



# LIJEČNIČKI VJESNIK

GLASILO HRVATSKOGA LIJEČNIČKOG ZBORA  
THE JOURNAL OF THE CROATIAN MEDICAL ASSOCIATION

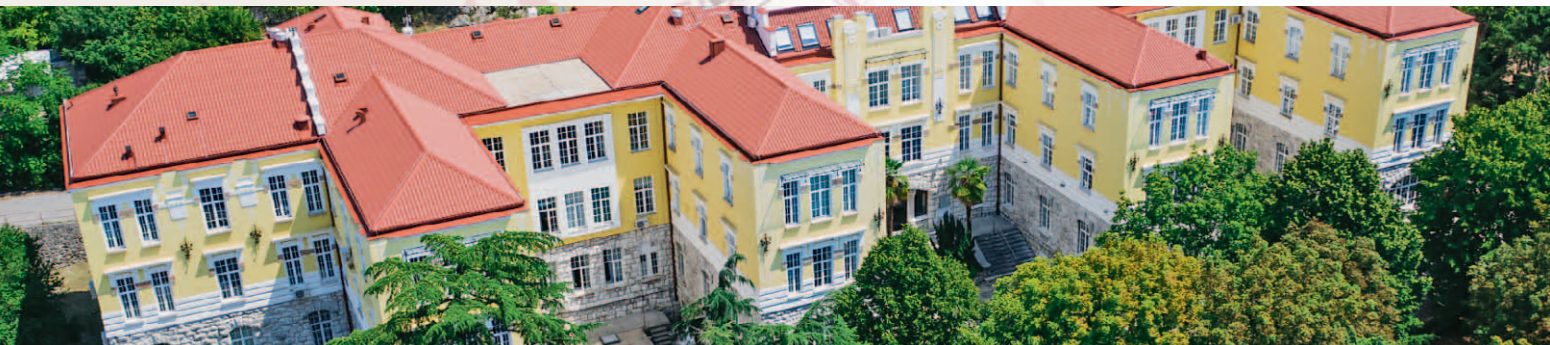
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## FIRST INTERNATIONAL CONFERENCE ON TEACHING AND LEARNING IN MEDICAL EDUCATION

MARCH 30 – APRIL 2, 2023



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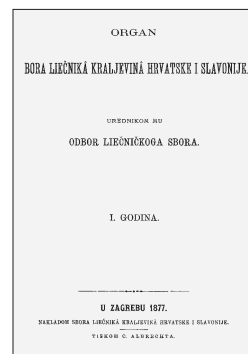
# LIJEČNIČKI VJESNIK

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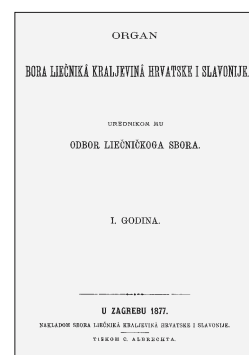
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# The MedRi 2023 Conference – Foundations for a New Medical Education in the Republic of Croatia

## MedRi 2023 konferencija – Temelji za novu medicinsku izobrazbu u Republici Hrvatskoj

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### Introduction

From March 30 to April 2, 2023, Rijeka and Lovran were the hosts of the *MedRi 2023 Conference*, which consisted of two major events, including *The First International Conference on Teaching and Learning in Medical Education*, as well as the satellite student symposium *First International Student Symposium on Future Doctors Educating the World*. The conference organizers included the Faculty of Medicine in Rijeka, Texas Tech University Health Sciences Center El Paso (United States of America), Croatian Medical Chamber, University of Rijeka and University Hospital Centre Rijeka. In addition, the event was organised with the support of the Deans' Conference of medical faculties in the Republic of Croatia, Croatian Medical Association, Innovative Pharmaceutical Initiative and Croatian Society of Gastroenterology. Furthermore, the conference was held under the patronage of the Ministry of Science and Education and Ministry of Health, whereas the Association of Croatian American Professionals Foundation provided special support.

The aim of this Editorial is to briefly describe the motive, aims and programme behind the *MedRi 2023 Conference*, as well as the impact it might have on the future of medical education in the Republic of Croatia. Finally, it is our great pleasure to present the *MedRi 2023 Conference Book of Abstracts*, which is published in association with Croatian Medical Association as a special thematic supplement in this issue of *Liječnički vjesnik*.

### The idea behind the *MedRi 2023 Conference*

The initiative and idea for the *MedRi 2023 Conference* organization stemmed from the comprehensive and profound changes made at the Faculty of Medicine in Rijeka in the past two years in the field of faculty development. The necessity for such changes was the inevitable consequence of the fact that, in recent years, medical educators are confronting a complete shift in the teaching and learning paradigms at the na-

tional and international levels. Furthermore, the rapid advancement of new strategies, from student-centred learning, e-learning, interprofessional education to clinical simulation, emphasizes the need for not only introducing innovations in the educational process, but also conducting concurrent changes in the education of medical educators and the curriculum for medical doctors on all levels because the three should not be seen as separate entities. During the process of creating the infrastructure for professional educational development of our teachers at the Faculty of Medicine in Rijeka and establishing various educational programs, confronted with specific obstacles, it became obvious to us that all other medical faculties in Croatia and our neighbouring region must be facing similar challenges.

