



**FINAL REPORT -  
PROCEEDINGS  
CONFERENCE  
EMUTOM**

**Timisoara, September 24<sup>th</sup> 2012**

## European Module for Undergraduate Teaching of Occupational Medicine (EMUTOM)

### Final conference “Class and e-learning in occupational medicine for undergraduate students”

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On 24<sup>th</sup> of September 2012, a conference on occupational medicine in undergraduate education was held in Timisoara as a closing activity of the European Module for Undergraduate Teaching of Occupational Medicine (EMUTOM). This project was funded by the Lifelong Learning Programme of the European Commission. Between 2010-2012 five European Institutes, Ghent University (Belgium), Centre Hospitalier Universitaire de Rouen (France), University of Medicine and Pharmacy “Victor Babeş” Timisoara (Romania), University of Belgrade (Serbia) and the Coronel Institute - **University of Amsterdam** (the Netherlands), worked together to identify common learning goals in teaching occupational medicine in undergraduate education in Europe and to develop an online module to support education of occupational medicine in undergraduate curricula [www.emutom.eu](http://www.emutom.eu)

During the closing conference 30 participants from 9 countries were present and various presentations were held, which are briefly summarized.

#### **Blended learning of occupational medicine – should it be local, national or international? – Prof. dr. K. Radon (Ludwig – Maximilians – Universität München, Germany)**

Blended learning is a combined approach of various learning strategies (Online learning, Classroom learning, mobile learning). Success factors have been identified as 1. the use of didactic concepts, 2. the creation of a teaching and learning culture, 3. technology production and 4. quality evaluation (!). Advantages of blended learning compared to using only a single approach to learning (eg. classroom or distant learning) include: learning at own pace, possibility of repetition, interactive and flexible format, targeting different learning styles and the professor actually have met the students (which is not the case in distant learning). Barriers to blended learning include costs, the need for sufficient logistics, quality control, blended learning can be perceived as tiring, technical support and infrastructure.

Depending on the target group and content blended learning in occupational medicine should be local, national or international. It was suggested to target occupational medicine at a national level because of specificity of medical aspects. Postgraduate education could be internationally orientated because of the differences in culture. Considering content aspects it was suggested to teach basic aspects of occupational medicine on an international level. Medical aspects can be taught national at undergraduate level and international at postgraduate level or continuous medical education. Similar to medical aspects, legal aspects can be educated at a national level in undergraduate curricula and for continuous medical training for general practitioners. Legal aspects in postgraduate of continuous medical education training for occupational physicians should be taught on an international level. Finally research was suggested to be international orientated.

### **What every doctor should know about work and health - A needs analysis in six European countries – dr. P. Smits (The Coronel Institute, University of Amsterdam, the Netherlands)**

All doctors should have ‘work and health’ competencies. Little is known about these competencies as experienced by stakeholders such as patients, general practitioners, medical specialists and occupational physicians. In the EMUTOM project the perceived needs were explored of these stakeholders in six European countries: Belgium, France, Serbia, Romania, Spain and The Netherlands.

An open answer questionnaire was sent to a convenience sample of stakeholders (patients, general practitioners, medical specialists, occupational physicians, other), asked to articulate which ‘work and health’ competencies medical students should have at the end of their medical study.

Results identified four clusters, 1. General introduction (meaning of work, employment, basic knowledge of occupational health, occupational history taking, preventive concepts), 2. Structure legislation roles (communication, legislation, compensation), 3. Effect of work, occupational diseases (diagnostics of occupational diseases, basic knowledge of risks in work, musculoskeletal diseases and risks, toxicological risks, risks of stress, reporting of ODs, personal protection, biological risks, climate, thermoregulation, radiation), 4. Fitness for work (assessment of disability, return to work policy, pre-employment examinations). Interesting, not one stakeholder mentioned health promotion.

It was concluded that stakeholders state that doctors should have competencies on the meaning of work for health, occupational diseases, health risks at work and fitness for work and skills on occupational history taking. These competencies are the basis of the European Module EMUTOM

### **Evidence based approach of e-learning in higher education - Dr. R. Vanderlinde (Ghent University, Belgium)**

Recent there is (a renewed) attention for an evidence based approach in education, however there’s a gap between education and research. From a practical point of view teachers ask questions like what is the better approach A or B? Which is often answered by ‘*It’s complicated...*’ and ‘*It depends...*’.

