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Advanced Solutions for Supporting Cardiac Patients in Rehabilitation

REA-Research Executive Agency, FP7-SME-2012, Research for SMEs, grant agreement n° 315659

HeartWays - Advanced Solutions for Supporting Cardiac Patients in Rehabilitation

Coronary artery disease (CAD) is caused by an accumulation of plaques within the walls of the arteries that supply the myocardium with oxygen and nutrients. After decades of progression, some of these plaques may rupture and along with the activation of the blood clotting system limit blood flow to the myocardium, resulting in an acute coronary syndrome (ACS). This may be either a heart attack (myocardial infarction) meaning that muscle cell necrosis in the affected regions of the myocardium has occurred) or unstable angina (meaning that the patient has persistent or recurrent chest pain at rest but without evidence of myocardial necrosis). Risk factors comprise age, sex, family history but also lifestyle-related aspects such as smoking habits, physical inactivity, overweight/obesity etc. Despite the advantages, utilization of cardiac rehabilitation phase III remains low. Recent research is supportive of the beneficial effects of cardiac rehabilitation in patients with heart failure as well as in older patients. Unfortunately, cardiac rehabilitation continues to be considerably underutilized with poor referral and enrolment rates. Implementing quality performance measures, automated referral systems, and the option of home-based cardiac rehabilitation for some patients may all help to increase participation. In addition, innovative exercise training regimens may help to enhance the beneficial effects of cardiac rehabilitation. HEARTWAYS has the objective to develop an advanced modular solution for supporting cardiac patients in rehabilitation outside a medical centre with the aid of wearable sensors and intelligent algorithms that personalize the management and the follow-up for patients and professionals.

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Juan Pablo Lázaro Ramos

Telecommunication Engineer (on Telematics, 2002) and PhD candidate on Communications by Universidad Politécnica de Valencia. In 2005, he held one of the prestigious Torres Quevedo grants offered by the Education and Science Ministry of Spain to young researchers. He has participated in different EU projects in Information and Communication Technologies (ICT) Program in the European VI and VII Framework Programs. He has wide experience in national projects related to the transference of research background into real products in the field of ICT's applied to social services and health care. His research is focused on the development of the paradigm of Ambient Intelligence, through the definition of standard architectures, seamless integration of devices, communications and intelligent software, in particular focused on the development of Ambient Assisted Living (AAL) concept. Since January 2010, he is the R&D Director in TSB S.A., a company focused on the development of innovative products in the eHealth and Active Ageing domain. Currently he is also member of EvAAL, which objective is to compare and evolve technologies related to the AAL field by creating competitions, and also supports as a promoter the AALOA initiative as an integration umbrella for the development of AAL technologies.



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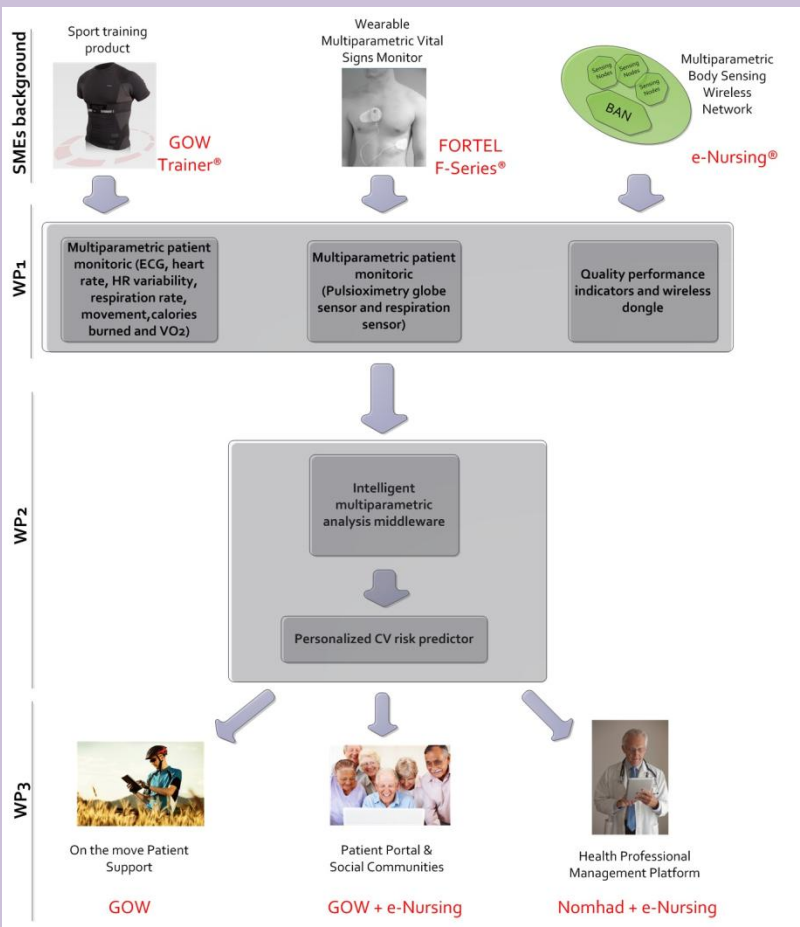


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As has been previously mentioned, cardiovascular diseases are the main cause of death in the European Union and they cost an important quantity of billion Euros annually. Furthermore, life expectancy of citizens and chronic diseases are growing trends. And on top of that, we are immersed in a global economic crisis that is affecting all EU members and countries around the world without distinction. For all these reasons, new approaches are needed. It will change the way we design, organize and deliver health care services and urgent measures should be taken to reduce the mortality and the burden of CVDs. Some specific initiatives which aim to stimulate cardiovascular disease prevention promoting healthy lifestyles are:

- American Heart Association (USA) has released a challenge to improve the cardiovascular health of all Americans (20 %) reducing deaths from cardiovascular disease and stroke (20 %) by 2020.
- European Commission (Europe) has initiated a pilot to increase by two the average number of healthy life years (HLYs) in the EU by 2020.



In conclusion, the successful result of this research project will have a positive impact on a wide range of community societal objectives including improved health and safety of population, increasing new business opportunities to innovative SMEs and fostering better efficiency and economic sustainability health care systems.

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