Health Informatics - System of concepts to support Continuity of care - Part 1: Basic concepts

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EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

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Käsitlusala: Continuity of care implies the management of health information in two different perspectives: - local management of information about the subject of care, at the site of care provision, - information interchange between health care providers.	**Scope:** Continuity of care implies the management of health information in two different perspectives: - local management of information about the subject of care, at the site of care provision, - information interchange between health care providers.

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Health informatics - System of concepts to support continuity of care - Part 1: Basic concepts

Informatique de santé - Système de concepts en appui de la continuité des soins - Partie 1: Concepts de base

Medizinische Informatik - Begriffssystem zur Unterstützung der Kontinuität der Versorgung - Teil 1: Grundbegriffe

This European Standard was approved by CEN on 10 May 2007.

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Foreword

This document (EN 13940-1:2007) has been prepared by Technical Committee 251 "Health informatics", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2007, and conflicting national standards shall be withdrawn at the latest by December 2007.

This document supersedes ENV 13940:2001.

This two-part standard under the general heading *Health informatics — System of concepts to support continuity of care* consists of the following parts:

Part 1: Basic concepts

Part 2: Core process and work flow in health care

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

0 Introduction

0.1 General

Continuity of care is increasingly invoked nowadays as one of the most important issues in health care. What is in perspective is both an improvement of the quality of care, and a reduction of costs. Continuity of care is now seen as prerequisite to improve at the same time efficacy, effectiveness and efficiency of health care.

Thus there is a need for clinicians, private and public health care providers, health managers, and funding organisations to base their decisions, in terms of re-organisation of services, on a good understanding of the concepts involved.

This European Standard defines the classes of concepts and their descriptive terms, regarding all processes of care, especially considering patient-centred continuity of care, shared care and seamless care.

Continuity of care depends on the effective transfer and linkage of data and information about both the clinical situation and the health care provided to a subject of care, between different parties involved in the process, within the framework of ethical, professional and legal rules. The description and formalisation of continuity of care in information systems implies that the related concepts and descriptive terms be defined, so establishing a common conceptual framework across national, cultural and professional barriers.

0.2 Target groups

The system of concepts and the terms defined in this European Standard are designed to support the management of health care related information over time and the delivery of care by different health care actors who are working together. This includes primary care professionals and teams, health care funding organisations, managers, patients, secondary and tertiary health care providers, and community care teams.

This harmonised system of concepts will be used to facilitate clinical and administrative decision making, and to enhance relationships between health care professionals and their patients.

Among other applications, the content of this European Standard will prove of utmost importance for the development of well designed clinical networks, either at regional — possibly cross-border —, or at local level, either including hospital settings or not; it will help the correct management of personal health data, and of Electronic Health Records in that context. It provides a clear conceptual framework to establish the terms of reference of health information systems, to be used for tenders.

0.3 Notes

0.3.1 General

These notes apply to this European Standard in general.

0.3.2 Subject of care

In this European Standard, 'subject of care' refers to an individual. It is assumed that in those cases where a health care activity addresses a group of more than one individual (e.g. a family, a community), and where a single health record is used to capture the health care activities provided to the group, each individual within the group will be referenced explicitly within that health record. This issue is further discussed in Annex A "On the issue of the subject of care being a group of persons", page 94.

0.3.3 Description and display of concepts

This European Standard aims to identify and describe concepts important to continuity of care, and to establish a system of concepts that is to be used when setting up information systems, especially when dealing with health record communication. The primary focus of the standard is terminology and ontology.

Descriptions framed in tables having the same pattern of rubrics are systematically provided for all the concepts presented in Clauses 6 to 11. Whenever not felt relevant to a given concept, some of these rubrics may intentionally be left blank. In the headings of these tables, the names of those concepts that are purely abstract constructs and therefore are not instantiable but through their specialization, are shown in italic characters.

Examples are provided wherever felt relevant and necessary. However, in general, examples for superordinate concepts are to be sought at the level of the corresponding subordinate concepts.

In order to help the readers understand more easily the relationships between these concepts, diagrams have been introduced based on UML conventions. Thus, for each one of the concepts described in Clauses 6 to 11, a subset of the general and comprehensive diagram is provided as an illustrative part of the monograph, showing only its direct relationships with other concepts belonging to the current system of concepts.

