…tell and listen to stories that educate, move and inspire…

editors
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DANIEL SCHWARZ
MARTIN KOMENDA

Institute of Biostatistics and Analyses,
Faculty of Medicine, Masaryk University
e-mail: schwarz@iba.muni.cz

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WELCOME WORD

Dear colleagues and students,

we are pleased to welcome you at the 13th year of the MEFANET conference, which traditionally brings together educational technologists, teachers and students from faculties of medicine and faculties of healthcare sciences across Czechia and Slovakia. This year's conference is held under the auspices of Professor Martin Repko, PhD, Dean of the Faculty of Medicine of Masaryk University.

This event brings together three Erasmus+ funded medical education projects in various stages of development or completion: BCIME, TELSON and CLEVER, which have together covered wide range of topics, including medical curriculum mapping and scenario-based learning underpinned by virtual patients. We believe that this joint meeting of projects will form a large network of institutions and businesses across Europe, actively engaged in similar topics of medical educational informatics.

The conference programme encompasses three workshops, one symposium, one keynote lecture, one session with short communications and a guided poster tour. Besides general concepts of technology enhanced learning, the conference program focuses mainly on medical educational informatics and also on simulation modalities used in medical education.

The workshops will enable participants to explore several use-cases of virtual patients, starting from case-based learning, going through various approaches to collaborative learning, such as problem-based and team-based learning, finishing with the use of simple linear virtual patient cases for lifelong learning and continuous professional development of physicians. The symposium will uncover on-line academic analytics for facilitation innovations in complex curricula at medical universities.

We thank all participating speakers and authors of the conference proceedings contributions. It is our sincere hope that this year's conference will become another valuable asset for the MEFANET community.

On behalf of the programme committee and organising team

Daniel Schwarz & Martin Komenda

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Institute of Biostatistics and Analyses, Ltd., a spin-off company of the Masaryk University

GENERAL INFORMATION

Conference venue

Mendel Museum of Masaryk University
Mendlovo nám. 1a, 603 00 Brno, Czech Republic
GPS: 49.191028, 16.593972
https://mendelmuseum.muni.cz/

Catering

Lunch is included in the registration fee and will be served in the foyer to all conference participants on 27 and 28 November.

Registration of participants at the conference venue

27 November 2018 from 9.00 to 16.30 h
28 November 2018 from 8.00 to 15.00 h

Information for authors

- A data projector, PC connected to the internet, laser pointer and microphone are available for the lecture.
- All equipment is available for testing before the conference or during breaks.
- Technical support will be available for the whole time of the conference in the congress hall.
- Your presentation file will be uploaded to the PC at a registration desk.
- It will be also possible to upload your presentation directly to the PC in the congress hall; however, we do not recommend this due to time issues.
- Create your presentation; we recommend pptx format, eventually export to pdf.
- Duration of a standard lecture (including discussion) should not exceed 20 min.
- Authors of posters will receive information on poster presentation at a registration desk.
- Official languages of the conference are Czech, Slovak, and English.
- Poster dimensions from A3 to A0 format.

We kindly ask lecturers to stay within the time limit for their presentations.

Wednesday
27 November

11.³⁰ /////// *Lunch*

12.³⁰ /////// TELSON:
workshop on scenario-based
learning with low-fidelity simulations

14.⁰⁰ /////// *Coffee*

14.¹⁵ /////// Keynote:
Technologies in medical and healthcare education:
Looking back, the present and future visions

15.³⁰ /////// *Coffee*

16.⁰⁰ /////// CLEVER:
Interactive session
on case-based learning in medicine

17.³⁰ /////// MEFANET Coordinating Council meeting

18.⁰⁰ /////// *Museum excursion*

19.⁰⁰ /////// *Banquet*

Wednesday 28 November

09.00 ////// **Poster session**

10.15 ////// *Coffee*

10.20 ////// **Short communications**

12.00 ////// *Lunch*

13.00 ////// BCIME:
Symposium on curriculum innovations

14.30 ////// *Coffee*

15.00 ////// **Workshop on virtual patients in continuous professional development**

16.30 ////// *Conference closing*

AB

STRA

CTS

WORKSHOPS AND SYMPOSIUM

WORKSHOP ON SCENARIO-BASED LEARNING WITH LOW-FIDELITY SIMULATIONS

12.30–14.00 **WEDNESDAY**

TELSON group {Masaryk University, St George's University in London, The University of Medicine and Pharmacy "Grigore T. Popa" Iasi}
Support: TELSON, Erasmus+ (Problem-based and team-based learning strategies in the education of biomedical and life sciences)

The workshop will deliver general information about how Scenario-Based-Learning (SBL) educational resources - virtual scenarios (VS) - and pedagogy methods - PBL and TBL - can be used effectively in order to develop reasoning skills and decision making competencies in students. This will be explained on the experience and data coming from the Summer school on Mathematical Biology organized by Masaryk University in autumn 2019. The participants will hear about selected collaborative learning methods (PBL, TBL & Flipping classroom) and the main differences between them. Further they will have an opportunity to work in groups on development of single-based-answer items, which form an import part of readiness tests in TBL.

