

Modeling And Artificial Intelligence Decision Support System For Heart Failure

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ABSTRACT

Heart failure (HF) is a pandemic currently affecting up to 15 million people in Europe. It is a complex clinical syndrome presenting with impaired heart function and is associated with poor quality of life for patients and high healthcare costs. There is a high clinical demand for novel computational modeling and artificial intelligence (AI) tools that will facilitate risk stratification, early diagnosis, and disease progression assessment in HF. STRATIFYHF [1] aims to develop, validate and implement the computational modeling and AI-based, decision support system (DSS) for risk stratification, early diagnosis, and disease progression assessment in HF to accommodate both primary and secondary care clinical needs. The DSS will integrate patient-specific demographic and clinical data using existing and novel technologies and establish. A coupled model which includes multiscale modelling of realistic sarcomeric system, genetics patient profile, electrophysiology, realistic directions of muscle fibers, solid-fluid interaction coupled to electrophysiology of the heart was implemented. Initial results give influence of left ventricle deformations on deformations of mitral valve, and on general blood flow in heart. Also drug distribution in the heart and effects of different drugs are tested for heart failure disease. STARTIFYHF [1] will change the way in which HF is diagnosed today and thereby improve the quality and length of patients' lives and lead to efficient and sustainable healthcare systems by reducing the number of HF-related hospital admissions and unnecessary referrals from primary to secondary care in Europe and beyond.

REFERENCES

- [1] www.stratifyhf.eu