *designations* (3.1.6) and definitions from one or more specific subject fields

3.2 Abbreviated terms

CV	controlled vocabulary
Ph. Eur.	European Pharmacopoeia
FDA	United States Food and Drug Administration
HL7	Health Level Seven
ICH	International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use
ICSR	Individual Case Safety Report

IMDRF	International Medical Device Regulators Forum
IMP	investigational Medicinal Product
IMPID	investigational Medicinal Product identifier
IPCID	investigational Medicinal Product package identifier
JP	Japanese Pharmacopoeia
MPID	Medicinal Product identifier
OMG	Object Management Group
PCID	Medicinal Product package identifier
PhPID	pharmaceutical product identifier
PPCC	pharmaceutical product concept code
TermID	term identifier (controlled vocabulary)
UoM	unit of measurement
UDI	unique device identification code
UML	Unified Modeling Language
USP	United States Pharmacopeia

4 Conformance terminology and context as it relates to the ISO IDMP standards and corresponding IDMP technical specifications

— *Mandatory*: Defining elements *necessary* for the unique identification of Medicinal Products per the ISO IDMP standards/technical specifications.

— *Conditional*: Conditional applies to the "within category" data elements, as applicable, when there are alternative data sources for a given data element(s) to identify a medicinal/pharmaceutical product. Regional implementation of the ISO IDMP standards/technical specifications may elevate the conditional conformance categories to "*mandatory*" per regional requirements.

— *Optional*: When listed at the category level (e.g. specified substance), optional corresponds to ISO categories or data elements that are not absolutely necessary for the *unique* identification of medicinal/pharmaceutical products according to the ISO IDMP standards/technical specifications. Regional implementation of the ISO IDMP standards/technical specifications may elevate the optional conformance categories to "*mandatory*" or "*conditional*" per regional requirements.

5 Requirements

5.1 Elements required for the unique identification of pharmaceutical products

This subclause describes the elements required to uniquely identify and characterise a pharmaceutical product. It provides the requirements to support pharmaceutical product identification. Pharmaceutical product identification (PhPID) shall be based on the following subset of elements that describe the pharmaceutical product:

a) active substance(s)/specified substance(s);

NOTE 1 The substance(s) within the ingredient role "active" and "adjuvant" is utilised to define the PhPID.

b) strength(s), strength units (units of measurement and/or unit of presentation);

c) reference strength(s) includes reference substance(s) (i.e. active moiety and its corresponding strength);

d) administrable dose form;

e) medical device, when it is a component of a Medicinal Product.

NOTE 2 A medical device is used in the PhPID only in those situations where the pharmacological, immunological or metabolic action should be considered as the principal mode of action of the device. For products where this occurs (e.g. the skin scaffold situation), the device is in effect being considered as an "ingredient" of the pharmaceutical product, and is therefore described here, because it will be referenced in the PhPID identification of the pharmaceutical product.

These elements are described in detail in ISO 11615 and ISO/TS 20443.

Pharmaceutical identifiers and elements shall represent pharmaceutical products as represented in a Medicinal Product per the authorisation by a medicines regulatory authority. ISO IDMP can be utilised to support off-label usage of Medicinal Products, but is outside the scope of this document.

This document and the related IDMP standards shall not be a substitute for evidence to support broader claims of safety or efficacy in relation to other Medicinal Products that are assigned identical PhPIDs as outlined in ISO 11615 and ISO/TS 20443.

The data elements required for the generation of PhPIDs depend further on terminologies/controlled vocabularies (CVs) as described in the following documents:

— ISO 11615;

— ISO 11238;

— ISO 11239;

— ISO 11240;

— ISO/TS 19844;

— ISO/TS 20440;

— ISO/TS 20443;

— ISO/TS 20451.

5.2 Exchange of pharmaceutical product information

To successfully support information sharing in the exchange of regulated product information between the parties mentioned in the Introduction, the construct of the message shall be in a format that allows for full compatibility and interoperability between stakeholders upon implementation.

The HL7 Version 3 messaging standard shall be utilised for the exchange of Medicinal Product information, emphasizing the importance of having a standardised method of exchanging Medicinal Product information in support of regulatory and pharmacovigilance activities.

6 Description of the information modelling principles and practices

6.1 General considerations

The information modelling in this document uses the Unified Modeling Language (UML), which is maintained by OMG (Object Management Group).

Like all languages, UML may say the same thing in several different ways, and there are different styles and patterns that may be followed. The use of UML in this document has been kept very simple, using classes, attributes and basic association relationships only; some constructs (such as stereotypes and complex relationships) have been avoided for this reason. The following aims to explain the style that has been followed in this document.

In addition, colour has been used in the diagrams to help visualise groups of associated entities together with one another (see Figure 1).

Figure 1 — Legend for colour coding of model classes

6.2 Conceptual overview diagrams

The conceptual overview diagram provides a framework with which to view the more detailed descriptions of information (see Figure 2).

The Medicinal Product and investigational Medicinal Product overarching models (see ISO 11615:2017, Figure 5 and Figure 15) show a single representative class from each particular information section, related to the core concept (either the Medicinal Product or the investigational Medicinal Product).

Basic cardinalities between the Medicinal Product or the investigational Medicinal Product and these core classes are shown, but none of the detailed entities, relationships or attributes is described.

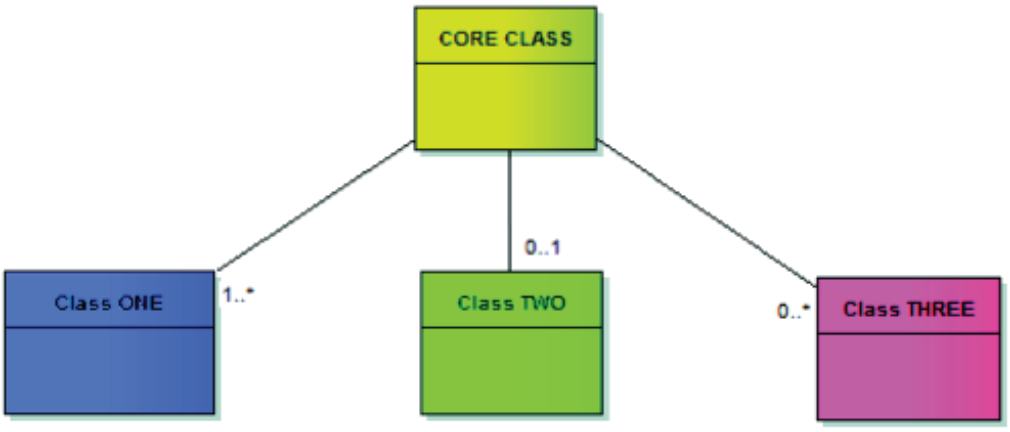

Figure 2 — Example conceptual overview diagram

6.3 High-level diagrams

The high-level diagrams (see Figure 3) provided at the start of each section of information show all the classes required to describe the information for that section and the conceptual relationships between those classes, with the starting point always as the (investigational) Medicinal Product.

No attributes and no detailed cardinalities are shown in these conceptual diagrams, as again their primary purpose is to provide a framework with which to view the more detailed descriptions of information that follow in the detailed description diagrams.