INTERACTIVE SESSION ON CASE-BASED LEARNING IN MEDICINE

16.00–17.30 WEDNESDAY

CLEVER group {The University of Medicine and Pharmacy "Grigore T. Popa" Iasi, Pavol Jozef Šafárik University in Košice, Masaryk University}
Support: CLEVER, Erasmus+ (Case-based learning and virtual cases to foster critical thinking skills of students)

The workshop will introduce Case-Based-Learning (CBL) and Virtual Patient Cases (VPC) in a context of medical curriculum at University of Medicine and Pharmacy "Grigore T. Popa" in Iasi. The participants of the workshop will hear about SWOT analysis focused on implementation of CBL and VPC into an existing curriculum – using learning units and learning outcomes – two important entities employed in the formal description of a curriculum. Demonstrated examples of virtual patient cases and explained insights into the authoring methodology will serve the participants as a toolkit for their "hands-on-VPC" activity.

CLEVER

SYMPOSIUM ON CURRICULUM INNOVATIONS

13.00−14.30   THURSDAY

BCIME group {Pavol Jozef Šafárik University in Košice, Masaryk University, Universitaet Augsburg, Uniwersytet Jagiellonski, The University of Medicine and Pharmacy "Grigore T. Popa" Iasi}
Support: BCIME, Erasmus+ (Building Curriculum Infrastructure in Medical Education)

The workshop will offer overview of innovative curriculum mapping and harmonization processes and considerations of how curriculum innovations can enhance the comprehensibility of medical curriculum and streamline efficiency during its definition. Participants will acquire information about the needs analysis of five independent medical faculties regarding the curriculum management systems. Guidelines and the best practices including methodological background how to address the challenge of curriculum innovations based upon the experiences of the contributing organizations will be presented too. Inspired by the results of BCIME implementation team, teachers, curriculum designers, institutional management, and anyone, who might be involved in learning innovation can find motivation for curriculum optimisation.

BCIME

ERASMUS+
Building **C**urriculum **I**nfrastructure in **M**edical **E**ducation

WORKSHOP ON VIRTUAL PATIENTS IN CONTINUOUS PROFESSIONAL DEVELOPMENT

15.00–16.30 **THURSDAY**

Daniel Schwarz, Kateřina Maršálová, Matúš Hlaváčik (Institute of Biostatistics and Analyses, Ltd.) & Igor Richter (Liberec Hospital)
Support: Ipsen Pharma

Lifelong learning of physicians in the Czech Republic is organized by professional medical associations, often with some external support. Despite the delayed onset of technology-enhanced learning, there have been several e-learning projects and online platforms for case-based learning launched recently. "Renal carcinoma and virtual patients" (ca-ledviny.cz) is a new project aimed at scenario-based learning with all cases associated with this type of kidney cancer. Although the target group involves mainly oncologists and urologists, this educational platform has the potential to become an interesting learning resource for specialists in other medical disciplines as well. The workshop participants will receive information about the project and will hear about the authoring process behind linear and interactive virtual patients. One of the on-line cases will be gone through while being facilitated by an invited content expert. A standardized evaluation tool will be then used to gather data from participants about their experience.
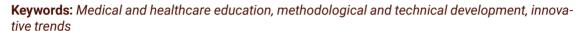

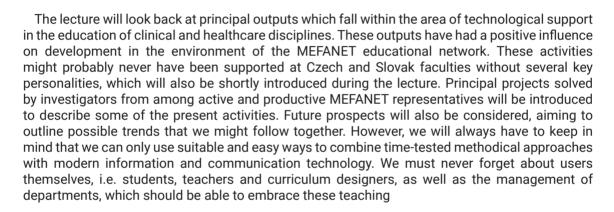
IPSEN
Innovation for patient care

KEYNOTE LECTURE

TECHNOLOGIES IN MEDICAL AND HEALTHCARE EDUCATION: LOOKING BACK, THE PRESENT AND FUTURE VISIONS

14.45–15.30 **WEDNESDAY**

Martin Komenda
Faculty of Medicine, Masaryk University

Keywords: *Medical and healthcare education, methodological and technical development, innovative trends*

The lecture will look back at principal outputs which fall within the area of technological support in the education of clinical and healthcare disciplines. These outputs have had a positive influence on development in the environment of the MEFANET educational network. These activities might probably never have been supported at Czech and Slovak faculties without several key personalities, which will also be shortly introduced during the lecture. Principal projects solved by investigators from among active and productive MEFANET representatives will be introduced to describe some of the present activities. Future prospects will also be considered, aiming to outline possible trends that we might follow together. However, we will always have to keep in mind that we can only use suitable and easy ways to combine time-tested methodical approaches with modern information and communication technology. We must never forget about users themselves, i.e. students, teachers and curriculum designers, as well as the management of departments, which should be able to embrace these teaching

SHORT COMMUNICATIONS: TECHNOLOGY-ENHANCED LEARNING

TEN YEARS OF WIKISKRIPTA IN SEVERAL NUMBERS

10.30–12.00 THURSDAY

Martin Vejražka, Čestmír Štuka, Stanislav Štípek
First Faculty of Medicine, Charles University

Keywords: WikiSkripta, wiki in education, community-based learning, student-oriented learning

The WikiSkripta portal (www.wikiskripta.eu) was established in 2009 as a repository of materials for the undergraduate education of medical students. The original intention was to create a repository of reusable learning objects (RLO) for teachers. A policy change and student involvement, however, have gradually transformed WikiSkripta into one of the most sought-after repositories of educational materials for medicine.

Openness, accessibility and community-based approach are important aspects of the project. The motivation of contributors is of key importance for the development and sustainability of open community-based projects. We will use statistic data from the ten-year period of WikiSkripta existence to demonstrate which motivational elements have contributed to its success, how the project dynamics has changed and what is the position of Wikiskripta among other educational project.

