INTERNATIONAL STANDARD

ISO 13120

First edition
2013-04-01

Health informatics — Syntax to represent the content of healthcare classification systems — Classification Markup Language (ClaML)

Informatique de santé — Syntaxe de représentation du contenu des systèmes de classification des soins de santé — Langage de marquage de la classification (ClaML)

Reference number
ISO 13120:2013(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) 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 organizations, 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 standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 13120 was prepared by Technical Committee ISO/TC 215, *Health informatics*.

Introduction

Healthcare classifications are developed and distributed in a variety of informal formats, such as MS Word, with little consistency in approach between developers. Exchanging data from these systems or attempting to parse the informal text into a more formal structure, say for publishing purposes, presents many challenges because unwanted mistakes are easily made, and difficult to detect. For example, the accidental deletion of a tab can transform a sibling rubric into a parent. ASCII files with comma separated value fields is another mechanism widely used for storing and transferring data, but as a solution here is limited by insufficient formal structuring capabilities.

In the interests of safely exchanging and distributing the content and hierarchical structure of healthcare classification systems, this International Standard presents a simple XML specification, ClaML, for exchange and distribution of healthcare classifications systems. XML is the chosen format for this International Standard as: a) XML provides the necessary structuring elements, and b) there are many readily available XML parsers in existence.

This International Standard builds on CEN/TS 14463:2002 in that the primary focus of CEN/TS 14463:2002 was to support electronic data processing. Assessment of CEN/TS 14463:2002 revealed the need to extend the areas for version control and maintenance within the Standard and this was supported by insight from the health informatics community who have been active in the implementation of this International Standard.

This International Standard is intended to serve as the core representation from which all publication forms can be derived. It contains information of a depth sufficient to uniquely identify and describe the structure and relevant element of healthcare classification systems. This International Standard does not intend to prescribe to developers how healthcare classification systems should be structured, nor does it define or explain the meaning of the structuring elements. This International Standard is not meant to be a direct format for printing or viewing the content of a healthcare classification system. Views and prints are to be derived from this representation by post processing.

This International Standard is targeted at:

a) developers of first generation[2] healthcare classification systems, to assist in the construction, maintenance and publication (both in paper and electronic formats) of a particular system;

b) developers of information systems to assist in the inclusion of mechanisms for unambiguous loading of healthcare classification systems in their applications;

c) organizations responsible for updating healthcare classification systems;

d) institutions receiving updated healthcare classification systems.

Health informatics — Syntax to represent the content of healthcare classification systems — Classification Markup Language (ClaML)

1 Scope

1.1 Main purposes

The main purpose of this International Standard is to formally represent the content and hierarchical structure of healthcare classification systems in a markup language for the safe exchange and distribution of data and structure between organizations and dissimilar software products.

The scope of healthcare classifications systems covered in this International Standard encompasses terminologies, and is constrained to traditional paper-based systems (like ICD-10) and systems built according to categorial structures and a cross thesaurus (like ICNP).[3] This International Standard is intended for representation of healthcare classification systems in which classes have textual definitions, hierarchical ordering, named hierarchical levels (such as “chapter”, “section”), inclusion- and exclusion criteria, and codes. It is not intended to cover any formal representation, either for definition or composition, of concepts, or for specification of classification rules. Systems with such formal specifications can at best be partially represented using this International Standard, and are hence out of scope.

1.2 Topics considered outside the scope of this International standard

This International Standard is not intended to:

a) provide a normative syntax on how a healthcare classification system is to be constructed;

b) define link types between elements in a healthcare classification system; this is left to the developers of healthcare classification systems;

c) provide a representation for direct viewing or printing.

2 Normative references

The following referenced documents are indispensable for the application 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 639-1, *Codes for the representation of names of languages — Part 1: Alpha-2 code*

3 Abbreviated terms

ClaML	Classification Markup Language
XML	eXtensible Markup Language 1.0
DRG	Diagnosis-Related Group
DTD	Document Type Definition
IANA	Internet Assigned Numbers Authority
ICD	International Classification of Diseases
ICF	International Classification of Functioning, disability and health
ICNP	International Classification for Nursing Practice
OPS	“Operationen und Prozedurenschlüssel”, the German procedure classification
WHO	World Health Organization

4 Conformance

The normative part of this International Standard is written in the form of a document type definition (DTD). Many commercially available XML tools provide facilities to test the conformance of an XML document with a DTD. Users of this International Standard are encouraged to perform such a test before distributing their healthcare classifications in the format of this International Standard. Alternatively, a conformance test using an XML Schema Definition (XSD) can be performed, but an XSD is not part of the current revision of this International Standard.

5 Conventions

The font Courier New is used to denote the DTD of ClaML.

Bold text is used to denote elements and attributes defined in the DTD. For names of elements CamelCase is used (i.e. a single string, without spaces, consisting of multiple words, each starting with a capital); for names of attributes lowercase is used.

6 Classification markup language

6.1 Basis of the syntax

The basis of the syntax is to represent the content of healthcare classification systems. The syntax defined in this International Standard is called Classification Markup Language. It is defined here in the form of a DTD. The reference to this syntax will be headed to ClaML in the remainder of this document. The Version of ClaML described in this document is Version 2.0.0.