Therefore, the *MedRi 2023 conference* was organized with the vision of gathering and connecting all stakeholders in medical education in the Republic of Croatia, from students to decision makers, to jointly participate in the realization of the three basic aims of the conference. The first aim was to determine the current challenges in medical education in the Republic of Croatia on all levels, including graduate, postgraduate and continuous medical education. Furthermore, the aim was to encourage cooperation at the national and international level and determine examples of best practices in modern medical education in order to encourage their application in everyday work. Ultimately, the aim was to provide possible solutions and directions for the development of medical education in the Republic of Croatia, encouraging the permanent connection of the gathered stakeholders in bringing about the necessary changes.

### Future of medical education written in the *MedRi 2023 Conference* programme

The *MedRi 2023 Conference* programme was divided into pre-conference and conference events. The pre-conference events took place at the Governor's



FIGURE 1. DEANS' CONFERENCE AT THE GOVERNOR'S PALACE IN RIJEKA

Palace in Rijeka and, amongst others, included the thematic Deans' Conference entitled *Challenges and future of medical education in the Republic of Croatia*, which was the major happening of the entire conference (Figure 1). The deans of medical faculties in Zagreb, Rijeka, Split, Osijek and Mostar attended the Deans' Conference, reaching joint conclusions for the future of medical education on all levels in the form of *Lovran Declaration*, a written document by which the aforementioned deans commit to change through short-term and long-term goals. In addition to general goals, such as establishing and maintaining permanent connections between medical faculties in Zagreb, Rijeka, Split, Osijek and Mostar, the major short-term goals are aimed mostly towards improving faculty development, whereas long-term goals strive towards curricular changes and joint improvement of the quality of the teaching process on all levels of medical education. In addition, Deans' conference gave initiative and support to the establishment of the International Working Group for the Implementation of the Lovran Declaration and regular holding of a conference on medical education once every two years, along with annual mini symposia with the aim of monitoring the progress of the set goals.

Furthermore, the *MedRi 2023 Conference* events were organized at the Hotel Excelsior in Lovran and the programme consisted of lectures, workshops, poster sections, tips for best practices and panel discussions, which were conducted through 18 thematic sections, including faculty development, resident education, mentoring, continuing medical education, clinical skills and simulation, innovative learning methods, e-learning and many others. The conference was attended by 97 invited lecturers, 400 onsite and over 1300 online registered participants from 11 countries, including Bosnia and Herzegovina, Croatia, Hungary, Italy, Serbia, Singapore, United States of America, Slovenia, Spain, Switzerland and Turkey (Figure 2). The conference participants included medical educators,

administrators, medical students and health professions students, specialists and residents, and others involved in medical education. Online participants could follow the live broadcast of the conference all four days via the Panopto platform, which was made possible by the Croatian Medical Chamber.

### Student symposium

We are most proud that a special part of the *MedRi 2023 conference* included the three-day satellite *First International Student Symposium on Future Doctors Educating the World*, which was held with the aim of highlighting the importance of including students as equal partners in establishing joint directions for the development of medical education. The organizers of the symposium were the Student Council of the Faculty of Medicine in Rijeka, FOSS MEDRI, CroMSIC – International Association of Medical Students Croatia, European Medical Students' Association – EMSA and the Student Section of the journal *Medicina Fluminensis*. This convening is a major first step towards creating a deeper bond between students in medical and healthcare professions through scientific, professional, and educational collaborations. The significance of the symposium is reflected in the fact that more than 30 student associations and sections participated in the symposium, presenting their work through 13 thematic sections and 43 presentations. Special emphasis was put on improving clinical and other practical skills and therefore, two complete days of the symposium were dedicated to workshops. In addition, more than 50 student volunteers helped in the organization of the *MedRi 2023 Conference* (Figure 3).

### The *MedRi 2023 Conference* Book of Abstracts

The *MedRi 2023 Conference* Books of Abstracts contains 141 abstracts and as much as 291 authors, who made invaluable contribution to the success of





FIGURE 2. MEDRI 2023 CONFERENCE GROUP PHOTO

the first conference. Moreover, these numbers and the important topics presented in the abstracts are yet another indicator of the great interest in the field of medical education in the Republic of Croatia. This Book of Abstracts consists of three parts, including the abstracts for *The First International Conference on Teaching and Learning in Medical Education*, *First International Student Symposium on Future Doctors Educating the World*, and poster sections. The abstracts are published in the order in which they were presented in their respective thematic sessions listed in the *MedRi 2023 Conference* programme.

