An Ontology based Scheme for Formal Care Plan Meta-Description

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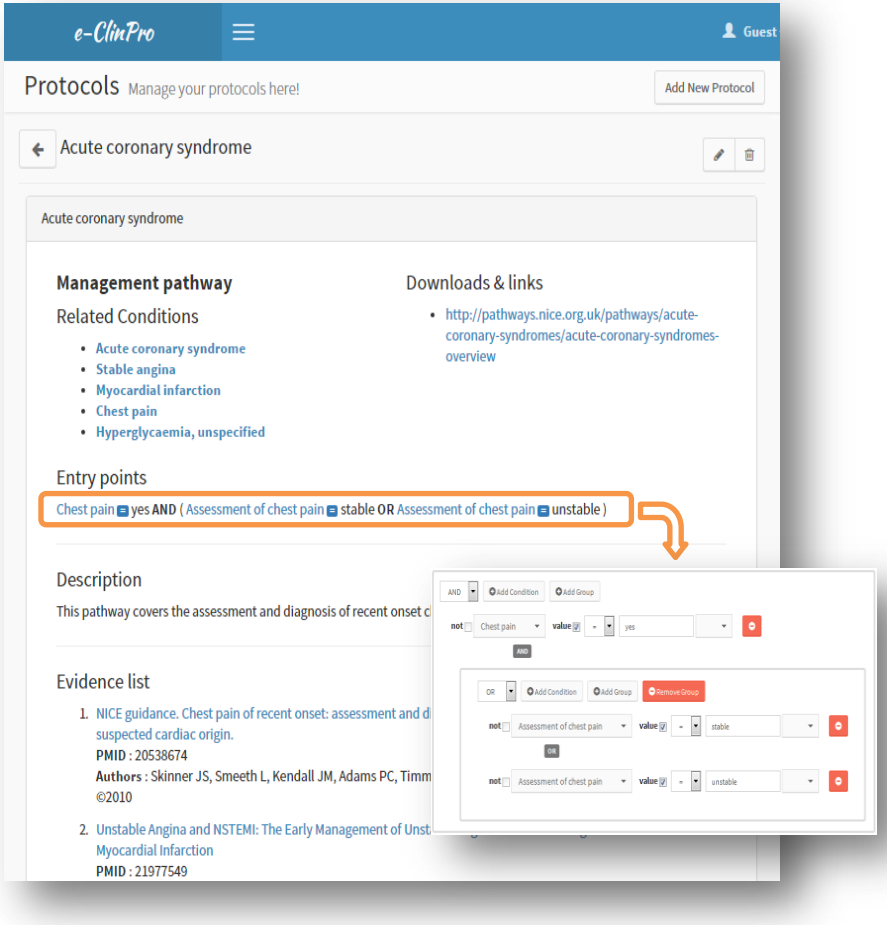
Summary

- Propose a conceptual model and an ontology for a meta-description of formal care plans
  - *Focusing on care plans as a whole and not addressing internal algorithmic steps*
- Our care plans' modeling allows
  - *Semantic tagging*
  - *Semantic enrichment*
- Advantages of our modeling
  - *Use and re-use care plans across platforms*
  - *Link to other scientific information (e.g. papers in PubMed, PHR, etc)*
  - *Modeling of the provenance*
  - *Justifications for modifications or alterations to care plans*

e-ClinPro: Clinical protocol management system

- A heterogeneous semantic social network to describe and organize clinical protocols
- The protocols' organization is based on their provenance, evolution and modifications