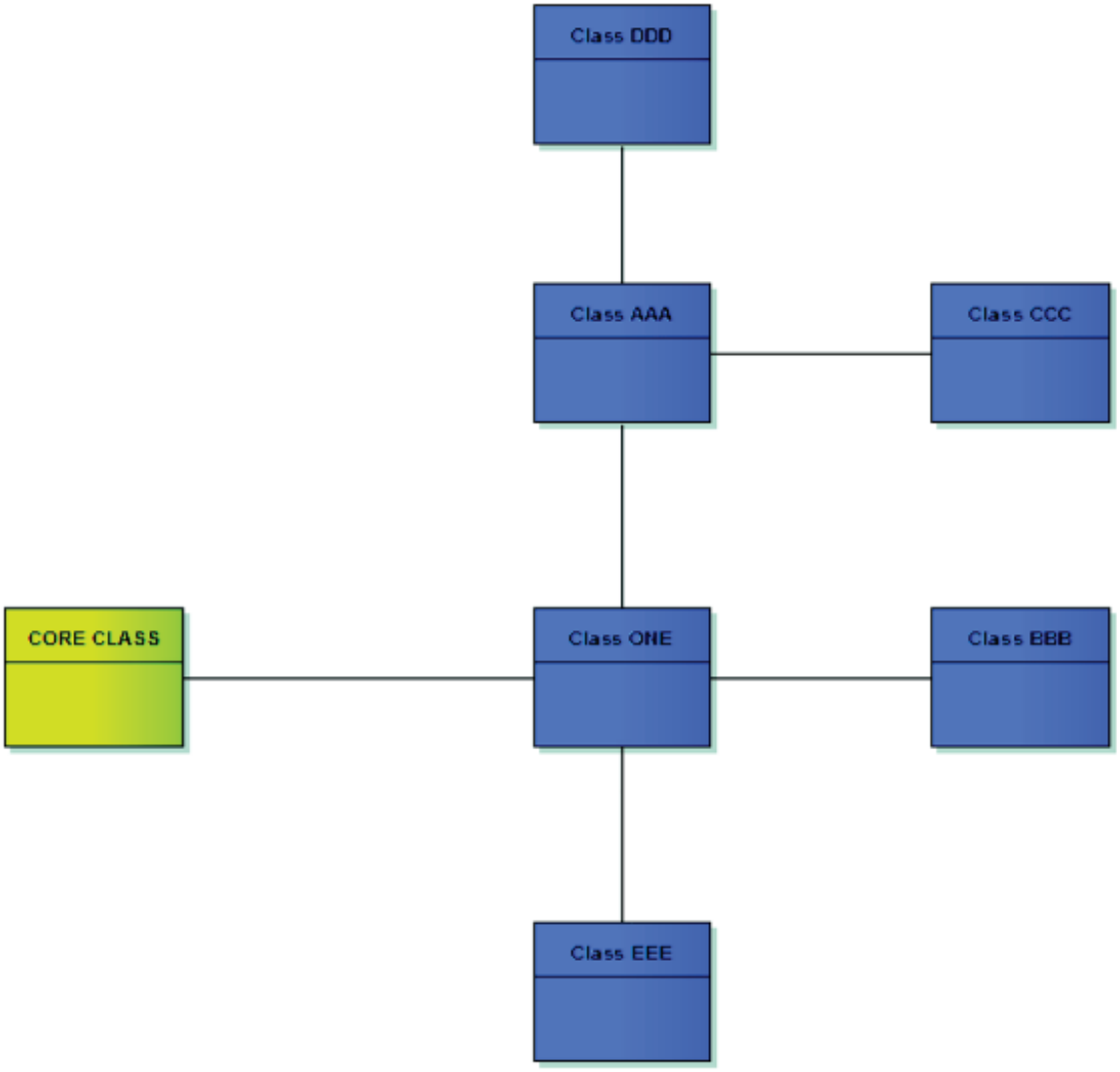

Figure 3 — Example high-level diagram

6.4 Detailed description diagrams

6.4.1 General

The detailed description diagrams (see Figure 4) for each section show all the classes and all the attributes required to describe the information for that section, and the detail of the conceptual relationships between those classes.

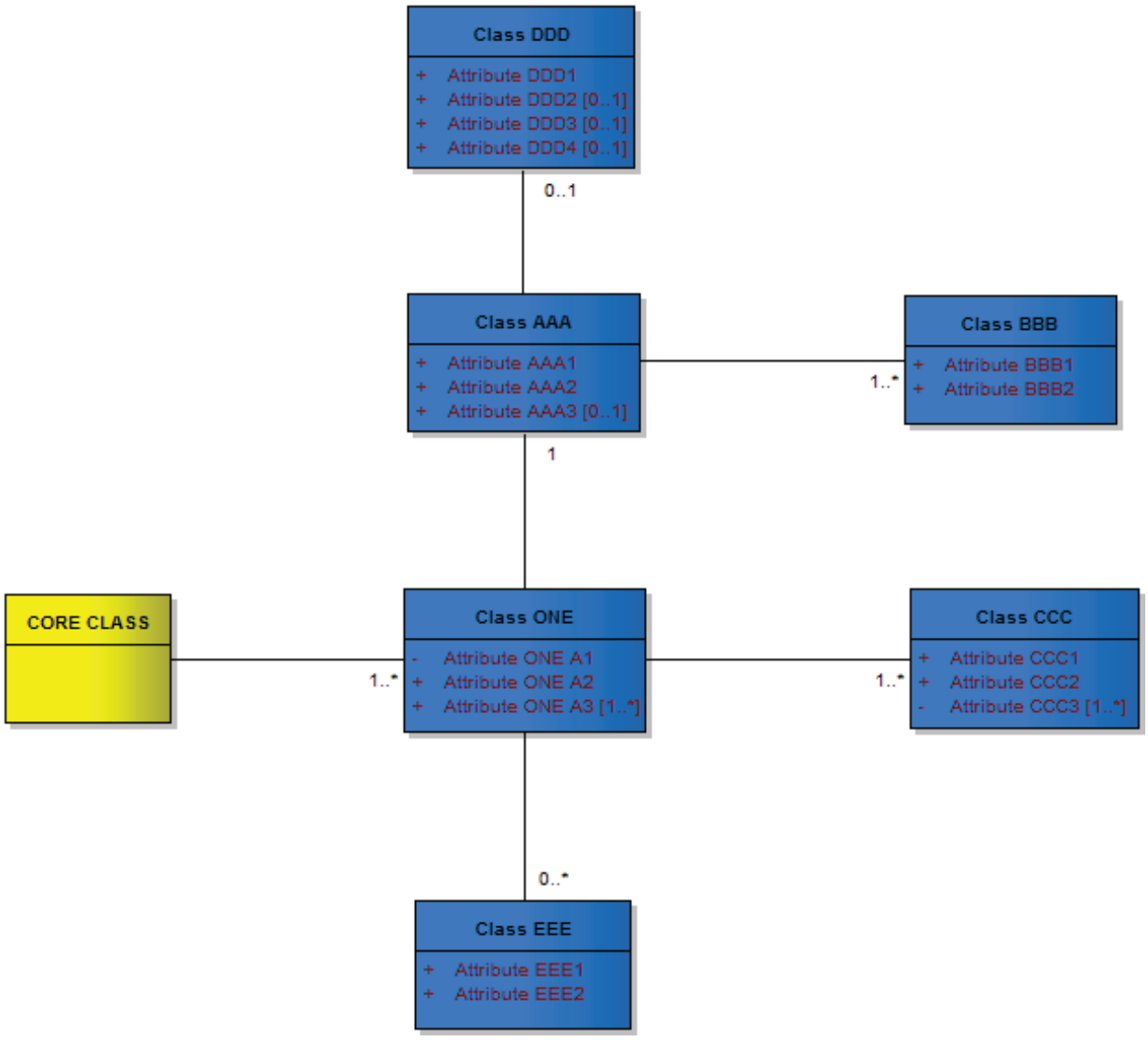

Figure 4 — Example detailed description diagram

6.4.2 Relationships between classes

Relationships between classes are described simply as associations, with no further qualification as to the role or type of the association, in order to keep the model simple.

Cardinalities on relationships are given in a single direction only.

A cardinality of "1" is synonymous with a cardinality of "1..1".

A cardinality of "1" between entities is reflected in the text as the information for that entity shall be specified, and that only one set of the entity information shall be given.

A cardinality of "1..*" between entities is reflected in the text as the information for that entity shall be specified, and that one or more sets of the entity information shall be given.

A cardinality of "0..1" between entities is reflected in the text as the information for that entity can be specified, and that one set of the entity information can be given.

A cardinality of "0..*" between entities is reflected in the text as the information for that entity can be specified, and that one or more sets of the entity information can be given.

Some optional entities can be elevated to mandatory if some conditions are met. Please see Clause 4.

Please refer to ISO 21090 for more information on composition of attributes.

6.4.3 Attributes of classes

Attributes of a class are described using an attribute name in the model. The definition, description and example values for the attribute are given in the text following the model diagram.

NOTE While some specified attributes are captured by a single value, others may require one or two additional values (e.g. ID may also require a code system identifier).

An attribute showing no explicit cardinality means that the attribute shall be valued with one value (this is the equivalent to [1...1]).

An attribute showing a cardinality of [1...*] means that the attribute shall be valued with one or more values.

An attribute showing a cardinality of [0...1] means that the attribute can be valued with one value.

An attribute showing a cardinality of [0...*] means that the attribute can be valued with one or more values.

Some optional attributes can be elevated to mandatory if some conditions are met. Please see Clause 4.

Please see ISO 21090 for more information on composition of attributes.

6.4.4 Generalised classes and patterns

There is one use of a generalised class in the diagrams whereby the pattern for a set of information is described once, but applied for use for several classes. For simplicity, this has not been described by using the formal UML generalisation/specialisation relationships, but by using a specialised class name.

There is also one generalised pattern used several times in the diagrams whereby somewhat generic classes provide the ability to describe something using (unspecified) classification or nomenclature or identification systems. To do this at the conceptual level, the model shows a class with two attributes: the first to identify the system itself (be that a classification, nomenclature or identification system), and the second to describe the applicable term or value from that system.

6.4.5 Translation and language

There is no description of the translation of information described in this document. It is acknowledged that, for global implementation, translation of the information will be required and will occur at implementation.

7 Identifying characteristics for the identification of pharmaceutical products

7.1 Pharmaceutical product identification strata and levels

7.1.1 General

PhPID sets shall be represented within two strata (active substance stratum and specified substance stratum), both of which contain four PhPID identification levels, for each pharmaceutical product contained in a Medicinal Product.