Diagrams providing partial views of the system of concepts are also proposed at the beginning of each one of Clauses 6 to 11. These diagrams are focused on the topic addressed in the corresponding clause. For instance: actors, or health data management. For a better clarity, they only show the relationships between the concepts defined in that clause and, except for Clause 6, all relationships between those concepts and concepts defined in other clauses of this European Standard. For Clause 6 the relationship with a number of concepts that are not defined in this standard is shown. For clarity of reading, concepts defined in the clause the diagram is a part of are shown in white. Concepts defined in other clauses of the standard are shown in grey while concepts not defined in this standard is light grey, whithout frames.

The purpose of using UML diagrams in this European Standard is to highlight the relationships between concepts. Their attributes, which actually do not belong to the field of concept modelling, are not addressed in this European Standard. This means that additional attributes may be felt useful or necessary in the course of implementation, without conformance with the current European Standard being at stake.

Besides, there are related features and other related entities which may be considered as concepts in their own right. They are usually of a generic nature, and do not belong to the system of concepts which is the focus of this European Standard. As a consequence, they are not described any further. An example of this is: a subject of care may have an undefined number of addresses, and an address may be associated with an undefined number of subjects of care. The resolution of this 'many to many' relationship is not within the scope of this European Standard.

In order to differentiate them both from normal attributes and from concepts with which direct relationships are explicitly mentioned, these features are shown apart, in a rubric called "features or related entities not described in this document".

0.3.4 Concept modelling vs. information modelling

[The concepts designated by terms printed in italic in this sub-section are defined in ISO 1087:2002].

Concept modelling may be used for two purposes. The main purpose is to graphically describe a *concept system* within a *subject field*. This description can clarify the relationships between the *concepts*, and illustrate some of their *definitions*. The other purpose is to let a concept modelling tool set up a data base organising the *concept system*, in order to keep track of its *concepts* and relationships, as well as check its consistency.

Information modelling has the purpose of organising the information objects, each one representing

knowledge about a concept. There is however additional information in an information model about the properties of the information objects, shown as attributes to the objects, and operations describing behaviour of the objects.

All *concepts* have the same degree of integrity, and in a concept model all *concepts* should be modelled in the same way. In UML this means that a *concept* is represented by a class. There are no attributes or operations in the classes. A *characteristic* of a *concept* is also a *concept*, and its function as *characteristic* is therefore modelled as a relation to the core *concept*. Relations may be *generic* making the *specific concept* inherit all *characteristics* of its *generic concept*. The *specific concept* has additional *characteristics* modelled as *concepts* associated to the *specific concept*.

Beside *associative relations* and *generic relations* there are *partitive relations* describing *partitive concepts* being parts of a *comprehensive concepts*.

If a relation between two *concepts* denotes an *essential characteristic* of the core concept, this relation can probably be used when the core *concept* is to be textually defined. Also *concepts* not being *characteristics* of another *concept* may be related, and it may be clarifying to show this relation graphically. Equally, not all *characteristics* used in a *definition* have to be shown in the graph.

In an information model a lot of information objects should be added. They are often modelled as attributes. The relations between the information objects, drawn as classes in the UML are often the same as in the concept model. Some related *concepts* are not necessary to show as classes of their own, and they may then be represented as attributes of their class. Even some *characteristics of concepts* may be better represented as attributes than as separate classes in the information model. The information model needs to be a robust template for a data model, which can be used in the creation of a data base keeping information of those objects which have been conceptually analysed in the concept model.

In this European Standard *concepts* are described in text and models. The models comply with the principles described here above. The tables list the relationships of each *concept*, but they also list those attributes that are considered important to be included in an information model though they are not necessary to describe the *concept system*.

0.3.5 Frequent use of the term 'care' instead of 'health care'

The scope of this European Standard regards topics related to continuity of health care. However, in this document the shorter term 'care' is often used and is to be understood as a synonym for the longer term 'health care'. Examples of this are: 'continuity of care', 'subject of care', 'episode of care', 'period of care', 'care plan', 'programme of care'... Would the concepts hereby described be used in another context, the complete phrase 'health care' might have to be systematically used wherever relevant in order to provide full consistency in that context.

1 Scope

1.1 Main purpose

Continuity of care implies the management of health information in two different perspectives:

- local management of information about the subject of care, at the site of care provision;
- information interchange between health care providers.

NOTE **Record management**: Continuity of care requires that every contact and every health care provider activity, in or out of the presence of the subject of care, be recorded. Those health care activities that are performed by health care third parties should also be recorded in order to support continuity. If ever a contact or a health care activity is not recorded, while it remains a contact or health care activity, its contribution to seamless or integrated care can be ignored, and continuity of care jeopardized.

