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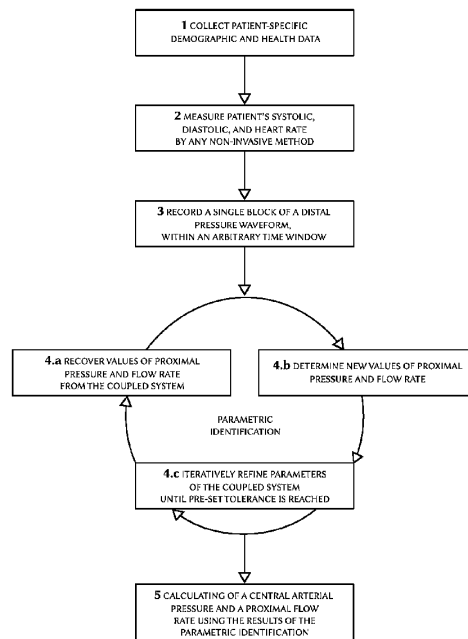


FIG. 1

(57) Abstract: A method, a computer-readable medium and a system for reconstruction of a patient-specific central aortic pressure waveform morphology using a non-invasive distal pressure measurement and a non-invasive recording of a distal pressure waveform are disclosed. Measurements of patient's systolic and diastolic pressures as well as patient's heart rate are made at a distal position, for example using the radial artery. The invention makes use of patient-specific demographic and health data, e.g., gender, age and/or current medication. The patient – specific central arterial pressure waveform morphology is calculated using a lumped-parameter multi-compartment model of the Windkessel type. The method does not assume structural rigidity of a transfer relationship, but it assumes an evolutionary law that provides the relationship between distal and proximal pressures. The invention provides values of a

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central arterial blood pressure and of a proximal flow rate which are useful in diagnosis of an elevated heart pressure or hypertension or both. The method has been validated using clinical trials. The method of the invention reproduced the values obtained using invasive methods from the clinical trials.