PhPID sets shall be generated using the substance standard (see ISO 11238 and ISO/TS 19844), the strength and administrable dose form classification (see ISO 11239 and ISO/TS 20440) and unit(s) of measurement standard (see ISO 11240) as illustrated below.

Reference strength shall be repeated in both PhPID strata. The reference strength shall be derived from the active moiety/moieties of an active substance(s) depending on the specific product characteristics.

All the PhPID strata can be described at four different levels from 1 to 4 (see Table 1).

Table 1 — Four levels of PhPID

PhPID active substance spectrum	PhPID_SUB_L1 → Substance(s) PhPID_SUB_L2 → Substance(s) + strength + reference strength PhPID_SUB_L3 → Substance(s) + administrable dose form PhPID_SUB_L4 → Substance(s) + strength + reference strength + administrable dose form
PhPID specified substance spectrum	PhPID_SpSUB_L1 → Specified substance(s) PhPID_SpSUB_L2 → Specified substance(s) + strength + reference strength PhPID_SpSUB_L3 → Specified substance(s) + administrable dose form PhPID_SpSUB_L4 → Specified substance(s) + strength + reference strength + administrable dose form

A pharmaceutical product may refer to a drug that is associated with a medical device. In this instance, the device term and term ID (i.e. unique device identifier) shall be displayed with the active substance(s) and specified substance(s) terms for the product at all applicable PhPID levels. This association shall be made by directly associating the assigned PhPIDs to a Medicinal Product and its corresponding MPID/PCID as outlined in ISO 11615 and ISO/TS 20443.

Strength is not applicable to a device.

A region may further refine the requirements in relation to specification of the medical device as part of this document at implementation so that this information is to be specified only if required.

A pharmaceutical product may refer to a drug that is associated with an adjuvant (e.g. vaccine). In this instance, the adjuvant term and term ID shall be displayed with the active substance(s) and specified substance(s) terms for the product at all applicable PhPID levels. This association shall be made by directly associating the assigned PhPIDs to a Medicinal Product and its corresponding MPID and PCID as outlined in ISO 11615 and ISO/TS 20443.

Strength shall indicate quantity, unit of measurement and/or unit of presentation.

Administrable dose form is derived from the pharmaceutical product.

Placebos shall be captured as active substances when utilised as a comparator. Regional implementation guides will provide more information as some regional regulation defines what is considered a placebo or active substance.

7.1.2 PhPID specified substance

As described in ISO 11238, specified substance(s) shall capture detailed characteristics of single substances or the composition of material that contains multiple substances or multiple physical forms. These elements necessary to define specified substances shall be divided into four groups to facilitate implementation.

These groups are described as follows.

a) Specified Substance Group 1. Elements shall be used to describe material that contains multiple substances, solvents used in the preparation of herbal or allergen extracts, specific marker or

signature substances present in plant or animal derived materials, the physical form of a substance, when relevant, and any properties essential to the description of the material.

The element groups used to define a Specified Substance Group 1 shall include constituents, physical form and property.

NOTE 1 This grouping of elements allows for the definitions of many materials in commerce that are used in the formulation of Medicinal Products.

b) Specified Substance Group 2. Group 2 elements shall be used to capture the manufacturer of either a substance or Specified Substance Group 1 along with minimal manufacturing information.

The minimal manufacturing information shall include the overall production method type (i.e. synthetic, extractive, recombinant), production system type, (i.e. cell line, plant or animal tissue), production system (specific cell line).

NOTE 2 Group 2 elements would allow the tracking of the substance to the manufacturer. It also allows the distinguishing of synthetic peptides from recombinant peptides and the capture of the product cell line.

c) Specified Substance Group 3. Group 3 elements shall capture the grade of the material along with the source that defines the given grade.

Group 3 elements shall be used to distinguish specific pharmacopoeia grades and technical grades of material.

The grade for each pharmacopoeia shall be a separate substance if a pharmacopoeia monograph related to a substance is not harmonised.

NOTE 3 For most active pharmaceutical substances, generally recognised pharmacopoeias are USP, Ph. Eur. or JP. For herbal substances, the grades would be standardised, quantified and unstandardised.

d) Specified Substance Group 4. Group 4 elements shall contain the most detailed information on a substance. This information shall include critical manufacturing processes, specifications (e.g. impurities and related substance limits would be captured using constituents), unitage, reference material and analytical methods used for potency determination.

NOTE 4 The specific information described for Specified Substance Group 4 is often submitted in regulatory submissions in an unstructured manner that is difficult to capture and organise. The fields developed here will attempt to organise and structure the data in a manner that will facilitate its use in both review and compliance activities. It is anticipated that the suite of ISO IDMP standards will extend into more granular regulatory content as adoption increases by stakeholders and the standards extend deeper into additional regulatory and clinical use cases over time.

7.1.3 Pharmaceutical product specified substance identification (PhPID SpSub)

The PhPIDs for specified substance(s) shall be generated from three of the four groups (Groups 1 to 3) identified within ISO 11238 and ISO/TS 19844.

Groups 1, 2, and 3 contain necessary data elements for more detailed pharmaceutical product identification which supports the scope and purpose of this document.

Groups 1 to 3, as assigned to an active substance(s), shall be utilised within this document for pharmaceutical product identification with corresponding PhPIDs attributed as applicable.

Group 4 is a more comprehensive level of substance identification that is not necessary for the purposes of pharmaceutical product identification and shall not be utilised for PhPID generation.

Specified substance information shall be represented with the active substance(s) elements within a pharmaceutical product and within a Specified Substance Group 1, as applicable.

Groups 2 and 3 shall be associated directly with the active substance(s) of a pharmaceutical product and to a Specified Substance Group 1 as applicable.

ISO/TS 19844 addresses the assignment and association of specified substance groups for defined product classes. See ISO 11238 and ISO/TS 19844 for detailed informa related to substance and specified substance elements and identification.

A region may further refine the requirements in relation to specification of specified substances as part of this document at implementation such that this information is to be specified only required.

7.2 Cardinality

The relationships within the elements of a pharmaceutical product shall respect the following cardinality:

— a PhPID has one administrable dose form (cardinality relationship: 1..1);

— a PhPID may have zero to one u of presentation (cardinality relationship: 0..1);

NOTE This is often used specifically at the point of delivery to the patient in cases where a quantitative unit of measurement is not applicable.

— a PhPID has one or more active substances (cardinality relationship: 1..*);

— a PhPID has one or more active cified substances (cardinality relationship: 1..*);

— a PhPID has one strength (cardinality rela nship: 1..1) based on one to many active substances or specified substan (cardinality relationship: 1..*);

For liquid pr rations, the strength (presentation) and strength (concentration) shall both be represented.

A separate PhPID shall be generated to represent the strength concentration, i.e. per unit volume as applicable. This shall be known as the product code conc as it represents a calculation of th rength presentation of a liquid preparation (i.e. total volume per container) as authorised by a m cines regulatory agency.

— a PhPID has one to many reference strengths (i.e. active moieties with a corresponding strength) (cardinality relationship: 1..*) as it re s to the strength of one to many active substances/specified substances (cardinality relationship: 1..*).

7.3 Representation of strength concentration

For liquid preparations, st gth sh be represented by both the total volume of the container as authorised by a regu ory medicines authority using strength (pre ation) and engths concentration per unit volume (e.g. 1 ml) using strength (con tration). For PhPID genera and alignment, the strengt all be expressed per t volume per container (MPID and PCID) with the corresponding st gth concentration per unit volume presente every instance of PhPID levels 2 and 4. Both rep ntati shall be considered ndatory elements when illustrating the strength of a pharmaceutical product.

The strength concentration per unit volume shall be calculated from the strength per total volume of the c ainer presented at all Ph levels where strength is represe d in accordance th the prod authorisation by a medicines regulatory agency.

A PhPID shall be generated to represent a strength concentration per unit volume regardless of whether this unit volume is additionally represe d as s ngth per an actua lume within a container presentati This PhPID will be an abstract PhPID shall be referred to a pharmaceutica oduct concept code (PPCC). The PPCC is necessary to support e-prescribing/e-dispensing activities in cases where what is prescribed is simply a given strength concentration per unit volume with no reference to the strength per total volume per container authorised by a medicines re atory agency.

The strength per unit volume shall be included as a data element and mapped to the strength per total volume at all applicable PhPID levels to support the interoperability and exchange of pharmaceutical product data.

The calculation and mapping of strength concentration per unit volume to the strength per total volume at all applicable PhPID levels should be addressed during regional implementation and maintenance of this document.

7.4 Pharmaceutical product identifier (PhPID)

The PhPID is a globally unique identifier assigned at the level of the pharmaceutical product and utilises the identifying characteristics as outlined below. For products that need to be reconstituted in accordance with the authorisation by a regulatory medicines authority before they can be administered, the PhPID shall refer to the characteristics of the product after reconstitution.