Evidence in a context of educational innovation could be seen as a pyramid. On the bottom an **inspiration** or **idea**, that is put into **existence** through **implementation**, from there it leads to **perception** and **experienced outcomes**, which ultimately could lead to **evidence** through **measurement**. Much research ends with perceptions as effect and evidence are difficult to measure in educational research. A problem is the many context variables that could influence the outcome. John Hattie emphasized the use of effect sizes as approach to evidence as he calculated the effect sizes by meta-analysis on various studies. The effect was described in a barometer of influence ranging from  $d < 0$ , to  $d = 0 - 0.15$  (effect achieved without schooling),  $d = 0.15 - 0.4$  (effects of teachers on students to be accomplished within a year),  $d > 0.4$  (zone of desired effects).

Answering the question on ‘what works’ is considered as a strategy to bridge the gap between educational research and practice.

Speaking about ICT or e-learning in higher education means thinking about a diversity of applications and didactical use. E.g. collaborative technology use, simulation, ICT as an information tool all consider a different educational learning strategy and even social media attunes to various skills, producer of content, commentator, gatherer, joiner or observer.

Still because of the many possible influencing factors it is difficult to interpret study results. It’s like we are measuring the clouds? Answering the question of what works with ICT in higher education, means looking at influencing conditions that supports learning effects.

### **General presentation of EMUTOM project – Prof. dr. L. Braeckman (Ghent University, Belgium)**

All medical doctors, whichever speciality they practice, have a key role in the prevention, diagnosis and treatment of work-related conditions and the promotion and maintenance of good health, but their training in occupational medicine is usually limited. In response the European Module for Undergraduate Teaching of Occupational Medicine (EMUTOM) proposal was applied for and funded by the the Lifelong Learning Programme of the European Commission. Its objective is aimed at enhancing collaboration between five (at start six) European medical faculties through the design of a module for teaching health and work issues that allows for harmonisation and transparency in terms of competencies and learning outcomes. The EMUTOM project started on October 1<sup>st</sup> 2010 and ended September 30<sup>th</sup> 2012.

The module aimed to increase awareness and to provide a practical understanding of work and health related issues to inform and enthuse students about the field of occupational medicine and health.

Furthermore the EMUTOM project was set out to provide undergraduate students in medicine and health sciences with sufficient knowledge, appropriate skills and attitudes in dealing with work-related issues. This included students to 1. understand the impact of health and disease on work and vice versa (Knowledge), 2. take an occupational history (Skills) and 3. adopt a preventive attitude when considering work and health issues (Attitude).

The project used a two phased strategy. First the current condition of occupational medicine in undergraduate medical curricula across Europe was investigated by a questionnaire survey and an open answer questionnaire send to multiple stakeholders (patients, general practitioners, occupational physicians, specialists) was used to identify the basic content for occupational medicine training in undergraduate medical curricula in Europe (see presentation Prof. dr. P. Smits). Results indicated a broad range of contact hours in occupational medicine among European countries (0-100) and even between universities within the same country. Needs analysis identified four clusters of occupational medicine related topics, meaning of work, occupational diseases, fitness for work and occupational history taking, which were used to structure the module.

Development of the module was the second phase of the EMUTOM project. Based on the explorative study the module was setup in a four chapter structure, 1. General introduction to work and health, 2. Effects of work on health, 3. Fitness for work and 4. Workplace health promotion. Each chapter had a similar structure, advanced organizer, learning objectives, body of the chapter, summary with key words, student assignments and multiple choice questions and feedback on the multiple choice questions. The module is delivered as a 5-day taught programme in a three-weeks period and has a student workload of 84 hours (3 European credits).

The module is available on <http://www.emutom.eu>. The information and the material is directed both to those who teach to medical undergraduates and also to undergraduates themselves. It contains a teacher manual and supports a blended learning approach.