6.2 Document Type Definition

```
<!ENTITY % rubric.simple “#PCDATA | Reference | Term”>
<!ENTITY % rubric.complex “%rubric.simple; | Para | Include | Include Descendants| Frag-
ment | List | Table”>
<!ELEMENT ClaML (
          Meta*,
          Identifier*,
          Title,
          Authors?,
```

```
          Variants?,
          ClassKinds,
          UsageKinds?,
          RubricKinds,
          Modifier*,
          ModifierClass*,
          Class*)
>
<!ATTLIST ClaML
          version CDATA #REQUIRED
>
<!ELEMENT Meta EMPTY>
<!ATTLIST Meta
          name CDATA #REQUIRED
          value CDATA #REQUIRED
          variants IDREFS #IMPLIED
>
<!ELEMENT Identifier EMPTY>
<!ATTLIST Identifier
          authority NMTOKEN #IMPLIED
          uid CDATA #REQUIRED
>
<!ELEMENT Title (#PCDATA)>
<!ATTLIST Title
          name NMTOKEN #REQUIRED
          version CDATA #IMPLIED
          date CDATA #IMPLIED
>
<!ELEMENT Authors (Author* )>
<!ELEMENT Author (#PCDATA)>
<!ATTLIST Author
          name ID #REQUIRED
>
<!ELEMENT Variants (Variant+)>
<!ELEMENT Variant (#PCDATA)>
<!ATTLIST Variant
          name ID #REQUIRED
>
<!ELEMENT ClassKinds (ClassKind+)>
<!ELEMENT UsageKinds (UsageKind+)>
<!ELEMENT RubricKinds (RubricKind+)>
<!ELEMENT ClassKind (Display*)>
<!ATTLIST ClassKind
          name ID #REQUIRED
>
<!ELEMENT UsageKind EMPTY>
<!ATTLIST UsageKind
          name ID #REQUIRED
          mark CDATA #REQUIRED
>
<!ELEMENT RubricKind (Display*)>
<!ATTLIST RubricKind
          name ID #REQUIRED
          inherited (true|false) “false”
>
<!ELEMENT Display (#PCDATA)>
<!ATTLIST Display
          xml:lang NMTOKEN #REQUIRED
          variants IDREF #IMPLIED
>
<!ELEMENT Modifier (
          Meta*,
          SubClass*,
          Rubric*,
          History*)
>
<!ATTLIST Modifier
          code NMTOKEN #REQUIRED
          variants IDREFS #IMPLIED
>
<!ELEMENT ModifierClass (
```

```
          Meta*,
          SuperClass,
          SubClass*,
          Rubric*,
          History*)
>
<!ATTLIST ModifierClass
          modifier NMTOKEN #REQUIRED
          code NMTOKEN #REQUIRED
          usage IDREF #IMPLIED
          variants IDREFS #IMPLIED
>
<!ELEMENT Class (
          Meta*,
          SuperClass*,
          SubClass*,
          ModifiedBy*,
          ExcludeModifier*,
          Rubric*,
          History*)
>
<!ATTLIST Class
          code NMTOKEN #REQUIRED
          kind IDREF #REQUIRED
          usage IDREF #IMPLIED
          variants IDREFS #IMPLIED
>
<!ELEMENT ModifiedBy (
          Meta*,
          ValidModifierClass*)
>
<!ATTLIST ModifiedBy
          code NMTOKEN #REQUIRED
          all (true|false) “true”
          position CDATA #IMPLIED
          variants IDREFS #IMPLIED
>
<!ELEMENT ExcludeModifier EMPTY>
<!ATTLIST ExcludeModifier
          code NMTOKEN #REQUIRED
          variants IDREFS #IMPLIED
>
<!ELEMENT ValidModifierClass EMPTY>
<!ATTLIST ValidModifierClass
          code NMTOKEN #REQUIRED
          variants IDREFS #IMPLIED
>
<!ELEMENT Rubric (
          Label+,
          History*)
>
<!ATTLIST Rubric
          id ID #IMPLIED
          kind IDREF #REQUIRED
          usage IDREF #IMPLIED
>
<!ELEMENT Label (%rubric.complex;)*>
<!ATTLIST Label
          xml:lang NMTOKEN #REQUIRED
          xml:space (default|preserve) “default”
          variants IDREFS #IMPLIED
>
<!ELEMENT History (#PCDATA)>
<!ATTLIST History
          author IDREF #REQUIRED
          date NMTOKEN #REQUIRED
>
<!ELEMENT SuperClass EMPTY>
<!ATTLIST SuperClass
          code NMTOKEN #REQUIRED
          variants IDREFS #IMPLIED
```

```
>
<!ELEMENT SubClass EMPTY>
<!ATTLIST SubClass
          code NMTOKEN #REQUIRED
          variants IDREFS #IMPLIED
>
<!ELEMENT Reference (#PCDATA)>
<!ATTLIST Reference
          class CDATA #IMPLIED
          authority NMTOKEN #IMPLIED
          uid NMTOKEN #IMPLIED
          code NMTOKEN #IMPLIED
          usage IDREF #IMPLIED
          variants IDREFS #IMPLIED
>
<!ELEMENT Para (%rubric.simple;)*>
<!ATTLIST Para
          class CDATA #IMPLIED
>
<!ELEMENT Fragment (%rubric.simple;)*>
<!ATTLIST Fragment
          class CDATA #IMPLIED
          usage IDREF #IMPLIED
          type (item | list) “item”
>
<!ELEMENT Include EMPTY>
<!ATTLIST Include
          class CDATA #IMPLIED
          rubric IDREF #REQUIRED
>
<!ELEMENT IncludeDescendants EMPTY>
<!ATTLIST IncludeDescendants
          code NMTOKEN #REQUIRED
          kind IDREF #REQUIRED
>
<!ELEMENT List (ListItem+)>
<!ATTLIST List
          class CDATA #IMPLIED
>
<!ELEMENT ListItem (
          %rubric.simple;
          | Para
          | Include
          | List
          | Table)*
>
<!ATTLIST ListItem
          class CDATA #IMPLIED
>
<!ELEMENT Table (
          Caption?,
          THead?,
          TBody?,
          TFoot?)
>
<!ATTLIST Table
          class CDATA #IMPLIED
>
<!ELEMENT Caption (%rubric.simple;)*>
<!ATTLIST Caption
          class CDATA #IMPLIED
>
<!ELEMENT THead (Row+)>
<!ATTLIST THead
          class CDATA #IMPLIED
>
<!ELEMENT TBody (Row+)>
<!ATTLIST TBody
          class CDATA #IMPLIED
>
<!ELEMENT TFoot (Row+)>
```

```
<!ATTLIST TFoot
          class CDATA #IMPLIED
>
<!ELEMENT Row (Cell*)>
<!ATTLIST Row
          class CDATA #IMPLIED
>
<!ELEMENT Cell (
          %rubric.simple;
          | Para
          | Include
          | List
          | Table)*
>
<!ATTLIST Cell
          class CDATA #IMPLIED
          rowspan CDATA #IMPLIED
          colspan CDATA #IMPLIED
>
<!ELEMENT Term (#PCDATA)>
<!ATTLIST Term
          class CDATA #IMPLIED
>
```

6.3 Semantic description of the Classification Markup Language

6.3.1 ClaML

6.3.1.1 General

The element **ClaML** identifies a Classification Markup Language file.

6.3.1.2 Contents

The element **ClaML** shall contain:

— an optional number of **Meta** elements;

— an optional number of **Identifier** elements;

— one **Title** element;

— one optional **Authors** element;

— one optional **Variants** element;

— one **ClassKinds** element;

— one optional **UsageKinds** element;

— one **RubricKinds** element;

— an optional number of **Modifier** elements;

— an optional number of **ModifierClass** elements;

— an optional number of **Class** elements.

6.3.1.3 Required attribute

The attribute **version** shall specify the version of ClaML used in the remaining document. The value to indicate the current version shall be “2.0.0”.

6.3.1.4 Optional attribute

The element **ClaML** has no optional attributes.

6.3.2 Meta

6.3.2.1 General

The element **Meta** shall be used to define meta information about a class or the classification.

6.3.2.2 Contents

The element **Meta** has no content.

6.3.2.3 Required attributes

The attribute **name** defines the name for the meta information.

The attribute **value** defines the content of the meta information.

The attribute **variants** defines the variants in which this **Meta** element is valid. When the attribute is absent the **Meta** element is valid in all **variants**. The variants are defined in the element **Variants** (6.3.7).

EXAMPLE

```
<Meta name="DRG" value="J"/>
```

NOTE The example is taken from the OPS . It indicates that the class is used for coding in a DRG-System.

6.3.2.4 Optional attribute

The element **Meta** has no optional attributes.

6.3.3 Identifier

6.3.3.1 General

The optional element **Identifier** may occur multiple times. It defines an issuing authority and the unique identifier for the classification defined by that authority.

6.3.3.2 Contents

The element **Identifier** has no content.

6.3.3.3 Required attribute

The attribute **uid** is required and defines the unique identifier for the classification.

6.3.3.4 Optional attribute

The optional attribute **authority** identifies the authority that issued the uid.

