



Overall Report of IFMBE-HTAD activities during the period 2012 -2015

Introduction

The IFMBE's Healthcare Technology Assessment Division (HTAD) is aiming to promote Healthcare Technology Assessment (HTA) within the biomedical and clinical engineering community. Health technology refers to the application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures and systems developed to solve a health problem and improve quality of lives (WHO). Healthcare technology is defined as prevention, care and rehabilitation, vaccines, pharmaceuticals and devices, medical and surgical procedures, and the systems within which health is protected and maintained. Health Technology Assessment is a multidisciplinary field of policy analysis. It evaluates the medical, social, ethical, and economic implications of the development, diffusion, and use of health technology, according to the International Network of Agencies for Health Technology Assessment (INAHTA).

It is clear from this definition that the scope of HTA is very broad. The HTAD focuses mainly on the medical devices, the procedures, and the systems used in healthcare delivery, excluding vaccines, pharmaceuticals and clinical interventions. The purpose of HTA is to support the process of decision-making in health care at policy, clinician and management levels by providing reliable and timely information on some or all of the evaluative dimensions mentioned earlier. In this respect, HTA has been compared to a bridge between the world of research and the world of decision-making since assessment of currently adopted technologies can inform both research and adoption strategies. HTA provides a unique input into the decision-making processes of the healthcare system.

In accordance with the broad concept of health technology, the principles and scope of HTA can be applied in order to assess the potential consequences not only of medical interventions but also of organizational interventions. The thorough assessment of the potential effects on public health that the adoption of a new technology may have, and its consequences on the healthcare system itself and its economy, is what HTA can offer to decision-makers. As a result, this could allow evidence-based decisions depending on particular conditions of economic and health priorities and factors, but also influencing the acceleration or slowing down of the diffusion of the technology in question at different levels of care and/or in different sectors of the health system. The role of Biomedical- and Clinical Engineers in many aspects of HTA fields, especially those directly addressing medical devices, is essential due to their active involvement in healthcare technology development, evaluation, procurement, maintenance and user-support.

HTAD seeks to identify the synergies between HTA and BME/CE and to promote the role of HTA and its contribution to quality, safe and cost-effective healthcare.

The main objectives of the HTAD are therefore among others:

- i. To reveal the importance of the role of Biomedical and Clinical Engineers in many aspects of HTA and stimulate collaboration and professional development and growth.
- ii. To improve co-operation between Biomedical Engineers working in the field of HTA in different countries and promote collaboration with medical and other health professionals and their associations at international, regional and national levels.
- iii. To facilitate information sharing, technical and professional guidelines for the practices within the HTA field and to promote capacity building.

According to its charter description the general activities of the HTAD are therefore focusing on:

- a) Planning, promoting and organizing specialized meetings, educational courses, and publications in HTA.
- b) Preparing or participating in the preparation of international documents such as guidelines, specifications, procedures and standards.
- c) Promoting the exchange of specialists between HTA-related research groups.
- d) Creating links and collaborating with the other HTA organizations and the Medical Devices Unit of WHO.
- e) Identifying the knowledge and competences that Biomedical Engineers need to master in order to be successfully engaged in HTA projects and integrated in BME education.
- f) Promoting international recognition of the role of Biomedical Engineers in HTA.
- g) Disseminating the HTA Division's work worldwide while identifying region-specific initiatives, resources and opportunities for partnership.

During its first 3 years period 2012-2015 the HTAD has worked towards achieving many of the above objectives and planned activities, as stated in this report.

Accomplished activities of the HTAD

- A Round Table entitled “**Healthcare Technology Assessment of Medical Devices**” was organized at **IFMBE MBEC2014: 6th** European Conference of the International Federation for Medical and Biological Engineering.

Chaired by Prof Nicolas Pallikarakis, University of Patras (GR) and Dr Leandro Pecchia, University of Warwick (UK), the round table focused on the role of the BME and CE on the HTA and how HTA methodologies can inform the design of new healthcare technologies. A synthesis of the round table can be seen on YouTube¹.

The following speakers were invited to give their contribution to the round table:

- Adriana Velazquez, WHO responsible for medical devices, “WHO activities in HTA”.
 - Yves Verboven, MedTech Europe, “HTA: The MD industry points of view”
 - Ernesto Iadanza, Secretary of the IFMBE CED, “Hospital-based HTA”
 - Tony Easty, Human factors in HTA
 - Leandro Pecchia, University of Warwick and Treasurers of the HTA Division, Pre market evaluation of MDs
 - Marjan Hummel, Twente University, Multi decision criteria analysis as a tool to evaluate MDs.
 - Nicolas Pallikarakis, HTA Division / IFMBE activities
- Special Session on “**Analytic Hierarchic Process in healthcare decision making and user need elicitation**” was organized at **IFMBE MBEC2014: 6th** European Conference of the International Federation for Medical and Biological Engineering.

The Analytic Hierarchy Process (AHP) is a multi-dimensional, multi-level and multifactorial decision-making method based on the idea that it is possible to prioritize elements by: grouping them into meaningful categories and sub-categories; performing pairwise comparisons; defining a coherent framework of quantitative and qualitative knowledge; measuring intangible domains. A number of researchers have highlighted the benefits of using AHP particularly for user need elicitation in healthcare, Healthcare Technology Assessment and other applications of medical decision making.

