TECHNICAL SPECIFICATION

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Health informatics — Deployment of a clinical data warehouse

Informatique de santé — Déploiement d'un entrepôt des données cliniques

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Foreword

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of document:

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An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TS 29585 was prepared by Technical Committee ISO/TC 215, *Health informatics*.

Introduction

This Technical Specification furthers the work of ISO/TR 22221 by providing implementation guidance for a clinical data warehouse and describing general considerations of development and deployment, issues and applications of data aggregation and data modelling, and architecture and technology approaches.

The role of the clinical data warehouse is to enable data analyses in support of effective policies and decision-making, to improve quality of care, to improve health services organizations, as well as to influence learning and research. It will have relevance to both developing and more established health systems. It will enable meaningful comparison of programmes and outcomes.

Although data warehouse technologies are becoming increasingly used in non-healthcare sectors, their use in health is still at an early stage. ISO/TR 22221 had a primary goal of underpinning a coherent approach to the diverse and multi-stakeholder perspectives of secondary use of data from various health system sources. This Technical Specification is intended to have pragmatic relevance by indicating best practice in setting up a clinical data warehouse and in using it from data abstraction and architectural perspectives. The clinical data warehouse is distinguished by the complexity of the interactions of data and hence the challenges to provide adequate methods for evaluating process and outcomes of care for different populations and sub-populations. Currently such knowledge is relatively fragmented and it is too early to be integrated into an International Standard. A Technical Specification will however benefit progression to an International Standard by aligning emerging best practice from different international experience.

The clinical data warehouse is also, in health informatics, the place of the intersection of health services delivery, organization and epidemiological expertise concerned with adequate and effective data abstraction and presentation for different decision-making contexts as presented in ISO/TR 22221. Good use of the clinical data warehouse will depend on furthering common approaches to frequently used data abstractions that concern analysis of care delivery and organization. Effective data warehouse deployment will be enabled by promoting good practice in furnishing dynamically accessible, interpretable data combinations, which will depend on showing the relationship between clinical and health system need and the architectural properties of the data warehouse.

This technical specification complements the ISO 13606 series in that competent extended use of data beyond immediate care delivery depends on the effective organization of the original source data.

Health informatics — Deployment of a clinical data warehouse

IMPORTANT — The electronic file of this document contains colours which are considered to be useful for the correct understanding of the document. Users should therefore consider printing this document using a colour printer.

1 Scope

This Technical Specification has three sections, 1) general considerations of design and deployment, 2) data aggregation and data modelling and 3) architecture and technology, and is intended to provide an overall set of guidelines for clinical data warehouse deployment supported by useful descriptions concerning different data aggregation and modelling approaches as well as particular aspects of information architecture that contribute to successful deployment. The first section is of particular interest to healthcare decision-makers, including information technology managers, of requirements and procedures that support successful clinical data warehouse deployment. The second section supports the understanding, choice, instigation and evaluation of methods that ensure reliable selection and aggregation of primary data for adequate compilation and presentation to support decisions – this section is of particular interest to statisticians, epidemiologists, healthcare evaluation specialists and others. Section three is of particular interest to informaticians concerned with efficient architectures, data mining methods, dynamic data querying and visualization for clinical data warehouses.

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.

ISO/TR 22221, *Health informatics — Good principles and practices for a clinical data warehouse*

ISO/TS 25237, *Health informatics — Pseudonymization*

ISO 27799, *Health informatics — Information security management in health using ISO/IEC 27002*

3 Terms and definitions

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

3.1
clinical data repository
CDR
operational data store that holds and manages clinical data collected from service encounters at point of service locations

NOTE Data from a CDR can be fed to the EHR for that client, such that the CDR is recognised as a source system for the EHR. The CDR can be used to trigger alerts in real time.