



**SLOVENSKI STANDARD**  
**SIST ENV 14032:2003**

**01-oktober-2003**

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**Zdravstvena informatika – Sistem konceptov za podporo zdravstveni negi**

Health Informatics - System of concepts to support nursing

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**ICS:**

35.240.80	Uporabniške rešitve IT v zdravstveni tehniki	IT applications in health care technology
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EUROPEAN PRESTANDARD  
PRÉNORME EUROPÉENNE  
EUROPÄISCHE VORNORM

**ENV 14032**

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ICS 35.240.80

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## Health Informatics - System of concepts to support nursing

This European Prestandard (ENV) was approved by CEN on 12 January 2001 as a prospective standard for provisional application.

The period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into a European Standard.

CEN members are required to announce the existence of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

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## Foreword

This draft European Prestandard has been prepared by Working group 2 "Terminology and knowledge bases" of CEN/TC 251 "Health Informatics", the secretariat of which is held by SIS. It is a continuation by a voluntary task force of the work initiated as a Short Strategic Study entitled "Systems of concepts for nursing: a strategy for progress" produced under mandate M/255 given to CEN by the European Commission and the European Free Trade Association, order voucher BC/CEN/97/23.6.

All Annexes are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## Introduction

Terminology models and categorial structures deal with the essential structure for concept systems.

This Prestandard aims at facilitating the process of harmonisation across terminological systems on nursing diagnoses and nursing actions, by reducing unnecessary diversity and making explicit motivated diversity. It also aims at assisting integration of terminology systems within health records and other healthcare applications, and at establishing a continuum between information models and terminology models. Moreover, developers of terminology systems may use this standard for systematic presentation (i.e. to build taxonomies), to reduce ambiguities in the expressions, to produce more systematic descriptions.

Robust categorial structures can only be obtained by performing mapping from the various existing systems (and from real charts), putting them into a database or a description-logic system, and studying deeply the problems arising from these mappings. To perform this activity on a large scale, a consolidated hypothesis is needed. The presence of the ENV allows experiments and validations to be concentrated on a precise hypothesis, so that contributions will be focussed and the evolution towards the final normative content will be effective.

The textual description of the Prestandard is accompanied by a set of tables providing synopses of categorial structures for the focus of nursing diagnoses (see Subclause 4.2), for nursing diagnoses (see Subclause 4.3), and for nursing actions (see Subclause 5.2). It should be noted that any examples given in the Prestandard are non-exhaustive. Graphical outlines (according to the UML conventions, see Subclause 3.2 and Annex D) of the system of concepts for nursing diagnoses and nursing actions are provided in figures 1 and 2.

The normative part is complemented by 4 informative Annexes.

Annex A provides informal descriptions of the domains and categories in the Prestandard. These are informative content, intended to clarify the meaning and scope of each item through the use of descriptions and non-exhaustive examples – they are not normative definitions.

Annex B lists examples of dissections on nursing diagnoses and Annex C on nursing actions.

Annex D provides a synthesis of the UML conventions.

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## 1. SCOPE

### 1.1 Main purposes

This European Prestandard describes a system of concepts to support the development, maintenance, comparison and implementation of terminology systems, which in turn support data classification, communication, storage and retrieval in Nursing Information Systems and Nursing Records. This European Prestandard includes a set of categorial structures that cover nursing diagnoses and nursing actions.

Even though the Prestandard is centered on nursing needs, it may be used for domains with similar semantic properties, such as the subject field covered by ICIDH-2.

The main uses foreseen for the system of concepts are to:

- provide a language to highlight the structure and/or the taxonomy of a terminology system, i.e. the most relevant and systematic criteria used by developers to organise the terminology system. This description may be used to harmonise a terminology system within the environment of an information system, e.g. by comparing information models and terminology models.
- provide the criteria to generate systematic names from rubrics and terms of a terminology system, as a supporting feature to be distributed in the near future together with the usual presentation of the terminology system itself.

The provisions of this European Prestandard apply to the complete, contextualised meaning of the terms and will not apply directly to the surface/literal expressions of preferred terms or working terms registered in existing terminology systems. Often, relevant details pertaining to a term can only be understood from its context within the terminology system. Therefore, it is recommended that terms be paraphrased to reflect contextualised meaning before applying this European Prestandard.

Definitions or free text descriptions of these terms contain many pragmatic or assertional concepts (e.g. defining characteristics of nursing diagnoses) that are outside the scope of the present system of concepts.

The content of this European Prestandard is not intended to be used as a terminology system for end-users. Systematic representation according to this Prestandard is not intended to replace the original rubric or the original expression from the coding system or terminology to which it is applied.

