



MEDICINE 2040

Rewriting the future of healthcare

NON INVASIVE INTRA-CARDIAC PRESSURE MONITORING (ICPM)

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We present a system based on a revolutionary technological concept allowing non-invasive measurement, calculation and prediction through cloud big data analysis of pressures in cardiac chambers and assess the left and right ventricular end diastolic pressures (LVEDP and RVEDP), being the major markers for congestive heart failure (CHF) and Predictors of myocardial dysfunction. Intra-cardiac pressure changes preside the development of many symptomatic events, hence the ability to real-time monitor the intra-cardiac blood pressure is critical. The system processes ultrasound data (as well as other imaging modalities) recorded from the heart chambers, analyses it and calculates the pressure changes in left and right ventricles (LV and RV), right and left atriums (RA and LA) and pulmonary capillary wedge pressure (PCWP), pulmonary artery (PA) and assess LVEDP and RVEDP in real time with great accuracy. Currently these pressures are assessed either through catheterization procedure or locally via implantable devices. The results were confirmed during ongoing human experiments conducted under the approval of an ethical committee. In the production setting the system will be able to transmit the patient's self-monitoring data from the imaging device through a smartphone or a computer to a cloud system and further transmitted to the relevant medical care personnel. The goal is to provide an accurate information helping to control heart failure of any medical cause reducing the hospitalization rate and therapeutic costs, hence improving life quality and expectancy, being important both for patients and public health institutions.