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Dentistry — Required elements for codification used in data exchange

Art dentaire — Éléments requis pour la codification utilisée dans l'échange de données

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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 16059 was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 3, *Terminology*.

Introduction

One of the purposes of codification is to facilitate information exchange regardless of language. Therefore, it is necessary to have precise and universal standard terminology that uses a coding system for already accepted standardized definitions; this terminology must be comprehensible and applicable in all languages worldwide.

Communication can be enhanced by the use of standardized abbreviations or codes, allowing the interpretation and transmission of a message. (According to Webster's dictionary, "a code is a system of symbols (as letters, numbers or words) used to represent assigned meaning".)

These codes can take different forms such as digital codes, alphanumeric codes. However, as Arabic numerals are used worldwide, digital terminology minimizes the unwanted effects of linguistic barriers and facilitates direct communication, thus avoiding the need for, and risks of, translation.

Moreover, existing documents, dealing with codification, require harmonization in accordance with a normative reference document and in turn they should serve as a model for the elaboration of future codification documents.

Dentistry — Required elements for codification used in data exchange

1 Scope

This International Standard defines the elements of syntax, including the structure and associated content, for the purpose of coded data exchange and the need for harmonizing existing and future dentistry codification documents.

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 1942, *Dentistry —Vocabulary* [1)]

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

ISO 3950 [2)], *Dentistry — Designation system for teeth and areas of the oral cavity*

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

ISO 80000-3 [3)], *Quantities and units — Part 3: Space and time*

3 Terms and definitions

For the purposes of this document, the terms and definitions concerning units of time (day, hour, minute, month, second, year) and calendars (date, day, month, year) given in ISO 80000-3 and ISO 8601 apply.

Elsewhere, the terms and definitions given in ISO 1942 and the following apply.

3.1
basic format
format of a representation comprising the minimum number of components necessary for the precision required

1) To be published. (Revision of ISO 1942, Parts 1 to 5, published in 1989)

2) To be published. (Revision of ISO 3950:1984)

3) Revises ISO 31-1:1992 and ISO 31-2:1992.

3.2
Gregorian calendar
calendar defining the year of 365 days, or 366 days for a leap-year (every fourth year), divided into 12 sequential months

3.3
OSI index
Oral Status and Intervention classification

3.4
syntax
connected and orderly system of elements for codification purposes

4 Syntax

4.1 Introduction

The essential information for data exchange and the syntax necessary for the codification of normative documents shall contain the following elements to which codification shall apply.

4.2 General information

4.2.1 Person identification

Persons shall be identified as one of the following:

a) patient;

b) receptionist;

c) oral care provider;

d) other health provider;

e) dental technician.

4.2.2 Activity identification

Activities shall be identified as one of the following:

a) oral health care;

b) other health care;

c) dental laboratory process;

d) dental product manufacturing.

4.2.3 Premises identification

Premises shall be identified as one of the following:

a) dental office or dental surgery;

b) other health professional premises;

c) laboratory;

d) manufacturing company.

4.2.4 Country identification

The country shall be identified in accordance with ISO 3166-1.

4.2.5 Date and time

4.2.5.1 General

The representation of date and time of the day is specified in ISO 8601.

4.2.5.2 Date

ISO 8601 uses the Gregorian calendar for the identification of calendar days.

The date shall be represented in accordance with ISO 8601 and expressed in the basic format as YYYY MM DD as shown in the example below:

— four digits YYYY represent the year;

— two digits MM represent the month;

— two digits DD represent the day.

EXAMPLE For the year 2005, month of November, day 17, the basic format is 2005-11-17.

4.2.5.3 Time of day

The local time of day shall be represented in accordance with ISO 8601 and expressed in the basic format as two digits hh representing the hour, two digits mm representing the minutes, two digits ss representing the seconds.

EXAMPLE For the time 23 hours, 20 minutes, 50 seconds, the basic format is 23:20:50.

4.2.6 Identification of the oral status and the need of corresponding treatment

The Oral Status and Intervention index (OSI index) is used as a classification index for the oral status and the relating interventions [4)].

This index classifies the oral status and the corresponding interventions, on a logical ten-point scale from 0 to 9; it is a decimal digital code.

In this index, 0 represents oral health or the absence of need for care, whilst digits 1 to 9 represent worse oral health status and increasingly complicated, invasive and costly care interventions.

The digits of this index are the first numeric terms which allow the classifying of the oral status and the corresponding interventions and the linking of health records with the aim of a good state of health.

4) In 1983 the WHO, FDI and ISO adopted a system that would serve as a basis for the digital coding of oral health and care: the Oral Status and Intervention index (OSI index).

The OSI index is used not only for classifying health status and intervention procedures but also to enter information, in a numeric form, into charts and records. It is an indicator of the individual and collective health status and of the types of intervention.

The OSI index is a system, from which several syntaxes can be developed. It is used as the base, as the principle of elaboration for the decimal digitalization of dental codes developed by ISO and others. Moreover, the OSI index can serve as a "hub" which can be translated into world-wide existing codes and nomenclatures.

The codes used are readily recognised because they have a standard structure. They are not memorised but logically deduced.

