

A Comprehensive Representation Methodology for Computer-based Patient Records.

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Fifteen years since the Institute of Medicine published *The Computer-Based Patient Record: An Essential Technology for Health Care*, there is still a lack of cohesion in efforts to develop infrastructure to address how modern approaches to data and knowledge management can achieve the requirements of a computer-based patient record. Content ontologies are often built out of context, without common foundations or any anticipation of clinical decision support. Information models (such as HL7) are clinically inarticulate, ontologically inconsistent, and do little to facilitate decision support, a key requirement of CPRs. Attempts to leverage Semantic Web technologies to address the challenges of knowledge and data representation in health care and life sciences should be orchestrated within the context of the clearly articulated requirements, guidelines, and recommendations of the CPR.

XML technologies, although appropriate for capturing message exchange formats and structured content, are (by themselves) insufficient for knowledge representation. RDF technologies, although appropriate for knowledge representation, are not built for structured content, presentation, reporting, and data transformation. Emerging standards such as GRDDL (Gleaning Resource Descriptions from Dialects of Language) demonstrate the effectiveness of using both technologies in an orchestrated way to augment the richness of data published on the web. Here, we describe how the specific user requirements for CPRs can be directly met by an approach that leverages XML, RDF, and OWL in tandem rather than in isolation.