This European Standard seeks to identify and define those processes which relate to the continuity of health care provided to human beings (to the exclusion of other living subjects). It specifically addresses aspects of sharing subject of care related information needed in the process of health care. It identifies and defines relevant data and information flows, together with their relationships to "time slots".

In order to support the delivery of high quality care to each subject of care, and to facilitate continuity of care, a full understanding is needed of the temporal aspects of the delivery of health care, the role of each party in the health care process, and their interaction in the subject's of care environment. The concepts describing the characteristics of the ongoing process of care should not differ in nature from those that are used to structure and organise the data locally in the Electronic Health Record.

This European Standard addresses such topics as:

- organisational principles of health care;
- health care actors, health care parties, subjects of care, health care providers, provider organisations, health care professionals and third parties;
- health issues and their management;
- time-related concepts: contacts, encounters, episodes of care and periods of care;
- concepts related to decision support, use of clinical knowledge, and activity: activities, protocols, programmes of care, care plans, care pathways;
- concepts related to responsibility and information flows within the clinical process: health mandates and their notification;
- concepts related to health data management.

In order to establish a common conceptual framework for continuity of care across national, cultural and professional barriers, all these concepts are defined in this document, and their inter-relationships identified.

1.2 Topics outside the scope

The scope of this European Standard definitely addresses those concepts that support continuity of health care. Even if the WHO definition of health acknowledgedly establishes the social well being as one of several determinants of health in general, social wellfare is out of the scope of this European Standard. If certain concepts addressed in this European Standard might be felt useful for other kinds of care provision than health care, it is not recommended to do so without carefully re-appraising their specific relevance to these distinct uses; this could be the topic for other future standards.

This European Standard does not intend to define how the processes should be performed in a particular health care framework. It does not intend to have any regulatory impact on the actual delivery of care. For example, it defines what "a hospital stay" is, but it does not specify in any way the events that may occur during a hospital stay.

The specific management of prescriptions for drug therapy and of laboratory tests and their results are not part of this European Standard; nor does the standard define any other aspects of the health care process, such as security, act specific management, the life cycle of acts, terminology and classification, or the financing mechanism of health care delivery.

As stated above, continuity of care depends on the effective transfer and linkage of data and information about the clinical situation and the care provided to a subject of care, between different parties involved in the process, within the framework of ethical, professional and legal, rules.

The communication or sharing of personal health data between health care parties imply that such requirements as confidentiality, privacy protection, and security are properly covered by an adequate set of relevant policies. However, while this European Standard addresses the transfer of responsibilities between subjects of care and health care providers, which by the use of mandates includes some aspects of the assignment of access rights, it does not address those policies.

In practice, clinical data and information take the form of Record Components, as defined in EN 13606-1:2007. The management of security, access control, access rules etc. is tightly linked to EHR communication, and therefore it actually belongs to the scope of EN 13606 as a whole, and more particularly of its Part 4. In this respect as in others, and in the view of consistency between standards, this European standard follows the provisions of EN 13606.

While this European standard can help manage the logistics of health care delivery, particularly in its Part 2: "Core process and work flow in health care" (to be published), it does not intend to refer specifically to the issue of resources needed in the provision of health care activities.

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.

EN 12264:2005, *Health Informatics — Categorial structures for systems of concepts*

EN 12381:2005, *Health Informatics — Time standards for health care specific problems*

EN 13606-1:2007, *Health Informatics — Electronic health record communication*
Part 1: Reference model

EN 13606-4:2007, *Health Informatics — Electronic health record communication*
Part 4: Security

EN 14822-2:2005, *Health Informatics — General purpose information components — Part 2: Non clinical*

EN 14822-3:2005, *Health Informatics — General purpose information components — Part 3: Clinical*

ISO 704:2000, *Terminology work — Principles and methods*

ISO/IEC 1087-1:2000, *Terminology work — Vocabulary — Part 1: Theory and application*

ISO/IEC 6523-1:1998, *Information technology — Structure for the identification of organisations and organisation parts — Part 1: Identification of organisation identification schemes*

ISO 10241:1992, *International terminology standards - Preparation and layout*

ISO/IEC 15414:2002, *Information technology — Open distributed processing — Reference model — Enterprise language*

ISO TS 18308:2004, *Health informatics — Requirements for an electronic health record architecture*

ISO TR 20514:2005, *Health informatics — Electronic health record — Definition, scope, and context*