The WikiSkripta portal represents an open repository of educational materials for the undergraduate education of students of medicine and related disciplines. It is based on the wiki technology, which makes it possible to create new texts or edit existing texts immediately and effortlessly. The materials can be accompanied by images, audiovisual or interactive elements.

The technical core of WikiSkripta is based on the open-source MediaWiki software, supplemented with several extensions of our own. An extensive group of authors, involving university teachers, students, doctors and other experts, mostly from medical faculties, contributes to the WikiSkripta contents. A community of students and young doctors – the so-called WikiSkripta editors – look after WikiSkripta smooth running. The WikiSkripta editors educate themselves systematically on skills necessary to process specialised texts, principles of evidence-based medicine, some soft skills etc. We have obtained data on WikiSkripta operation by using the Google Analytics tools, i.e. statistical tools which are directly incorporated in the MediaWiki software, as well as our own tools, based on direct queries on the WikiSkripta database.

Nowadays, the WikiSkripta portal is the third largest medical wiki-project globally. After ten years of operation, it contains almost 10,000 articles, which have undergone more than 400,000 edits, and more than 6,400 images. Although registration is not required in order to either access or create materials in WikiSkripta, more than 17,000 users have created their own accounts. The usage of the Wikiskripta portal reflects the course of the academic year. Up to 55,000 users visit the portal every day during the examination period. About 60 registered users contribute to the

portal contents each month. More than 600 students were gradually involved among the editors. The motivation bringing students to become involved in the project has a significant influence on how much they participate. The presented data will demonstrate that a maximum openness of the environment, together with support for the students' own initiative, lead to the best results. Even a small restriction of user rights or imposing obligations result in a loss of active contributors.

The open environment, based on community work, makes it possible for educational materials to be created effectively. Apart from educational materials themselves, there are even more benefits: such an environment concentrates gifted students and supports their cooperation, stimulates them, supports their involvement in the academic environment, and motivates them to acquire important skills. The use of open environments is therefore one of several effective student-oriented educational tools. The project usefulness, openness and accessibility is of key importance its development in the long term.

AN INTERACTIVE AND SELF-TEACHING MATERIAL FOR PRACTICAL MICROBIOLOGY DIAGNOSTICS

10.30–12.00   THURSDAY

Hiroko Martin, Ondřej Zahradníček, Milada Dvořáčková, Monika Dvořáková Heroldová, Petra Šišková
Faculty of Medicine, Masaryk University

Keywords: interactive game, microbiology, student-made

The paper presents a fully student-made project of an interactive material for self-education of students. It may serve as a supplement of official materials provided by the teachers (official slideshows, protocols for practical sessions and official interactive self-learning material). It is based on pictures provided by the teachers, but these pictures are used in an inovative manner. The material serves as microbiology game teaching students the diagnostic algoritms in bacteriology.

The author has made a material based on Microsoft Powerpoint with interactive elements. The author used mostly the pictures of the "Atlas of medically important microbes" (an interactive electronic atlas), a previous project of a group of the teachers from the Institute of Microbiology of Medical Faculty, Masaryk University and St. Ann's Faculty Hospital in Brno. These pictures show variety of microorganisms in microphotografies, macrophotographies on various cultivation media and diagnostic test used in practice. All these photographs are arranged so that a student may go through them by chosing a corresponding answer on a slide. The answer has a hyperlink to another slide showing a new picture. The new picture gives a feedback to a student using the material: sometimes just a plain Petri dish is shown as a "result of cultivation", what gives an information to the user, that the microbe does not grow on that medium.

The material that is made by the author serves as an interactive material based on the J. A. Comenius motto "Schola ludum". The user just clicks on variants of an answer and finds new pictures. The material, in fact, is a simplified simulation of a real diagnostics in microbiology based on morphology of cells, morphology of colonies, biochemical properties of bacteria and other properties. Although it obviously cannot include all details or all eventualities that happen in the real diagnostics, it may function very well as a tool making students to better understand the work of a microbiology laboratory. The material has been tested on a few students (school-mates of the author) that enjoyed it and they gave a feedback to the author saying that this mateerial can be used at learning for the final examination of Medical Microbiology subject.

An interactive material is presented, that is made by a student that used pictures from an atlas. This material may inspire more students by its relative simplicity: all material is based just on Microsoft Powerpoint. It shows that students, even when not led by a teacher, are able to make a good tool that might be used by other students in their education.

UPDATING OF E-LEARNING MATERIALS: A WORK FOREVER

10.30–12.00 **THURSDAY**

Ondřej Zahradníček
Faculty of Medicine, Masaryk University

Keywords: *updating, time management, microbiology*

Many e-learning and blended-learning projects are implemented as up-to-date when set into the practice. Nevertheless, after several years, it starts to be necessary to update them. There exist many reasons why to do this: the real changes in the given medical branch (in Microbiology, for example, changes of taxonomy); need for changes due to technical development; need for better compliance with the copyright for the used images; need for change the visual form of the material after a negative feedback from students, and many others.

The author has in recent years updated all existing e-learning support materials for the blended learning courses of Medical microbiology, namely the course for General Medicine students (only practical part, in English and in Czech), the course for Dental Medicine students (also only practical part, in English and in Czech), the course for nurses with variants for midwives and paramedics (in Czech only), the course of dental hygienists and the course for opticians and orthoptists (both in Czech only). The biggest problem was time management, as all these updates should be done in the same time as regular teaching of students and all other duties. Another problem is that there are no specific funds for such an activity: in the teaching activities, only direct teaching is usually counted.