### About the name, the past and the future...

Although the *MedRi 2023 Conference* is clearly not the first international conference on medical education in the world, the name was selected symbolically, reflecting the aspirations of the organizers to gather, for the first time, all stakeholders of medical education in the Republic of Croatia and its neighbouring region at the same place and at the same time. Considering that the *MedRi 2023 Conference* and its initiatives rest on the values of continuity, inclusivity, cooperation, association, support and development, we extend our deepest gratitude to the authorities who paved the way of medical education in the Republic of Croatia,



FIGURE 3. MEDRI 2023 CONFERENCE STUDENT VOLUNTEERS

who supported and participated in the conference and whose footsteps we will continue to follow. The high interest and international extent of the *MedRi 2023 Conference* indicates that the timing was just right to establish inseparable connections and jointly reach conclusions about what the future holds for this authentic, highly demanding and, above all, a noble profession. Hopefully, time will work on our behalf to build a better future for those who succeed us.

Rijeka  
(Photo: Nina Pereza)



FIRST  
INTERNATIONAL CONFERENCE  
ON TEACHING AND LEARNING  
IN MEDICAL EDUCATION

**INTEGRITY | COOPERATION | LEADERSHIP**

March 17, 2023

Nina Pereza, MD, PhD  
Associate Professor, Center for Genetic Education  
Department of Medical Biology and Genetics  
Faculty of Medicine  
Braće Branchetta 20, 51000 Rijeka  
Croatia

Dear Dr. Pereza,

On behalf of the Association of Croatian American Professionals Foundation (ACAP), I am delighted to support the initiative of the MEDRI 2023 conference to identify current challenges and potential directions for the advancement of medical education in the Republic of Croatia on all levels, including graduate, post-graduate, and continuous medical education. We recognize the need to discuss and introduce novel faculty educational development programs to foster teaching excellence.

In addition, we see this letter of support as the first step towards the establishment of a more sustained international collaboration between ACAP and MEDRI2023, with the aim of strengthening interactions between Croatian medical doctors at home and abroad. We are delighted to see the first official gathering of established professionals in the field of medical education taking place in March of this year in Rijeka, the goals of which are in line with the mission and objectives promoted by ACAP. We wish you every success at this first conference.

Most respectfully yours,



Steven Pavletic, MD  
Professor of Medicine and Oncology-Hematology  
President, Association of Croatian American Professionals Foundation  
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## Session C1: Faculty Development

### NOT AN AFTERTHOUGHT: HOW FACULTY DEVELOPMENT CAN DRIVE INNOVATION IN MEDICAL EDUCATION

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Faculty Development (FD) refers to activities designed to enhance knowledge, skills and behaviors of health professionals in their various faculty roles. Depending on the context, these roles may include: education such as teaching and facilitating learning, curriculum development, learner assessment and program development; research and administrative and leadership roles.

FD is critical for the satisfaction and success of individual faculty and is also necessary for the success of educational programs within larger medical institutions such as schools of medicine and academic health centers.

Unfortunately, most faculty do not have access to robust FD to build skills and expertise for key educational roles. Furthermore, many educational programs and curricula are designed without significant consideration for the development of faculty who will be responsible for teaching and assessing learners or evaluating programs. This can limit the success of educational programs, stifle change in medical education and frustrate faculty leaders and frontline teachers.

Faculty development is a burgeoning discipline within academic medicine. Best practices for FD, specifically using a competency framework to design programming exist and can be adapted for local context and needs. Effective FD programs as measured through participant satisfaction and reported changes in teaching by participants and learners, are grounded in learning theory, promote reflection, feedback and collaborative learning based on participants own teaching experiences. These programs also incorporate a variety of learning strategies. Communities of practice (CoP) are a model in which to situate FD to promote a sustained setting for social learning among individuals with a shared understanding and set of beliefs related to education. FD especially through vibrant CoP can create momentum for faculty to advocate for innovation and change in medical education through knowledge mobilization where educational research interfaces with educational practice.

**Key Words:** medical education; faculty development

### TRANSFORMING PROFESSIONAL DEVELOPMENT IN MEDICAL EDUCATION THROUGH FACULTY AND STUDENT DEVELOPMENT PROGRAMS AT THE FACULTY OF MEDICINE IN RIJEKA, CROATIA

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The higher education system in the healthcare profession is unique because professionals involved in delivering education have three simultaneous roles, including that of the healthcare provider, medical educator and scientist. However, while current mandatory programs are focused mostly on delivering education on how to become a healthcare provider, the increasing demands on professionals to acquire both teaching and research

excellence imposes challenges for organizing new concepts for additional training. These highly organized professional development activities are known as faculty development programs, but are currently underrepresented in the European higher education systems.