4.3 Clinical information

4.3.1 Anatomical identification

a) Tooth/teeth

1) designation of tooth/teeth: in accordance with ISO 3950;

2) designation of supernumerary tooth/teeth;

3) designation of missing tooth/teeth;

4) designation of replaced tooth/teeth;

5) designation of tooth surfaces;

i) coronal:

I) occlusal;

II) mesial;

III) distal;

IV) vestibular;

V) lingual;

VI) palatinal/palatal for the upper area;

ii) radicular:

I) mesial;

II) distal;

III) vestibular;

IV) lingual;

V) apical;

6) designation of tooth surface site:

— 1 surface;

— 2 surfaces;

— 3 surfaces;

— 4 surfaces;

— 5 surfaces;

— all surfaces + root retention;

7) designation of tooth sector:

i) root:

I) 1/3 superior;

II) 1/3 middle;

III) 1/3 apical;

b) oral cavity:

1) designation of areas of the oral cavity:

— the whole of the oral cavity;

— the maxillary area;

— the mandibular area;

— the upper right quadrant;

— the upper left quadrant;

— the lower left quadrant;

— the lower right quadrant;

— the upper right sextant;

— the upper anterior sextant;

— the upper left sextant;

— the lower left sextant;

— the lower anterior sextant;

— the lower right sextant;

— an area specified in an annexed document (or further explanation available);

NOTE A sextant, in this context, means a one sixth part of the dental arches. A quadrant, in this context, means a one fourth part of the dental arches.

2) tongue;

3) lips (mucosal side);

4) internal parts of the mouth (including palate);

c) temporomandibular joint (tmj).

4.3.2 Histological identification

a) Tooth and tooth supporting-structures:

   1) tooth:

      — enamel;

      — cementum;

      — dentine;

      — pulp;

   2) periodontal ligament;

   3) alveolar bone:

      — cancellous bone;

      — cortical bone;

   4) gingiva:

      — alveolar mucosa;

      — free gingiva;

      — attached gingiva;

b) oral cavity:

   1) jugal mucosa;

   2) palatal mucosa;

   3) sublingual mucosa;

   4) lingual mucosa.

4.3.3 General (medical) status identification

This provides information on the patient's status and the relevance of that status to the treatment plan.

Refer to WHO international classification of diseases [6] [7].

4.3.4 Oral status identification

a) Mucosa;

b) gingiva;

c) surfaces of tooth/teeth;

d) position of tooth/teeth;

e) periodontium;

f) enamel;

g) dentine;

h) cementum.

4.3.5 Healthcare identification

The past, present and future healthcare shall be identified as follows:

a) examination and recording of oral conditions:

   1) general preliminary examination;

   2) microbiological sampling;

   3) imaging;

   4) biopsy;

   5) cytological sampling;

b) instruction/exercise/monitor for self-care:

   1) examination/plan/explanation/prescription;

   2) general, oral health, diet;

   3) mucosal;

   4) gingival;

   5) enamel;

   6) oral hygiene;

   7) pain relief/desensitization;

c) professional surface care:

   1) examination/plan/explanation/prescription;

   2) bleaching;

   3) topical fluoride (fluoridation);

   4) stain removal;

   5) supragingival scaling;

   6) subgingival scaling;

   7) surface polishing;

   8) caries preventive application;

   9) pits and fissures sealing;

d) orthodontics:

1) examination/plan/explanation/prescription;
2) monitor development;
3) retainer – removable;
4) retainer – fixed;
5) positioner – removable;
6) positioner – fixed;

e) periodontics:

1) examination/plan/explanation/prescription;
2) protection splint;
3) recontour;
4) root cleaning;
5) curetage;
6) applied medication;
7) retention splint;

f) single tooth restoration:

1) examination/plan/explanation/prescription;
2) direct restoration – metallic;
3) direct restoration – non-metallic;
4) direct restoration – metallic, delayed;
5) direct restoration – non-metallic, delayed;
6) direct restoration, extended/repaired;
7) laboratory preform;
8) factory preform;

g) endodontics:

1) examination/plan/explanation/prescription;
2) temporary dressing;
3) lining;
4) capping – indirect;
5) capping – direct;

6) pulp chamber;

7) root canal(s) treatment;

8) root canal retreatment;

h) oro-dental surgery:

1) examination/plan/explanation/prescription;

2) extraction, tooth;

3) access to other procedure;

4) trauma or fracture reduction;

5) lesion, foreign body, etc.;

6) tumour;

7) cosmetic/function restoration/maintenance;

8) pain control procedure;

9) dental implant;

i) fixed prosthesis:

1) examination/plan/explanation/prescription;

2) enamel bonded;

3) crown tooth cemented;

4) crown + implant cemented;

5) bone implanted abutment only;

j) removable prosthesis:

1) examination/plan/explanation/prescription;

2) partial denture, tooth or implant borne;

3) partial denture, tooth or implant and mucosa-borne;

4) full denture, roots-/mucosa-borne;

5) full denture, implants attached;

6) full denture, mucosa-borne.

4.4 Products and processes

4.4.1 Materials identification

The material or the materials and their combining/mixing order shall be identified.

4.4.2 Identification of stages corresponding to semi-finished/intermediate products

a) Laboratory stages:

   1) any laboratory stage;
   2) working or study model;
   3) pattern for occlusion registration;
   4) assembly preforms – teeth;
   5) assembly preforms – wire/metal;
   6) pattern investment;
   7) final form;

b) appointment stages:

   1) any one-appointment stage;
   2) preparation;
   3) preparation and/or impression;
   4) preparation, impression and/or registration of occlusion and appearance;
   5) insertion;
   6) final seal or attachment;
   7) contour check/recontour;
   8) repair;
   9) rebase or relining;
   10) removal;

c) temporarisation step.

4.4.3 Identification of medical devices

a) Identification of the custom-made medical device;

b) description and site of the medical device;

c) identification and origin of the device constituent materials.

4.4.4 Identification of dental products

a) Codification of the dental product:

   1) any dental product;
   2) dental equipment;
   3) dental instruments;