EXAMPLE

```
<Identifier authority="HL7" uid="2.16.840.1.113883.6.3"/>
```

NOTE The example shows a HL7 registered identifier specifying that the ClaML-file is containing ICD-10 data.

6.3.4 Title

6.3.4.1 General

The element **Title** defines the title for the classification.

6.3.4.2 Contents

The content of the element **Title** is limited to plain text.

6.3.4.3 Required attribute

The attribute **name** defines a short name for the classification.

6.3.4.4 Optional attributes

The attribute **version** defines the version of the classification. It is recommended to use the well-known major.minor.patch version numbering scheme.

The attribute **date** defines the date of publication. It is recommended to use a string with the format "YYYYMMDDHHMMSS.UUUU[+|-ZZzz]" that conforms to the constrained ISO 8601 that is defined in ISO 8824:1990, (ASN.1), Clause 32 (generalized time). Digits can be omitted from the right side to express less precision.

EXAMPLE

```
<Title name="ICD-10" version="10.2006.13" date="20051115">International Classification of
Diseases, 10th revision</Title>
<Title date="20091026" name="OPS" version="2010"/>
```

NOTE The first example shows a title element for the ICD-10. In the second example a title element is given for the OPS just holding the short name.

6.3.5 Authors

6.3.5.1 General

The element **Authors** defines the authors of the ClaML file. This can, for example, be an organization issuing the file or a person creating a healthcare classification. In case multiple organizations work on a healthcare classification they can all be named as authors (see example below).

6.3.5.2 Contents

The element **Authors** contains an optional number of **Author** elements.

6.3.5.3 Required attribute

The element **Authors** has no required attributes

6.3.5.4 Optional attribute

The element **Authors** has no optional attributes

6.3.6 Author

6.3.6.1 General

The element **Author** represents the name of an author of the classification.

6.3.6.2 Contents

The content of the element **Author** is limited to plain text.

6.3.6.3 Required attribute

The attribute **name** uniquely identifies the author. The first character of the attribute **name** shall be a letter, underscore or colon. This attribute is referenced in the element **History**.

EXAMPLE

```
<Authors>
     <Author name="who">World Health Organization</Author>
     <Author name="fic_nl">Dutch WHO-FIC</Author>
</Authors>
```

6.3.6.4 Optional attribute

The element **Author** has no optional attributes

6.3.7 Variants

6.3.7.1 General

Optionally, this International Standard supports multiple variants of a classification in the same ClaML file. The element **Variants** defines the variants (if any) that are contained within the ClaML file.

6.3.7.2 Contents

The element **Variants** contains one or more **Variant** elements.

6.3.7.3 Required attribute

The element **Variants** has no required attributes.

6.3.7.4 Optional attribute

The element **Variants** has no optional attributes.

6.3.8 Variant

6.3.8.1 General

The element **Variant** uniquely identifies a variant within the ClaML file.

6.3.8.2 Contents

The content of the element **Variant** is limited to plain text.

6.3.8.3 Required attribute

The attribute **name** uniquely identifies the variant in the remainder of the ClaML file.

EXAMPLE

```
<Variants>
     <Variant name="cm">Clinical Modification</Variant>
     <Variant name="am">Australian Modification</Variant>
</Variants>
```

6.3.8.4 Optional attribute

The element **Variant** has no optional attributes.

6.3.9 ClassKinds

6.3.9.1 General

The element **ClassKinds** lists the kinds of classes, which are present in the classification.

6.3.9.2 Contents

The element **ClassKinds** contains one or more **ClassKind** elements.

EXAMPLE

```
<ClassKinds>
     <ClassKind name="chapter"/>
     <ClassKind name="block"/>
     <ClassKind name="category"/>
</ClassKinds>
```

NOTE In the example, the three common kinds of Classes are listed. This example ClaML section applies to ICD-10, ICF and OPS.

6.3.9.3 Required attribute

The element **ClassKinds** has no required attributes.

6.3.9.4 Optional attribute

The element **ClassKinds** has no optional attributes.

6.3.10 ClassKind

6.3.10.1 General

The element **ClassKind** defines the name of a **Class**.

6.3.10.2 Contents

The element **ClassKind** contains an optional number of the **Display** elements.

6.3.10.3 Required attribute

The attribute **name** defines the name for the **ClassKind** and uniquely identifies the **ClassKind**. The first character of the attribute name shall be a letter, underscore or colon.

6.3.10.4 Optional attribute

The element **ClassKind** has no optional attributes

6.3.11 UsageKinds

6.3.11.1 General

The optional element **UsageKinds** lists the kinds of usage of classes, which are present in the classification.

6.3.11.2 Contents

The element **UsageKinds** contains one or more **UsageKind** elements.

EXAMPLE

```
<UsageKinds>
     <UsageKind mark=”S” name=”seite”/>
</UsageKinds>
```

NOTE The example shows the usage kind that is used in the OPS. It specifies if a code can be used according to the laterality of the procedure, e.g. at the left or right arm.

6.3.11.3 Required attribute

The element **UsageKinds** has no required attributes

6.3.11.4 Optional attribute

The element **UsageKinds** has no optional attributes

6.3.12 UsageKind

6.3.12.1 General

The element **UsageKind** defines the name of a **UsageKind**.

6.3.12.2 Contents

The element **UsageKind** has no content.

6.3.12.3 Required attributes

The attribute **name** defines the name for a **UsageKind** and uniquely identifies the **UsageKind**. The first character of the attribute name shall be a letter, underscore or colon.

The attribute **mark** specifies how the code of a **Class** with a specific **UsageKind** shall be marked.

EXAMPLE

```
<UsageKinds>
     <UsageKind name=”etiology” mark=”†”/>
     <UsageKind name=”manifestation” mark=”*”/>
</UsageKinds>
```

6.3.12.4 Optional attribute

The element **UsageKind** has no optional attributes

6.3.13 RubricKinds

6.3.13.1 General

The element **RubricKinds** lists the kinds of rubrics, which are present in the classification.

6.3.13.2 Contents

The element **RubricKinds** contains one or more **RubricKind** elements.

EXAMPLE

```
<RubricKinds>
     <RubricKind inherited="false" name="exclusion"/>
     <RubricKind inherited="false" name="inclusion"/>
     <RubricKind inherited="false" name="note"/>
     <RubricKind inherited="false" name="preferred"/>
     <RubricKind inherited="false" name="preferredLong"/>
</RubricKinds>
```

NOTE Again this section of ClaML applies to ICD-10, ICF and OPS in the same way. An explanation of the recommended kinds of rubrics is given in Table B.3.

6.3.13.3 Required attribute

The element **RubricKinds** has no required attributes.

6.3.13.4 Optional attribute

The element **Rubrickinds** has no optional attributes.

6.3.14 RubricKind

6.3.14.1 General

The element **RubricKind** defines the name of a **RubricKind**.

6.3.14.2 Contents

The element **RubricKind** contains an optional number of **Display** elements.

6.3.14.3 Required attributes

The attribute **name** defines the name for the **RubricKind** and uniquely identifies the **RubricKind**. The first character of the attribute **name** shall be a letter, underscore or colon.