The aim of this presentation is to highlight the innovative approach to how the Faculty of Medicine in Rijeka, Croatia transformed professional development activities through the Centre for Improving Teachers' Competencies and Communication Skills, a specialized organizational unit, the activities of which are aimed at both healthcare professionals, as well as students. The Centre provides a plethora of faculty development programs, which are primarily focused on educational development for improving teachers' competencies, introducing innovative learning methods, conducting peer review and organization of international meetings. In addition, our rich student development programs include primarily research development, which is conducted in association with the scientific journal *Medicina Fluminensis* and represents an internationally and nationally awarded program for encouraging student scientific activities. Finally, as the result of the international collaboration between the Faculty of Medicine in Rijeka and Texas Tech University Health Sciences Center El Paso, this presentation emphasizes the importance of establishing international collaborative faculty and student development programs. The intention of such programs is to share best practices and provide support for the establishment of an international platform for improving professional competencies in the healthcare higher education system.

**Key Words:** medical education; faculty development; teachers' competencies; research education; medical students

## TRANSFORMING PROFESSIONAL DEVELOPMENT THROUGH FACULTY DEVELOPMENT PROGRAMS: TTUHSC EL PASO EXPERIENCE

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This presentation aims to introduce the Texas Tech University Health Sciences Center El Paso (TTUHSC EP) Institutional Faculty Development Program (IFDP). This competency-driven, 8-month program is recommended to all new junior and mid-level faculty members. The goals of our program are to improve their teaching and assessment, research, administrative, and leadership skills. Our interactive online tutorials and face-to-face activities are organized into four modules: Teaching and Assessment, Research, Clinical Skills and Simulation, and Leadership Development. The Teaching and Assessment module consists of six courses: Adult Teaching and Learning, How to Build and Teach an Online Course, Technology of e-Learning, Library Skills, and Interprofessional Education courses. The Research module is comprised of five courses: Fundamental Research Skills course, Clinical Trials course, Institutional Review Board (IRB) Skills course, Writing Interest Group course, and the Grantsmanship Training course. The Clinical Skills and Simulation module focuses on the best practices of teaching and learning in the clinical simulation environment, assessment and feedback, debriefing, guided reflection, and curriculum integration. Finally, four courses are offered in the Leadership Development module: Succeeding and

Advancing as Faculty, Conflict Resolution and Negotiation, Leadership Skills, and Faculty Wellness in the Workplace courses. Every year, a broad spectrum of health sciences topics relevant to basic sciences, undergraduate, and graduate medical, nursing, and dental education are introduced in synchronous onsite activities and workshops or interactive teleconference sessions. Requirements for graduation from the IFDP are attendance of a minimum of 40 contact hours and successful completion of three projects: an oral presentation, the creation of an online module, and a written proposal for a scholarly or research project. The fact that the current IFDP offers approximately four times the number of contact hours required to graduate allows faculty participants to customize their professional development experience.

**Key Words:** faculty development; academic career; teaching skills; teaching in simulation environment; research skills; administrative and leadership skills

## **DEVELOPMENT OF TEACHING COMPETENCIES AT THE UNIVERSITY OF SPLIT SCHOOL OF MEDICINE**

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Excellence in medical teaching and knowledge transfer is essential in order to educate future generations of healthcare workers. Moreover, it can be said that competent teaching is a core expectation from physicians in an academic setting. Hence, emphasis in higher education institutions should be put into expanding scope of knowledge, usage of new educational technologies and active problem-solving learning approaches. This approach is constantly discussed, developed and upgraded at the University of Split School of Medicine. The teaching staff is trained through various formal forms of education for teachers organized by the School, as well as other institutions. Since 2009, we have been continuously conducting a course called Skills of Medical Education and Scientific Work, in which teachers are taught the techniques of knowledge transfer, presentation making, exam questions writing, and public speaking. Some of the covered topics also include index publications search, learning outcomes, problem based learning, team learning and microteaching. The course lasts for three days, and so far more than two hundred teachers have successfully completed it. During the COVID-19 pandemic and changes in the organization and implementation of classes, workshops were organized for all teachers on the use of distant learning applications – Microsoft Teams platform as well as the Merlin/Moodle system. Information about continuing medical education courses is regularly published on the website. Further assessment and improvement of teaching competencies at our School is managed through peer-to-peer and self-evaluation. In peer-to-peer evaluation, a colleague attends one lecture and makes a detailed assessment of teaching through a structured questionnaire, which is shown to the assessed teacher, while in self-assessment, comparisons are made with student surveys in order to self-reflect on our own competencies. These processes are carefully managed and constantly evaluated by the Committee for quality improvement. Finally, teacher education is maintained through organisation of the continuing medical education courses, which is managed by a Committee for Continuing Medical Education and a Rulebook on Continuing Medical Education, which regulates all forms of postgraduate training outside regular postgraduate study.

