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BIOmarker based diagnostic TOOLkit to personalize pharmacological approaches in Congestive Heart Failure

BIOTOOL-CHF

Project

Objectives

Heart failure is a chronic clinical syndrome involving up to **6.5 million people in Europe**. It is the leading cause of hospitalisation in adults, yielding a healthcare cost of 17 billion euro/year.

The mortality rate is comparable/superior to several type of cancers in the EU perspective, **reaching 70% at 5-year** in the advanced stages of heart failure.

BIOTOOL-CHF will **discover**, **develop**, and **validate** a personalised approach to manage diuretic therapy in heart failure and reduced ejection fraction, **to reduce heart failure hospitalizations and improve the quality of life**.

Impacts

The innovation potential of BIOTOOL-CHF is built on the overall approach that will be adopted to tackle the unsolved issue of **improving the efficiency of fluid management in systolic heart failure**.

BIOTOOL-CHF research activities will lead to identification of a selected pool of biomarkers **validated for prediction of fluid overload** to be implemented in a companion **diagnostic prototype**.

This tool, coupled with a fluid retention score and a prognostic score integrated with a set of specific patient characteristics, will be the basis to develop the BIOTOOL-CHF Decision-Making Tool functional **to help health care providers in managing fluid balance**.

BIOTOOL-CHF: conceptual framework



BIOTOOL-CHF will provide clinical validation of the biomarkers-guided approach to manage diuretic therapy by a prospective randomised study comparing standard of care with decision-making tool guided approach.

Development

In this phase, BIOTOOL-CHF will direct the activities towards the development of two products of potential industrial exploitation.



Set of validated biomarkers to estimate congestion and related clinical outcomes of patients with chronic heart failure with reduced ejection fraction



Al-derived algorithm from multiparametric analysis of patients characteristics to identify congestion and to predict prognosis



Decision-making tool to implement management of fluid retention by means of loop diuretics



Prototype of Point of Care companion diagnostic to assess biomarkers concentrations



Strategy plan to comply for CE marking of the Companion Diagnostic



Discovery

BIOTOOL-CHF will discover a multiparametric biomarker-based score, integrating clinical profiles, novel and standard laboratory assays, to define independent clusters of congestion predicting congestion-related events, including worsening heart failure as well as toxicities related to excessive diuretic therapy.





Project details

PROJECT NUMBER: 101095653 PROJECT TITLE: BIOmarker based diagnostic TOOLkit to personalize pharmacological approaches in congestive heart failure TOPIC: HORIZON-HLTH-2022-TOOL-11-01 START DATE: 1 October 2023 DURATION: 60 Months GRANTING AUTHORITY: HADEA EU CONTRIBUTION: 9.600.663,00 Euro

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