Chaired by Dr Leandro Pecchia and Dr Marjan Hummel, this special session had contributions by the following international speakers:

- Dr Antonella Petrillo, *University of Cassino (Italy); Improving Italian healthcare service quality using Analytic Hierarchy Process methodology*
- Dr Marjan Hummel, *University of Twente (Netherlands); “User Preferences for Design Scenarios of a New Imaging Technique to Detect Breast Cancer”*
- Giuseppe Fico, *Universidad Politecnica de Madrid (Spain); “User Requirements for incorporating diabetes modeling techniques in disease management tools”*

¹ Short video of the Round Table on HTA:

<https://www.youtube.com/watch?v=OYUAShRYosM&feature=youtu.be>

- Ludmil Mikhailov, University of Manchester (UK); “Fuzzy ANP Approach for Selection of Group Health Insurance Plans”
- Rahi Jaun, Indian Institute of Technology Bombay (IITB) (India): “Application of AHP tool for choosing a Medical Research Area”
- Dr Leandro Pecchia, University of Warwick (UK); “Analytic Hierarchy Process (AHP) to select the surgical approach in hernia repair: laparoscopic (TAPP) versus open surgery”

- A Round Table entitled “**THE ROLE OF BIOMEDICAL ENGINEERS IN HEALTH CARE TECHNOLOGY ASSESSMENT**” was organized at **MEDICON2013: Mediterranean Conference on Medical and Biological Engineering and Computing**, 25-28 September 2013, Seville, Spain.

The Round Table focused on the mission and needs of healthcare technology assessment today. This Round Table emphasized on the significant role that biomedical engineers should play in HTA. Following an overview of the state of the art of HTA nowadays, this round table focused on medical devices design and usability aspects and was followed by concrete examples where the involvement of biomedical engineers is essential.

Prof. Nicolas Pallikarakis (Chairman of IFMBE-HTAD) opened the Round Table and welcomed the panel of experts and made an introduction on the role of BMEs in HTA.

Following that, Mr Eduardo Briones (Public Health Unit Seville, Spain) focused on the value of multidisciplinary approach of HTA in healthcare organizations and hospitals.

Assist. Prof. Patricia Trbovich (Univ. of Toronto, Canada, Member of the HTAD Board) stressed the importance of design and usability in Health Technology Assessment.

Assist. Prof. Leandro Pecchia (University of Warwick, UK, Member of the HTAD Board) made a presentation on Tools for early stage Health Technology Assessment.

The last presentation was on HTA in Developing Countries: An HTTG Perspective on the Role of the Biomedical Engineer, made by Assist. Prof. Cari Borrás (George Washington University, USA).

Finally, the workshop closed with comments and questions from the audience to the panel of experts.

- Nicolas Pallikarakis was an invited speaker at the **Workshop: Chronic diseases and telemedicine tools and innovative models for prevention in Europe**, 29-30 November 2013, Rome, Italy and made a presentation entitled: “***The contribution of Health Technology Assessment – HTA***”.
- HTAD participated at the **Second Global Forum on Medical Devices**, organised by WHO, 22-24 November 2013, Geneva, Switzerland, in different ways:
 - i. During the session **Health Technology Assessment: Networks and Societies Around the Globe**, Nicolas Pallikarakis made a presentation entitled “***International Federation of Medical and Biological Engineering, Health Technology Assessment Division, (IFMBE-HTAD)***”.

- ii. During the session **How to Prioritize Medical Devices** Leandro Pecchia also presented a paper on ***“A web tool to support the user need elicitation for the Health technology assessment (HTA) in emerging countries”***.
- iii. HTAD and CED participated actively in the workshop organised by INBIT on ***‘A new generation web-based medical technology management system’***.

These activities improved the visibility of the BMEs role and create a good basis for more involvement and recognition.

Ongoing and future activities

- WC2015 Round table: “HTA of medical devices: premarket challenges” scheduled for Wednesday, June 10, 2015, 12:00 - 13:30
- WC2015 Workshop on Health Technology Assessment for Biomedical Engineers, “Methods and Tools for Pre-Market HTA of Medical Devices” (Health Technology Assessment for Biomedical Engineers Workshop), Wednesday, June 10, 2015, 13:30 - 15:00.
- A book on Human Factors for clinical engineering was developed in collaboration with the Clinical Engineering Division (CED) of IFMBE. This book aims to guide the adoption and practice of human factors methods for the clinical engineering field. **Assist. Prof. Patricia Trbovich** (Univ. of Toronto, Canada, **Member of the HTAD Board**) is a co-author of this book. The book will be launched during WC2015 and will be published as an Adobe Acrobat document on the CED website, in freely downloadable form.
- The first Summer school on HTA for BME and Medical Physicists, which will run September 7-10, 2015, hosted by the University of Warwick, UK²
- Journal Supplement³ on BMC Medical Informatics and Decision Making titled “Multidimensional, multidiscipline and shared decision making in healthcare and eHealth”. Guest Editor Dr Leandro Pecchia.
- Medicon2015 HTA Workshop (under preparation)
- An international inventory of BMEs active in HTA worldwide is not realised yet.
- The **“International Journal of Clinical Engineering and Healthcare Technology Assessment”**, **CEHTA**, a collaboration between the two respective Divisions of the IFMBE is ready to be launched. The Journal is expected to start its publication with the first issue now expected to appear in September 2015.

² Summer School on HTA, University of Warwick:

<http://www2.warwick.ac.uk/fac/sci/eng/research/systems/abspie/hta/>

³ BMC Supplement: <http://www2.warwick.ac.uk/fac/sci/eng/research/systems/abspie/bmcspecial/>