The author has made some important updates in the e-learning support materials for blended learning of some groups of students of Medical Faculty, Masaryk University. Firstly, all pictures with a questionable copyright have been either removed (if found to be not necessary) or replaced by the own photos of the author or the Institute of Microbiology of the Faculty of Medicine, Masaryk University. In particular cases, especially if better solution was not available, pictures from public domains have been used. Some photos were also replaced by hyperlinks to reliable materials containing not only photos, but also more supplementary facts to the given topics. In some materials, the visual form has been changed, too, after critical voices from students. The materials were also updated because of the changes of methods used in practical microbiology, changes of taxonomy and all other reliable changes. All this was only possible so that each semester only a part of the materials were updated. The next year some of materials neglected the year before were updated, and so on; the disadvantage of this approach is that usually when finished, it is just time to start a new round.

Although the focus of nearly everyone preparing e-learning materials (either for e-learning or, as in this case, for blended learning) is in making new materials, very important part of the work of a teacher using them is also updating them. This work is often neglected, not counted in evaluations, but it is necessary to keep the quality of all materials provided to students. If e-learning methods are used, universities should find ways how to keep living the projects that are already running for several years.

SIMULATION IN TEACHING PARAMEDICS AND RADIOLOGISTS

10.30−12.00 THURSDAY

Alena Lochmannová
Faculty of Health Care Studies at University of West Bohemia

Keywords: *Simulation center, paramedic, radiology*

The purpose of the presentation is to present a case study of the opening of a simulation center at the Faculty of Health Studies of the University of West Bohemia in Pilsen and to underline the importance of simulation in teaching paramedics, radiologists and other workers in health care facilities.

High-quality preparation of medical students at universities is exposed to a number of challenges, of which one of the most important is the possibility of practical training, to a sufficient extent so that the graduate is able to participate smoothly and effectively in the work process. As paramedics and radiologists, as well as other fields of education at the Faculty of Health Care Studies in Pilsen, have an impact on the health care and life of patients in their practice, support for practical training seems to be a logical result of the educational process. Interaction in teaching is an important tool, although it does not cover a wide range of student needs. Therefore, simulation is being approached more and more.

Simulation education is currently an important part of modern education. It focuses not only on the actual training of simulated situations, but also on the area of interpersonal communication, which, for example, appears to be essential in the case of paramedics. Simulation teaching is on the edge of normal teaching and practice in the real world, and is an approach to better integrate theory with practice, primarily thanks to the immediate feedback that the student receives not only from lecturers but also other students.

The newly opened simulation center of the Faculty of Health Care Studies of the University of West Bohemia is equipped, among other things, with a modern ambulance and skiagraph simulator. The simulator is almost a true copy of a real ambulance car, with only minor modifications compared to the original car, the equipment corresponds to the real equipment used by rescuers in the field. In addition, the simulator has internal cameras that actually capture the space inside the ambulance. Here, students can try their work and their classmates can watch them in the classroom on the display, or it is possible to use the recorded record for reflection. The simulator is better for training in the short and long term than training in a real ambulance, as there is no need to maintain the automobile part of the car, no need for a trained driver and no need to secure and pay for parking space. In addition to the ambulance car, there is also a skiagraph simulator in the room, which is also a very unique aid and in terms of quality it is equal and in some cases even exceeds the devices used in real conditions of the hospital environment.

Simulation-based learning and simulation methods allow the use of the error-learning approach. The learning process is the only one where the mistake can be perceived as an opportunity for further education. In this context we can talk about the concept of error free medicine. The simulation center has the potential for more effective preparation of students and thus an increase in patient safety and effectiveness of the specified treatment.

OBJECTIVE COMPARISON OF XAPI STATEMENTS IN VARIOUS VIRTUAL SCENARIO DELIVERY SYSTEMS

10.30–12.00 **THURSDAY**

Matúš Hlaváčik, Daniel Schwarz, Andrzej Kononowicz
Faculty of Medicine, Masaryk University, Uniwersytet Jagiellonski

Keywords: *virtual patient, xAPI, low-fidelity*

The educational technologies are moving forward, and technology-enhanced medical education should too. One of the means is using virtual patients with the integration of xAPI. Experience API enables recording and tracking and then personalizing and improving learning activities. As this is quite a new field for educational technologists, It is important to find and set some standards, in order to enable interoperability and wider data use across different platforms.

Two virtual patient delivery systems - CASUS and OpenLabyrinth – were used for comparison of xAPI statements. An identical virtual patient case about Hiccup was authored in both systems – consisting of 9 nodes arranged in a linear pathway and 26 interactive elements. A protocol was developed for the experiment and independent tests were performed in both virtual scenario delivery systems. For the recording of the xAPI statements, one selected learning record store - GrassBlade LRS – was used. The analysis lied in a manual comparison of JSON-like and XLS-formatted data.

The LRS recorded 19 xAPI statements from OpenLabyrinth and 32 from CASUS. Both systems follow the existing xAPI specification and have the same structure of statements. Storing of timestamps and the context of actions is, however, very different in these systems. Both systems ignore external links and controlling media in a scenario. Other differences include the use of different verbs for the same actions, e.g. for start/end of the scenario "launched/terminated" is used in CASUS and "initialized/completed" in OpenLabyrinth.

We would like to propose a three-level model of recordings with xAPI in virtual scenarios based on the granularity of the statement. The first level is about activities linked to the scenario as open, close, reopen, etc. The second level is on the level of nodes - leaving one node and visiting another and suggested verbs for that. The third level is about individual interactions such as recording the answer, controlling media, etc.