The attribute **inherited** specifies if rubrics with this **RubricKind** are inherited by subclasses. The default value for this attribute is **false**.

6.3.14.4 Optional attribute

The element **RubricKind** has no optional attributes.

6.3.15 Display

6.3.15.1 General

The element **Display** defines how a **ClassKind** or **RubricKind** is to be displayed in a specific language.

6.3.15.2 Contents

The content of the element **Display** is limited to plain text.

6.3.15.3 Required attribute

The attribute **xml:lang** defines the language of the content of the element. The attribute values of **xml:lang** shall follow ISO 639-1 if they are two-letter codes, and ISO 3166-1 if they contain two-letter subcodes. Language identifiers registered with the IANA shall contain the prefix "I-" or "i-". Any privately used codes shall contain the prefix "X-" or "x-".

6.3.15.4 Optional attribute

The attribute **variants** define the variants in which this **Display** element is used. When the attribute is absent the **Display** element is used in all variants.

EXAMPLE

```
<ClassKinds>
         <ClassKind name="chapter">
                 <Display xml:lang="en">Chapter</Display>
         </ClassKind>
         <ClassKind name="block">
                 <Display xml:lang="en">Section</Display>
         </ClassKind>
         <ClassKind name="category">
                 <Display xml:lang="en"/>
         </ClassKind>
</ClassKinds>
<RubricKinds>
         <RubricKind name="inclusion">
                  <Display xml:lang="de">Inklusiva</Display>
         </RubricKind>
</RubricKinds>
```

6.3.16 Modifier

6.3.16.1 General

The element **Modifier** defines a modifier within the classification.

6.3.16.2 Contents

The element **Modifier** contains:

— an optional number of **Meta** elements;

— an optional number of **SubClass** elements;

— an optional number of **Rubric** elements;

— an optional number of **History** elements.

6.3.16.3 Required attribute

The attribute **code** defines the code for the Modifier.

6.3.16.4 Optional attribute

The attribute **variants** defines the list of variants in which this **Modifier** is valid. When the attribute is absent the **Modifier** is valid in all variants.

EXAMPLE

```
<Modifier code="Md1">
     <SubClass code="0"/>
     <SubClass code="1"/>
     <SubClass code="2" variants="cm" />
</Modifier>
```

NOTE In this Modifier the SubClass with the code 2 is valid for the ICD-10-CM only whereas the other SubClasses are valid for all Modifications contained in one file.

6.3.17 ModifierClass

6.3.17.1 General

The element **ModifierClass** defines a modifier class in the classification.

6.3.17.2 Contents

The element **ModifierClass** contains:

— an optional number of the **Meta** elements;

— exactly one **SuperClass** element;

— an optional number of the **SubClass** elements;

— an optional number of the **Rubric** elements;

— an optional number of the **History** elements.

6.3.17.3 Required attributes

The attribute **modifier** references the code of the modifier the **ModifierClass** belongs to.

The attribute **code** defines the code for the **ModifierClass**.

6.3.17.4 Optional attributes

The attribute usage refers to a **UsageKind** and specifies the usage of the **ModifierClass**.

The attribute **variants** defines the list of variants in which this **ModifierClass** is valid. When the attribute is absent the **ModifierClass** is valid in all variants.

EXAMPLE

```
<ModifierClass modifier="Md1" code="0">
     <SuperClass code="Md1"/>
     <SubClass code="00"/>
     <SubClass code="01"/>
     <SubClass code="02"/>
</ModifierClass>
```

6.3.18 Class

6.3.18.1 General

The element **Class** defines a class in the classification.

6.3.18.2 Contents

The element **Class** contains:

— an optional number of **Meta** elements;

— an optional number of **SuperClass** elements;

— an optional number of **SubClass** elements;

— an optional number of **ModifiedBy** elements;

— an optional number of **ExcludeModifier** elements;

— an optional number of **Rubric** elements;

— an optional number of **History** elements.

6.3.18.3 Required elements

The attribute **code** defines the code for the class.

The attribute **kind** references the **ClassKind** of the class, e.g. chapter, block, category, etc. A list is provided in Table B.1.

6.3.18.4 Optional attributes

The attribute **usage** refers to a **UsageKind** and specifies the usage of the class.

The attribute **variants** defines the list of variants in which this **Class** is valid. When the attribute is absent the **Class** is valid in all variants. A list is provided in Table B.2.

EXAMPLE

```
<Class code="A00" kind="category">
     <SuperClass code="A00-A09"/>
     <SubClass code="A00.0"/>
     <SubClass code="A00.1"/>
     <SubClass code="A00.9"/>
     <Rubric kind="preferred">
        <Label xml:lang="en">Cholera</Label>
     </Rubric>
</Class>
```

NOTE This Class with the Code A00 is a category. Its SuperClass is the block A00-A09, its SubClasses are A00.0, A00.1 and A00.9. The preferred term is Cholera. The example shows a simple Class which would look much the same as well in ICF or OPS.

6.3.19 ModifiedBy

6.3.19.1 General

The element **ModifiedBy** refers to the code of a **Modifier**, which modifies the class and its descendants. In case the **Modifier** shall not modify a descendant of the **Class** the element **ExcludeModifier** shall be defined at that specific descendant (see 6.3.20).

6.3.19.2 Contents

The element **ModifiedBy** contains:

— an optional number of **Meta** elements;

— an optional number of **ValidModifierClass** elements.

6.3.19.3 Required attribute

The attribute **code** references the code of the **Modifier**.

6.3.19.4 Optional attributes

The attribute **all** is used to indicate that all **ModifierClasses** are valid. In such a case, the element **ModifiedBy** does not contain an element **ValidModifierClass**. The default value of the attribute **all** is **true**.

The attribute **position** specifies the position for the code of the **ModifierClass** when the **Modifier** is used to generate the subclasses of the modified **Class**. The first position shall be specified by the number '1'.

The attribute **variants** defines the list of variants in which this **ModifiedBy** element is valid. When the attribute is absent this **ModifiedBy** element is valid in all variants.

EXAMPLE

If a clinical modification of the classification is created which allows limited addition of a fifth digit, the modification is specified as follows:

```
<Class code="C88" kind="category">
     ...
     <SubClass code="C88.0"/>
     <SubClass code="C88.1"/>
     <ModifiedBy code="Md1" position="5"/>
</Class>
<Class code="C88.0" kind="category">
     <SuperClass code="C88"/>
</Class>
<Class code="C88.1" kind="category">
     <SuperClass code="C88"/>
     <ExcludeModifier code="Md1"/>
</Class>
```

In the example, both **Class** C88 and its descendant C88.0 are modified by **Modifier** Md1. At the descendant **Class** C88.1 the modifier is excluded, i.e. **Class** C88.1 is not modified by **Modifier** Md1.

6.3.20 ExcludeModifier

6.3.20.1 General

The element **ExcludeModifier** refers to the code of a **Modifier**, which is not to be used for this class and its descendants.

6.3.20.2 Contents

The element **ExcludeModifier** has no content.

6.3.20.3 Required attribute

The attribute **code** references the code of the excluded Modifier.