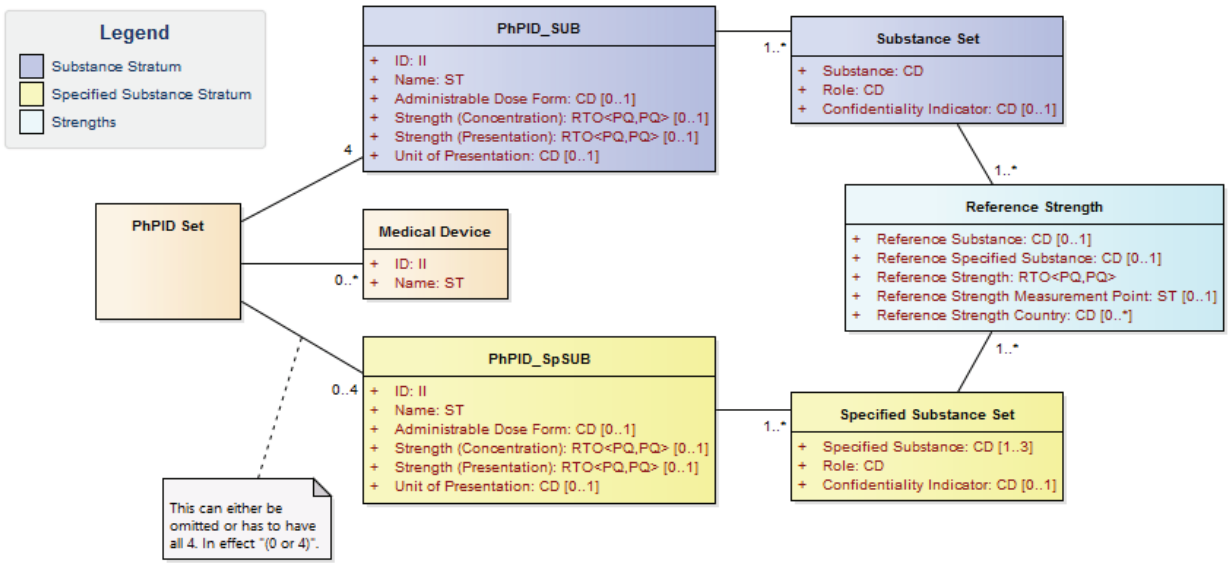

Figure 5 — Pharmaceutical product identification (PhPID) detailed model

NOTE For more detailed information regarding the specific data elements classifying a particular substance(s) and specified substance(s), see ISO 11238 and ISO/TS 19844. The details of these elements are defining attributes for pharmaceutical product identification and assignment of PhPIDs.

7.5 Pharmaceutical product substance stratum elements (PhPID_SUB_Lx)

7.5.1 Construct of the pharmaceutical product substance stratum

The construct of the pharmaceutical product substance stratum utilises the active substance(s) with strength, reference strength [i.e. reference substance(s) and corresponding strength(s)], administrable dose form, and medical device and adjuvant(s) (when applicable).

7.5.2 Substance set

Each pharmaceutical product shall have one or more active substances. For each, the substance and the role of the ingredient shall be identified.

7.5.2.1 Substance

The substance Name and ID of the pharmaceutical product shall be specified, where applicable, based on va drawn from the value sets as defined in ISO 11238 and ISO/TS 19844. The standard Name and ID for the substance (see ISO 11238 and ISO/TS 19844) shall be described.

7.5.2.2 Role

The role of the ingredient as part of the pharmaceutical product shall be specified using an appropriate controlled voca ary. The controlled term and a term identifier shall be specified.

7.5.2.3 Confidentiality indicator

The confidentiality level of the organisation information can be specified at all PhPID levels using an appropriate controlled vocabulary. The controlled term and a term identifier shall be specified.

7.5.3 Administrable dose form

This shall describe the pharmaceutical dose form to be administered in accordance with the terms as authorised by a regulatory medicines au rity, after it has undergone any necessary reconstitution. It is a value drawn from a value set specified in ISO 11239 and ISO/TS 20440. It is to be specified using a CD data type. Each pharmaceutical product can have only one administrable pharmaceutical form. A Medicinal Product may have two manufactured items, one with a manufactured dose form of "powder for injection" and the other with a manufactured dose form of "solvent for injec n". These are then reconstituted to an administrable dose form "solu n for injection" before being administered to a patient.

7.5.4 Unit of presentation

Unit of presentation refers to the qualitative description of the unit in which the strength(s) of the pharmaceutical product is presented and described, often specifically at the point of delivery to the patient, in cases where a quantitative unit of measurement is not applicable. The unit of presentation standard term (see ISO 11239 and ISO/TS 20440) shall be described.

7.5.5 Medical device

When a medical device is a component of a pharmaceutical product, the following data elements apply.

7.5.5.1 Term

The medical device term ID and Name of the pharmaceutical product shall be specified, when applicable, on values drawn from a defined value sets.

7.6 Pharmaceutical product specified substance stratum elements (PhPID_SpSUB_Lx)

7.6.1 Construct of the pharmaceutical product specified substance stratum

The construct of the pharmaceutical product specified substance stratum utilises the specified substance(s) with strength, reference strength, administra dose form, and medical device (when applicable).

A region may wish to relax the requirement of the specification for specified substance as part of this document at implementation so that this information is to be specified only if r ired.

7.6.2 Specified substance set

Each pharmaceutical product shall have one or more specified substances. For each, the specified substance and its role shall be identified. A specified substance shall reference one or more active substances.

7.6.2.1 Specified substance

Each specified substance is a value drawn from a value set specified in ISO 11238 and ISO/TS 19844. It is to be specified using a CD data type.

7.6.2.2 Role

The role of the ingredient as part of the pharmaceutical product shall be specified using an appropriate controlled vocabulary. The controlled term and a term identifier shall be specified.

7.6.2.3 Confidentiality indicator

The confidentiality level of the organisation information can be specified at all PhPID levels using an appropriate controlled vocabulary. The controlled term and a term identifier shall be specified.

7.6.3 Administrable dose form

This shall describe the pharmaceutical dose form to be administered in accordance with the terms as authorised by a regulatory medicines authority, after it has undergone any necessary reconstitution. It is a value drawn from a value set specified in ISO 11239 and ISO/TS 20440. It is to be specified using a CD data type. Each pharmaceutical product can have only one administrable pharmaceutical form. A Medicinal Product may have two manufactured items, one with a manufactured dose form of "powder for injection" and the other with a manufactured dose form of "solvent for injection". These are then reconstituted to an administrable dose form "solution for injection" before being administered to a patient.

7.6.4 Unit of presentation

Unit of presentation refers to the qualitative description of the unit in which the strength(s) of the pharmaceutical product is presented and described, often specifically at the point of delivery to the patient, in cases where a quantitative unit of measurement is not applicable. The unit of presentation standard term (see ISO 11239 and ISO/TS 20440) shall be described.

7.6.5 Medical device

When a medical device is a component of a pharmaceutical product, the following data elements apply.

7.6.5.1 Medical device term

The medical device term ID and Name of the pharmaceutical product shall be specified, when applicable, on values drawn from a defined value sets.

7.7 Identifying characteristics to express strength

7.7.1 Expressing strength

Depending on the practices in a region or country, the strength description shall be the content of the active substance/specified substance description expressed quantitatively (e.g. per dosage unit, per unit of volume or per unit of weight, according to the pharmaceutical form or unit of presentation).

For a Medicinal Product/investigational Medicinal Product that requires reconstitution or dilution before being administered, the pharmaceutical product section shall describe the strength of the actual

pharmaceutical product after reconstitution or dilution in accordance with the authorised product information.

PhPIDs shall not include information related to actual administration amount to a subject/patient. The actual amount of product administered to a patient by a healthcare provider or self-administration is outside the scope of this document.

For some pharmaceutical products, the exact dose strength cannot be indicated and therefore needs to be expressed as a range, e.g. as "not greater than" or "not less than" a particular value.

The strength indicated for the pharmaceutical product shall be identical to the strength after reconstitution to the volume as authorised by a medicines regulatory authority. A description of strength is included in ISO/TS 20451.

7.7.2 Attributes for representation of strength in PhPID stratum elements

7.7.2.1 Strength (concentration)

The strength (concentration) shall be specified as a quantity of the active substance(s)/specified substance(s) present per one unit of the pharmaceutical product. For example, "2 mg/1 ml", "2 mg/1 tablet". For solid dose forms, this is generally the same as strength (presentation). For liquid preparations, both the total volume of the container as authorised by medicines regulatory authority and strength concentration per unit volume shall be identified.

7.7.2.2 Strength (presentation)

The strength (presentation) shall be specified as a quantity of the substance/specified substance present in a given quantity of the pharmaceutical product. For example, "10 mg/5 ml", "2 mg/1 tablet".

7.7.2.3 Representation of strength (concentration) and strength (presentation)

The symbol and the symbol identifier for the unit of measure shall be specified as defined in ISO 11240 and its resulting controlled vocabulary.

Where the strength is defined on the basis of a unit of presentation, the term and term identifier shall be used as defined in ISO 11239 and ISO/TS 20440 and its resulting controlled vocabulary.