Actual descriptors — together with the style and the symbols for the systematic representation — are outside the scope of this standard. They will be defined by the organisations producing the representations. After trial implementations of this Prestandard, a harmonised set of descriptors could be considered for inclusion in a future revision of this Prestandard.

The scope of this Prestandard is limited to the unambiguous representation of the terminological entries. Similar concepts may have different valid representations according to this Prestandard. It is out of the scope of this Prestandard to provide normalisation rules to compare two representations and to establish their equivalence.

It is outside the scope of this Prestandard, to define provisions about the nature and content of the guidelines for the management of status qualifiers (see Subclauses 4.4 and 5.3).

Categorial structures can be used to support different ways of implementing a terminology system. For example:

1. *pre-coordinated terms*. One data field in an information system contains a term or term phrase that may represent a systematic combination of concepts. Often this term or term phrase has a predefined non-combinatorial code, e.g. (from NIC) 6408 “Abuse protection support: religious”.
2. *post-coordinated terms*. One field in an information system contains a combination of terms (or codes), created by the user according to predefined rules, e.g. the user’s expression: “moderate restriction in participation in parent-child relationships” may be represented in ICIDH-2 by the following two terms: “participation in parent-child relationships” + “moderate restriction”
3. *name-value pairs*. An entry in an information system may be made up of two fields: one field for a term or term phrase to represent the variable that is observed and one field for the corresponding value. The value can be a numeric value, a score, a qualitative scale, a binary value, a coded value.
4. *data sets* made of a predefined list of names for the variables to be observed, e.g. assessment templates. At instantiation, the user assigns a value to each variable.

Each of the various categories and qualifiers described in this Prestandard may therefore appear either as part of a pre-coordinated term, as part of one of the multiple post-coordinated terms, as part of the names of the variables, or as part of the values. This Prestandard is not precluding any of these solutions or recommending one particular subdivision, except the ones on status qualifiers described in Subclauses 4.4 and 5.3.

The provisions of this European Prestandard partially apply to classes used to structure terminologies (e.g. “Heart functions” in ICIDH-2). The terms that represent these classes are too generic to be used alone in nursing records — i.e. to describe in detail the nursing diagnosis or the nursing action — but they obey the same semantic rules as the more detailed terms.

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### 1.2 Target groups of this European Prestandard

This European Prestandard is for use by

- a) developers of coding systems and terminologies on nursing, to assist in the development and maintenance of a particular system, as well for comparisons among different systems;
- b) developers of categorial structures about other systems of concepts, to take into account the relation with nursing and to be aware of the overlaps among different subject fields;
- c) information modellers and knowledge engineers building models for record systems, in particular to describe the expected content of terminological value domains for particular attributes and data elements;
- d) developers of information systems which need to handle an explicit system of clinical concepts for internal organization, datawarehouse management and middleware services;
- e) developers of software for Natural Language Processing, to facilitate harmonisation of their output with coding systems and record structures;
- f) developers of markup standards for representation of healthcare documents.

### 1.3 Topics considered outside the scope of this European Prestandard

This European Prestandard is not intended to provide

- a) a detailed classification or nomenclature on nursing diagnoses or nursing actions;
- b) descriptors and guidelines to represent contextual information for the recording of information within an electronic healthcare record;
- c) an exhaustive list of all the potential details that could appear in expressions of nursing diagnoses and nursing actions;
- d) an exhaustive thesaurus with the complete list of descriptors to be used to describe nursing diagnoses and nursing actions.

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## 2. NORMATIVE REFERENCES

This European Prestandard incorporates by dated or undated reference, provisions from other publications. These normative references are cited in the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments and revisions of any of these publications apply to this European Prestandard only when incorporated in it by amendment and revision. For undated references, the latest edition of the publication referred to applies (including amendments).

ENV 12264:1997      Medical Informatics — Categorial structure of systems of concepts — Model for representation of semantics

ENV 1614:1995      Medical informatics — Structure for nomenclature, classification and coding of properties in clinical laboratory sciences

## 3. DEFINITIONS AND CONVENTIONS USED IN DIAGRAMS

### 3.1 Definitions

For the purposes of this standard, the following definitions apply:

#### 3.1.1 associate (semantic) category

semantic category standing for a set of associate concepts [ENV 12264]

EXAMPLE: <device> stands for the set of associate concepts following the semantic link “has means” that describe the instruments, equipment or tools used to accomplish a nursing action.

