An ontological model for
the (digital) patient.

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Abstract. Ontologies and uniform language are needed to be able to compare large sets of patient data, specifically when applying computer based analyses [1,2]. "Patient" is a frequently used object in healthcare but it lacks a clear definition that can easily be translated into data systems, such as the Electronic Health Record [3], which is needed for interoperability or analysis. The first step in this process is to define an ontological description of the object patient although patient is frequently used in disease ontological descriptions. The work here described is the initial phase in creating a high level ontological description for the patient. It complements the research efforts in clinical decision tools such as MCI which is based on the OGMS [4].

The patient ontological model described here is, to our knowledge, the first one to structure patient related data in a cohesive and holistic way. It may incorporate many separate and existing data structures and classification systems such as LOINC codes, ATC codes, SNOMED or ICD. Contrary to the disease approach, the model describes the fundamental elements of the patient and allows for patient independent observations or objective measurements as well as for patient subjective observations either by the patient or the care provider. It automatically creates a logical and historical perspective of the patient and incorporates the patient's own observations and reporting.

Although research has been done on various aspects of patient modelling in relation to diseases or interoperability of patient data, for instance HL7 [5], a comprehensive patient model is absent. The model, when applied, may assist researchers, care providers, software developers and users of the terminology in a more consistent approach of the patient. The advantage for the patient is that the model offers an easy and complete overview of the components which may influence a person's health and how certain values can be related to diseases when out of range. The model is meant as a rich resource for the care provider as well as for the patient and can be used when creating patient portals, personal health environments (CPR), allowing for extensive data interoperability and analysis. The model may also facilitate the design and process of data exchange on the condition that the data are structured in accepted standardized formats such as HL7 or follow uniform classifications such as SNOMED or ICD.

References

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