

Advanced Clinical Decision Support Systems Beyond Clinical Guidelines

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Healthcare is continuously evolving and currently we are in the evidence based medicine era. Evidence based medicine is a medical practice approach which aims to optimize the given care by using evidence. In this context, clinical practice guidelines, which are based on the best available research evidence [1], are highly recommended and their application has been proven to improve quality of care [2].

Nevertheless, in certain cases the evidence is limited given the fact that clinical studies often have strict inclusion criteria and specific situation are not contemplated. Furthermore, when giving a treatment other external factors may affect the decision, such as patient preferences, medical choices and others [3]. Consequently, clinicians are often not compliant to clinical guidelines, but this non-compliance decisions' information is lost and not used to treat future patients.

To overcome with this issue and augment the guidelines' knowledge, several studies have proposed different alternatives [4]–[8]. Nonetheless to our best of knowledge the literature does not implement a solution that provides a complete overview of the case and gives clinicians the flexibility to understand best the situation. Therefore, in our study, we propose an integral clinical decision support system (CDSS) that consist of a guideline-based CDSS, an experienced-based CDSS and a case-based CDSS [3].

The result of this study is a generic system, that besides giving guideline based recommendations to clinical practitioners, it also collects and processes all the information stored into the systems, i.e. the decisional history [3]. This decisional history includes the health outcomes of a patient, such as toxicity, relapse and other health aspects. These outcomes, along with the rest of the information, are used by the system to assess the treatments for specific patients and generate new knowledge from previous cases.

This study has been implemented within DESIREE EU project, which targets breast cancer cases since it is a complex disease with multiple variants that affects more than 460000 new cases and 130000 deaths in 2012 [9]. In the coming months, the first prototype will be tested with real patients to ensure the well-functioning of the whole system.

Acknowledgements

Union's Horizon 2020 research and innovation programme under grant agreement No 690238.

Web page: <http://www.desiree-project.eu/>

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