Chapter 4

Integrated Platform for the Lifestyle Change and Holistic Approach to Personalized Prevention and Self-Management of Patients with High Blood Pressure

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ABSTRACT

High Blood Pressure (BP) is the main risk factor for stroke and a major risk factor for heart attack and kidney disease. EU countries policies on lifestyle measures and self-management in lowering BP including making dietary changes and exercising are emerging and increasing. We aim to addresses preventive solutions for citizens by improving adherence to life style changes as well as therapy compliance by patients’ education and monitoring of compliance. Our vision is aimed at creating a systemic solution for health promotion and disease prevention to support hypertensive citizens and healthcare professionals in co-producing healthy management and preventive care actions leading to behavioral changes. We will try to join the concept of prevention centered on a) promotion of subject empowerment, b) engagement of citizen at risk, c) provision of physicians with user-friendly devices, d) supporting behavioural changes of citizens in the adherence of lifestyle protocols, e) introduction of innovative organizational models to improve healthcare system performance.
INTRODUCTION

Hypertension is a health condition that can be either primary or caused by an underlying disease and has many risk factors such as age, gender, race and family history. Being overweight, smoking, low physical activity, alcohol abuse, stress, unhealthy dietary choices and certain chronic conditions, are factors that further negatively affect blood pressure and inevitably quality of life. High blood pressure is the main risk factor for stroke and a major risk factor for heart attack, heart failure and kidney disease. There is also increasing evidence that it is a risk factor for vascular dementia and aneurysms. EU countries policies on lifestyle measures in lowering blood pressure including making dietary changes and exercising are emerging and increasing. Approximately one-third of people with high blood pressure do not know that they have it.

- **Prevention for Citizens:** Improving Adherence of Life Style Changes and home monitoring: The traditional approach for measuring blood pressure has been performed by a physician or nurse in the clinic or office setting. This has been the cornerstone of the diagnosis and treatment of hypertension and is the approach most often used in hypertension clinical trials. However, home blood pressure monitoring (HBPM) has shown a stronger association (Jennings & Cook 2010) with cardiovascular prognosis than office-based readings. In particular, home measurements in patients with hypertension and diabetes correlate better with both microvascular and macrovascular complications. Furthermore, since ambulatory blood pressure measurement (ABPM) is being used increasingly in clinical practice and has become an indispensable technique for the management of hypertension, it will be included in our proposed platform for the 24-hours continuous monitoring of the people. In the past decade, self-assessment of blood pressure has increased for patients with diagnosed HBPM but not for citizens at risk following a preventive monitoring programme. International Health Associations now recommend home monitoring to all people with high blood pressure to help their healthcare provider determine whether treatments are working but without promoting it as a substitute for regular visits to physicians.

- **Therapy Compliance for Patients:** Patient Education and Monitoring of Compliance: Failure to prevent cardiovascular (CV) events (stroke, acute myocardial infarction, lethal arrhythmias) in hypertensive patients despite optimal pharmacologic prescription is frequently caused by poor compliance in observation of drug regimen. Unobserved therapy may result in sudden and relevant blood pressure increases during daily activity or stress conditions, favoured by low or no drug bio-availability. The high-pressure shock accounts for many acute cerebral haemorrhages, acute coronary syndromes or fatal arrhythmias, limiting the proven effectiveness of anti-hypertensive treatments in the prevention of cardiovascular sequels. Furthermore, sudden spikes of high arterial blood pressure can also occur despite optimal adherence to therapy prescription, causing unexpected CV events in subjects with apparently normalized blood pressure by pressure monitoring.

Our main objectives of this research are:

- Empowering hypertensive citizens or at risk of hypertension to better manage their condition and own health and increase the level of adherence to recommended clinical advice, treatments and prescriptions to improve their health. Even though hypertension diagnostic criteria may include a variety of factors, in general, patients, can be categorized as prehypertensive, hypertensive type I