TECHNICAL SPECIFICATION

ISO/TS 22558

First edition
2019-07

Health informatics — Classification of traditional Chinese medicine data sets

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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.

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).

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

For an explanation of 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 www.iso.org/iso/foreword.html.

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

With the application of information technology to traditional Chinese medicine, the collections of data produced in TCM clinical practice, scientific research, administrative management and other activities involved in TCM are increasingly rich. The data come from various organizations including hospitals, institutions, universities, enterprises and governments, etc. The data range from ancient times to the present. Classification should be established to give better management of these data sets, including the processing, integration, indexing and storage of data resources. Classification of traditional Chinese medicine data sets is a prerequisite and is vitally important in data retrieval, sharing and exchange. Making use of this classification and coding rules, traditional Chinese medicine data sets with the same features can be classified together, while those without any similarity can be kept separate. Thus, the data sets of traditional Chinese medicine can be managed effectively and accessed according to various retrieval approaches, which is beneficial for highly efficient query services. The order of all the classifications and codes in this standard only label their position in the classification system, and is not related to the importance.

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Health informatics — Classification of traditional Chinese medicine data sets

1 Scope

This document defines the classification rules and coding scheme for traditional Chinese medicine (TCM) data sets. It is applicable for investigation and management of TCM data resources as well as the description, integration, publication, index and retrieval of the TCM data sets.

This document excludes the Kampo medicine .

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/IEC 11179-2:2005, *Information technology — Metadata registries (MDR) — Part 2: Classification*

ISO/IEC 20944-1:2013, *Information technology — Metadata Registries Interoperability and Bindings (MDR-IB) — Part 1: Framework, common vocabulary, and common provisions for conformance*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 11179-2, ISO/IEC 20944-1 and the following apply.

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

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

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

3.1
data set
identifiable collection of data

[SOURCE: ISO 19115-1:2014, 4.3]

3.2
traditional Chinese medicine
traditional medicine that originated in China, and is characterized by holism and treatment based on pattern identification/syndrome differentiation

[SOURCE: ISO/TS 17938:2014, 2.1]

3.3
classification
exhaustive set of mutually exclusive categories to aggregate data at a pre-prescribed level of specialization for a specific purpose

[SOURCE: ISO 17115:2007, 2.7.1]

3.4
hierarchical classification
classification of objects using hierarchical taxonomy. Hierarchical classification systems are developed classes that are subdivided from the most general subject to the most specific

[SOURCE: Reitz, Joan M. (2004). *Dictionary for library and information science.* Westport, CT: Libraries Unlimited]

3.5
faceted classification
system that allows the assignment of multiple classifications to an object, enabling the classifications to be ordered in multiple ways, rather than in a single, pre-determined, taxonomic order

Note 1 to entry: Faceted classification may actually employ hierarchy in one or more of its facets. Faceted classification systems allow the assignment of multiple classifications to an object, and enable those classifications to be applied by searchers in multiple ways, rather than in a single, predetermined order.

[SOURCE: Lambert M. Surhone, et al.(2010). *Faceted Classification*, Betascript Publishing, ISBN:978-613 -1-40654-6, modified]

3.6
facet
grouping of concepts of the same inherent category

Note 1 to entry: A facet comprises "clearly defined, mutually exclusive, and collectively exhaustive aspects, properties or characteristics of a class or specific subject".

[SOURCE: ISO 25964-1:2011, 2.20, modified]

3.7
classification scheme
descriptive information for an arrangement or division of objects into groups based on characteristics which the objects have in common

[SOURCE: ISO/IEC 11179-2:2005, 3.2]

3.8
coded set
set of elements that is mapped onto another set according to a code

[SOURCE: ISO/IEC 20944-1:2013, 3.7.2.2]

3.9
code set
code element set
result of applying a code to all elements of a coded set

[SOURCE: ISO/IEC 20944-1:2013, 3.7.2.4]

3.10
code value
result of applying a code to an element of a coded set

[SOURCE: ISO/IEC 20944-1:2013, 3.7.2.3]

3.11
coding scheme
collection of rules that maps the elements of coded set onto the elements of code set

[SOURCE: ISO/IEC 20944-1:2013, 3.7.2.1, modified]

4 Classification scheme and coding scheme

4.1 Classifying and coding Principle

4.1.1 Scientificity

TCM data sets include the collection of various data recorded in TCM activities such as clinical practice, scientific experiments, literature resources digitalization and statistic data report, etc. The most stable and essential properties or characteristics of TCM data sets should be identified as the basis of classification.

