

PMRI Terminology Standards

Dec. 11, 2002

Summary of Changes v1 -> v2

- Core = group of tightly integrated terminologies [3]
- “Groups” nomenclature replaces “Layers” [3, 3.4]
- Group 2 = HIPAA/Administrative terminologies [3.2]
- Group 3 = Legacy clinical terminologies [3.3]
- Clarification of rationale for Group 3 [3.3]
- Removal of preliminary candidates for core group; replaced by domain coverage [4.2]
- Role of UMLS discussed [4.4]

Scope of Recommendations

- Standard terminology architecture
- Composition of the terminology groups
- Degree of integration of terminologies in the core group
- Organizational model for governance, licensing, and on-going maintenance of core terminologies
- Relationship of core group to other 2 groups
- Relationship between recommended terminology standards and message standards

Selection Criteria for Core Terminologies

■ Technical Criteria

- ◆ Domain coverage, concept orientation, multi-hierarchies, etc.

■ Non-technical Criteria

- ◆ Ownership and licensing
- ◆ Maintenance processes
- ◆ Viability/Funding

Technical Criteria

■ Quintessential Criteria

- ◆ Without them, the terminology cannot meet the goals of interoperability and data comparability
- ◆ Example: Non-ambiguity

■ Desirable Criteria

- ◆ Enhance value of the terminology, but not essential for interoperability and data comparability
- ◆ Example: Formal concept definitions (description logic)

Technical Criteria

- Criteria are objective and verifiable
 - ◆ Yes: “Meaningless identifiers”, “Multi-hierarchies”
 - ◆ No: “Ability to map to reimbursement codes”

Concept Orientation

■ Definition

- ◆ Elements of the terminology are coded concepts, with possibly multiple synonymous text representations, and hierarchical or definitional relationships to other coded concepts.

■ Example

- ◆ Concept: C004578675
- ◆ Text: “Myocardial Infarction”, “M.I.”
- ◆ Parent: C58849908 : “Cardiovascular Disease”

■ Value

- ◆ Supports explicit synonymy; enables meaningless identifiers, concept permanence

Concept Permanence

■ Definition

- ◆ The meaning of each coded concept in a terminology remains forever unchanged. If the meaning of a concept needs to be changed or refined, a new coded concept is introduced. No retired codes are re-used.

■ Example

- ◆ Concept: C004578675 : “Non-A/Non-B Hepatitis”
- ◆ Concept: ?? : “Hepatitis C”

■ Value

- ◆ Supports accurate data aggregation and data analysis across versions of a terminology (I.e. longitudinally)

Comprehensive Domain Coverage

■ Definition

- ◆ Includes most of the concepts and terms needed for primary clinical documentation in the defined domain area

Meaningless Identifiers

■ Definition

- ◆ The unique codes used to identify concepts in the terminology are unrelated to the meaning of the concepts or to their locations in the concept hierarchy

■ Example

- ◆ Concept: C004578675
- ◆ Text: “Myocardial Infarction”, “M.I.”
- ◆ Parent: C58849908 : “Cardiovascular Disease”

■ Counter-Example

- ◆ Concept: 250.31 (Juvenile-onset Type-II diabetes)
- ◆ Parent: 250.3 (Type-II diabetes)
- ◆ Grandparent: 250 (Diabetes)

■ Value

- ◆ Enables multi-hierarchies, unlimited # of siblings, re-classification

Non-redundancy

■ Definition

- ◆ Each concept is represented by just one code in the terminology

■ Counter-Example

- ◆ Code: 23.4.100.8 : “Pneumococcal pneumonia”
- ◆ Code: 23.12.6.1 : “Pneumococcal pneumonia”

■ Value

- ◆ Prevents false-negative query results if not all codes are known; necessitates more complex queries

Non-ambiguity

- Definition

- ◆ Each code in the terminology has a unique meaning

- Counter-Example



- Value

- ◆ Prevents false-positive query results in data analyses; assures unique interpretations of communicated data

Multi-Hierarchies

■ Definition

- ◆ A coded concept may be a child of more than one other coded concept in the hierarchy

■ Example

- ◆ Code: C09485757 : “Pneumococcal pneumonia”
- ◆ Parent: C5078489 : “Respiratory disease”
- ◆ Parent: C76990303 : “Infectious disease”

■ Value

- ◆ Prevents redundancy when concepts require multiple classification; Allows local additions to hierarchies.

Formal Concept Definitions (Description Logic)

■ Definition

- ◆ Logical definitions of coded concepts such that redundancy can be automatically detected and appropriate hierarchical relationships can be automatically inferred

■ Example

- ◆ Code: C09485757 : “Pneumococcal pneumonia”
- ◆ Is-A: C5078489 : “Disease”
- ◆ Has-location: C76990303 : “Lung”
- ◆ Has-etiology: C3004785 : “S. pneumoniae”

■ Value

- ◆ Prevents redundancy from being unintentionally introduced into a large terminology; supports deduction of implied hierarchical relationships

Infrastructure for Collaborative Development

■ Definition

- ◆ A variety of tools that allow many people to work on a terminology at the same time, and that support the assignment, scheduling, collection, and integration of their work

■ Value

- ◆ Allows large terminologies to be enhanced more quickly without introducing errors (e.g. redundancy)

Other Criteria

- Explicit version identifiers
- Representation of context information
- Availability of methods and tools to ease local implementation and incorporation of subsequent updates
- Support for local customization and subsequent merging with updated standard

Non-technical Criteria

- Ownership and Licensing
- Maintenance Processes
- Viability/Funding