

Date: 16 de Fevereiro de 2016

Venue: Seminar Room, Building VII, 2nd floor

Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa

Program

- 10h00 Wellcome
- 10h10 **Luís Lapão**, Instituto de Higiene e Medicina Tropical, Univ. Nova de Lisboa
"Ambient Assisting Living for an Ageing Population: Quantifying the benefits for the Health System"
- 10h30 **Sara Almeida**, School of Business and Economics, Univ. Nova de Lisboa
"Health at late in life: Active Ageing and the role of Ambient Assisted Living Devices"
- 10h50 **Hugo Lopes**, Escola Nacional de Saúde Pública, Univ. Nova de Lisboa
"Who are the Portuguese long-term care beneficiaries? Differences between nursing homes and community-based services populations."
- 11h10 *Coffee break*
- 11h40 **Sally Brailsford**, Southampton Business School, University of Southampton, UK
"Modelling human behaviour in healthcare systems: is it possible, and why should we do it?"
- 12h30 *Lunch*
- 14h00 **Carla Pereira e Miguel Fonseca**, Escola Nacional de Saúde Pública e Faculdade de Ciências e Tecnologia, Univ. Nova de Lisboa
"Evaluation of the functionality in the elderly"
- 14h20 **Cristina Nobre**, Faculdade de Ciências e Tecnologia, Univ. Nova de Lisboa
"Long Term Care Model in discrete time"
- 14h40 **Catarina Martins**, Faculdade de Letras, Universidade do Porto
- 15h00 *Leg stretching with a coffee or tea*
- 15h20 **Rogério Ribeiro**, NOVA Medical School, Univ. Nova de Lisboa
"Impact of the pilot use of a dedicated booklet as a tool to support self-management education in elderly people with type 2 diabetes"
- 15h40 **Tania Ramos**, Instituto Superior Técnico, Univ. de Lisboa
"Modelling home social care services with non-loyalty features"
- 16h00 *Farewell with a coffee*

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Sally is Professor of Management Science at the University of Southampton. Sally has worked for over 25 years in the area of health O.R. She is Vice-President 1 of EURO and chair of the EURO Working Group on OR Applied to Health Services (ORAHs). She is one of the Editors-in-Chief of the UK OR Society's new journal *Health Systems*. She has twice won the UK OR Society's Goodeve Medal, in 2004 for modelling emergency healthcare services in Nottingham, and in 2006 for modelling chlamydia infection.

Modelling human behaviour in healthcare systems: is it possible, and why should we do it?

Healthcare systems have been a popular application area for operational research modelling, in particular discrete-event simulation (DES) modelling, for more than sixty years. This talk focuses on DES models in which the simulated objects in such models are human beings (usually patients). We argue that this is an area where it is very important to capture human behaviour. Two widely used psychological models of human health-related behaviour are presented, and their relevance and applicability to DES modelling is discussed. The talk describes two case studies which include patient behaviour: a DES model of screening for diabetic retinopathy, and a microsimulation model of screening for breast cancer. The key questions are: can we actually model patient behaviour, and does behaviour matter more in healthcare than other areas?

Ambient Assisting Living for an Ageing Population: Quantifying the benefits for the Health System

Luís Velez Lapão, Joana Tristão and Mélanie Maia

Global Health and Tropical Medicine, Instituto de Higiene e Medicina Tropical,
Universidade Nova de Lisboa

Healthcare reforms, related to both the shortage of human resources and the costs associated with medicines, are starting to promote the rethinking of the role of health professionals. Recent political changes seem to reinforce the need to pursue strategies already defined, expanding the traditional scope of Ambient Assisted Living (AAL) to a wider range of health services.

The demand to develop new services to address healthcare for a growing and aging population is a major challenge for economies all over the world. At the same time, a new paradigm is calling for involving people in managing their health through a more proactive approach. These challenges require proper business innovation to guide the re-organization of resources in the healthcare units.

The healthcare environment also faces the pressure to introduce new technologies with the promise to reduce costs and improve quality. However, often the opposite is the cruel reality mostly due to the adoption of not suitable business models. New breakthroughs in sensors, medical technology and pharmaceuticals along with the rapid digitalization of services provide opportunities for more efficiency and effectiveness across most branches of health care. The innovation processes plays here an important role. New services deployment comes with a cost, but does they create substantial benefits to patients, professionals and the health system?