The unit of measure symbol and the symbol identifier as defined in ISO 11240 and its resulting controlled vocabulary shall be specified.

Where the strength is defined on the basis of a unit of presentation, the term and term identifier shall be used as defined in ISO 11239 and ISO/TS 20440 and its resulting controlled vocabulary.

7.7.2.3.1 Representing strength of multi-ingredient products

A product with two or more ingredients may have a strength described as the quantity of first ingredient plus quantity of second ingredient per unit of presentation. For example, "15 mg + 850 mg/1 tablet". In ISO 11615 and ISO/TS 20451, this is expressed in detail by showing the strength associated with each ingredient.

7.7.2.4 Measurement point

The measurement point, if applicable, can be described.

7.7.2.5 Country

The country or countries for which the strength and measurement point are valid can be specified using values from ISO 3166-1 alpha-2 codes elements.

If a measurement point is specified, a country or countries should be described.

7.7.2.6 Reference strength

7.7.2.6.1 General considerations

There are two roles for substances and/or specified substances in the PhPID.

— The active substance/specified substance that is intended to form the active basis of the product.

— To unambiguously link to the strength of the product. Each pharmaceutical product shall express strength associated with one or more active substance(s) or specified substance(s). In addition, a reference strength for the product shall be expressed based on an anhydrous free acid, anhydrous free base or substance "created" to express activity, where applicable (i.e. active moiety).

An active substance(s) and/or specified substance(s) shall be used as a reference to form the basis of strength of an investigational or authorised Medicinal Product.

The reference strength of the active substance(s) and/or specified substance(s) shall be described as a quantity of the substance present in a given quantity of the pharmaceutical product and shall be indicated using the strength class.

7.7.2.6.2 Reference substance

When a reference substance is specified, the value for the reference substance shall be described using a term and a term identifier as defined in ISO 11238 and ISO/TS 19844 and its resulting controlled vocabulary.

7.7.2.6.3 Reference specified substance

If a reference specified substance is specified, the value for the reference specified substance shall be described using a term and a term identifier as defined in ISO 11238 and ISO/TS 19844 and its resulting controlled vocabulary.

7.7.2.6.4 Reference strength

The strength of the reference substance or reference specified substance shall be specified as a quantity of the substance/specified substance present in a given quantity of the pharmaceutical product.

The symbol and the symbol identifier for the unit of measure shall be specified as defined in ISO 11240 and its resulting controlled vocabulary.

Where the strength is defined on the basis of a unit of presentation, the term and term identifier shall be used as defined in ISO 11239 and ISO/TS 20440 and its resulting controlled vocabulary.

The value and units of the strength range shall be specified using an RTO < PQ,PQ > data type. This supports the strength data to be given as a numerator and a denominator, each with units. It allows for a low and high value to be specified as well as upper and lower ranges. If both low and high values are the same, the interval is equivalent to a single value. If the low value is zero or not valued, the range is interpreted as not greater than the high value. Similarly, if the high value is zero or not valued, the range is interpreted as not less than the low value.

The unit of measure symbol and the symbol identifier as defined in ISO 11240 and its resulting controlled vocabulary shall be specified.

Where the strength is defined on the basis of a unit of presentation, the term and term identifier shall be used as defined in ISO 11239 and its resulting controlled vocabulary.

7.7.2.6.5 Reference strength measurement point

The reference strength measurement point, if applicable, can be described.

7.7.2.6.6 Reference strength country

The country or countries for which the reference strength and measurement point are valid can be specified using values from ISO 3166-1 alpha-2 code elements.

If a measurement point is specified, a country or countries should be described.

7.7.3 Representation of strength for a patch

For a patch, the strength shall be expressed as "per time unit" or "per each" patch in accordance with the approval by the medicines regulatory authority. If "per time unit" expression is not applicable, then the strength shall be expressed as "per each" patch.

When identifying the strength "per time unit" patch, the following principles are applied for PhPID generation:

— capture the rated release of the product (e.g. 1 µg/1 h as authorised by the medicines regulatory authority);

— capture the quantity released per total time unit (e.g. 24 µg/24 h).

Where no rated release information is authorised, the quantity per each/contained by each but not delivered by each (e.g. 50 mg per each patch) shall be specified.

8 Relationship between MPID/PCID and PhPID

8.1 Concepts required for the unique identification of a Medicinal Product and the association with PhPIDs

Figure 6 shows the conceptual relationship between MPID/PCID and PhPID. The drawing is part of a larger conceptual drawing taken directly from ISO 11615 and ISO/TS 20443, which should be consulted for detailed discussion of the classes presented.

Each box present in Figure 6 does not represent an individual class, but represents all the classes related to the area named in the box. For instance, the box Packaged Medicinal Product represents all the classes related to packaged Medicinal Products, e.g. batch identifier, package item (container), etc.

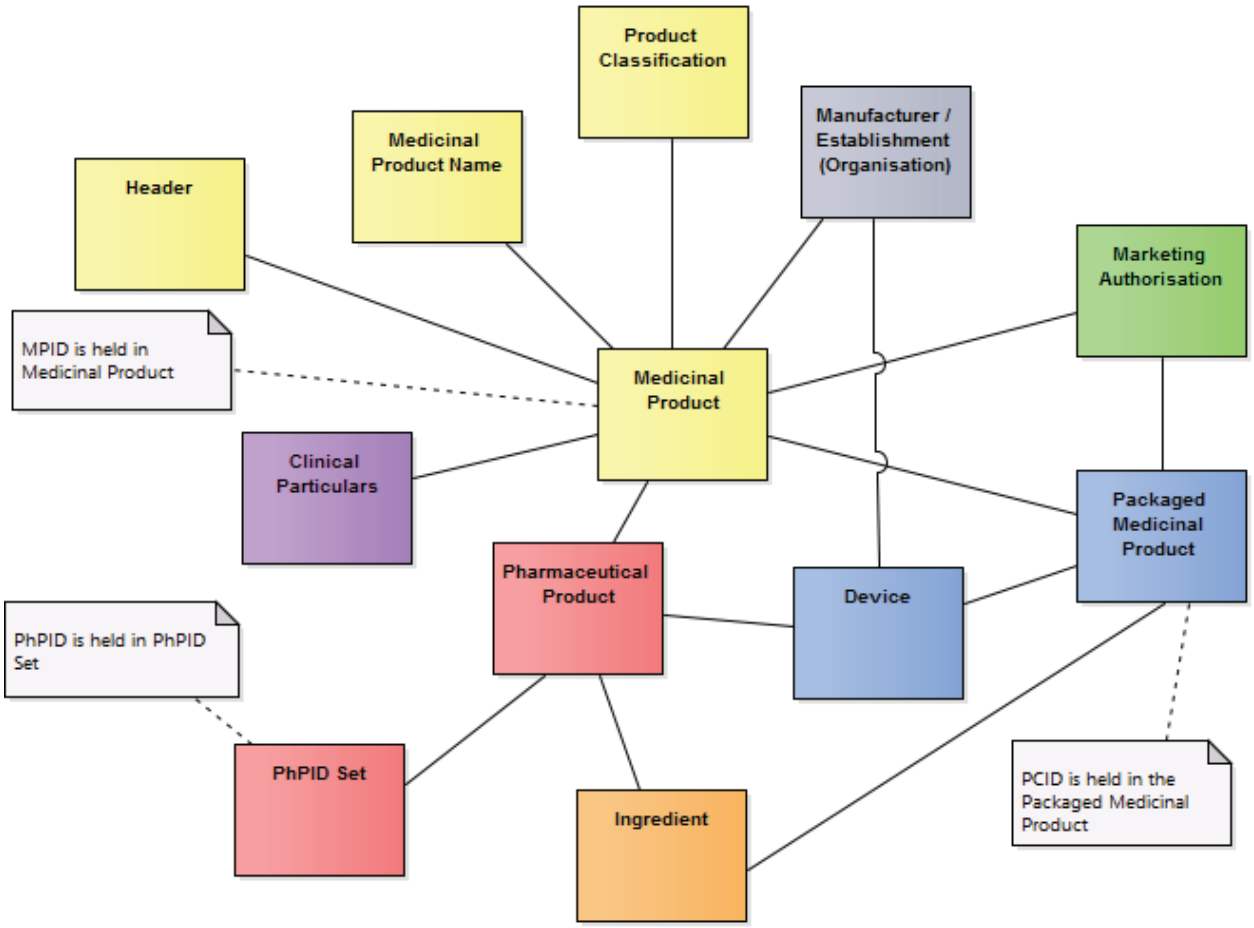

Figure 6 — Conceptual relationship between MPID and PhPID

This document defines the concepts required to associate PhPID(s) with regulated Medicinal Products (authorised or under investigation in a clinical trial) as described in ISO 11615 or ISO/TS 20443. Such association shall utilise the following principles.

a) A Medicinal Product may relate to one or more pharmaceutical products as part of a treatment regime [e.g. a kit, which might be a combination pack containing vaginal tablets (500 mg) and an external vaginal cream (10 %)].

b) The characterisation of the pharmaceutical product(s) based on the active substance(s)/specified substance(s), the (reference) strength thereof, the administrable dose form(s), and the medical device (e.g. a scaffolding for cell-based products) being part of the Medicinal Product (e.g. drug/device combination).

c) The description of the pharmaceutical product(s) in the pharmaceutical dose form approved for administration, where applicable, after reconstitution and as authorised in accordance with the regulated product information.

d) The association of the regulated (investigational) Medicinal Product and the pharmaceutical product(s) using the PhPID(s).