6.3.20.4 Optional attribute

The attribute **variants** defines the list of variants in which this **ExcludeModifier** element is valid. When the attribute is absent this **ExcludeModifier** element is valid in all variants.

6.3.21 ValidModifierClass

6.3.21.1 General

The element **ValidModifierClass** refers to the code of a **ModifierClass** that is valid for this class. Only valid modifier classes may be used to modify the **Class**. When the element **ModifiedBy** contains one or more **ValidModifierClass** elements the attribute **all** at **ModifiedBy** shall be set to false.

6.3.21.2 Contents

The element **ValidModifierClass** has no content.

6.3.21.3 Required attribute

The attribute **code** defines the code of the **ModifierClass**.

6.3.21.4 Optional attribute

The attribute **variants** defines the list of variants in which this **ValidModifierClass** element is valid. When the attribute is absent this **ValidModifierClass** element is valid in all variants.

EXAMPLE

```
<Class code="C88" kind="digit3">
     <ModifiedBy code="Md1" all="false">
        <ValidModifierClass code="0"/>
     </ModifiedBy>
</Class>
```

6.3.22 Rubric

6.3.22.1 General

The element **Rubric** defines the labels that belong to a **Class**, **Modifier**, or **ModifierClass**.

6.3.22.2 Contents

The element **Rubric** contains:

— one or more **Label** elements;

— an optional number of **History** elements.

6.3.22.3 Required attribute

The attribute **kind** refers to the **RubricKind** of rubric: *preferred*, *inclusion*, *exclusion*, etc. A list is provided in Table B.3.

6.3.22.4 Optional attributes

The attribute **id** uniquely identifies the rubric. The first character of the attribute **id** shall be a letter, underscore or colon.

The attribute **usage** refers to a **UsageKind** and specifies the usage of the **Rubric**.

6.3.23 Label

6.3.23.1 General

The element **Label** defines a piece of text.

6.3.23.2 Contents

The element **Label** contains plain text and:

— an optional number of **Reference** elements;

— an optional number of **Term** elements;

— an optional number of **Para** elements;

— an optional number of **Include** elements;

— an optional number of **IncludeDescendants** elements;

— an optional number of **Fragment** elements;

— an optional number of **List** elements;

— an optional number of **Table** elements.

6.3.23.3 Required attributes

The attribute **xml:lang** defines the language of the content of the element. The attribute values of **xml:lang** shall follow ISO 639-1 if they are two-letter codes, and ISO 3166-1 if they contain two-letter subcodes. Language identifiers registered with the IANA shall contain the prefix "I-" or "i-". Any privately used codes shall contain the prefix "X-" or "x-".

The attribute **xml:space** is used to indicate that white space (spaces, carriage returns, line feeds, tabs, etc.) shall be preserved within the rubric. The default value for this attribute is **default**, which indicates that white space may be ignored. The value **preserve** indicates that white space shall be preserved.

6.3.23.4 Optional attributes

The attribute **variants** defines the list of variants in which this **Label** is valid. When the attribute is absent the **Label** is valid in all variants.

EXAMPLE

```
<Rubric id="r1234" kind="preferred">
     <Label xml:lang="en">Cholera</Label>
</Rubric>
```

6.3.24 History

6.3.24.1 General

The element **History** shall be used to describe what happened to a **Modifier**, **ModifierClass**, **Class** or **Rubric**. It is intended only for basic history information to be exchanged with a classification. For complete history mechanisms, like an audit trail, a separate history capture mechanism is recommended. In case a classification is updated in a regular sequence and the changes to the classification done in that specific period have to be recorded and exchanged together with the classification in a ClaML file, the **History** element as described in this section can be used. It will basically specify when the change was done and who changed it and an explanation can be given in plain text.

6.3.24.2 Contents

The content of the element **History** is limited to plain text.

6.3.24.3 Required attributes

The attribute **author** references the unique identifier of the **Author**.

The attribute **date** gives the date of the change. It is recommended to use a string with the format "YYYYMMDDHHMMSS.UUUU[+|-ZZzz]" that conforms to the constrained ISO 8601 that is defined in ISO 8824:1990, (ASN.1), Clause 32 (generalized time). Digits can be omitted from the right side to express less precision.

EXAMPLE

```
<Rubric id="r123" kind="preferred">
     <Label xml:lang="en">Cholera, unspecified</Label>
     <History author="a234" date="20051115">add unspecified</History>
</Rubric>
```

6.3.24.4 Optional attributes

The element **History** has no optional attributes.

6.3.25 SuperClass

6.3.25.1 General

The element **SuperClass** defines a parent class of a **ModifierClass** or **Class**.

6.3.25.2 Contents

The element **SuperClass** has no content.

6.3.25.3 Required attribute

The attribute **code** refers to the code of the **SuperClass**.

6.3.25.4 Optional attribute

The attribute **variants** defines the list of variants in which this **SuperClass** is valid. When the attribute is absent the **SuperClass** is valid in all variants.

6.3.26 SubClass

NOTE 1 The **SubClass** element has been introduced in addition to the **SuperClass** element. This apparent redundancy is motivated by the need to represent the order of subclasses in case of multi-hierarchies. An added advantage is that the **Class** element can describe the complete definition of a **Class**, and be communicated individually.

EXAMPLE

```
<Modifier code="ST5780">
     <SubClass code="0"/>
     <SubClass code="1"/>
…
     <SubClass code="v"/>
     <SubClass code="w"/>
     <SubClass code="z"/>
     <SubClass code="x"/>
</Modifier>
```

NOTE 2 This example was taken from OPS, Version 2010. The Subclasses of this Modifier have to be ordered in a specific way, which is expressed in the order of the Subclasses. Otherwise the non-alphabetical order of the Subclasses cannot be displayed in a correct order and output mechanisms will not be able to arrange them in the order specified by the editor of the classification.

6.3.26.1 General

The element **SubClass** defines a child of a **Modifier**, **ModifierClass** or **Class**.

6.3.26.2 Contents

The element **SubClass** has no content.

6.3.26.3 Required attribute

The attribute **code** refers to the code of the **SubClass**.

6.3.26.4 Optional attribute

The attribute **variants** defines the list of variants in which this **SubClass** is valid. When the attribute is absent the **SubClass** is valid in all variants.

6.3.27 Reference

6.3.27.1 General

The element **Reference** defines a reference within a **Rubric** to another **Class** either in the ClaML file or in some external classification.

6.3.27.2 Contents

The content of the element **Reference** is limited to plain text.

6.3.27.3 Required attribute

The element **Reference** has no optional attributes.

6.3.27.4 Optional attributes

The attribute **class** is used to assign a class name to a **Reference**.

In case of an external reference the attribute authority defines the issuing **authority** of the unique identifier for the external classification, which is given in the attribute **uid**.

The attribute **code** defines the code of the referenced **Class**. In case this attribute is absent the contents of the element **Reference** define the code of the referenced **Class**.

The attribute **usage** defines a **UsageKind** that overrides the usage of the referenced class.

The attribute **variants** defines the list of variants in which this **Reference** is valid. When the attribute is absent the **Reference** is valid in all variants.