THE COURSE "TEACHER AT A MEDICAL FACULTY"

10.30-12.00 **THURSDAY**

Daniel Rajdl, Kristína Mizeráková
Faculty of Medicine in Pilsen, Charles University, Faculty of Medicine in Pilsen, Charles University

Keywords: how to teach, medical teacher, undergraduate education, graduate education
Formal pedagogical education of teachers at medical faculties has not yet become routinely available. Although the teacher's expertise if of key importance, the majority of medical teachers are not educated systematically in effective teaching methods. Therefore, we have created an e-course to meet this need. The course is available on the e-learning portal for postgraduate education at the Faculty of Medicine in Plzen of the Charles University (https://www.postudium.cz), consisting of seven weekly blocks and two attendance sessions.

The course is available for all students and teachers at the Faculty of Medicine in Plzen, and its pilot run was successful. The main topics of the course are as follows:

- Creating an effective presentation
- Evaluation of students – written tests and testing clinical skills
- Courses planning – learning outcomes and the basics of curriculum mapping

All topics are addressed on the basic and well-arranged level, and the entire course is designed as an introduction and possible inspiration to a deeper study of effective teaching methods used at medical faculties. An e-course of basic teaching skills at medical faculties is therefore available, which can be shared and developed across faculties.

POSTERS

CAN A CHANGE IN THE CARDIOPULMONARY RESUSCITATION TEACHING SAVE MORE LIVES?

09.00–10.15   **THURSDAY**

Denisa Osinová[1], Eva Kvaltínyová[2], Marek Štancel'[3]
[1]Clinic of Anesthesiology and Intensive Medicine, Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava, [2] Simulation Education Center, Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava, [3]Emergency department, University Hospital Martin

Keywords: *female cardiopulmonary resuscitation, simulations, education*

In 2018 and 2019 were published three studies focused on the differences in providing cardiopulmonary resuscitation (CPR) performed by bystanders and gender related survival of patients. Results of the researches have shown, that women have less chance of receiving CPR in public environment by bystanders, there is as well higher mortality of woman and worse neurological outcome after resuscitation compared to men. Based on the results of different studies, we have decided to implement female simulators in the teaching of CPR at Jessenius Faculty of Medicine and conduct a survey of behaviour of students, gender selection of the CPR simulator and reasons for their choice.

During the international competition Medgames 2019, which was organised in the University Hospital Martin, we have created simulation task leading to perform CPR and using automatic external defibrillator (AED). The simulation was used to observe the behaviour of twenty mixed teams with tree members of medical students during the task. In simulation task were used resuscitations mannequins, the evaluation was carried out in OSCE principles. For data and information collection we have placed in simulation two resuscitation mannequins. Both of them were same size, same dressed, same placement in room with the same lighting and in the same distance from the incoming students. The resuscitation mannequins were different in their external sex characteristics, specifically in hair, face and chest. Medical students had to choose one body to perform task. During the task, we have observed the selection of the resuscitation mannequin sex, quality of chest compressions, correct use of AED, ventilation, statements and behaviour of students.

In total, 60 medical students completed the task during competition. By evaluating of our observation, we found that 65% of medical students intentionally choose a male resuscitation mannequin. In the remaining 35% of students who choose the female resuscitation mannequin, we have observed significantly lower quality of performed CPR and correct use of AED. While the observed CPR quality in male mannequin (correct hand position 84,59% , correct chest compression depth 92,28%, correct chest compression frequency 78,9%) did not fall below 78,9% at each assessment point, the observed CPR quality in female mannequin (correct hand position 42,84%, correct chest compression depth 71,4%, correct chest compression frequency 71,4%) did not exceed 71,4% at each assessment point. The most significant difference between male and female resuscitation mannequin, we found out that is correct hand position which is 41,75%. Furthermore, we found that all teams used bag valve mask, as well as AED. However, we found a significant difference in proper placement of AED defibrillation electrodes (on male mannequin

100%, on female mannequin 57,12%). During the observation of selection of the resuscitation mannequin we have noted different statements and behaviours of teams, which will be presented in poster.

Based on our findings we are convinced that it is necessary to implement appropriate dressed high fidelity female mannequins to the practical CPR training and into interactive on-line algorithms. It is necessary to implement this topic into First Aid, Emergency medicine practical training for medical students as well for other medical professionals, healthcare professionals and as well for public. We are convinced that such a change in the practical training of CPR will bring higher chances of survival for women in sudden cardiac arrest in real situations.

EARLY EXPERIENCE WITH CLINICAL SKILLS CENTRE (CSC) IN VETERINARY TEACHING AND TRAINING AT THE UNIVERSITY OF VETERINARY MEDICINE AND PHARMACY IN KOŠICE

09.00−10.15 THURSDAY

Mária Kuricová, Jana Mojžišová, Tomáš Lipták, Valent Ledecký
Univerzita veterinárskeho lekárstva a farmácie v Košiciach

Keywords: *day-one skills, hands-on study, clinical skills, veterinary education*

The aim of CSC is to provide students with

1. the possibility of acquiring clinical skills in addition to the teaching process and according to the needs of individual student
2. the clinical workplaces of the center for sophisticated methods used in todays clinical practice.

The Clinical Skills Center now has 15 laboratories specializing in veterinary activities. Laboratories are equipped with enough tools, devices and elaborated schemes how to operate the instruments and carry out the laboratory and practical activities related to prescribed syllabi.