**Key Words:** teaching competencies; learning; medical education; medical student

## **Session C2: Policy Makers and Educational Strategies**

### **STRATEGY OF EDUCATIONAL ROLE OF THE CROATIAN MEDICAL CHAMBER**

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The Croatian Medical Chamber (CMC) is an autonomous and independent professional organization of doctors of medicine that represents doctors in the Republic of Croatia and abroad, which protects their rights and represents their interests. Through his work, CMC improves medical activity and takes care of the reputation of doctors and the medical profession. In cooperation with medical faculties in the country, professional societies of the Croatian Medical Association and other stakeholders in healthcare, the Croatian Medical Chamber organizes, supervises and evaluates the continuing medical education of doctors. The permanent committee of the Executive Board of the Chamber – the Committee for the Continuing Medical Education of Doctors – is in charge of the matter.

CMC, within the scope of its work, performs tasks with public powers, namely: maintains the directory of doctors in the Republic of Croatia, grants, renews and revokes approvals for independent work (licenses), maintains special registers for interns, specialists and subspecialists, maintains a register for special qualifications of doctors, maintains a disciplinary register, performs expert supervision over the work of doctors, determines the lowest price for the work of private doctors, approves the individual prices of medical services of private doctors, implements the procedure of recognition of foreign professional qualifications, performs other tasks with public powers in accordance with the law. CMC conducts disciplinary procedures, trains candidates for medical expertise, provides legal advice and other legal assistance to CMC members in their professional activities.

The Croatian Medical Chamber aims to promote excellence in medicine (professional and ethical) and ensure high-quality healthcare for patients in Croatia. The Chamber promotes: continuing medical education, the highest ethical standards, strengthening knowledge about the legal framework of the regulated profession, encourages members to personal development, creates knowledge bases, promotes the medical profession and informs its members. The Croatian Medical Chamber organizes various seminars, workshops and conferences to ensure continuing medical training of its members. This training enables doctors to be informed about the latest medical trends and best practices in order to provide the best possible care to their patients. The Croatian Medical Chamber supports and promotes ethical behavior among its members, with the aim of ensuring the best possible care and patient safety. This includes training on the ethical standards and guidelines they should adhere to in their work.

The Croatian Medical Chamber promotes, supports and controls the quality standards of health education so that doctors can provide the best possible care to their patients and encourages its members to participate in research and scientific works with the aim of improving medical knowledge and practice. The Chamber cooperates with other organizations and institutions to ensure the best possible education of its members. The Croatian Medical Chamber encourages and financially supports its members to undergo professional training abroad in order to acquire new medical knowledge or skills and share them with their colleagues in Croatia. Up to now, up to EUR 3,000 in grants have been spent for the above purpose, and more than 350 medical doctors have participated in professional training.

CMC organizes lectures on the basics of medical law for young doctors. As part of organized lectures, young doctors are introduced to their rights and obligations when performing medical activities. They are introduced to the rights of patients in the provision of health care, specialist training, professional supervision of their work and possible disciplinary liability – the Code of Medical Ethics and Deontology. The Chamber is the organizer of a large number of events, for example the Forum on Ethics in Medical Work with Psychiatric Patients and the Forum on Ethics in Emergency Medicine, Webinars (i.e.COVID-19) through which it informs its members about new knowledge in medicine.

The Croatian Medical Chamber is continuously working on publishing books and manuals for its members such as *HANDBOOKS 1-4* Continuous professional development of general and family medicine doctors. Among the above, every year, with the co-organization of other healthcare chambers, the Croatian Medical Chamber and the Faculty of Law of the University of Split organize the Congress of Coordination of Chambers in Healthcare (“KoKoZ”) and the Croatian Congress of Medical Law, in which local and foreign experts in the field of healthcare and law actively participate. The topics of the Congress are current topics from healthcare and medical law.

**Key Words:** Croatian Medical Chamber; medical education; medical doctors

## **THE FUTURE OF HIGHER EDUCATION IN THE ERA OF CHALLENGES: THE UNIVERSITY OF RIJEKA AS THE EUROPEAN UNIVERSITY OF THE FUTURE**

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The European Strategy for Universities, established in 2022, explicitly formulates four main objectives for universities: strengthening the European dimension in higher education and research, empowering universities as actors of change in the twin green and digital transition, supporting universities as lighthouses of the European way of life, and reinforcing universities as drivers of the EU’s global role in leadership. In my presentation,



I will focus on the first objective of strengthening the European dimension in higher education, pointing to the growing responsibility for reinforcing European values and the European idea, which are being seriously challenged.

In terms of future resilience, the European dimension in higher education, research and innovation should address the multiplicative impact of challenges on the quality of life and work. The main tool to strengthen European values/idea in the challenging era of poly-crises with the aim of a resilient Europe is structural and long-term – integrated and comprehensive – internationalisation, interconnectedness, and inclusive and innovative cooperation. The European Commission promotes the European University Initiative (EUI) as the flagship that best meets these requirements.

The University of Rijeka actively participates in the EUI as a member of the European University Alliance YUFE – Young Universities for Future of Europe, as well as with its Strategy 2021–2025, which is entitled ‘European University of the Future’. Our activities focus on the four areas: Open Education, Open Science, Open Innovation and Open Science to promote the transversal idea of openness in all university mission areas.