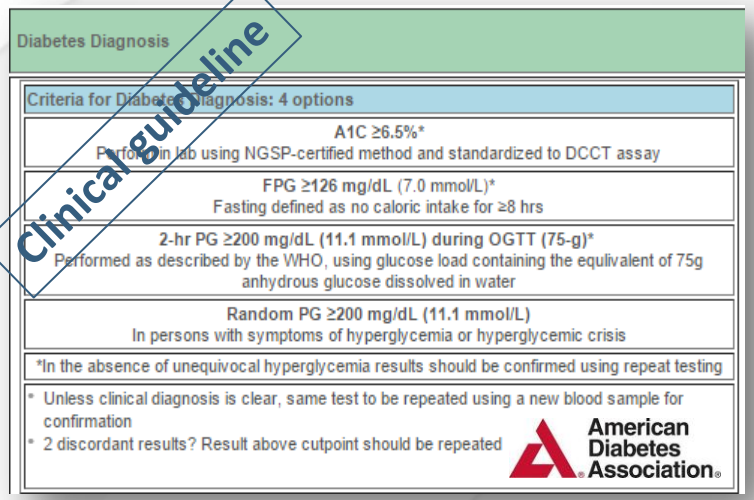


Formal care plans

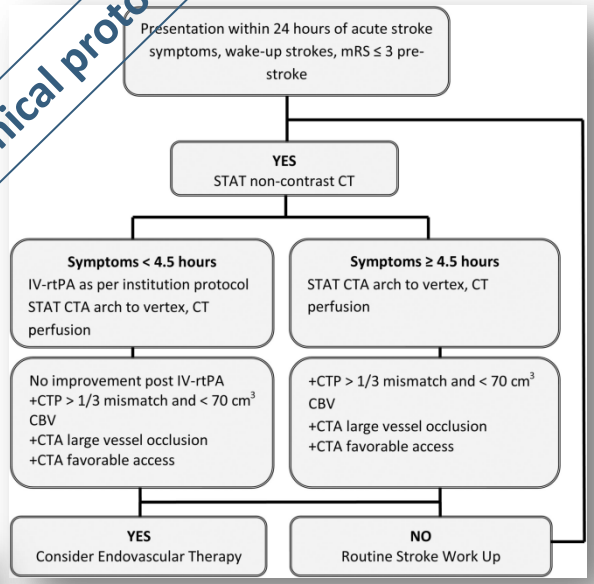
- Clinical guidelines
  - *Systematically developed recommendations to address various clinical problems*
- Clinical protocols
  - *Detailed algorithms on how to address a particular clinical problem (based on guidelines)*
- Care pathways
  - *Care algorithms integrating multidisciplinary tasks for patient care in and outside the hospital (based on guidelines)*
- …