The PhPID standard is vital in associating products at this level of granularity, e.g. to assist in product identification when a branded/proprietary name or MPID/PCID is unavailable. The elements defining the Medicinal Product identifier and Medicinal Product package identifier (MPID/PCID) are presented in ISO 11615 and ISO/TS 20443.

The PhPID shall refer to one or more Medicinal Products, which contain the same administered pharmaceutical product.

A Medicinal Product shall refer to one or more PhPIDs as one to many PhPIDs may be associated with one or many MPIDs/PCIDs.

PhPIDs shall refer to a Medicinal Product being tested in a clinical trial(s) throughout all phases of development and after authorisation by a regulatory authority within a particular region. A change to any of the PhPID elements associated with a change to the Medicinal Product shall warrant the generation of a new MPID/PCID.

The same pharmaceutical product may be utilised by one to many Medicinal Products.

The PhPID relationship for liquid preparations is a PCID attribute set given that total volume per container, as authorised by a medicines regulatory agency, is the mechanism by which strength is calculated. In this instance, the PCID attribute set would contain the strength per total volume per container information (e.g. 5 mg/5 ml vial). (See Figure 7.)

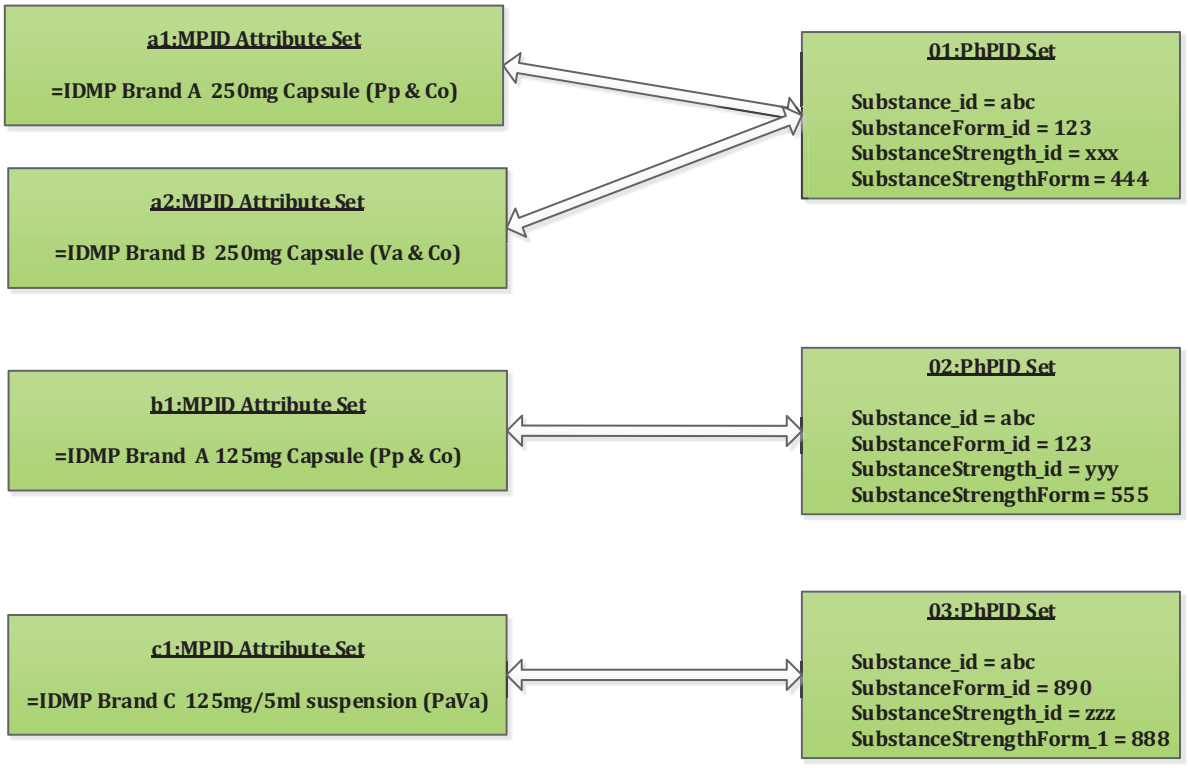

Figure 7 — Illustration of the relationship between MPID and PhPID

8.2 Pharmaceutical product identification criteria

8.2.1 General considerations

This subclause specifies how PhPIDs shall be generated.

8.2.2 Multiple products packaged as a kit and administered as separate Medicinal Products

A product that is constituted of items with different substances, strengths or dose form(s) that are intended to be administered independently of each other (e.g. a kit with tablets and cream to be taken at different time intervals in a particular order, or tablets of different strengths in one blister) shall be assigned separate PhPIDs for each product contained within the kit (see ISO/TS 20451).

8.2.3 Multiple products packaged as a kit for reconstitution and administered as one Medicinal Product

Multiple products packaged as a kit (combination pack) with the intent of being administered as one Medicinal Product shall be assigned one overarching PhPID for the Medicinal Product at the level of the kit (see Figure 8). A product may be supplied as two items, a powder for solution for injection, and a solvent for solution for injection. One PhPID shall be assigned with the administrable dose form of solution for injection.

Products without solvents (single products) will also have the dose form after reconstitution. Products that are already solutions, e.g. products with dose form "powder" without solvents and products with dose form "powder" with solvents, where the reconstituted products are identical, shall share the same PhPIDs.

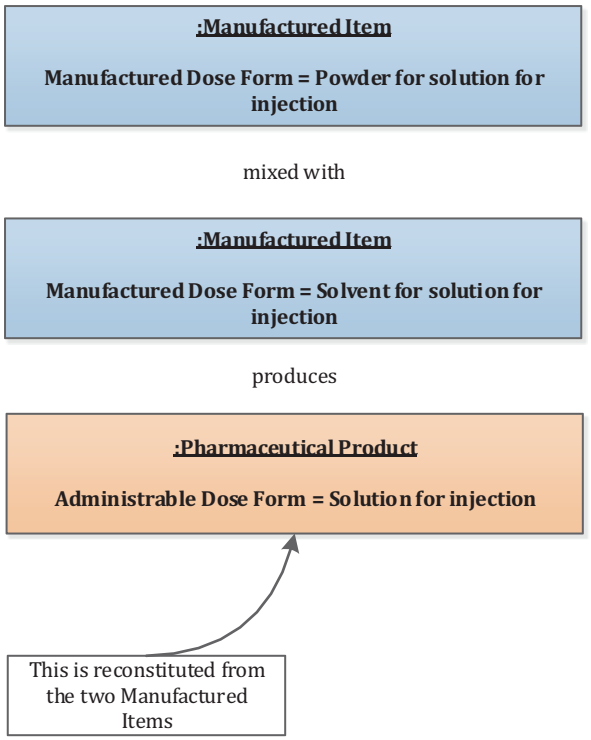

Figure 8 — Reconstituted kit example

8.2.4 Components of kits which are not packaged together (e.g. radiopharmaceutical kits)

A Medicinal Product authorised to be marketed as a kit with all components to be reconstituted and intended to be administered as one product (as approved by a medicines regulatory authority) shall be assigned one PhPID as reconstituted.

For radiopharmaceutical kits, there may be instances where, due to safety reasons, the radiopharmaceutical components of the kit would not be packaged together. This will not trigger the generation of an additional PhPID if the product was authorised as a radiopharmaceutical kit to be administered as one product.

8.2.5 Different representations of strength in two or more regions for identical products

One PhPID shall be generated for a product that is authorised in two or more regions and contains multiple representations of an identical strength.

Different regional representations that are synonymous for identifying a particular strength in an identical product shall have the identical PhPIDs assigned, regardless of region.

Mapping of the different terms of each region that are synonymous with a particular strength can be addressed in regional implementation guides supported by this document.

8.2.6 Representation of PhPID for a patch

For a patch, the strength shall be expressed as amount per each patch and per time unit (when applicable). In addition to identifying the amount per each patch, the following principles shall be applied when generating PhPIDs for a patch (see ISO/TS 20451):

— capture the rated release of the product (as authorised by a medicines regulatory authority);

— capture the quantity released per time unit (e.g. 24 µg/24 h).

Where no rated release information is authorised, capture the quantity per each/contained by each but not delivered by each (e.g. 50 mg per each patch).