4.1.2 Systematicness

The attributes or characteristics of TCM data sets are systematically arranged according to internal relations to ensure reasonable categories, clear hierarchy and reduced redundancy. Classification should put the partial problems into the system as a whole from the point of view of system engineering to achieve system optimization.

4.1.3 Scalability

The categories are set up to ensure that the established classification system will not be disturbed when a new code element and code value was added. The classification codes allow sufficient space for expansion for the subordinate information management system which is built based on this classification system.

4.1.4 Practicability

The classification and codes should satisfy the requirement of simple, clear and ease of use, and conform to the common sense of the users.

4.2 Classification scheme

Hierarchical classification and faceted classification were combined together in this standard in order to fully reveal the feature of TCM data sets. A TCM data set can be classified into different kinds of types by data creator type, data source type and subject type, and each kind of type which is a 'facet' can be combined together to a new complex classification by the sequence of data creator type, data source type and subject type. For data source type and subject type themselves, they use hierarchical classification respectively.

4.3 Coding scheme

The classification code structure consists of four parts:

— Traditional Chinese medicine (TCM) label,

— creator type code,

— data source type code,

— subject type code.

Period "." is used as separator between each part (Figure 1). Code value is Arabic numerals with fixed digits which is half-width character except for TCM label.
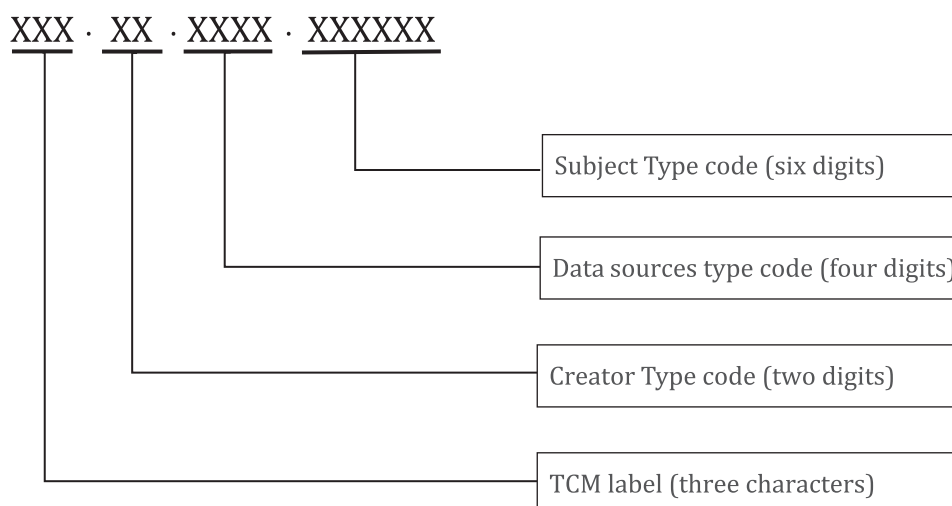
Figure 1 — The classification code structure

5 Classification and code list

5.1 TCM label

In order to identify data sets of traditional Chinese medicine, three characters, namely 'TCM', are used to represent all the data sets generated by the activities in the business domain of traditional Chinese medicine.

5.2 Creator type

The *creator type* relates to the type of an entity primarily responsible for making the content of the data set. According to the business domain of the traditional Chinese medicine, 10 types are specified with two-digit codes, including universities and educational agency, academic Institutions, hospital and medical centre, commercial company and manufacturer, government, international organization, professional association/society, publishers, individual and others (Table 1).

Table 1 — Code list for creator type

Codes	Creator type
01	Universities and Educational agency
02	Academic Institutions
03	Hospital and Medical centre
04	Commercial company and Manufacturer
05	Government
06	International organization
07	Professional Association/Society
08	Publishers
09	Individual
99	Others

5.3 Data source type

Data source type represents the type of the original source which the data were derived from. *Data source type* can be divided into two category hierarchies (top level categories, sub-categories if desired). The top level categories are specified in this document, but the sub-categories are not specified so that