In this study we have looked at the Amadora municipality (part of the Hospital Fernando da Fonseca influence region) and we have applied the Services Model Framework to calculate the costs and benefits of serving the ageing population (with chronic conditions) with additional AAL services with the aim of reducing both hospitalizations and not necessary specialist consultations.

Besides, by bringing to life a needed service it fulfills the detected need for IT technology and brings to patients a way to interact with their data and also be part of their own therapy as active members of the health system.

Nova Health Care Initiative

Health at late in life:

Active Ageing and the role of Ambient Assisted Living Devices *

Sara Valente de Almeida¹ and Pedro Pita Barros²

January 2016

- Abstract -

With a rising life expectancy and an ageing population there is a need to improve quality of living at the later stages of life and avoid marginalization of the elderly population. Fostering healthy and active ageing is thus indispensable to ensure the prosperity of future generations. But if countries actually manage to promote active ageing, what would be the impact on health?

In this project we propose a construction of an individual Active Ageing Index (AAI), using the micro-level data collected from the Ambient Assisted Living for All project (AAL4ALL). Our sample is constituted by 1174 Portuguese over the age of 49, distributed across 18 regions in the country. To construct the individual indicator we adapt the framework of the AAI developed by the European Commission (EC) and the United Nation Economic Commission for Europe (UNECE). After analysing the determinants of the individual AAI and health using OLS estimations, we develop a 3 equations system to study the relationship between Self-Assessed Health, the AAI and the use of AAL devices.

The results show a positive and significant effect of using AAL devices on the AAI, which in turn has a positive effect on the self-assessed health indicator. Policy design should focus on preventing of physical activity complications, potentially by providing financial support for the use of new Ambient Assisted Living devices. Social activities and access to health care services also turn out as relevant instruments to improve the living standards of an ageing population. The investment must focus the quality of the opportunities provided so that there is a true incentive for people to continue engaged in society after entering retirement.

Keywords: Active Ageing Index; Self-assessed health; Health and health care services; Public policy.

· We benefited from the collaboration of Comfort Keepers, who provided the data for the current research project. All opinions are our own.

¹ NOVA School of Business and Economics and NOVA Health Care Initiative

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WHO ARE THE PORTUGUESE LONG-TERM CARE BENEFICIARIES? DIFFERENCES BETWEEN NURSING HOMES AND COMMUNITY-BASED SERVICES POPULATIONS

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ABSTRACT

In order to address to the challenges arising by an ageing population, the Portuguese National Network for Long-term Integrated Care (NNLIC) was created in 2006. Regarding its structure, to respond to different patients' dependency levels, the NNLIC is organized in home and community-based services (HCBS) settings of care and four typologies of nursing homes (NH). The main goal is to explore, for the first time in Portugal, to what extent three NH typologies and HCBS populations differ from each other, trying to shed light in the criteria used for referral to each typology. This study concluded that there were differences regarding sociodemographic characteristics, main groups of pathologies and dependency levels at admission between the populations of all typologies of care. The logistic analysis found that a longer care responsiveness process, being married, being classified at the two lowest levels of cognitive independence and receiving care at Centre or Algarve region increases the probability to receive care in a NH setting of care. Finally, the ordered logistic regression to determine the main characteristics of the patients in each NH typologies concluded that, after adjusting to several variables, the number of patients correctly referred ranged from 9% to 89%. On the other hand, patients classified in a higher independence cognitive and ADL status at admission, increase the probability to be referred to the short-term care typology.

Keywords: Portuguese long-term care; Nursing Homes; Home and Community-Based Services; dependency levels.

Evaluation of the functionality in the elderly

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Aging with noncommunicable chronic diseases associated and with the decline of the functionality that is inherent to will be reflected in strong pressure on the health system, contributing inevitably to increase spending on social care and health and financial sustainability of these systems. The identification of health indicators of the population may provide important information for health policy design and more equitable social. The health indicators analyzed in this study was the functionality. In the national context, it is in Alentejo that observes the aging rate highest in the country. The study population consisted of elderly people living in the Alentejo region. The main objective is to evaluate the elderly persons' functionality, based on the International Classification of Functionality

Long Term Care Model in discrete time

Abstract

The growing concern over the issue of an aging population and the increased probability of people to become dependant of special care, has motivated the search for solutions both in terms of public or private coverage. Using the model of stochastic vortices we studied the evolution of an open population subject to inputs, outputs and periodic reclassification of subpopulations. In this work it was intended to develop an estimate of the population at risk of dependency and make a financial and actuarial evaluation of a possible assistance product to dependence, a product of Long Term Care (LTC), and estimate its expected individual costs, evolution and the number of users per degree of dependency. Under the model assumptions it is possible to obtain a detailed statistical study at any time and know the distribution probability of number and proportion of elements in each subpopulation, which allows the proper management of resources required to meet the needs of individuals in long term care dependence, as well as a quantification of the risk of dependency of the population over time. To illustrate the model we used real data from a Portuguese social solidarity institution and obtained three possible scenarios determined by the considered model inputs.

