

SEMANTIC CONCEPTUAL MODEL FOR MANAGING CLINICAL PROTOCOLS

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Introduction

Clinical protocols play an important role in today's evidence based medicine for developing clinical reasoning skills [1] and they are extensively used both in teaching and practicing medicine. In this research, we will try to organize and propose an ontology for managing (as metadata) clinical protocols in a much more beneficial way than they are currently used.

Background

Clinical protocols can be divided into two main categories: 'diagnostic' and 'therapeutic'. The first one includes investigation or verification of a disease and the second one refers to the management process of a disease or condition. The protocol is applied to a patient by a Medical Expert at a Health Center and then the result is reviewed (e.g. work or fail) by the expert. The

Results

Figure 1 shows the proposed clinical protocols ontology. The entity-relationship diagram describes the basic concepts of a Clinical Protocol and its relationships with the concepts of Medical Expert, Patient and Health Center. Finally, the developed ontology will be available online in Biportal [2].

Discussion and Future Plans

The goal is to create a web application implementing the proposed ontology, which will focus on smart user interface, providing information for institute facilities, patient cohort and protocol's approval from Health Center and Medical Expert. Furthermore, the proposed ontology supports metadata enrichment via controlled medical vocabularies and ontologies.

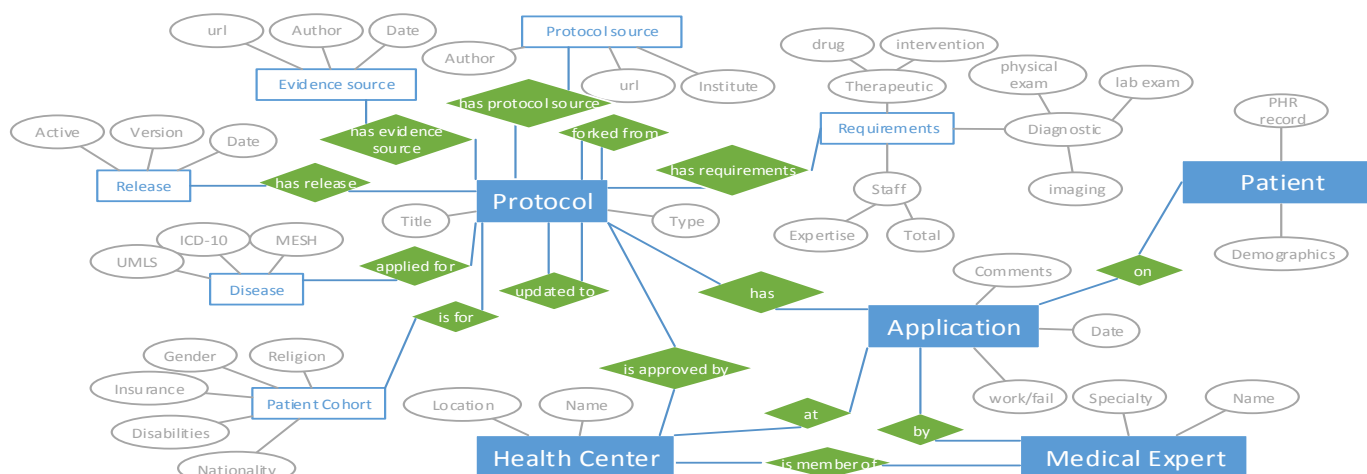


Figure 1: Concepts relationship diagram.

protocol requirements depend on several factors such as Health Center facilities, staff qualifications and whether this is diagnostic or therapeutic. The protocol's release can be updated or deactivated in case of new medical evidence. An important feature of the model is the concept of clinical protocol repurposing, whereby each protocol can fork into a selection of new variations based on a number of factors including: patient cohort, availability of medical facilities, medical insurance allowances, cultural and gender issues, etc.

The metadata representation of protocols is implemented in OWL, a web ontology language, which makes it possible to infer knowledge from static typed models and data.

References

1. Norman, G. (2005), Research in clinical reasoning: past history and current trends. *Medical Education*, 39: 418–427.
2. BioPortal <http://bioportal.bioontology.org/>

Keywords

Medical ontology, OWL, clinical protocols

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