

**Ai-care: a Clinical Decision Support System with Application in Bipolar Disorder**

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**Introduction:** Clinical decision support systems (CDSS) are computer systems that deal with scientific knowledge and patient data in order to offer clinical guidance. The utility of CDSS in mental health can be viewed in terms of enhancing both the diagnosis and treatment processes.

**Objectives:** Our purpose is to design AI-CARE as a CDSS that relies primarily on the evidence-based clinical guidelines and individual patient data, with the aim to elaborate on this information and offer regimen choices to clinicians for better mental health care.

**Aims:** We aim to develop an interactive tool that can be used for effective decision making by psychiatrists and other health professionals. The longitudinal course of Bipolar I Disorder (BDI) is the subject of our implementation.

**Methods:** We developed AI-CARE based on the medical knowledge of the domain expert and clinical guidelines for BDI. The ontology developed describes the domain concepts as well as the time evolution of BDI symptoms. The clinical guidelines are encoded in the form of Rules. Patient data constitutes the input of our system initializing the Ontology on which the developed rules are applied.

**Results:** The approach of AI-CARE allows individualized diagnosis and treatment decisions as output of the examined case based on the applied rules. AI-CARE provides recommendations about the best therapeutic treatment, notifications and alerts.

**Conclusions:** We present the AI-CARE as a CDSS for BDI. AI-CARE platform enables clinicians to monitor the subject's actual state and retrieve recommendations on the best treatment, while providing notifications for critical mood shifts of the patient.