Interoperability Among Prenatal EHRs: A Formal Ontology Approach

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Introduction

The continuity of care for women in the scope of the Brazilian Health Unified System is supported by the Stork Network program (SNP), which guarantees a woman's entitlement to reproductive planning, pregnancy, labor and postpartum care. Electronic health records (EHRs) related to care in the prenatal, parturition, and puerperal phases are necessary to ensure goals of the SNP. However, gathering information from EHRs connected to different information systems is a challenge and involves adoption of semantic interoperability solutions(1). To overcome this failure of semantic interoperability among prenatal EHRs our strategy is develop an ontology in the obstetric and neonatal domain (OntONeo). Such ontology will be able to join different standards and terminologies adopted by information systems that deals with prenatal EHRs.

Methodology

We adopted Basic Formal Ontology (BFO) as top-level ontology of OntONeo and the methodology of ontological realism(2). In addition, with the aim of fostering interoperability among biomedical ontologies and taking advantage of reuse previous ontologies developed, the OntONeo relies on well-consolidated initiatives, namely, those pertaining to the Open Biomedical Ontologies (OBO) Foundry(3). The representation language used is Web Ontology Language version 2 (OWL 2) and as ontology editor tool we use Protégé 5.

Partial results

Each medical specialty has specific information about the care provided, as the Woman's Health Record(4). So we propose a formal definition to EHRs specialty on OntONeo domain (Figure 1). In addition, we observe a set of basic information are part of general EHR, independent of medical specialty, such as patient demographic information.

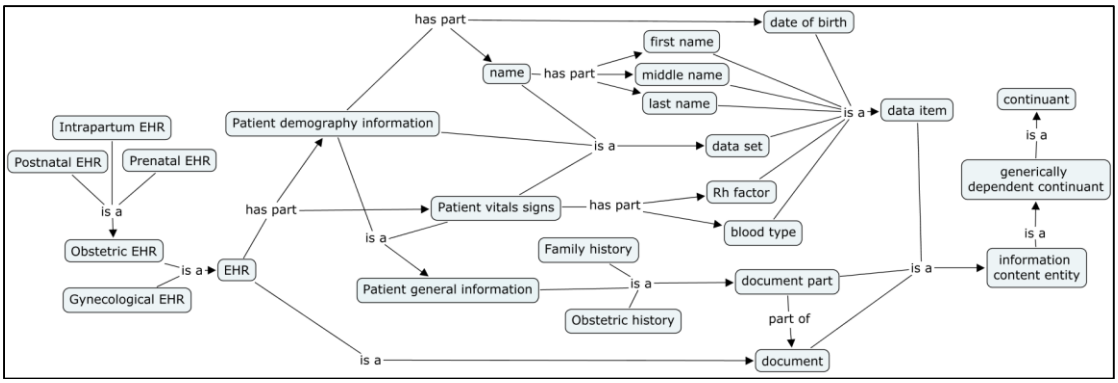

Figure 1. Part of OntONeo that deals with the basic information common in EHRs.

Conclusion

We present an ontology in the obstetric and neonatal domain (OntONeo) that aims to represent the EHR data involved in the care of the pregnant woman, and of her baby. OntONeo is a project in the early stages of development, open source, and the current version can be found at *ontoneo.wordpress.com*.

References

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