INTERNATIONAL STANDARD

ISO 18104

Third edition
2023-12

Health informatics — Categorial structures for representation of nursing practice in terminological systems

Informatique de santé — Structures catégorielles destinées à la représentation des pratiques de soins infirmiers dans les systèmes terminologiques

Reference number
ISO 18104:2023(E)

© ISO 2023



COPYRIGHT PROTECTED DOCUMENT

© ISO 2023

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

© ISO 2023 – All rights reserved

Contents

Page

Foreword ... **iv**
Introduction ... **vi**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
3.1 General terms ... 2
3.2 Categories of healthcare entities for nursing diagnoses ... 4
3.3 Sub-categories of healthcare entities applicable to a clinical assessment including nursing diagnoses ... 5
3.4 Categories of healthcare entities for NursingActions not previously specified ... 6
3.5 Sub-categories of healthcare entities for Nursing Actions and its sub-categories not previously specified. ... 7
3.6 Categories of healthcare entities for Nurse Sensitive Outcomes ... 8
3.7 Sub-categories of healthcare entities for nurse sensitive outcomes ... 9
4 Semantic links ... **10**
4.1 'Representation relation' to 'Nursing Diagnosis' ... 10
4.2 'Representation relation' to 'nursing action' ... 13
4.3 List of domain constraints for nurse sensitive outcome, including its sub-categories and their attributes ... 15
5 Categorial structures — Requirements ... **17**
6 Categorial structure for representing nursing diagnoses ... **17**
7 Categorial structure for representing nursing actions ... **18**
8 Categorial structure for representing nurse sensitive outcomes ... **19**
Annex A (informative) **Nursing diagnosis, nursing actions and nurse sensitive outcomes in context** ... **20**
Annex B (informative) **Guidance for using categorial structures** ... **29**
Bibliography ... **33**

© ISO 2023 – All rights reserved

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 document 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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 251, *Health informatics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 18104:2014), which has been technically revised.

The main changes are as follows:

— more comprehensive representation of nursing practice;

— inclusion of nurse sensitive outcomes, its sub-categories representing known confounding variables and their relationship with the care process;

— inclusion of reference to ISO 13606-2 and openEHR RIM;

— inclusion of reference to ICNP into the SNOMED CT® terminology;

— representation of the nursing action ‘Assessment’ as an Observation which is represented as a sub-category of NursingAction;

— recognition of the collaborative roles of nurses (and midwives) with their subject of care to inform actions and assessments;

— inclusion of a goal/ expected outcome category;

— inclusion of a number of specified sub-categories enabling the differentiation between Nursing Actions and actions undertaken by others, as listed in a new category titled Outcome Causation;

© ISO 2023 – All rights reserved

— category definitions were reviewed and updated;

— definitions are provided for all new categories and sub-categories.

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.

© ISO 2023 – All rights reserved

Introduction

Development of terminological systems to support nursing has been motivated by multiple factors including the need to:

— represent nursing concepts in electronic systems and communications, including systems that support multi-professional team communications and personal health records;

— analyse data about the nursing contribution to subject of care and outcomes — for quality improvement, research, resource and performance management, reimbursement, policy and other purposes;

— describe nursing in order to educate and inform students and others.

Multiple terminologies exist to support representation of concepts for healthcare purposes; some of these are relevant to the nursing domain. In the context of health informatics, there is a clear requirement for both domain coverage and for interoperability among computer-processable terminological systems that support nursing. These requirements are best represented by clinical information models. Nursing terminologies, or those parts of healthcare-related terminologies that are relevant to nursing, include concept representations for nursing assessments, a nursing action undertaken to determine a nursing diagnoses (judgements). Nursing diagnoses inform the need for further nursing actions. Collectively these concepts represent the provision of nursing services whilst nurse sensitive outcomes represent the result of health services, including nursing services, delivered at any point in time.

A nursing diagnosis is used as an indicator of nursing service demand. Nursing actions represent nursing service delivery components undertaken to meet the service demand. These concepts and the scope of nursing practice are further elaborated in Annex A.

It was identified that nursing outcome definitions need to differentiate between conceptual, structural or contextual viewpoints. A conceptual definition recognises that nurse-sensitive subject of care outcomes are the result of a number of defining aspects. Nurse-sensitive health outcomes not only pertain to individuals but also to groups, families, local communities and the population at large. This is further elaborated in Annex A.