The module has been evaluated by on-line questionnaires sent to experts and practitioners in each country of the participating universities and to 5 students in the third year. Main conclusions included, overall, positive comments and feedback, need for more cases, more multiple choice questions, minor chapter related remarks, new layout for the website, consistency of the chapters and more visibility (logo).

At the end of the EMUTOM project the question remains, what's next? A final version of the module is available from October 2012 and partner universities strive to implement the module into the undergraduate curriculum in their counties. The module is available for all interested parties, free of charge and will be promoted to various activities such as final conference report, scientific publications, bilateral agreements, and others.

### **Inventory of undergraduate curricula in occupational medicine in European countries – Prof. dr. J.F. Gehanno (Centre Hospitalier Universitaire de Rouen - France)**

Many European workers have no occupational physician. General practitioners play a central role in the system as gate keepers, treating sick workers and decide when they return to work. Interactions between general practitioners and occupational physicians are often lacking, raising the question about the knowledge of general practitioners in occupational medicine. As continuous medical education on occupational medicine in journals is scarce, their only source of knowledge are their medical studies. Hence the research question was posed: What is the level of teaching in occupational medicine to undergraduate students in the European schools of medicine? A questionnaire about occupational medicine in undergraduate medical curricula was emailed 307 medical schools in 27 European countries.

Responses came from 135 medical schools representing 108.400 students. Lectures identified as most used pedagogical approach (91%), followed by seminar tutorials (52%), workplace visits (38%), short term internship (29%), problem based learning (26%), e-learning (20%), project work (16%) and work-based tuition (9%). Average hours in the undergraduate medical curriculum dedicated to teach occupational medicine was 25,5 hours (range 0-100). About a quarter of the medical schools (27%)

delivered less than 10 hours of training and results demonstrated high differences in hours of occupational medicine teaching between and within countries.

Results identified a large variation in taught topics related to occupational medicine. Most taught topics are orientated towards 'traditional occupational medicine' (occupational diseases, toxicology, etc.). Less than 50% of the respondents reported to teach topics concerning return to work (assessment of workability/ disability, return to work, environmental impact of industrial activity, etc.).

In conclusion results demonstrate that medical schools across Europe are very unequal in providing qualifying doctors with education on the topics they will frequently come across in their working lives. Some of them may even fail to provide future doctors with the skills and competencies to enable them to practice as competent physicians. Despite European regulations and free movement of workers across Europe, we face very different levels of education in occupational health in European countries. This warrants a debate on the competencies that every doctor should have in occupational medicine and the definition of a core curriculum for undergraduate teaching in occupational medicine in Europe.

### **Group discussion session**

To conclude the EMUTOM conference, participants were divided into three small groups to have a discussion guided by two questions:

1. How could you use the module in your university?
2. Do you have examples for assignments relating to your country?

Afterwards there was a plenary report of each group discussion. The results are briefly summarized.

The EMUTOM module is seen as an additional source in support of undergraduate (and even postgraduate) training of occupational medicine. It provides a common frame of reference for teachers with or without a background in occupational medicine and the structure of the module with cases, assignments, self-assessment exercises, feedback, etc. offers users support to use this frame for teaching or learning.

Participants of this conference reported the use of some parts of the module in their curriculum, but also acknowledge that more promotion in other institutes in their country and connected countries is needed. The extent of usage of the module can be very diverse (use of presentation vs. implementation of module elements through blended learning) and would be an interesting focus of future evaluation of the module. Participants also believed that the implementation of the module in education could lead to a change in pedagogical approach.

Language literacy however was perceived as an important barrier to the implementation of the EMUTOM module in some countries, which stresses the need for translation. Other barriers to the implementation of the module is the level of difficulty of the content and related materials (cases, questions, etc.). Some parts of the module have been identified as to more suitable for postgraduate

students, which is not the main target of EMUTOM. The module is a theoretical orientated approach in the education of occupational medicine.

Next to lectures, the use of internet (blended learning), discussion groups, role playing sessions, peer learning groups and interactive lectures by using voting systems were discussed as potential approaches to teach occupational medicine.

Although the road to harmonize education on occupational medicine in Europe is still long and rocky, it is worth the efforts!