Impact of the pilot use of a dedicated booklet as a tool to support self-management education in elderly people with type 2 diabetes

Rogério Tavares Ribeiro^{1,2}, Rita Andrade^{1,2}, Dulce do Ó¹, Sónia Silva¹, Lurdes Serrabulho¹, João Filipe Raposo^{1,2}

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Introduction: MANAGE-CARE is a European project focused on innovative, patient-centred chronic care management for elderly people with type 2 diabetes (T2D).

Objectives: The aim of this pilot study was to evaluate the impact of a newly developed booklet on health-related emotional distress, patient empowerment and level of diabetes self-care.

Material and Methods: The study included 33 participants with T2D >65 years old, attending a diabetes outpatient clinic. Exclusion criteria included BMI > 40 kg/m² and major complications of diabetes. The booklet was given to all participants to use it over a period of one month. Participants were asked to complete three validated questionnaires addressing diabetes-related emotional distress (PAID, “Problem Areas in Diabetes Questionnaire”), empowerment (DESF, “Diabetes Empowerment Scale-Short Form”) and diabetes self-management activities (SDSCA, “Summary of Diabetes Self-Care Activities”) at baseline and after one month.

Results: Of the initial 33 recruited, 27 participants completed the study (15 male and 12 female, mean age 70.5±0.9 years, HbA_{1c} 8.0±0.2 %, diabetes duration 19.7±1.7 years, and 67% having insulin therapy).

At baseline, female participants showed a greater intrusion of diabetes in self-reported quality of life (PAID score: 38.8±6.1 vs 23.4±5.5 in male, p<0.05) and lower empowerment (DES-SF: 4.2±0.1 vs 4.6±0.1, p=0.03). The use of the booklet for one month led to lower self-reported diabetes-related emotional distress in the study population (PAID score: 30,2±4,3 vs 23,9±3,6; p>0,05), but did not significantly impact on empowerment (DES-SF: 4,4±0,1 vs 4,3±0,1; p=0,2) or self-care activities (SDSCA: 3,5±0,5 vs 3,6±0,5; p=0,1). Observed gender differences were maintained at the end of the study.

Conclusion: An educational diabetes booklet, when integrated in a patient-centred approach, may contribute to the improvement of some aspects of diabetes self-management in the short term. Patient gender differences in the emotional burden of disease will require further attention.

Support: The MANAGE CARE project has received funding from the European Union in the framework of the 2nd Health Programme.

Modelling home social care services with non-loyalty features

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One problem within the planning of home social care is the simultaneously allocation of caregivers to patients and the definition of the daily work schedule of each caregiver. In literature, most works assume loyalty between the caregiver and the patient. This is to mean the same person must always visit the patient.

In our problem, one of the objectives is exactly the opposite. One wants to define a plan that allows caregivers to rotate (with specific rules) among patients on a weekly basis. This work is motivated by a real case study of a Portuguese catholic parish that offers several social services to the population living nearby. The “non-loyalty” feature was a request made by the social assistant in charge since she has noticed that a long patient-caregiver relationship usually leads to conflict situations.

Each week, the daily schedule of teams of two caregivers has to be plan so that all patients’ requests are met. These vary from several times a day to twice a week and may comply activities of the daily living and/or transportation to/from the day care centre. Each caregiver starts the day at the day care centre, returns for the lunch break and ends the working day again at the centre.

We have decomposed this case into two smaller problems: weekly visiting schedule plan and caregiver allocation in a rolling horizon context. For each problem a MILP formulation is proposed. One is based in VRP with time windows while the other is an extension of the allocation problem. Two objectives are optimized and compared for the weekly visiting plan: minimization of walking time and workload balance among caregivers (minmax problem). Given the computational burden of the weekly VRP, a heuristic approach was developed. Results will be presented and compared with the current practice.

Keyword: Home social care problem, non-loyalty features, MILP formulations, real case study

Oral presentation