9 Relationship between IMPID/IPCID and PhPID

Investigational Medicinal Products refer to the Medicinal Product being tested in a clinical trial throughout all phases of development prior to its authorisation by a medicines regulatory authority within the region in which the product is intended to being marketed.

The IMPID/IPCID is using a common attribute set related to an investigational Medicinal Product, which when all of them have a value, defines a specific IMPID/IPCID concept. The pattern is:

— country code segment [ISO 3166-1 alpha-2 code elements];

— sponsor [organisation] code segment;

— sponsor product code and/or regulator product code (depending on regional requirements) segment;

— sponsor package code and/or regulator package code (depending on regional requirements) segment.

The IPCID is contained within the investigational packaged Medicinal Product class.

Figure 9 shows the conceptual relationship between an investigational Medicinal Product and PhPID. The figure is part of a larger conceptual drawing taken directly from ISO 11615 and ISO/TS 20451, which should be consulted for a detailed discussion of the classes presented.

Each box present in Figure 9 does not represent an individual class, but represents all the classes related to the area named in the box. For instance, the box Investigational Packaged Medicinal Product represents all the classes related to investigational packaged Medicinal Products, e.g. batch identifier, package item (container), etc.

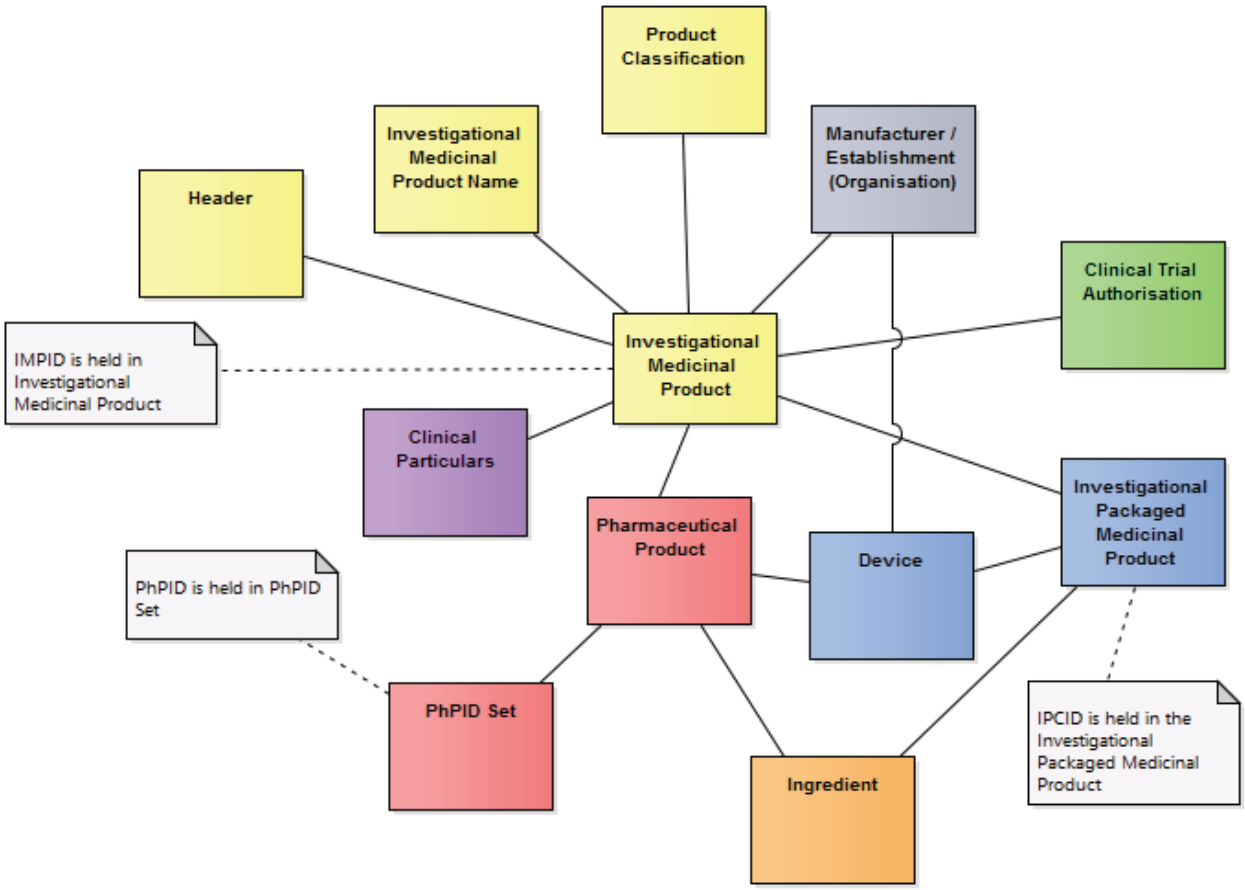

Figure 9 — Conceptual relationship between IMPID/IPCID and PhPID

PhPIDs shall refer to an investigational Medicinal Product being tested in a clinical trial(s) throughout all phases of development prior to its authorisation by a medicines regulatory authority within a particular region. A change to any of the PhPID elements associated with a change to the investigational Medicinal Product shall warrant the generation of a new IMPID and/or IPCID.

The principles for assigning a PhPID to an investigational Medicinal Product are identical to their assignment for authorised Medicinal Products. However, there may be dissimilarities between regulators or when PhPID levels are to be assigned to an investigational Medicinal Product (e.g. different phases of development). As stated, this document accommodates the generation and assignment of PhPIDs for investigational Medicinal Products, but the timing and utilisation of PhPID levels for investigational Medicinal Products shall be addressed in regional implementation guides supported by this document.

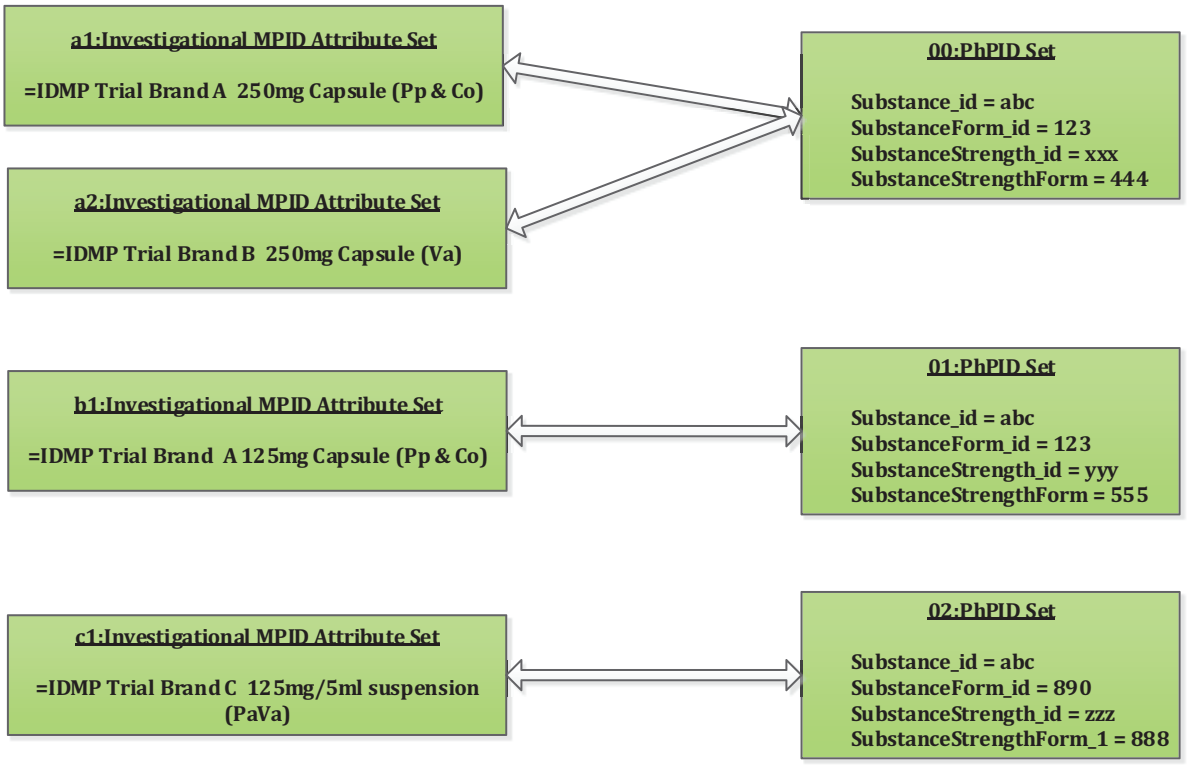

Figure 10 — High-level example of the relationship between IMPID and PhPID

The PhPID relationship for liquid preparations is an IPCID attribute set, given that total volume per container, as authorised by a medicines regulatory agency, is the mechanism by which ngth is calculated. In this instance, the IPCID attribute set would contain the strength per total me per container information (e.g. 5 mg/5 ml vial). (See Figure 10.)

