Czech Republic

State of Clinical Engineering (CE) - Health Technology Management (HTM) – Body of Practice (BOP)

From a professional point of view, this is a distinctly interdisciplinary field characterized by a high degree of interconnection of technical and natural sciences with the clinical environment and medical disciplines. The application of engineering techniques, technology and theories to solve problems in healthcare and technology management in healthcare is the basis of clinical engineering. These areas include the development and management of health systems, education, maintenance, safety management, clinical research and development, and other analytical and development activities aimed at streamlining healthcare delivery to patients. Clinical engineering also solves the issues of technology management and acquisition, risk management, technology evaluation, hospital space design and project management.

In the Czech Republic, according to the law, a biomedical engineer can do a wider range of activities after specialized education in the field of clinical engineer. However, there is little distinction in the general public between the terms biomedical engineer and clinical engineer.

Despite this need in the Czech Republic, the area of technology evaluation is being developed especially in the academic sphere. The gradual use of the HTA method by hospitals is evident, but in the Czech Republic there is no uniform concept in the HTA area. Therefore, in the Czech Republic it is necessary to link the results from the academic field with the real application of the results at the providers of health services.

It is therefore appropriate to provide more information, especially in the Czech Republic, on the activities and benefits of clinical engineering and health technology management.

How would you suggest to show the Value of and from having CE-HTM program

From my point of view, it is appropriate to show successful examples of the use of these programs. It is also advisable to show the users of the outputs of these programs what benefits these programs can bring to them - for example, improved processes connected with medical devices, improved health care processes, cost savings.

Example of success stories where CE supported patient outcomes

The CTU research group is also involved in the assessment of purchases and in health technology pricing, which is one of specific aspects of the devices. Donin et al. [1] published a paper on the issues related to international monitoring the purchases of medical devices, and their proposed model formalizes the data on purchases allowing formulating hypotheses on the effectiveness of the purchases. Their cost estimate method was successively used in estimating the prices of the tomotherapy equipment [2], and in the
PET/CT selection [3]. The studies investigate medical devices purchase decisions from the healthcare provider’s perspective.

In the field of technology assessment the good example of the use of these type of methods is for example in publication of Rogalewicz [4], in this work addresses health technology assessments at the hospital level, the so-called hospital-based HTA (HB-HTA). The author illustrates a potential use of HTA methods for decision making at the hospital level with seven examples (six from the Czech healthcare environment). Other similar examples are presented by Zavadil et al.[5].

**CE Education program available (levels and content) – Body of Knowledge (BOK)**

In the field of clinical engineering, it is necessary to mention the possibilities of education of biomedical technicians and biomedical engineers. Within the Czech Republic, a biomedical technician is a student with a bachelor’s degree in the field and a biomedical engineer a student with a master’s degree. Both a biomedical technician and an engineer can undergo specializations in clinical engineering. This will allow them to increase the scope of their activities. Within the doctoral program of CTU, Faculty of Biomedical Engineering, there is a newly accredited program of Biomedical Engineering. Where clinical engineering is offered as one of the specialization options. In this specialization, students are trained in the areas of medical technology management and health technology assessment.

Detailed description of the development and overview of educational possibilities in the field of biomedical engineering and clinical engineering in Czech Republic is presented in the article by Lhotská and Hozman: Biomedical Engineering Education in the Czech Republic [6].

**CE Association/Society and Credentialing/Certification program if available**

*Czech Society for Biomedical Engineering and Medical Informatics Member of Czech Medical Association Jan Evangelista Purkynje.*

The Czech Society for Biomedical Engineering and Medical Informatics is a non-profit scientific and educational organization in the field of medical, clinical and biological engineering and medical informatics. It joins together physicians, biomedical technicians, biomedical engineers, clinical engineers, medical informaticians and other professionals from related areas. The Society aims at encouraging research and the application of knowledge, and to disseminate information and promote collaboration. Society is a partner of International Federation for Medical and Biological Engineering.

**CE major challenges (think of 3 subjects)**

- Interconnection of clinical engineering education programs with needs of practice.
- Support for investments in research in the field of clinical engineering in connection with the development of new equipment, devices, software, etc.
- Promoting international cooperation and transfer of experience.

**What is the most important action you will support to increase CE recognition**

www.ced.ifmbe.org
International cooperation and exchange of information in the field of clinical engineering. To support the training of professionals and knowledge transfer.

References:

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