**Key Words:** higher education, university, European University Alliance YUFE, Young Universities for Future of Europe

## **THE THIRD CENTURY OF EDUCATIONAL ACTIVITY: CROATIAN MEDICAL ASSOCIATION 1874 – 2023**

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The Croatian Medical Association (CMA) was founded on February 26, 1874 for the purpose of improving protection of people’s health, professional and scientific work, fostering medical ethics and protecting class interests. It was founded under the name of Association of Physicians of the Kingdom of Croatia and Slavonia. *Liečnički viestnik* is the oldest Croatian medical journal with long-lasting tradition. The first issue was published in January 1877. In 1919, the Association changed its name to the *Association of Doctors of Croatia, Slavonia and Međimurje*. By the year 1939 the name was changed into the *Croatian Medical Association* and in 1945, to the *Association of Doctors of Croatia*.

The CMA is the founder of the School of Medicine University of Zagreb, the Croatian Medical Chamber as well as other associations and institutions in Croatia. In October 2013, the Republic of Croatia and CMA became full members of the European Union of Medical Specialists (UEMS). The CMA is also a member of the World Medical Association (WMA).

The CMA has 10 826 voluntary members in 26 branches and 163 Professional Societies. Also, it collaborates with the most relevant public institutions related to the Healthcare system of Croatia.

One of the main projects of the CMA are creation of clinical guidelines for the Healthcare system of Croatia. Since 2004, more than 70 diagnostic and therapeutic guidelines have been written by Professional Societies of CMA. In cooperation with the National Institute of Health and Care Excellence (NICE) the CMA found solutions for creating short, applicable guidelines and algorithms for the diagnosis and treatment of the most common diseases in Croatia.

During the last five years the CMA has also developed and implemented EU funded projects focused on the internationalization of higher education in Croatia (EXPPAND) and on childhood obesity prevention in Croatian primary schools (PETICA-play for health). Professional Societies of the CMA are devoted to *Life Long Learning* that consist of more than 2500 core educational activities/year. In conclusion, the CMA in its third century of educational activity, is continuously paving the way for a better future of the Croatian Healthcare system by investing in education and training of doctors that is essential for the progress of medicine.

**Key Words:** tradition, scientific work, guidelines, projects, education, doctors

## THE ROLE OF ENTRUSTED PROFESSIONAL ACTIVITIES IN THE EDUCATION OF DOCTORS AND SPECIALISTS

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Medicine is one of the earliest, most respected, highly selective and sought-after professions. Since it deals with human health, education and control systems have been developed from the onset in order to produce experts who can competently perform their work.

Today, medical education is based on knowledge and competences. The basis of any medical education is how to put together a system of education, based on knowledge and competences, in order for it to create a doctor or specialist who will be able to competently solve the problems encountered in everyday practice.

The time frame for education is set and for now quite rigid, and the question arises how to educate individuals who do not have the same predispositions within this time framework.

Doctors today require not only knowledge and skills from their profession, but also to be a good communicator, associate – team member, health promoter, leader, scientist and professional. One of the ways of education that is directly involved in the normal process of work and takes into account the differences between individuals is education through mastering entrusted professional activities (EPA).

The concept of the EPA was developed in 2005 by Ollen ten Cate who believed that competency-based education frameworks were too abstract and theoretical for practical application in everyday practice, or in assessment of a medical student or resident. Entrusted professional activity is a key task of the profession entrusted to an individual in a particular health unit. Entrusted professional activity represents a description of the work that operationally defines the profession. They represent a job description, not a description of a person. They include a list of tasks that each clinical department or healthcare professional may have for that day, week, or any period of time. Using EPAs, educators teach students and residents and assess their progress. What is expected from the completion of education through a system of entrusted professional activities is the demonstration of the competence of performing an activity that was the subject of the entrusted professional activity that is being taught and assessed without supervision. The entire learning process is divided into a set of entrusted professional activities that fully define the curriculum or individual specialization. A student or resident should have the ability and focus and to successfully perform individual stages of the procedure independently. When a student or resident completes all the individual entrusted professional activities provided for by the program of study or specialization, he has achieved the requirements for the final exam, and the issuance of a diploma and a license for work.

### Session C3: Resident Education

#### CHALLENGES IN IMPLEMENTATION OF EUROPEAN STANDARDS IN TRAINING REQUIREMENTS (ETR)

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Postgraduate specialty training is a highly standardised segment in the continuum of medical education in Europe. It is presented in the document European Training Requirement, European Standards of Postgraduate Medical Specialist Training (ETR), which defines the requirements for trainees, trainer and training institutions. In the European Union of Medical Specialists (UEMS) specialist sections create new and/or revised ETRS that are subject to a review and approval process in which the final decision is made by the National Medical Association from the EU/EEA member countries.

