

## Methods

This medical device will synchronously assess several physiological variables: heart rate, respiratory rate, blood pressure variation, arterial pulse oximetry and circulating glucose, as well as the physiological responses to hyperoxia and meal ingestion. The results obtained will be analyzed using MatLab, in order to develop an algorithm with predictive value for early diagnosis of metabolic diseases. We are also developing a standard test mixed-meal to assess post-prandial glucose excursions with the CBmeter. The work is currently in the prototype development phase.

## Results

A preliminary pilot-test performed with the prototype revealed that all the proposed variables are assessable with the CBmeter. The standardized test meal used in the pilot-test caused a glucose excursion curve that stabilized 30 minutes after ingestion, being suitable for metabolic evaluation with the CBmeter. Interstitial glucose variation was 16.6mg/dl glucose with a latency time of 21min. Heart rate did not vary significantly after the meal ingestion.

## Conclusions

The CBmeter prototype is currently optimized to be used in a medical device clinical-trial with healthy volunteers. The mixed meal developed has proven to be suited in healthy volunteers to determine variations in CB-related cardiorespiratory parameters.

## Acknowledgements

Project funded by FCT/SAICT-POL/23278/2016

## Keywords

Carotid body, Diabetes, Early diagnosis, Medical device.

## S7

### Help to care for users and caregivers: Help2care

Maria dos Anjos Coelho Rodrigues Dixe<sup>1,2</sup> (maria.dixe@ipleiria.pt)

<sup>1</sup>Center for Innovative Care and Health Technology, Polytechnic Institute of Leiria, 2411-901 Leiria, Portugal; <sup>2</sup>School of Health Sciences, Polytechnic Institute of Leiria, 2411-901 Leiria, Portugal

*BMC Health Services Research* 2018, **18(Suppl 2):S7**

There are several studies showing that the family members providing care to their relatives need to acquire abilities that enable them to be competent in their performance, having the health care professionals an indispensable role in their training [1]. Empowering caregivers can help in reducing health care costs, improve the quality of life of both user and caregiver [2], their mental health [3] and greater satisfaction with their care [4]. The continued support to caregivers can help them in decision making in less serious health situations and to use fewer health services [5].

The main aims are: to construct assessment instruments to evaluate the patient and caregivers needs and abilities concerning self-care; to develop a support manual accessible to all caregivers; to make videos that demonstrate techniques and task procedures to support the caregiver in the caring process; to develop a digital platform where all the developed resources will be available (website and app) to support the care transition from the hospital to the residence integrating professionals from the hospital and from the primary health-care services; to empower health professionals to use the caregivers' and users' self-care empowerment model.

This project will include participation of students, teachers, researchers and stakeholders throughout the project using an action research, where, as the materials are developed, the population target acceptance will be tested, justifying the corrections needed before moving to the next step, using a consistent methodology with an action and learning research process. Population: The population will be: dependent patients diagnosed with a chronic illness, total or partial dependency admitted to the Hospital and require caregiver after hospital discharge; Informal Caregivers whose dependent members of the family present the criteria laid up and Health professional. To evaluate the patient and caregivers' needs and capacity concerning self-care we will construct them (activity 1). During the pilot test period we will have, two kinds of metrics: Qualitative metrics available on (<http://garyperلمان.com/quest/>). And quantitative

monitoring metrics for the use of the mobile app, including retention rate, churn rate, daily active users (DAU), daily sessions per DAU and stickiness, and also access statistics per module/feature on the app. The main output will be: A training model of caregivers and users for self-care composed with: a caregiver's support manual; a digital platform and a manual with the empowerment model to be used by health professionals

## Acknowledgements

The current abstract is being presented on behalf of a research group. It is also part of the Help2care - project: Help to care for users and caregivers, which is a Portuguese project with the support of COMPETE 2020 under the Scientific and Technological Research Support System, in the co-promotion phase. We acknowledge the Polytechnic of Leiria, the Polytechnic of Santarém, Polytechnic of Castelo Branco, Centro Hospitalar de Leiria and also to other members, institutions and students involved in the project.

## References

- Clarke DJ, Hawkins R, Sadler E, Harding G, McKeivitt C, Godfrey M, Dickerson J, Farrin, AJ, Kalra L, Smithard D, Forster. A. Introducing structured caregiver training in stroke care: findings from the TRACS process evaluation study. *BMJ Open*. 2014;4:1-10.
- Cheng HY, Chair SY, Chau JP. The effectiveness of psychosocial interventions for stroke family caregivers and stroke survivors: A systematic review and meta-analysis. *Patient Education and Counseling*. 2014;95:30-44.
- Legg, LA, Quinn TJ, Mahmood F, Weir CJ, Tierney J, Stott DJ, Smith LN, Langhorne P. Non-pharmacological interventions for caregivers of stroke survivors. *The Cochrane Database of Systematic Reviews*. 2014. 10. CD008179. Doi: 10.1002/14651858
- Bakas T, Farran CJ, Austin JK, Given BA, Johnson EA, Williams LS. Content Validity and Satisfaction With a Stroke Caregiver Intervention Program. *Journal of Nursing Scholarship*. 2009;41(4):368-375.
- Pierce L, Steiner VL, Khuder SA, Govoni, AL, Horn LJ. The effect of a Web-based stroke intervention on carers' well-being and survivors' use of healthcare services. *Disability and Rehabilitation*. 2009;31(20):1676-1684.

## Keywords

Transitions of care, Caregivers, Self-care, Users.

## S8

### TeenPower: e-Empowering teenagers to prevent obesity

Pedro Sousa<sup>1,2</sup> (pedro.sousa@ipleiria.pt)

<sup>1</sup>Center for Innovative Care and Health Technology, Polytechnic Institute of Leiria, 2411-901 Leiria, Portugal; <sup>2</sup>School of Health Sciences, Polytechnic Institute of Leiria, 2411-901 Leiria, Portugal

*BMC Health Services Research* 2018, **18(Suppl 2):S8**

## Background

Adolescent obesity has reached epidemic proportions, being urgent to find effective prevention strategies. The core components of classic prevention programs have been unable to obtain the desired adherence. The solution may involve a more extensive and frequent contact with the healthcare team and the use of alternative communication channels and interacting/dynamic technologies with adolescents. TeenPower is a transdisciplinary practice-based action research project that aims to develop innovative interventions to promote healthy behaviors. This project is promoted by the polytechnics of Leiria, Santarém and Castelo Branco, Município de Leiria (City Council), as well as local schools and primary healthcare stakeholders, key partners in the development phase and in the implementation of the intervention program.

## Objective

The main goal is the development, implementation and evaluation of a program for the promotion of healthy behaviors and prevention of obesity in adolescence, based on e-therapy and sustained by the case management methodology. The project is directed to the cognitive-behavioral empowerment of adolescents, through increased and interactive contact between adolescents and a multidisciplinary healthcare team. The use of Information and Communication Technologies (ICT) in