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#### 3.1.2 associate concept

concept which follows a semantic link [ENV 12264, modified] 14032-2003

EXAMPLE: "patient", following the semantic link “has beneficiary” in a system of concepts on nursing action.

#### 3.1.3 associate (semantic) domain

semantic domain standing for a set of associate categories

EXAMPLE: in this Prestandard, the semantic link “is applied to” defines an associate domain (called the <<focus>>) including associate categories such as <property>, <process>.

NOTE: the name of an associate domain often reflects the name of the corresponding semantic link, e.g. “has means” <<means>>, “has beneficiary” <<beneficiary>>.

#### 3.1.4 base (semantic) category

semantic category standing for a set of base concepts [ENV 12264]

EXAMPLE: <adequacy>, which indicates sufficiency for a particular requirement, in a system of concepts on nursing diagnoses.

#### 3.1.5 base concept

concept used systematically as superordinate concept in dissections of target concepts [ENV 12264, modified]

EXAMPLE: the descriptor "informing" can be used systematically in dissections that describe the target concepts of nursing actions about provision of information to patients or relatives. All these target concepts are children of “informing”.



**3.1.6 base (semantic) domain**

semantic domain standing for a set of base categories

EXAMPLE: <<judgement>>, which represents the set of base categories for a nursing diagnosis, such as <alteration> or <adequacy>.

**3.1.7 categorial structure**

reduced system of concepts to describe the essential organization of the semantic categories in a particular system of concepts for development, maintenance and application of terminology systems [ENV 12264, modified]

**3.1.8 descriptor**

concept considered as elementary for usage in a set of dissections

EXAMPLE: "bathing" is a descriptor belonging to the semantic category <action>

NOTE 1: a descriptor (e.g. "bathing oneself", see Annex B, example 5) may be considered as elementary for a set of dissections corresponding to a coding system, but the same concept may be expressed by multiple descriptors for another coding system, i.e. according to different systematisation needs.

NOTE 2: a descriptor can appear only in one category, but it can be used in multiple semantic domains.

**3.1.9 differentiating criterion**

semantic link and an associate category

NOTE: differentiating criteria are used to build taxonomies. If an associate semantic domain is involved in the creation of a new layer of a taxonomy, the corresponding differentiating criteria may generate subtrees with different structures. E.g. in a coding system of nursing actions, if a layer of the taxonomy is built according to the semantic link "has means", then three independent subtrees may be generated, i.e. one based on the differentiating criterion "has means"-<device>, one based on the differentiating criterion "has means"-<resource> and one based on the differentiating criterion "has means"-<substance>. In fact, the three internal categorial structures respectively of <device>, <resource> and <substance> may involve a different organisation of the subsequent layers of the respective sub-taxonomies.

**3.1.10 dissection**

systematic representation of a phrase according to a predefined categorial structure

**3.1.11 qualifier**

concept used to further specify another concept

EXAMPLE: the qualifier "risk for" further specifies a nursing diagnosis

NOTE: the names for the semantic categories of qualifiers usually are similar to the corresponding semantic link (e.g. "has existence qualifier"-<existence>, "has evolution qualifier"-<evolution>, "has success qualifier"-<successfulness>).

**3.1.12 (semantic) category**

concept chosen to stand for a specified set of subordinate concepts, considered homogeneous [ENV 12264]

EXAMPLES: <physical environment>, <state>, <substance>, <group>

NOTE 1: In examples within this Prestandard, semantic categories are enclosed in angle brackets < >.

NOTE 2: a descriptor can appear only in one category.

**3.1.13 (semantic) domain**

set of semantic categories taking the same role in a system of concepts

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EXAMPLES: <<focus>>, <<means>>, <<beneficiary>>

NOTE 1: In examples within this Prestandard, semantic domains are enclosed in double angle brackets << >>.

NOTE 2: a semantic category may appear in different semantic domains, e.g. <individual> can be a <<bearer>>, a <<target>>, a <<beneficiary>>. Therefore a descriptor may belong to multiple domains (but only to one semantic category) and the same descriptor can be present in one dissection with different roles, i.e. it may correspond to different semantic domains (e.g. a “patient” can be the direct <<target>> and the final <<beneficiary>> for a nursing action).

**3.1.14 (semantic) link**

unidirectional associative relation from one concept to another [ENV 12264, modified]

EXAMPLE: the semantic link “has-site” could be applied from the concept “pain” to the concept “hip”, in a system of concepts to describe nursing diagnoses.

NOTE: A semantic link may be also used between semantic categories and semantic domains.

