VIRTUAL PATIENT IMPLEMENTATION IN CASE-ORIENTED TEACHING FOR PREGRADUATE MEDICAL EDUCATION

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D2.1 TECHNOLOGY-ENHANCED LEARNING AND TEACHING IN ACUTE MEDICINE

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We aim to present interactive tools implementing virtual patients for teaching and learning master's and bachelor's medical education study programmes. The tools, which are freely available at educational web portals AKUTNE.CZ (part of MEFANET) and Sepsis-Q.cz, are in the form of interactive multimedia algorithms or clinical scenarios. They are representing an important contribution to lessons that are more oriented to problem solving (Problem Based Learning, PBL) compared to the traditional eduational scenarios. Use of virtual patient is one of the main features that supports teaching and memory footprinting in management of critical case, without hurting a real patient. We want to introduce options and possibilities of our original platform for authoring and using virtual patients.

In the period of the 2007–2009 an educational portal for e-learning in acute medicine www.akutne.cz was established as a part of MEdical FAculties NETwork in the Czech and Slovak Republics. The portal contains web-based tools for authoring of virtual cases, which have a form of interactive algorithms for clinical reasoning training. Interactive algorithms are created by teams of students led by physician during one school year. The process consists of different steps: study of literature, construction of story of the case, writing the text of each node in two language versions — Czech and English, creation of multimedia materials, as well as adding supporting laboratory results and physiological parametres to every node. The algorithms are developed in a set of forms generated by a backend application (PHP/XML/MySQL) and then rendered on a frontend application (ActionScript/FLASH, nowadays HTML5). Completed algorithms undergo a three-stage review; final peer-review by special-physician is published together with algorithm in education part of the website.

Strictly anonymous basis for interactive clinical scenarios SEPSIS-Q are drawn from the register EPOSS (Data-based evaluation and prediction of outcome in severe sepsis). Cases from EPOSS research database suitable for education are subsequently upgraded to didactically appropriate level by a backoffice application (PHP/MySQL), which enables convenient and comprehensive web content management. All the finished cases are approved by a guarantee designated by the Board of the EPOSS/SEPSIS-Q project. Consequently, the clinical case becomes immediately available on-line in Adobe flash player environment (nowadays HTML5 player).

Since 2007, more than 40 interactive algorithms were created in Czech and English languages and published at AKUTNE.CZ educational web portal. Individual algorithms cover the following thematic areas: first aid, emergency medicine, intensive medicine, pain management, anesthesiology, dentistry, gynecology and obstetrics, pediatrics and surgery. Since 2012, the educational web portal Sepsis-Q published seven clinical scenarios of severe sepsis, based on real clinical cases. Lessons based on virtual patient are used with a positive feedback from students of General Medicine, Dentistry, Nursing and Midwifery in the following courses: First Aid, Anestesiology and Pain Management, Intensive Care Medicine and Anesthesiology for Midwifes.

Lessons with the use of the algorithms or virtual patients compose a very important part of undergraduate teaching of acute medicine topics. The introduced tools can be used in the classroom in the form of PBL courses of study General Medicine, Midwifery and Dentistry. These peer-reviewed educational tools can be used to guide the PBL-like conducted sessions integrated into curriculum of medical and paramedical professions. Our platform for authoring and using interactive algorithms is now available for the academic use worldwide.