Nursing practice is best represented by terminological systems pertaining to three key categories, 1) Nursing Diagnosis, 2) Nursing Actions and 3) Nurse Sensitive Outcomes. These concepts and the scope of nursing practice reflect the nursing process, they are further elaborated in Annex A. The categories that make up the nursing practice domain are shown in Figure A.1. Semantic links between categories are shown in Figures 1, 2 and 3. As this document deals with populations and groups of individuals, as well as individual subjects of care, the definition of ‘subject of care’ does not conform with ISO 13940:2015.

Many of the categories and subcategories included in this document are equally applicable to other clinical disciplines. This categorial structure represents a common pattern for all types of clinical practices. The terminologies association with each of these categories and sub-categories are likely to differ to best represent each discipline’s knowledge base and service protocols.

Topics considered outside the scope of this document include

— complete categorial structures that would cover all the potential details that could appear in expressions of nursing diagnoses, nursing actions and nurse sensitive outcomes,

— a detailed terminology of nursing diagnoses or nursing actions or nurse sensitive outcomes,

— a “state model” for nursing diagnoses or nursing actions or nurse sensitive outcomes — for example, provisional nursing diagnosis or absent nursing diagnosis, planned nursing action or nursing action not to be done — see Annex A,

— nursing diagnoses made and nursing actions undertaken by nurses working in other professional roles — see Annex A, and

— knowledge relationships such as causal relationships between concepts — see Annex B.

© ISO 2023 – All rights reserved

NOTE 1 Throughout the main body of this document, where terms such as nursing diagnosis, nursing action and nurse sensitive outcome are used, these refer to representation of these concepts in electronic systems, not to the professional activity of making a diagnosis or performing an action or determining their relationship with nurse sensitive outcomes.

This document is applicable to the following user groups:

— developers of terminologies that include nursing diagnosis, nursing action and nurse sensitive outcome concepts;

— developers of categorial structures and terminologies for other healthcare domains, to support clarification of a relationship to or overlap with nursing concepts;

— developers of models for health information management systems such as electronic health records and decision support systems, to describe the expected content of terminological value domains for particular sub-categories and data elements in the information models, including archetypes or templates[45];

— developers of information systems, including electronic health/medical records, that require an explicit system of concepts for internal organization, data repository management or middleware services;

— developers of software for natural language processing, to facilitate harmonization of their output with coding systems.

It is not intended for use by clinical nurses without health informatics expertise. However, Annex B provides an introduction to categorial structures to assist those without health informatics expertise to contribute to its development, review, implementation and evaluation.

NOTE 2 Although the scope of testing and review of the first edition of this document has been limited to nursing, the three categorial structures have features in common with the more general framework for clinical findings [ISO/TS 22789, the domain-specific categorial structure for surgical procedures (ISO 1828),[20] ISO 13940 as well as with the WHO ICHI.[2]]This document can therefore inform development of other general and domain-specific categorial structures in healthcare.

© ISO 2023 – All rights reserved

Health informatics — Categorial structures for representation of nursing practice in terminological systems

1 Scope

This document specifies the characteristics of categorial structures, representing nursing practice. The overall aim of this document is to support interoperability in the exchange of meaningful information between information systems in respect of nursing diagnoses, nursing actions and nurse sensitive outcomes. Categorial structures for nursing diagnoses, nursing actions, nurse sensitive outcomes and associated categories support interoperability by providing common frameworks with which to

a) analyse the features of different terminologies, including pre- and post-coordinated expressions, those of other healthcare disciplines, and to establish the nature of the relationship between them,[3][4][5][6][7][8]

b) develop terminologies for representing nursing diagnoses, nursing actions,[9][10][11][12] and nurse sensitive outcomes,

c) develop terminologies that are able to be related to each other,[3][8][13] and

d) establish relationships between terminology models, information models, including archetypes, and ontologies in the nursing domain.[14][15][16][45]

There is early evidence that the categorial structures can be used as a framework for analysing nursing practice,[17] for developing nursing content of electronic record systems,[18][19] document the value of nursing services provided and to make nursing's contribution visible[16][36][47][50].

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 17115, *Health informatics — Representation of categorial structures of terminology (CatStructure)*

ISO/TS 22789, *Health informatics — Conceptual framework for patient findings and problems in terminologies*

EN 12264, *Health informatics — Categorial structures for systems of concepts*

3 Terms and definitions

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

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

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

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

© ISO 2023 – All rights reserved