Implementation of the ETRs in national specialty training systems brings a number of challenges in the area of trainee education (especially assessment) as well as trainers' responsibility (process for recognition as trainer and quality management of trainers). Demanding is the process for recognition as training institution (requirements on staff, clinical activities, equipment) and quality management (accreditation, clinical governance, manpower planning, external auditing etc).

The main challenge is in achieving the goal of specialty training in accordance with competency-based medical education (CBME), oriented towards trainee's progress in the acquisition of competencies. In new ETRs the implementation of the Canadian Framework of Competencies (CanMEDS) is recommended. Special attention is paid to methods of workplace-based assessment of competencies, including clinical and procedural skills, and professional behaviour evaluation. To assess the progress of trainees the Entrustable professional Activities (EPAs) are introduced, developed for the specialty training programmes. To achieve harmonisation of the specialist training in Europe and high standards of health care, UEMS is developing the European specialist examinations that can be taken by trainees in the last year of specialty training, can be an equivalent to the national exam.

The pandemic crisis has emphasised the need to further advance the specialty training and requires the development of new contents and standards.

**Key Words:** postgraduate education; medical specialty; competencies; assessment; trainee; mentor

## RESIDENT EDUCATION CHALLENGES IN „NEW“ SPECIALIZATION

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The introduction of specialization in Emergency medicine (EM) as a primary specialization in Croatia was a key step forward in the health care of emergency patients, said by Fred Zeidler who was one of the founders of European Society of Emergency Medicine (EUSEM). In Croatia, EM as a primary specialization has been established more than decade ago, after at least two more decades of intensive work by a dedicated group of medical professionals. First by-law defining residency program was issued in 2009., and the last one with no major changes in 2022. Education of residents in a new specialization was full of challenges, from lack of mentors, lack of well-organized Emergency Departments (ED) in most hospitals, to certain obstacles in by-law. Emergency medicine is a highly complex specialty in which decisions for the patient's life and health are made based on limited information in a short period of time. It requires a high level of different skills and competencies, broad knowledge and flexible, communication skills. In Clinical Hospital Center Rijeka, ED has been organized since 1984, and it has been a kind of advantage. The education itself, apart from the parts defined by-law went a step forward, following the education of anesthesiology residents especially in mastering basic skills in the field of resuscitation, such as endotracheal intubation (EI). In the lecture, the problems and the disparity between the regulations and everyday clinical practice were presented on the example of EI, comparing the default competencies of EM specialists and anesthesiologists. The training of residents was carried out through daily clinical work, practicing clinical skills, problem base learning and medical simulation workshops. In the last part of the lecture, the necessity of developing EM as an academic profession with great potential for scientific research was presented. Therefore, in 2018, EM was added to the Department of Anesthesiology, Reanimation and Intensive Care of the Faculty of Medicine in Rijeka, which was then renamed to the Department of Anesthesiology, Reanimation, Emergency and Intensive Care Medicine. Good example of translation medicine with implementation of basic research in the dynamic field of EM has been done during covid pandemic in ED Clinical Hospital Center Rijeka when First molecular laboratory in EM has been established in collaboration with scientist from Faculty of Medicine in Rijeka, headed by prof. Vanda Juranić Lisnić. Despite numerous difficulties in the implementation of this specialization over the past time, an enviable cadre of young specialists eager for further development of EM has been created, who in the coming period will assume the dominant role of teachers and mentors within their profession.

**Key Words:** emergency medicine; resident education; by-law; clinical skills; scientific research

## THE ADDED VALUE OF UEMS EU SPECIALIST ASSESSMENT

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European Union of Medical Specialists (UEMS, Union Européenne de Médecines Spécialistes) has its goal to develop the highest standards in the education of medical specialists, promote harmonization of specialist training in Europe and consequently ensure similar healthcare framework for the EU populations. The UEMS was established more than 60 years ago and is now with membership of National Medical Associations from 41 countries and includes 43 medical specialties.

There is a long tradition of specialist assessment conducted by specialist sections together with respective EU Boards as a part of the quality assurance process for specialist training and currently includes almost all specialties. One of the UEMS bodies, the Council for Specialist Medical Assessment (CESMA) is dedicated to this task and performs appraisals for the exam process. The exam is constructed to assess the application of knowledge, and consists of a written part (multiple choice questions) and sometimes oral and practical parts. Inspection of the candidate's logbook is an important criterion for the exam. The UEMS exam is a mark of excellence and career progress for the successful candidate and is respected as proof of the highest healthcare specialist competencies in the EU and also in the rest of the world. UEMS has signed agreements with many countries and the UEMS exam is recognized as an equivalent to the national specialty exam or an equal alternative to national certification. The UEMS EU diploma or certificate of successfully passing the exam is not a license for work. On the national level, medical specialists awarded the EU UEMS diploma/certificate (or fellowship) represent a quality mark for the highest specialist training standards as practiced in their country.

