Taking Historical Inventories in Nonischemic Heart failure – Etiologies and Risk Factors Trial (THIN-HEART)  
The Heart Failure Origin Organization Task (HOOT)

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**Background**
- Patients with nonischemic dilated cardiomyopathy (NIDCM) are often labeled ‘idiopathic’ when a specific, single cause cannot be identified.
- Several groups have attempted to determine the prevalence of known causes of NIDCM in patients with initially unexplained NIDCM varying results.
- Criteria for diagnoses which rely on historical features may be inconsistent or not universally accepted.
- Quantification of risk factors is challenging due to fragmentation of clinical data regarding individuals.
- Data sources may have disparate representation schema with variable degrees of clinical relevance.
- Robust, consistent classification criteria are required to examine the relationship between known NIDCM risk factors on a population basis.
- Abstraction of clinical data into Unified Medical Language System Concepts will facilitate automated risk factor identification and patient phenotype description.
- Knowledge regarding risk factor definition and patient classification can be represented in the Web Ontology Language (OWL) and the Semantic Web Rule Language (SWRL)
- Codification of available clinical data and diagnostic criteria will facilitate discovery of new diagnoses and disease associations.
- These knowledge bases can be reused on data abstracted from any clinical data repository.

**Methods**
- Questionnaire Forms  
- SNOMED-CT  
- LOIN-C  
- FMA  
- Heartfaid HF Ontology  
- UMLS Concepts  
- OWL + SWRL  
- Analytic Tasks

**Results**
- Successful translation of existing clinical data into OWL representation has allowed diagnostic criteria and research query restraints to use both specific numerical values and higher levels of abstraction.
- Collaboration with the EU-based Heartfaid group creates the potential for validation of conclusions using our data set in a larger population.
- Both specific hypothesis testing and multi-dimensional clustering analysis can be supported by the knowledge base.
- UMLS annotation will also allow integration with other platforms such as CVRGrid to extend the Heart Failure knowledge base and data sets available for analysis.

**Conclusions**

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