The challenge in developing a Clinical skills center (CSC) is organizing skills into a logical framework. In our CSC the skills are divided into the direct teaching process from 4th study year and into free time study without or under supervision of a specialist, beginning from early semesters. In addition the clinical examination of the students takes place at the CSC. practical tasks examination allowing objective assessment of acquired basic and advanced clinical skills.

We prepared skills rooms for clinical records writing, clinical examination, positioning and restrain, infusions, injections, cannulations, blood drow, suturing, bandaging, laboratory diagnostics, imaging diagnostics, anesthesia, intubation, endoscopy, gowning, glowing, patient and surgical team preparation, surgical instrumentation, basic surgical techniques. As a part of our work we:

• prepared visual instructional materials as guidelines for the performance of clinical skills up to 120, which increase the quality of the teaching process
• summarize video films from the Internet according to specific focus to facilitate clinical training (a total of 24 processed topics) and we started uploading our own videos prepared at the University Veterinary Hospital

- submitted the grant project for sophisticated teaching of practical veterinary clinical and laboratory experience
- uploaded five virtual patients

During years 2018/2019 a total of 294 students completed individual self-study under the guidance of CSC staff. Five practical workshops were held at CSC for students from our university.

Students from the Louisiana State University have also completed their practical experience in CSC. We uploaded 5 virtual patients. Within direct education proces in the CSC we performed:

- 119 practical exercises in the field of General Surgery
- 8 practical exercises for Kynology students
- 8 presentation exercises for pre-clinical classes.

The CSC offers the students the opportunity for intensive training, while maintaining an ethical stance regarding treatment of animals. Center-based clinical evaluation allows an objective assessment of all students. The establishment of CKZ implements a long-term intention in the field of undergraduate education activities, in the sense of providing students with individual clinical and laboratory training and thus increasing the quality of the graduates and meeting the requirement of the EAEVE commission of day one skills. This study was supported by grant KEGA 001UVLF-4/2019.

SIMULATION CENTRE (SIMU) OF EUROPEAN SIGNIFICANCE WILL BE OPEN IN BRNO

09.00–10.15   **THURSDAY**

Jitka Blažková, Petr Štourač
Faculty of Medicine, Masaryk University, University Hospital Brno, Department of Paediatric Anaesthesiology and Intensive Care Medicine, Brno

Keywords: *simulation, education, medical programmes, innovation, simulation centre*

SIMU will be one of the largest and most modern simulation centres in Central Europe. In the area of Czech Republic, it will be a completely unique teaching centre where practical education of students of the Faculty of Medicine of Masaryk University will take place. At SIMU students will be able to learn common, complex and very complicated tasks and procedures. All this in a safe environment of the simulation centre.

Sustainable development and innovation in modern medicine increase the volume of knowledge and the number of procedures with which the medical students must be acquainted. This compels lecturers to enrich and expand the syllabus with new information and methods greatly increasing the volume of teaching material. Although students are impeccably prepared in theory, they have difficulties in implementing the acquired knowledge into practice.

At the same time, changes in the structure of health care mean that part of the inpatient care is transferred to the outpatient sphere and consequently, the time that students can spend in contact with patients is getting more and more restricted. Students are merely in the role of observers, not being able to independently carry out tasks known to them in theory only. Another problem is that the practical training of medical students takes place at faculty hospitals. Patients coming to the medical facility of this type have usually very specific and complex diagnoses not suitable for teaching purposes. As a result, students lack training in basic skills and practical training may not

be fully consistent with the theory currently being studied.

The SIMU project addresses this issue, targeting on innovation, development and improvement of practical teaching.

Students who complete the modified study process will have better practical skills, experience and the ability of independent decision-making. They will be able to engage more quickly and easily in the work process and their teamwork ability will improve.

Vision of the Simulation Centre: "Through the involvement of advanced elements of simulation medicine in education, become the leading workplace in the field of medical programme education in the Czech Republic."

TEACHING OF AN OBLIGATORY COURSE PAEDIATRIC MEDICINE FOR THE STUDENTS OF GENERAL MEDICINE PROGRAMME AT THE FACULTY OF MEDICINE OF THE PALACKÝ UNIVERSITY IN OLOMOUC

09.00–10.15 **THURSDAY**

Barbora Ludíková
Faculty of Medicine and Dentistry, Palacký University in Olomouc

Keywords: *evidence-based medicine, PEDKAZ, paediatrics*

Paediatrics is an obligatory course for students of the General Medicine study programme, and is concluded with an oral examination. This course is also taught at the Department of Paediatrics of the Faculty of Medicine of the Palacky University in Olomouc. This department aims to follow modern educational trends using evidence-based medicine, and to develop theoretical as well as practical skills using modern technology.

The course is taught in the fifth year of the General Medicine study programme over a four-week period, when students use their knowledge from clinical propaedeutics, which they attended in the third year of study, and after an introduction into paediatrics. The study is evenly distributed into a theoretical part, which is carried out in the form of lectures, with an effort to provide an interactive approach in the form of supplementary questions linked to understanding of a given issue; this is extended to the employment of the PEDKAZ portal, which serves as an interactive trainer to simulate clinical cases of paediatric patients. We are trying to distribute the lecture part evenly among individual paediatric disciplines, but we also consider it necessary to enrich the course with the view of a clinical psychologist and a training of work with information sources.