10 Conceptual model

The composition of the pharmaceutical product as authorised by a regulatory medicines authority shall be captured in a structured format. To illustrate this point, a high-level conceptual model related to the pharmaceutical product is presented in Figure 5 along with representative examples (in ISO/TS 20451) for pharmaceutical product identification assignment.

Bibliography

[1] ISO 639-1, *Codes for the representation of names of languages — Part 1: Alpha-2 code*

[2] ISO 1087-1, *Terminology work — Vocabulary — Part 1: Theory and application*

[3] ISO 6709, *Standard representation of geographic point location by coordinates*

[4] ISO 8601, *Data elements and interchange formats — Information interchange — Representation of dates and times*

[5] ISO/TS 16791, *Health informatics — Requirements for international machine-readable coding of Medicinal Product package identifiers*

[6] ISO 21090, *Health informatics — Harmonised data types for information interchange*

[7] ISO/IEC Guide 99, *International vocabulary of metrology — Basic and general concepts and associated terms (VIM)*

[8] ISO/IEC 2382, *Information technology — Vocabulary*

[9] ISO/IEC 5218, *Information technology — Codes for the representation of human sexes*

[10] ISO/IEC 11404, *Information technology — General-Purpose Datatypes (GPD)*

[11] ISO/HL7 27951, *Health informatics — Common terminology services, release 1*

[12] ISO/HL7 27953-1, *Health informatics — Individual case safety reports (ICSRs) in pharmacovigilance — Part 1: Framework for adverse event reporting*

[13] ISO/HL7 27953-2, *Health informatics — Individual case safety reports (ICSRs) in pharmacovigilance — Part 2: Human pharmaceutical reporting requirements for ICSR*

[14] ENV 12610:1998, *Medical informatics — Medical product identification*

[15] ENV 13607, *Health informatics — Messages for the exchange of information on medicine prescriptions*

[16] ENV 1613:1995, *Medical informatics — Messages for exchange of laboratory information*

[17] HL7 Core Principles.

[18] HL7. *Reference Information Model (RIM)*

[19] Addendum to E2C: Periodic Safety Update Reports for Marketed Drugs [in E2C(R1)]

[20] Appendix: Electronic format of package insert information on ethical drugs (SGML/DTD Ver. 2.0) Appendix1 DTD Ver. 2.0

[21] Appendix2 Overview of SGML creation

[22] Appendix3 DCL Appendix4 Template of SGML

[23] Appendix5 Data model (Entities and relationships)

[24] Appendix6 List of fields of package insert information

[25] CaCore 2.0 Technical Guide, National Cancer Institute, Center for Bioinformatics, U.S. Department of Health and Human Services

[26] CDISC Clinical Research Glossary V10. 2016

[27] Commission Directive 2003/63/EC of 25 June 2003 amending Directive 2001/83/EC of the European Parliament and of the Council on the Community code relating to Medicinal Products for human use

[28] Commission Directive 2003/94/EC of 8 October 2003 laying down the principles and guidelines of good manufacturing practice in respect of Medicinal Products for human use and investigational Medicinal Products for human use

[29] Directive 2001/20/EC of the European Parliament and of the Council of 4 April 2001 on the approximation of the laws, regulations and administrative provisions of the Member States relating to the implementation of good clinical practice in the conduct of clinical trials on Medicinal Products for human use

[30] Directive 2001/83/EC of the European Parliament and of the Council of 6 November 2001 on the Community code relating to Medicinal Products for human use as amended by Directive 2002/98/EC, Directive 2004/24/EC and Directive 2004/27/EC

[31] Directive 90/385/EEC

[32] Directive 93/42/EEC

[33] E1 The Extent of Population Exposure to Assess Clinical Safety for Drugs Intended for Long-Term Treatment of Non-Life Threatening Conditions.

[34] E2A Clinical Safety Data Management: Definitions and Standards for Expedited Reporting

[35] E2B(R3) Clinical Safety Data Management: Data Elements for Transmission of Individual Case Safety Reports

[36] E2C(R1) Clinical Safety Data Management: Periodic Safety Update Reports for Marketed Drugs

[37] E2D Post-Approval Safety Data Management: Definitions and Standards for Expedited Reporting

[38] E2E Pharmacovigilance Planning

[39] E2F Development Safety Update Report

[40] Directive EC 2007/47 on Medical Devices

[41] EudraVigilance Medicinal Product Dictionary (EVMPD) Version 2.0 Message and Acknowledgement Specifications, 8 December 2004 (Doc. Ref. EMEA/178966/ 2004)

[42] EudraVigilance Medicinal Product Dictionary (EVMPD) Version 2.0 Technical Specifications, 9 November 2004 (Doc. Ref. EMEA/140190/ 2004)

[43] EudraVigilance (EV) Access Simple Database Version 2.0 Forms Documentation, 31 January 2005 (Doc. Ref: EMEA/35416/ 2005)

[44] EudraVigilance (EV) Access simple Database Version 2.0, 8 November 2004 (Doc. Ref: EMEA/140327/ 2004)

[45] EudraVigilance (EV) Access Simple Database Version 2.0 Step by Step Guide, 8 December 2004 (Doc. Ref: EMEA/191986/ 2004)

[46] European Pharmacopoeia. (Ph. Eur.)

[47] FDA 21 CFR 310.305

[48] GHTF/AH (PD1)/N2ER1: 2009 GHTF Discussion Paper (in view of preparation of a Draft Guidance on UDI for Medical Devices) Title: Unique Device Identification (UDI) System

[49] Guide to RxNorm, United States National Library of Medicine, National Institute of Health

[50] Guideline on Summary of Product Characteristics. December 1999 (Doc. Ref. Notice to Applicants, Final – revision 0)

[51] Guidance for Industry Providing Regulatory Submissions in Electronic Format — Content of Labelling.

[52] "Guideline on the categorisation on New applications versus Variations", The Rules governing Medicinal Products in the European Union, Notice to Applicants, Volume 2A and Volume 2C

[53] Guideline on adjuvants in vaccines for human use, 20 January 2005 (Doc. Ref. EMEA/CHMP/VEG/134716/ 04)

[54] Guideline on declaration of herbal substances and herbal preparations in herbal Medicinal Products/traditional herbal Medicina oducts in the SPC, 26 July 2007 (Doc. Ref. EMEA/HMPC/CHMP/CVMP/287539/ 2005)

[55] Guideline on Pharmaceutical Aspects of the Product Information for Human Vaccines. 26 November 2003 (Doc. Ref. EMEA/CPMP/BWP/2758/02)

[56] Guidelines on Pharmacovigilance for Medicinal Products for Human Use. Volume 9A of the Rules Governing Medicinal Products in the European Union

[57] Guideline on Similar Biological Medicinal Products. 30 October 2005 (Doc. Ref. CHMP/437/04)

[58] Guideline on the acceptability of names for human Medicinal Products processed through the centralised procedure, 11 December 2007 (Doc. Ref. CPMP/328/98, Revision 5)

[59] Guideline on the Chemistry of New Active Substances. 17 December 2003 (Doc. Ref. CPMP/QWP/130/96 Rev. 1)

[60] ICH M5. Guideline 2005*:* Data Elements and Standards for Drug Dictionaries

[61] International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH) Clinical Safety

[62] Ministry of Health and Welfare. PSB/SD Notification No. 37 (29th March 1999)[1)]

[63] Regulation (EC) No 726/ 2004 of the European Parliament and of the Council of 31 March 2004 laying down Community procedures for the authorisation and supervision of Medicinal Products for human and veterinary use and establishing a European Medicines Authority

[64] Regulation (EC) No 1394/2007 of the European Parliament and of the Council of 13 November 2007 on advanced therapy Medicinal Products and amending Directive 2001/83/EC and Regulation (EC) No 726/2

[65] Release Notes for SPL Schema PORR_MT050020 (3.20.05)

[66] TERMS Standard Dosage Forms, Routes of Administration and Containers, EDQM, Fifth Edition, December 2004, Version 5.0.0

[67] Substance Registration System (SRS) SRS Substance Definition Manual Version 5b Final Draft.doc

[68] The Japanese Pharmacopoeia Fourteenth Edition[2)]

[69] The Japanese Pharmacopoeia Fourteenth Edition, supplement I

[70] The Japanese Pharmacopoeia Fourteenth Edition, supplement II

[71] The Food and Drugs Act and Regulations and Related Health Canada Guidelines.

1) All documents are available only in Japanese. Please note documents' names are only tentative translation. Electronic package insert information accompanied by the utility system of information provision on drug safety.

2) Japanese Pharmacopoeia (Fifteenth Edition in English to be published).

[72] The Natural Health Product Regulations and Related Health Canada Guidelines.

[73] The Unified Code for Units of Measure.

[74] The U.S. Consolidated Healthcare Informatics initiative.

[75] United States Department of Agriculture's (USDA) Integrated Taxonomic Information System. (ITIS)

[76] United States Pharmacopeia (USP).

[77] WHO Technical Report 498(1972); ICH E2A

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