EXAMPLE

```
<Reference>A00.0</Reference>
<Reference code=”I”>A00-B99</Reference>
<Reference usage=”etiology”>A00</Reference>
<Reference authority=”HL7” uid=”2.16.840.1.113883.6.3”>A00.0</Reference>
<Reference authority=”HL7” uid=”2.16.840.1.113883.6.3” code=”I”>A00-B99</Reference>
```

6.3.28 Para

6.3.28.1 General

The element **Para** defines a paragraph within a Rubric.

NOTE The **Para** element originates from the DocBook standard. Upon revision, adherence to XHTML, using the P element, will be considered.

6.3.28.2 Contents

The element **Para** contains plain text and:

— an optional number of **Reference** elements;

— an optional number of **Term** elements.

EXAMPLE

```
<Para>some text in a paragraph</Para>
<Para>and another paragraph</Para>
```

6.3.28.3 Required attribute

The element **Para** has no required attributes.

6.3.28.4 Optional attribute

The attribute **class** is used to assign a class name to a **Para**.

6.3.29 Fragment

6.3.29.1 General

The element **Fragment** defines a fragment of text within a **Rubric**.

6.3.29.2 Contents

The element **Fragment** contains plain text and:

— an optional number of **Reference** elements;

— an optional number of **Term** elements.

6.3.29.3 Required attribute

The element **Fragment** has no required attributes.

6.3.29.4 Optional attributes

The attribute **class** is used to assign a class name to a **Fragment**.

The attribute **usage** refers to a **UsageKind** and specifies the usage of the **Fragment**.

The attribute **type** defines the type of **Fragment**. Possible values are **item** and **list**. The default value is **item**.

EXAMPLE

```
<Rubric kind=”inclusion”>
     <Label xml:lang=”en”>
        <Fragment type=”list”>tuberculosis</Fragment>
        <Fragment type=”list”>disseminated</Fragment>
     </Label>
</Rubric>
<Rubric kind=”inclusion”>
     <Label xml:lang=”en”>
        <Fragment type=”list”>tuberculosis</Fragment>
        <Fragment type=”list”>generalized</Fragment>
     </Label>
</Rubric>
```

displayed as:

Tuberculosis:

- disseminated

- generalized

```
<Rubric kind=”inclusion”>
     <Label xml:lang=”en”>
        <Fragment type=”item”>Leukorrhoea (vaginalis)</Fragment>
```

```
        <Fragment type="item">due to Trichomonas (vaginalis)</Fragment>
     </Label>
</Rubric>
<Rubric kind="inclusion">
     <Label xml:lang="en">
        <Fragment type="item" usage="etiology">Prostatitis</Fragment>
        <Fragment type="item">due to Trichomonas (vaginalis)</Fragment>
     </Label>
</Rubric>
```

displayed as:

Leukorrhoea (vaginalis) } due to Trichomonas (vaginalis)

Prostatitis† }

6.3.30 Include

6.3.30.1 General

The element **Include** references a **Rubric**, which shall be included in the current **Rubric**.

6.3.30.2 Contents

The element **Include** has no content.

6.3.30.3 Required attribute

The attribute **rubric** contains the unique identifier of the **Rubric** that shall be included.

EXAMPLE

```
<Class code="A00">
     <Rubric id="r123" kind="preferred">
        <Label xml:lang="en">Incision of ear</Label>
     </Rubric>
</Class>
<Class code="A00.0">
     <Rubric kind="preferred">
        <Label xml:lang="en">
           <Include rubric="r123"/>external ear
        </Label>
     </Rubric>
</Class>
```

displayed as:

A00 Incision of ear

A00.0 Incision of ear: external ear

6.3.30.4 Optional attribute

The attribute **class** is used to assign a class name to an **Include**.

6.3.31 IncludeDescendants

6.3.31.1 General

The element **IncludeDescendants** references a **Class** from which the code and preferred rubrics of its descendants shall be included in the **Rubric**.

6.3.31.2 Contents

The element **IncludeDescendants** has no content.

6.3.31.3 Required attribute

The attribute **code** references the code of the **Class**.

The attribute **kind** defines the class kind of the descendants that shall be included.

EXAMPLE

```
<Class code="I" kind="chapter">
     <Rubric kind="contents">
        <Label xml:lang="en">This chapter contains the following
blocks:<IncludeDescendants code="I" kind="block"/>
     </Label>
     </Rubric>
</Class>
```

6.3.31.4 Optional attribute

The element **IncludeDescendants** has no optional attributes.

6.3.32 List

6.3.32.1 General

The element **List** defines a list of **ListItem** elements.

NOTE The **List** element originates from the DocBook standard. Upon revision, adherence to XHTML, using the OL or UL element, will be considered.

6.3.32.2 Contents

The element **List** contains at least one and optionally more **ListItem** elements.

6.3.32.3 Required attribute

The element **List** has no required attributes

6.3.32.4 Optional attribute

The attribute **class** is used to assign a class name to a **List**.

6.3.33 ListItem

6.3.33.1 General

The element **ListItem** contains a piece of text that shall be formatted as an item in a list.

NOTE The **ListItem** element originates from the DocBook standard. Upon revision, adherence to XHTML, using the LI element, will be considered.

6.3.33.2 Contents

The element **ListItem** contains plain text, and:

— an optional number of **Reference** elements;

— an optional number of **Term** elements;

— an optional number of **Para** elements;

— an optional number of **Include** elements;

— an optional number of **List** elements;

— an optional number of **Table** elements.

6.3.33.3 Required attribute

The element **ListItem** has no required attributes.

6.3.33.4 Optional attribute

The attribute **class** is used to assign a class name to a **ListItem**.

EXAMPLE

```
<Class code="II" kind="chapter">
  <Rubric kind="instruction">
    <Label xml:lang="en">
      <List class="decimal">
         <ListItem>
            <Para>Primary, ill-defined, secondary and unspecified sites of malignant neo-
plasms
            </Para>
            <Para>Categories C76-C80 include malignant neoplasms for which there is no
clear indication of the original site of the cancer or the cancer is stated to be "dis-
seminated", "scattered" or "spread" without mention of the primary site. In both cases the
primary site is considered to be unknown.
            </Para>
          </ListItem>
          <ListItem>
             <Para>Functional activity</Para>
           </ListItem>
         </List>
       </Label>
     </Rubric>
   </Class>
```

6.3.34 Table

6.3.34.1 General

The element **Table** defines a table.

6.3.34.2 Contents

The element **Table** contains the following:

— one optional element **Caption**;

— one optional element **THead**;

— one optional element **TBody**;

— one optional element **TFoot**.

6.3.34.3 Required attribute

The element **Table** has no required attributes.

6.3.34.4 Optional attribute

The attribute **class** is used to assign a class name to a **Table**.

6.3.35 Caption

6.3.35.1 General

The element **Caption** defines the caption of a **Table**.

6.3.35.2 Contents

The element **Content** contains plain text, possibly mixed with the elements:

— Reference;

— Term.

6.3.35.3 Required attribute

The element **Caption** has no required attributes.

6.3.35.4 Optional attribute

The attribute **class** is used to assign a class name to a **Caption**.

6.3.36 THead

6.3.36.1 General

The element **THead** defines the headings of a **Table**.

6.3.36.2 Contents

The element **THead** contains one or more occurrences of the element **Row**.

