

EURO MINI CONFERENCE

COIMBRA | 30 MARCH - 1 APRIL 2015

IMPROVING HEALTHCARE: NEW CHALLENGES, NEW APPROACHES

Final Report

The Euro Mini Conference on *Improving Healthcare: new challenges, new approaches* took place in Coimbra, Portugal, from the 30th March to the 1st April 2015.

1. Scope and objectives

Recent advances in medicine allow us to live longer and healthier lives. These advances have been made possible through the joint contribution of very different scientific fields. Healthcare is nowadays better understood as a multidisciplinary field, with increasing number of challenges that can be better tackled by joint collaboration of researchers with different scientific backgrounds.

The challenges that Healthcare is facing have not only to do with the ability of providing better services to all (treatments, preventive medicine, better diagnosis tools), with an increased focus on improved personalized treatment options, but also with the need to tackle an increased pressure felt by Healthcare systems: increased number of patients, some of them requiring expensive treatments, with a consequent increase in the workload for health institutions that most of the times have to deal with important budget restrictions.

The Conference provided a forum in which researchers coming from different scientific disciplines discussed and shared their experience regarding methodological approaches to tackle different healthcare challenges. The Conference welcomed contributions from operational research, industrial engineering, medicine, medical physics, management, computational biology, bioinformatics, health economics among others.

2. Participants

The Conference had 93 enrolled participants, from 22 different nationalities: Australia, Belgium, Brazil, Canada, Hong Kong, Ireland, Israel, Italy, Lebanon,

Poland, Portugal, Romania, Serbia, Singapore, South Africa, Spain, Sweden, Switzerland, The Netherlands, United Arab Emirates, United Kingdom, USA.

These participants had very different academic backgrounds: operations research, medicine, medical physics, engineering, biomedicine, medicine, among others. Moreover, participants had also very different professional backgrounds: researchers from academia, researchers from private companies, clinicians, etc. This diversity contributed to the fulfillment of the Conference objectives.

Among these participants there were 20 PhD students presenting their research work, many of them for the first time.

3. Conference Program

The welcoming session was attended by Lina Coelho (representing the Direction of Faculty of Economics of University of Coimbra), António Martins (President of Inesc-Coimbra), Ana Viana (Vice-President of the Management Committee of APDIO) and Sally Braislford (Vice-President of EURO and Chair of ORAHS).



The Conference Program was composed by a total of 70 talks, 4 of which invited talks. Our invited speakers were Alexandre Quintanilha, Ben Heijmen, David Craft and Sally Braislford.

Alexandre Quintanilha made a wonderful opening plenary talk about *Neuroenhancement: past, presente and future*, drawing our attention to many ethical, philosophical and cultural questions regarding our evolution and the means we use to improve our cognitive capacities.

Ben Heijmen talked about optimization related to automate radiotherapy planning, one of the most promising applications of operations research in the medical field.

David Craft also talked about radiotherapy planning, describing the field as being rich in very difficult mathematical optimization problems that researchers with an operations research background are especially well suited to tackle.

Sally Braisford was in charge of the final plenary talk, that could not be more appropriate: how can we overcome the barriers and get operational research used in healthcare. Many important and interesting questions were raised and discussed.



The Conference Program was organized in 15 Sessions, with very different topics: Biomedical Engineering; Health Informatics: Health Logistics and Scheduling; Healthcare Planning; Matheuristics and Metaheuristics; Optimization in Healthcare; Radiotherapy Optimization and Simulation. All the scheduled talks took place, and there was fruitful and participated discussion in all sessions.



4. Social Program

Considering the interdisciplinary character of the Conference, it was important to facilitate the creation of working networks between participants. Trying to contribute to this objective, coffee-breaks were planned as having 30 minutes, so that participants could meet and continue the fruitful discussions held in the sessions. Talks, coffee-breaks and lunches were all held in the same building.



On the second day of the conference, there was a guided tour to the Old University of Coimbra, Unesco World Heritage, with its beautiful library and magnificent buildings. The Conference Dinner took place in Saint Marcus Palace, a very nice building belonging to the University of Coimbra, in the surroundings of the city. The dinner was accompanied with *Fado de Coimbra* (a traditional type of music that is sung by students of the University).





5. Publication Opportunities

The authors had the opportunity of submitting a paper to be published in the Conference Proceedings. The Conference Proceedings will be published by IOP Science, as an issue of *Journal of Physics: Conference Series* (open access). After a peer-review process, 17 papers were accepted for publication.

There is going to be a special issue in *International Transactions in Operational Research* (the call for papers is already available in the journal webpage). There is also going to be a special issue in *Journal of Global Optimization*.

6. Support

The conference was supported by EURO (the Association of European Operational Research Societies), ORAHS (EURO Working Group on Operational Research Applied to Health Services), APDIO (Portuguese Operational Research Society), Inesc-Coimbra, Faculty of Economics of University of Coimbra, FCT (Portuguese Science Foundation) and COMPETE under project grant PTDC/EIA-CCO/121450/2010.

Coimbra, 6 April 2015

(Conference Chair)