TECHNICAL SPECIFICATION

ISO/TS 22558

First edition
2019-07

Health informatics — Classification of traditional Chinese medicine data sets

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ISO/TS 22558:2019
https://standards.iteh.ai/catalog/standards/sist/34e5df10-314f-4fa5-b6c5-4d74bd97e70e/iso-ts-22558-2019

Reference number
ISO/TS 22558:2019(E)

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Published in Switzerland

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Foreword

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

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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*

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3 Terms and definitions

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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]

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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]

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

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[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]

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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.

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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.

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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.

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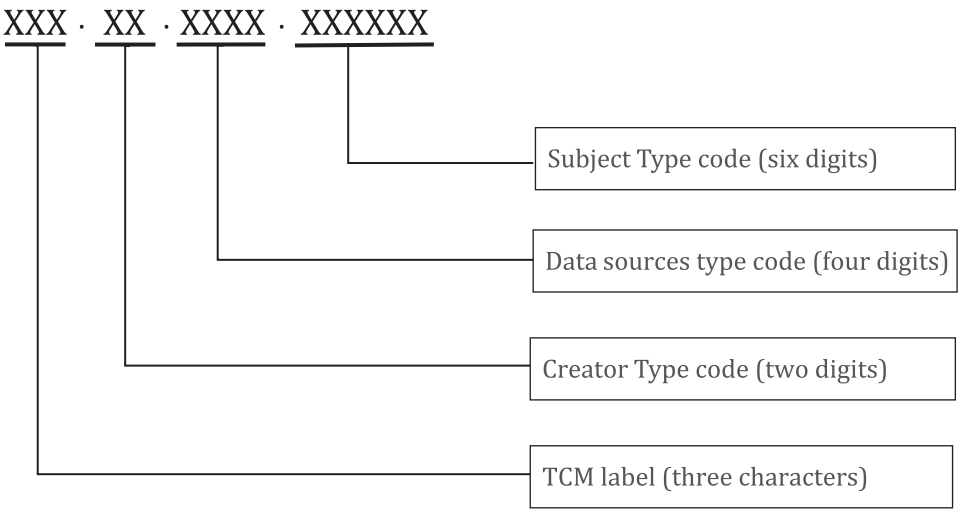

Figure 1 — The classification code structure

5 Classification and code list

5.1 TCM label

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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.

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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

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users can decide to further divide or not when using the standard. The four-digit Arabic numerals “0100” to “9900” are applied to code the type. The first two digits are used to designate the top level category and sequenced from “01” to”99”. “99” is used to designate “other source” since there might be some new sources added on the list in the future. The last two digits are assigned to be flexible and allow for future extension and occupied by “00” in this document(Table 2).

Table 2 — Codes of data sources type

Code	Data source type	Scope
0100	Historical materials	Information recorded in the ancient literature, especially the ancient books which were made prior to the use of modern printing technology.
0200	Academic publication	Information recorded both in printed works such as books and Journals, and also electronic resources such as the electronic versions of books and periodicals. The sub types of publications include technical standard, technical report, Patent, academic paper, thesis, dissertation, dictionary, etc.
0300	Primary records	Original source or evidence which is an artefact, a document, manuscript, a recording, or any other source of information that was created at the time under study. It serves as an original source of information about the topic, including medical records, health records, and experimental records, etc.
9900	Other source	Other sources not included in the above.

5.4 Subject type

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The subject type of data sets can be divided into three category hierarchies (of top level categories, sub-categories and sub-sub-categories if desired).The six-digit Arabic numerals “010000” to “990000” are applied to code the type. The first two digits are used to designate the top level category and sequenced from “01” to”99”. “99” is used to designate “other subject types” since there might be some new subjects added on the list in the future. Each top level category has sub-categories which were designated by the middle two digits. The last two digits are assigned to be flexible and allow for future extension when users need to further divide the subject and occupied by “00” in this document (Table 3).

Table 3 — Codes of subject type

Code	Subject type	Description
010000	**Management of TCM**	**The data sets are generated by the activity of traditional Chinese medicine administrative management, medical management, health care management, scientific research management, education management, industrial management, cultural management, international development and other activities.**
010100	TCM administrative management	This subject involves human, financial, material and other management elements, including the data generated by human resource management, financial management, material management, office affair management and other activities.
010200	Medical management	The subject involves the management of medical process, patient information, medical examination, medical technology, medical equipment and medical quality of TCM medical institutions, including the management of patients' in-and-out transfer, medical quality and safety, medical technology management, medical record management and pharmaceutical management activities.

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