6.3.36.3 Required attribute

The element **THead** has no required attributes.

6.3.36.4 Optional attribute

The attribute **class** is used to assign a class name to a **THead**.

6.3.37 TBody

6.3.37.1 General

The element **TBody** defines the body of a **Table**.

6.3.37.2 Contents

The element **TBody** contains one or more occurrences of the element **Row**.

6.3.37.3 Required attribute

The element **TBody** has no required attributes.

6.3.37.4 Optional attribute

The attribute **class** is used to assign a class name to a **TBody**.

6.3.38 TFoot

6.3.38.1 General

The element **TFoot** defines the footer of a **Table**.

6.3.38.2 Contents

The element **TFoot** contains one or more occurrences of the element **Row**.

6.3.38.3 Required attribute

The element **TFoot** has no required attributes.

6.3.38.4 Optional attribute

The attribute **class** is used to assign a class name to a **TFoot**.

6.3.39 Row

6.3.39.1 General

The element **Row** defines a row within a **Table**.

NOTE The **ROW** element originates from the DocBook standard. Upon revision, adherence to XHTML, using the TR element, will be considered.

6.3.39.2 Contents

The element **Row** contains an optional number of the element **Cell**.

6.3.39.3 Required attribute

The element **Row** has no required attributes.

6.3.39.4 Optional attribute

The attribute **class** is used to assign a class name to a **Row**.

6.3.40 Cell

6.3.40.1 General

The element **Cell** defines a cell within a **Row** of a **Table**.

NOTE The **CELL** element originates from the DocBook standard. Upon revision, adherence to XHTML, using the TD element, will be considered.

6.3.40.2 Contents

The element **Cell** contains plain text, possibly mixed with the elements:

— **Reference;**

— **Term;**

— **Para;**

— **Include;**

— **List;**

— **Table.**

6.3.40.3 Required attribute

The element **Cell** has no required attributes.

6.3.40.4 Optional attributes

The attribute **class** is used to assign a class name to a **Cell**.

The attribute **rowspan** defines the number of Rows that are spanned by a **Cell**.

The attribute **colspan** defines the number of columns that are spanned by a **Cell**.

EXAMPLE

Table 1 from ICD-10 at codes H54 …

Table 1 — Classification of severity of visual impairment

Category of visual impairment	Visual acuity with best possible correction	
	Maximum less than:	Minimum equal to or better than:
1	6/18	6/60
	3/10 (0,3)	1/10 (0,1)
	20/70	20/200
2	6/60	3/60
	1/10 (0,1)	1/20 (0,05)
	20/200	20/400
3	3/60	1/60 (finger counting at 1 metre)
	1/20 (0,05)	1/50 (0,02)
	20/400	5/300 (20/1200)
4	1/60 (finger counting at 1 metre)	Light perception
	1/50 (0,02)	
	5/300	
5	No light perception	
9	Undetermined or unspecified	
WHO Technical Report Series No. 518, 1973		

… would be represented in this International Standard as:

```
<Table>
     <Caption> Classification of severity of visual impairment</Caption>
     <THead>
     <Row>
          <Cell rowspan=”2”> Category of visual impairment </Cell>
          <Cell colspan=”2”> Visual acuity with best possible correction</Cell>
     </Row>
     <Row>
          <Cell> Maximum less than:</Cell>
          <Cell> Minimum equal to or better than:</Cell>
     </Row>
     </THead>
<TBody>
     <Row>
          <Cell rowspan=”3”>1</Cell>
          <Cell>6/18</Cell>
          <Cell>6/60</Cell>
     </Row>
     <Row>
          <Cell>3/10 (0,3)</Cell>
          <Cell>1/10 (0,1)</Cell>
     </Row>
     <Row>
          <Cell>20/70</Cell>
          <Cell>20/200</Cell>
     </Row>
     <Row>
          <Cell rowspan=”3”>2</Cell>
          <Cell>6/60</Cell>
          <Cell>3/60</Cell>
     </Row>
     <Row>
          <Cell>1/10 (0,1)</Cell>
```

```
            <Cell>1/20 (0,05)</Cell>
        </Row>
        <Row>
            <Cell>20/200</Cell>
            <Cell>20/400</Cell>
        </Row>
        <Row>
            <Cell rowspan="3">3</Cell>
            <Cell>3/60</Cell>
            <Cell>1/60 (finger counting at 1metre)</Cell>
        </Row>
        <Row>
            <Cell>1/20 (0,05)</Cell>
            <Cell>1/50 (0,02)</Cell>
        </Row>
        <Row>
            <Cell>20/400</Cell>
            <Cell>5/300 (20/1200)</Cell>
        </Row>
        <Row>
            <Cell rowspan="3">4</Cell>
            <Cell>1/60 (finger counting at 1metre)</Cell>
            <Cell rowspan="3"> Light perception </Cell>
        </Row>
        <Row>
            <Cell>1/50 (0,02)</Cell>
        </Row>
        <Row>
            <Cell>5/300</Cell>
        </Row>
        <Row>
            <Cell>5</Cell>
            <Cell colspan="2"> No light perception </Cell>
        </Row>
        <Row>
            <Cell>9</Cell>
            <Cell colspan="2"> Undetermined or unspecified </Cell>
        </Row>
</TBody>
<TFoot>
        <Row>
            <Cell colspan="3">WHO Technical Report Series No. 518, 1973</Cell>
        </Row>
</TFoot>
</Table>
```

6.3.41 Term

6.3.41.1 General

The element **Term** contains a piece of text that has a special meaning.

6.3.41.2 Contents

The content of the element **Term** is limited to plain text.

6.3.41.3 Required attribute

The element **Term** has no required attributes.

6.3.41.4 Optional attribute

The attribute **class** is used to assign a class name to a **Term**.

EXAMPLE

```
<Class code="B81">
     ...
          <Rubric kind="exclusion">
               <Label xml:lang="en">Angiostrongyliasis due to
                    <Term class="organism">Parastrongylus cantonensis</Term>
                    <Reference class="bracket">B83.2</Reference>
               </Label>
          </Rubric>
</Class>
```

Annex A
(informative)

Examples of usage of this International Standard

A.1 Representing the dagger and asterisk system of ICD

A feature of the ICD-9 and ICD-10 is the dagger (etiology) and asterisk (manifestation) system, which is used as an alternative method to classify diagnostic statements including a general disease and a manifestation in a particular organ or site. This can be represented in ClaML by defining a **UsageKind** for asterisk codes and one for dagger codes.

```
<UsageKinds>
     <UsageKind name="etiology" mark="†"/>
     <UsageKind name="manifestation" mark="*"/>
</UsageKinds>
...
<Class code="A17.0" kind="digit4" usage="etiology">
     <SuperClass code="A17"/>
     <Rubric kind="preferred">
          <Label xml:lang="en">
               Tuberculous meningitis <Reference>G01</Reference>
          </Label>
     </Rubric>
</Class>
...
<Class code="G01" kind="digit3" usage="manifestation">
     <SuperClass code="G00-G09"/>
     <Rubric kind="preferred">
          <Label xml:lang="en">
               Meningitis in bacterial diseases classified elsewhere
          </Label>
     </Rubric>
</Class>
```

Theoretically any code in ICD-10 (except for asterisk codes) can be referenced as a dagger code. For example at G01 the code A22.8 is referenced as a dagger code, although A22.8 itself is not marked as a dagger code. In such a case the **UsageKind** of the referenced code can be overruled with the attribute **usage** at the element **Reference**.