**3.1.15 system of concepts**

structured set of concepts established according to the relations between them [ENV 12264]

NOTE: A system of concepts is wider than a categorial structure. For example it may include categories and semantic links for status qualifiers (see Subclauses 4.4 and 5.3) and multiple categorial structures (see Subclauses 4.2 and 4.3).

**3.1.16 systematic name**

terminological phrase created according to preestablished rules and used as name for a target concept [ENV 12264]

NOTE 1: In common practice, a working name can be used in place of the systematic name. The working name may be either a term or a simpler terminological phrase.

NOTE 2: systematic names are the bridge between working names (e.g. expressions from nomenclatures, for humans) and formal representations (e.g. dissections, for computers)

**3.1.17 target concept**

concept whose designation is intended to be used in applications [ENV 12264]

EXAMPLE: “teach patient about diabetes” could be a target concept for nursing actions in a nursing record application. The concepts: “monitoring”, “teach relatives” are usually considered incomplete in that context and therefore cannot be considered adequate as target concepts.

**3.2 Conventions used in diagrams**

The textual description of the categorial structures in the Prestandard is accompanied by graphical outlines, drawn according to UML conventions (see Annex D, informative).

The correspondence between the UML constructs for information models and the terminological constructs for a system of concepts is as follows:

- The labeled lines in the figures represent semantic links. Direction is implied by the position of the label.
- The labels in the upper compartment of the boxes represent either semantic categories or semantic domains.
- Semantic domains are considered as abstract classes of UML and their labels are italicised in the diagrams. They are enclosed in double angle brackets << >> throughout the document.

- Semantic categories are considered as instantiable classes in UML and their labels are in plain font in the diagrams. They are enclosed in angle brackets < > throughout the document
- Qualifiers are considered as the attributes in UML and appear in the middle compartment of the boxes.
- The lower compartment of the boxes is not used.

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## 4. SYSTEM OF CONCEPTS FOR NURSING DIAGNOSES

### 4.1 General

For the purposes of this Prestandard, a nursing diagnosis shall be considered either as a judgement on something (called focus) or as a judgement on a particular dimension (e.g. ability, knowledge) of something.

The categories <altered process>, <altered state> and <altered structure> are a special case of nursing diagnosis as they may contain both judgement and focus (see Note 1 in Subclause 4.3).

The categorial structure for the focus of a nursing diagnosis is described in Subclause 4.2.

The categorial structure for nursing diagnoses is described in Subclause 4.3.

Additional qualifiers that should be used mainly within patient records — rather than within terminological expressions of nursing diagnoses — are described in Subclause 4.4.

All categories and domains are informally described in Annex A (informative).

A comprehensive graphical outline of the system of concepts for nursing diagnoses is presented in figure 1.

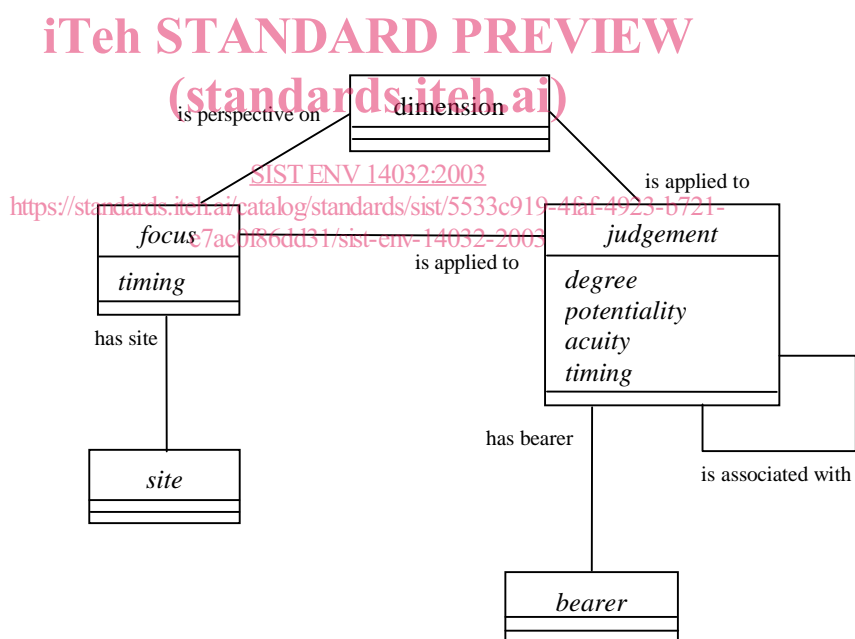


Figure 1. Graphical outline of the system of concepts for nursing diagnoses