Examples of formal care plans

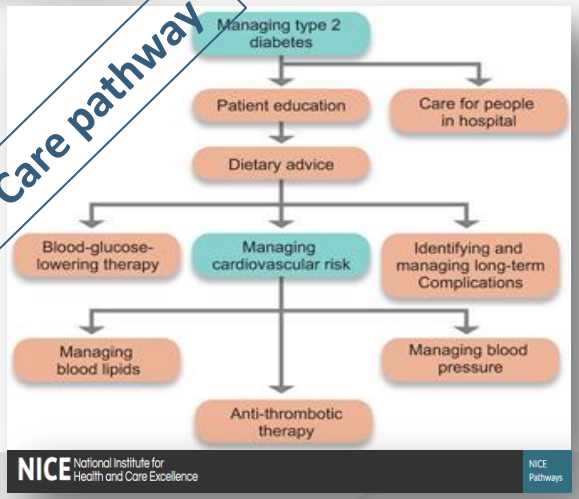
Clinical guideline



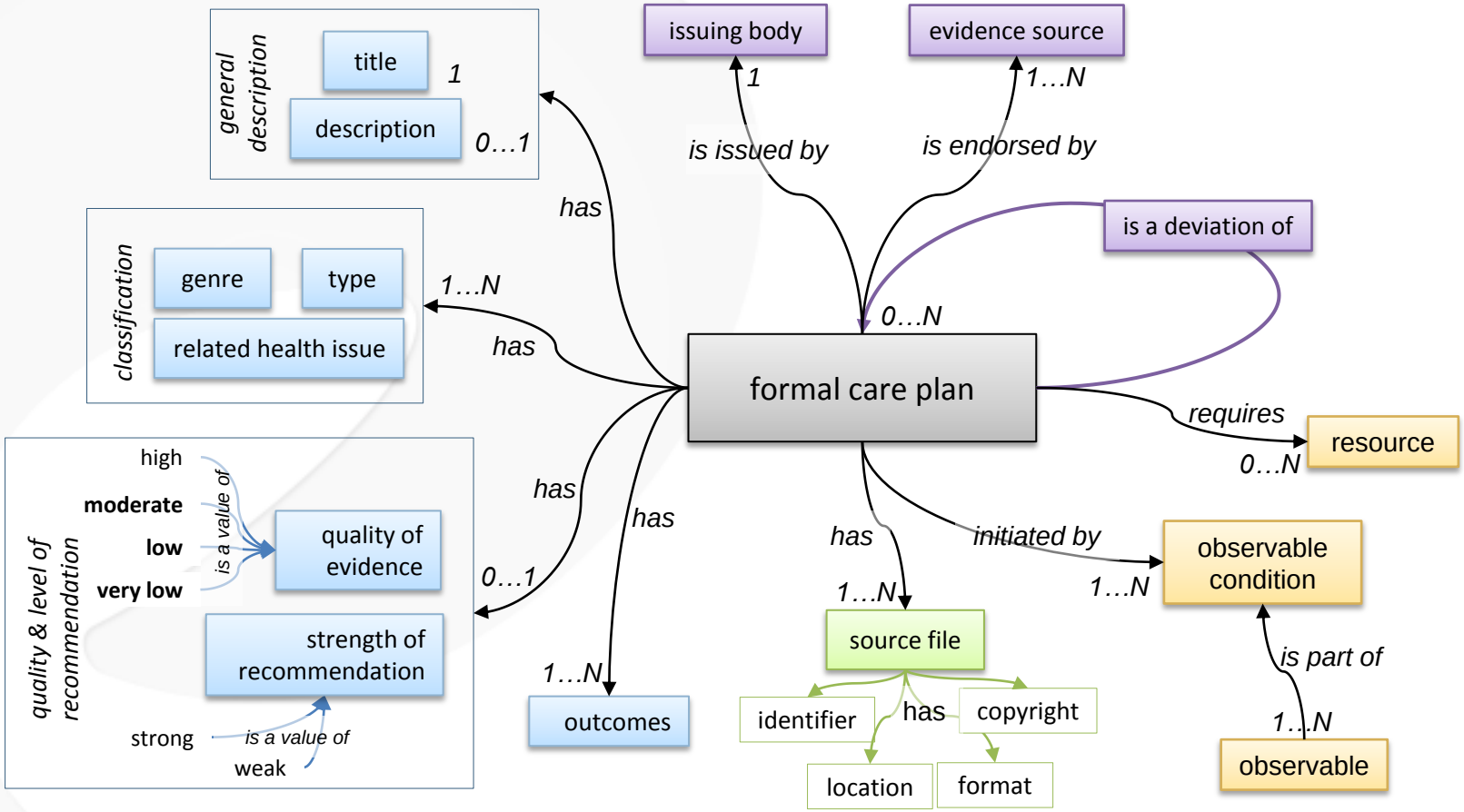
Clinical protocol



Care pathway

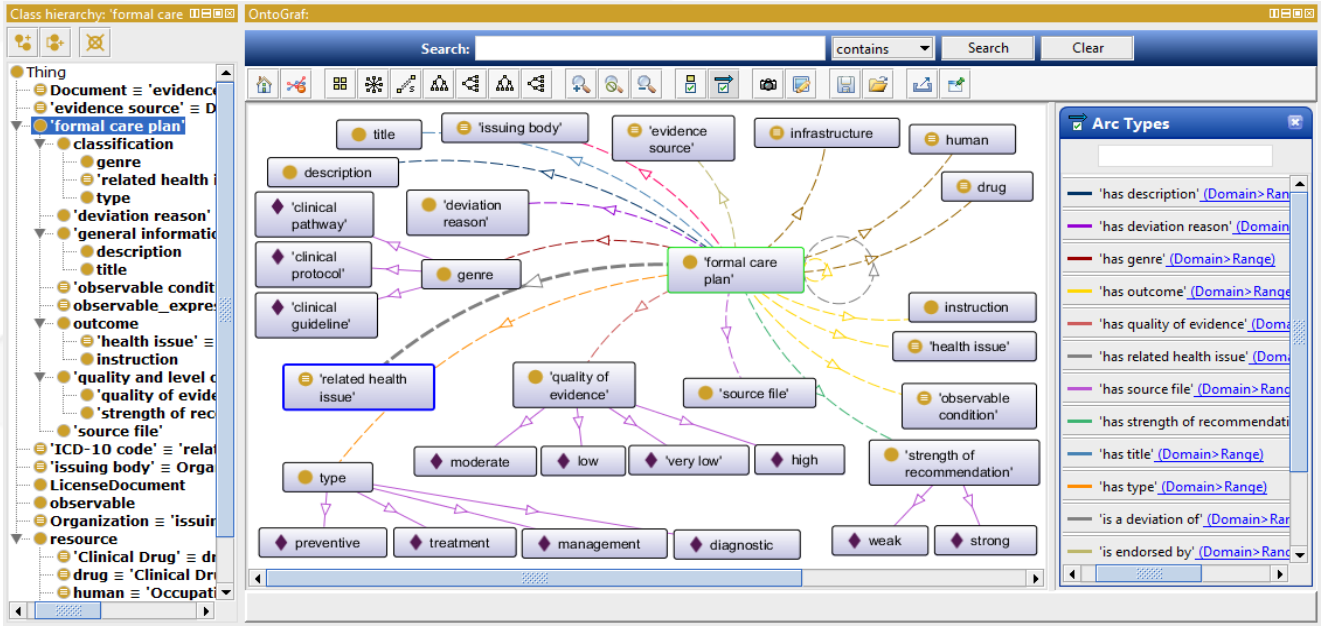


Conceptual model of care plan meta-description



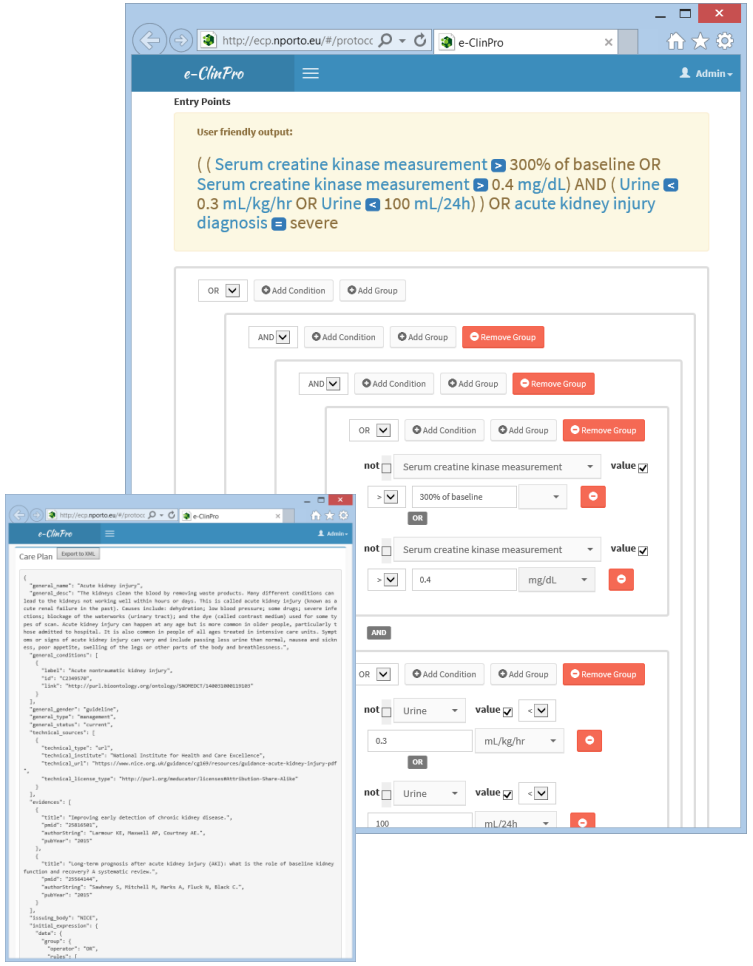
Ontology implementation

- Implemented with OWL2 using Protégé
- Available online in: http://purl.bioontology.org/ontology/ECP
- Integrated with commonly used standards and controlled vocabularies:
  - *ICD-10*, *SNOMED-CT*, *QUDT*, *UO*, *GRADE* and *UMLS*



Development process and evaluation

- Development by health care professionals (4 medical & 4 technology experts)
- Testing with 20 clinical protocols and guidelines (by NICE, NKF KDOQI, ADA, Hellenic Society of Nephrology and 2 Greek National University Hospitals)
- Medical experts found:
  - *The model was straightforward to use*
  - *The terminology was familiar and easy to understand and apply*
  - *The only difficulty identified in the expression of initial logical condition*



Conclusions

- Introduce a metadata scheme and ontology for the description of formal care plans

- Goal of the proposed scheme was to support:
  - *Care plan management in electronic repositories*
  - *Organization and classification*
  - *Universal tracking queries of care plans used by search engines or medical portals*
  - *Literature of evidence provenance*
  - *Institutional provenance*

- Our aim was to define in a formal, ontology-based, platform-independent metadata set to describe formal care plans and their relationships

Any questions?

THANK YOU

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eCP: Development of electronic clinical protocols

CARRE Project: Personalized patient empowerment and shared decision support for cardiorenal disease and comorbidities