Patients' adherence to medical treatment depends on its suitability to the patient's personal needs and social and demographic situation. Our goal is to develop a personalized clinical decision-support system (DSS) that would ensure that patients would receive optimal treatment based on their clinical context as well as their preferences and personal context.

Our DSS is based on a formal representation of clinical guidelines. Guidelines provide recommendations that are specific to the patient's clinical data that are often codified in the patient's electronic health record. However, guidelines do not thoroughly address the ways in which personal context should influence the medical recommendations. Another hurdle for personalizing DSSs is that this personal information is recorded in electronic health records as unstructured textual remarks that are difficult for automatic analysis.

In order to systematically personalize DSSs, we first need to understand what categories of information should be considered as personal context and patient's preferences (e.g., the availability of family members to assist the patient, whether the patient is currently travelling, patient's risk-aversion, trade-off between survival length and quality of life, willingness to pay for better services) and the types of effects that personal context can have on recommended clinical actions (e.g., deferring a clinical action, changing the ranking of actions, changing dosage, may be impairing efficacy but avoiding a side effect the patient cannot cope with).

To identify emerging personal context and effect categories, we conducted preliminary quantitative studies consisting of interviews and questionnaires with different stakeholders, including patients, physicians, nurses, and social workers.

The emerging categories will help us develop an ontology which would be integrated into computer-interpretable guideline formalisms. In this way, the ways in which different contextual information could affect decision-making may be specified such that the guideline-based DSS could provide personalized recommendations.