Bedside teaching is another – equally important – part of education of future doctors. Great emphasis is put on individual approach to students, particularly in the last week of teaching, because the students become fully-fledged support to the department staff, although supervised and helped by experienced doctors. At the same time, students attend counselling sessions, and they can also become acquainted with the job of general practitioners for children and adolescents, who have their consulting rooms at the Department of Paediatrics. SIM baby mannequins are also available for our students, helping to develop not only practical knowledge but also manual skills that future doctors will need to work with their patients. Evidence-based medicine is one of the cornerstones that the entire teaching system at the Department of Paediatrics relies on. Students acquire this approach themselves when working on a case study of a patient which,

among others, involves a clinical question in the PICO format; this must be addressed by looking up and using recent review articles. Students can solve this relatively complicated task with the help of their teachers, library staff of the Faculty of Medicine, and a statistician. This approach leads to an overall development of students' skills in terms of work with literature as well as a basic insight into research, about which future doctors must also be knowledgeable.

The presented teaching programme is rather demanding for students as well as for teachers, but is very positively rated by most students who have finished it. The students acquire a lot of knowledge, experience and skills that they will use later not only during subsequent study, but especially in their future careers.

FIRST AID SIMULATION COURSE AND ITS IMPLEMENTATION INTO THE CURRICULUM

09.00–10.15 **THURSDAY**

Tereza Vafková, Tereza Prokopová, Václav Vafek, Daniel Barvík
Faculty of Medicine, Masaryk University

Keywords: *simulation, first aid*

First Aid Simulation Course is a unique project established in March 2016 and it became part of the Medical Simulation Centre at the Faculty of Medicine of the Masaryk University in 2017.

It provides an opportunity to practise first aid in a group of 3 students in 5 different simulated scenarios during one half-day course. Our course is available to any student of general medicine and dentistry through the whole study period. It is organised once per semester. All the simulations are simulated by actors and they are designed and prepared by trained student lectors who collaborate in pairs. Students undergo structured twenty-minute debriefing session after the five-minute simulated scenario.

We have organized 8 courses, each for 30 participants, from the year 2016.

From the academic year 2019/2020 this course will be part of the curriculum of the Faculty of Medicine of Masaryk University.

PLATFORM VIRTUALNI-PACIENT.CZ – LIFELONG LEARNING

09.00–10.15 **THURSDAY**

Matúš Hlaváčik, Daniel Schwarz
Faculty of Medicine, Masaryk University

Keywords: *virtual patients, lifelong learning, platform, learning experience survey*

Virtualni-pacient.cz is an educational platform for lifelong learning with linear virtual patient cases. It can be used for authoring, editing and playing virtual patients. Virtual patients are low-fidelity simulation modality – learning with storytelling. There are two instances of our platform now – ledvina.virtualni-pacient.cz and tki.virtualni-pacient.cz. The goal of this contribution is to introduce the use-cases of this platform and present results of feedback investigation towards learning experience and system usability.

The platform is based on Symfony application, which is a framework of PHP, using JavaScript and Foundation as a base for the frontend and PostgreSQL is used to the storying data. For gaining feedback from users were used System Usability Scale and Learner SBL Experience Survey.

Our results are coming from a hackathon performed with 25 users of the platform, who went through all necessary steps to create a user profile and play one selected case.

Based on the results, our original virtual patient delivery platform has been upgraded substantially.

INTERACTIVE ALGORITHMS AKUTNĚ.CZ: OPEN ACCESS DATABASE OF MORE THAN 100 VIRTUAL PATIENTS

09.00–10.15 **THURSDAY**

Hana Harazim, Tamara Skříšovská, Jitka Chlupová
Faculty of Medicine, Masaryk University

Keywords: *virtual patient, serious game, open online database, acute medicine cases*

Knowledge of the right approach to acute conditions is a natural and expected foundation of a doctor after graduation. Although the teaching of acute medicine at the medical school is a part of the curriculum, the depth of understanding of the subject is often insufficient and does not lead to the ability to independently analyze and deal with the critical situation. One of the most effective tools for developing medical competencies, especially the art of clinical reasoning, is the virtual patient. Students are thus exposed to standard and/or rare critical situations without endangering the patient's life. The scenarios can be repeated, debriefed, analyzed from the pathophysiological point of view and the feedback can improve students' knowledge and responses in the context of life-threatening events. Since the launch of the educational and publishing portal www.akutne.eu an evergrowing set of virtual patients (VPs) - interactive algorithms AKUTNĚ.CZ - has become an integral part of it.

Since its establishment, the portal has contained a constantly improving background for the genesis of the virtual patient cases. We have developed a scheme of creating new VP, that consists of the team recruitment (1 doctor, 2 students) and working at the given topic during 2 semesters. The first step is to create the patient's story, then expand it to content of the individual decision nodes (including vital functions values, examinations and laboratory sampling) in the Czech and English language versions and supplement it with original multimedia resources. The review process includes two steps: the first is a feedback within the team of the authors, then the algorithm is reviewed by an external specialist. Students learn to work on a variety of skills in

the course of their work: not only gaining knowledge by studying literature, but also working with scientific texts, collaborating, giving and receiving feedback, and presenting the results of their work.

The portal of acute medicine AKUTNE.CZ (www.akutne.cz) was established in the year 2007. Nowadays, the portal offers 109 interactive algorithms, which include the areas of first aid, emergency medicine, anesthesiology, intensive medicine, traumatology, surgery, internal and general medicine, gynecology and obstetrics, paediatrics and nursing. Every school year we create 10-15 new VPs in group of approximately 30 students and 20 doctors. We use these algorithm-based lectures in the following courses at Medical Faculty of Masaryk University: First Aid, Anesthesiology and Pain Management, Intensive Care Medicine and Anesthesiology for Midwifes. The algorithms are available at www.akutne.cz, free of registration and free of charge, open for the academic use worldwide.