NOTE 1 For reasons of readability the example below is only a partial representation of class A22.8 . Parts left out at "..."

```
<Class code="A22.8" kind="digit4">
     <SuperClass code="A22"/>
     <Rubric kind="preferred">
          <Label xml:lang="en">Other forms of anthrax</Label>
     </Rubric>
     ...
</Class>
...
<Class code="G01" kind="digit3">
     <SuperClass code="G00-G09"/>
     ...
     <Rubric kind="inclusion">
          <Label xml:lang="en">
               Meningitis in anthrax <Reference usage="etiology">A22.8</Reference>
          </Label>
     </Rubric>
</Class>
```

In ICD-10 a dagger can also be added to a piece of text, as for example at A59.0 where a dagger is added to the text fragment Prostatitis. The attribute **usage** of the element **Fragment** is used in such a case.

NOTE 2 For reasons of simplicity, in the following example we left out the tags <Term class="organism">Trichomonas</Term>. In WHO that tag can be used to render all organisms in *italics.,* as is customary in WHO:

```
<Class code="A59.0" kind="digit4">
     <Rubric kind="inclusion">
          <Label xml:lang="en">
               <Fragment type="item">Leukorrhoea (vaginalis)</Fragment>
               <Fragment type="item">due to Trichomonas (vaginalis)</Fragment>
          </Label>
     </Rubric>
     <Rubric kind="inclusion">
          <Label xml:lang="en">
               <Fragment type="item" usage="etiology">Prostatitis(<Reference
usage="manifestation">N51.0</Reference>)</Fragment>
               <Fragment type="item">due to Trichomonas (vaginalis)</Fragment>
          </Label>
     </Rubric>
</Class>
```

A.2 References to different languages

The next piece of ClaML demonstrates how the same rubric in different languages would be represented.

```
<ClaML version="2.0.0">
  <Title name="ICD" version="10.0.0" date="20001201">
         International Classification of Diseases, 10th revision
  </Title>
  <ClassKinds>
     <ClassKind name="chapter">
       <Display xml:lang="en">Chapter</Display>
     </ClassKind>
   </ClassKinds>
   <Class code="A00-B99" kind="chapter">
     <Rubric id="r1234567890" kind="preferred">
       <Label xml:lang="en">
         Certain infectious and parasitic diseases
       </Label>
       <Label xml:lang="nl">
        Bepaalde infectieziekten en parasitaire aandoeningen
      </Label>
      <Label xml:lang="de">
        Bestimmte infektiöse und parasitäre Krankheiten
      </Label>
    </Rubric>
  </Class>
</ClaML>
```

A.3 Text containing repetition and layout

In books a particular kind of layout (see below) is often used to prevent repetition of the same texts in consecutive lines. This type of layout can be represented in ClaML using the element **Fragment**. At the same time, each Rubric contains the complete meaningful text.

A16.0 Tuberculosis of lung, bacteriologically and histologically negative

Tuberculous:

· bronchiectasis }
· fibrosis of lung }
· pneumonia } bacteriologically and histologically negative
· pneumothorax }

```
<Class code="A16.0" kind="category">
     <SuperClass code="A15-A19"/>
     <Rubric kind="preferred">
          <Label xml:lang="en">
               Tuberculosis of lung, bacteriologically and histologically negative
          </Label>
     </Rubric>
     <Rubric kind="text">
          <Label xml:lang="en">
               <Fragment type="list">
                    Tuberculous
               </Fragment>
               <Fragment type="list">
                    bronchiectasis
               </Fragment>
               <Fragment type="item">
                    bacteriologically and histologically negative
               </Fragment>
          </Label>
     </Rubric>
     <Rubric kind="text">
          <Label xml:lang="en">
               <Fragment type="list">
                    Tuberculous
               </Fragment>
               <Fragment type="list">
                    fibrosis of lung
               </Fragment>
               <Fragment type="item">
                    bacteriologically and histologically negative
               </Fragment>
          </Label>
     </Rubric>
     <Rubric kind="text">
          <Label xml:lang="en">
               <Fragment type="list">
                    Tuberculous
               </Fragment>
               <Fragment type="list">
                    pneumonia
               </Fragment>
               <Fragment type="item">
                    bacteriologically and histologically negative
               </Fragment>
          </Label>
     </Rubric>
     <Rubric kind="text">
          <Label xml:lang="en">
               <Fragment type="list">
                    Tuberculous
               </Fragment>
               <Fragment type="list">
```

```
                    pneumothorax
               </Fragment>
               <Fragment type=”item”>
                    bacteriologically and histologically negative
               </Fragment>
          </Label>
     </Rubric>
</Class>
```

Annex B
(informative)

Suggested usage of ClaML attributes

B.1 General

In principle there is no need to standardize on attribute values in this International Standard. Because all entities are unequivocally identified, bulk changes are a trivial though sometimes time-consuming task. This list is provided for trial purposes. It might help in more easy interchange within certain communities.

B.2 Class kind attributes

Table B.1 — Class kind attributes

Value	Usage
chapter	A chapter is a self-contained block of sections dealing with a specific content (e.g. in ICD-10 chapter 1 represents infectious diseases, in OPS chapter 8 represents non-surgical-therapeutic procedures).
block	A block is a self-contained block of codes dealing with a specific sub-content of a chapter (e.g. in ICD-10 section A00-A09 represents intestinal infectious diseases – a specific group of infectious diseases).
category	A category is an entity that describes a specific concept (e.g. in ICD-10 A00 represents Cholera – a specific infectious disease).

B.3 Usage kind attributes

The basic cause or underlying disease process is assigned a code marked with a dagger (†), and its clinical manifestation another, marked with an asterisk (*), with the two used jointly. An example of this is the coding of tuberculosis of the spinal column, which is coded as A18.0† (Chapter I – Certain infectious and parasitic diseases) as the basic cause and as M49.0* (Chapter XIII – Diseases of the musculoskeletal system and connective tissue) as its clinical manifestation.

Table B.2 — Usage kind attributes

Value	Usage
etiology	The basic cause or underlying disease process is assigned a code marked with a dagger (†).
manifestation	The clinical manifestation is marked with an asterisk (*).

B.4 Rubric kind attributes

Table B.3 — Rubric kind attributes

Value	Usage
preferred	The attribute kind="preferred" defines a specific unique term that identifies the meaning of a class.
inclusion	The attribute kind="inclusion" shall be used for additional terms that can be used within a class.
exclusion	The attribute kind="exclusion" shall be used for terms that are excluded from a class.
coding-hint	Coding instructions
definition	Otherwise unspecified texts added to rubrics. Should be used for a descriptive phrase for a given concept in a healthcare classification system.
note	General remark
text	e.g. a text for a Modifier
title	A title for a text rubric
introduction	A long text at the beginning of a chapter.
footnote	As in the printed versions of ICD.

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ICS 35.240.80

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