Interactive algorithms AKUTNĚ.CZ can provide a good foundation for teaching acute medicine through their use in self-learning and in form of Case-Based, Team-Based or Problem-Based Learning. As students are included in their development process, it enhances their motivation, knowledge and creativity. Their use is attractive for students, especially due to their format of "serious game" and accessibility via mobile devices.

LMS MOODLE IN IT COURSE LESSONS AT PJŠU FACULTY OF MEDICINE

09.00–10.15 **THURSDAY**

Lenka Urbanská, Jaroslav Majerník, Andrea Kačmáriková
Faculty of Medicine, Pavol Jozef Šafárik University, Faculty of Medicine, Pavol Jozef Šafárik University, Faculty of Medicine, Pavol Jozef Šafárik University

Keywords: *education, e-learning, LMS Moodle, IT course, medical student*

Progress in ICT and its ever-increasing application in the health sector is putting increasing demands on the level of computer literacy of healthcare professionals. The use of computer applications, information systems and devices connected to a computer is nowadays taken for granted. In order to support new processes and forms of health care and health services, it is necessary to teach subjects focused on education in the field of information and computer sciences to emphasize the application of knowledge, i.e. the so-called functional literacy. Most students arriving for medical and health care majors do not have a positive relationship to ICT education. By using e-learning tools in the classical educational environment, we can make the learning process itself more attractive and support the individual pace of studying on one's own. The present paper introduces the outputs of the project "Multimedia Support of the Process of Subject Informatics in Bachelor Study Programmes at Faculty of Medicine of UPJŠ in Košice" aimed at multimedia support of the traditional full-time form of teaching the subject.

The main output of the project was the creation of an e-learning course in the LMS Moodle program and its implementation into the teaching process. The curriculum of the e-learning course is divided into 7 thematic units titled:

- Personal computer
- Working with a computer and file management
- Working with Internet and Internet security
- On-line services in the Office 365 environment

- Microsoft Word 2016 Text Editor
- Statistical Data Processing in Microsoft Excel 2016
- Microsoft PowerPoint 2016 presentation editor

The study material of the Book type was chosen, which allowed us to create structured texts for studying in the form of a group of several web pages linked together by means of a hypertext menu. The explanatory textual part of the studying material is enriched with illustrations, instructional videos with text and audio commentary, problems addressed, hypertext and hyperlinks. To support the individual pace of study and studying on one's own, to increase interaction between learners and teachers, we used a wide range of activities offered by LMS Moodle in the course sections, namely:

- Poll - evaluation of the study material,
- Discussion forum – communication support among course participants,
- Chat - interaction support between teacher and students online,
- Testing - activity aimed at testing the theoretical knowledge and practical skills acquired, with the possibility of teacher's feedback.

The main aim of this course is to achieve the level of computer literacy among students of clinical and medical programs that will enable them to effectively use basic ICT tools in the processing of various assignments, tasks, professional student activities, as well as their final and scientific papers. In the winter term of the present academic year 2019/2020, the e-learning course is open to 39 attendees. Upon completion of the course, the e-learning course (the content of its curriculum, the form of teaching materials) as well as its implementation into the teaching process, will be evaluated from student responses in the form of a questionnaire, as well as in terms of the learning outcomes. In order to support the education of administrative, academic, clinical staff, as well as students of other majors at the Faculty of Medicine of PJŠU in the field of information and computer sciences, selected educational materials with multimedia content are also published on the official educational Portal of the Faculty of Medicine (https://portal.lf.upjs.sk/).

By creating electronic studying materials, we have been given the opportunity to dynamically review and update teaching texts, which we consider to be a valuable asset in our workplace due to the fact that knowledge in the field of information and computer science is becoming rapidly obsolete. By creating online study materials with multimedia content, making them available in the "anytime and anywhere" manner, and enabling students to be actively involved in the learning process, we expect their better understanding of the IT importance in today's health care related services.

PROPAEDEUTICS IN PRACTICE

09.00–10.15 THURSDAY

Jiří Libra, Lucia Macková, Martina Žižlavská, Klára Vataha, Timotej Vataha, Matěj Anton
Faculty of Medicine, Masaryk University

For future doctors, practical skills and soft skills are equally important as theoretical knowledge. Among the practical skills we have included the physical examination, soft skills and basic techniques like blood withdrawal, male catheterisation and inserting of nasogastric tube. These are technical skills that any student can master. But their training requires a particular approach. We emphasize the active execution of tasks under attentive supervision with immediate feedback.

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The MEFANET Journal (Mefanet J) is intended to present within a single forum all of the developments in the field of medical informatics, medical education, e-learning and thereby promote the synergism among these disciplines. The journal is the premier vehicle for disseminating information about MEdical FAculties NETwork, which covers all Czech and Slovak medical faculties.

The journal enables medical teachers and scientists to share and disseminate evidence demonstrating the actual practice in on-line education in medicine and healthcare sciences by focusing on:

- research in medical educational informatics and learning analytics
- applications of medical informatics into education
- design, usage and results of novel e-learning tools and innovative pedagogical methods in medical teaching and learning
- other interdisciplinary topics related to information and communication technology in medical education

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DANIEL SCHWARZ
MARTIN KOMENDA

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