**Key Words:** Competencies; Medical Specialist; Specialist Assessment; Specialist Training

## TRANSLATIONAL MEDICINE: MOTIVATING JUNIOR DOCTORS WITH TRANSLATIONAL SCIENCE

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Although the iron curtain was lifted more than 30 years ago, countries in Central and Eastern Europe are still struggling to catch up with our Western European counterparts as far as quality of care and teaching standards in medicine are concerned. This is reflected in a one-way traffic of health care professionals from the East to the West and in the very low, both in number and quality, research output of the region as compared to the West. Science and research are not a *l'art pour l'art* activities. Applying up-to-date research results at the bedside has become an everyday tool over the last 20 years. Without translating evidence-based medicine into clinical routine one cannot provide the best possible care for our patients. Beyond the importance of patient management embedding research in our daily work could have a profound effect on motivating our team and especially those who are open for answering appropriate and important research questions in order to make health care better. However, learning the tools of how to perform high quality research is mandatory. This requires a completely new structure and paradigm change that is almost completely missing from Central and Eastern Europe. Translational Medicine is aiming to fill this gap. Founded in 2015 at the University of Pécs, Hungary, the program trains PhD students and teaches them how to analyse and interpret the results of already published studies by the mathematical tools of meta-analysis and systematic review, how to form an appropriate and important research question and which are the tools that help us to answer these questions. During the training of 2 years the students have to perform one meta-analysis and develop 1 or 2 other research projects, let it be registry or clinical trial. Most importantly they learn the language of clinical science, develop the ability to perform clinical research on their own and present it in such high quality that is accepted by highly ranked international journals and

forums. Over the first 5 years the program produced 300 articles with an average impact factor of 4.21. Currently there are more than 150 new students in the program in year 1 and 2 at the Semmelweis University, Budapest, Hungary. Spreading this mission all over the country and beyond the borders of Hungary may help motivating junior doctors in our region and make them feel equal to their colleagues in the West.

**Key Words:** clinical research; motivation; training in medicine; translational medicine

## Session C4: Mentoring

### THE ROLE OF MENTOR DURING SPECIALTY TRAINING

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Mentorship during specialty training, particularly during competency-based specialty training, is fundamental to the intellectual and professional growth of the mentee; mentees often look for astute guidance regarding career pathway from their mentors, based on an assessment of their skills and attitude. Mentoring is a time-proven strategy that can help young physicians to achieve their fullest potential, with good mentorship being a prerequisite for success in any medical specialty. The most beneficial forms of mentoring include positive relationships with attending physicians that result in trustworthy, nurturing environments that facilitate learning. There are five types of mentors that can be instrumental for a mentee: educator, challenger, moderator, career planner and connector. A truly great mentor often embodies more than one of these mentorship characteristics. It is important to understand that mentees may often find more than one mentorship attribute in a single mentor, mentor who knows when to push, when to act with caution, when to teach, and when to inspire. It is also possible for mentees to find these individual attributes in different mentors, in which case they should define the role and the impact of each mentor. A mentor–mentee relationship is defined as a dynamic reciprocal relationship environment between an advanced career incumbent (mentor) and a beginner (mentee), aimed at promoting the development of both. The mentor-mentee relationship is a dynamic, multifaceted relationship wherein both parties have responsibilities and stand to gain if the relationship functions optimally. Mentor should use a way to train mentee that is not only effective, but also friendly and collegial. This easy-going environment fosters learning and ensures optimal performance. Every mentee desires a mentor that maintains an “open-door policy” to address concerns and questions that arise during the course of training. Maintaining the sustainable trainer’s network is essential for successful specialty training programme implementation.

**Key Words:** Medical education; mentor; specialty training

### EMERGENCY DEPARTMENT MENTORING PROGRAM FOR YOUNG PHYSICIANS

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Emergency medicine is a very complex and unique medical specialty and very often emergency medicine departments are the only entrance for many patient into the healthcare system. Specialists in emergency medicine have to have broad knowledge in acute illnesses, special medical conditions as intoxications, injuries and more complex as politraumatic patients or resuscitation. In emergency medicine, decisions for the patient’s life and health are made based on limited informations in a short period of time, which requires a high level of com-

petence and skills from medical to communication ones. Medical students have their first encounter with emergency medicine during college. Following the internship abolition in 2019 and the introduction of mentoring program from our Ministry of Health, an opportunity has been created for newly graduated physicians to start initial education and acquire practical skills in highly “busy” environment such as emergency departments. In November 2019, Clinical Hospital Center Rijeka admitted first group of young doctors for the “Work under supervision program”. We started with the education program from the first generation and gradually improved it. It is carried out through four educational modules, and after each module there is a written and oral test followed by mentor’s meeting. Currently we are under developing proces of completely new module, Module V (5th module), that will be dedicated to mastering basic skills in the point-of-care ultrasound in emergency medicine. We take the education of young physicians seriously, which is why we conducted an evaluation of our work and program through a survey – the opinion of young physicians about the training method and their work with positive feedback which gave us reasure to continue in the same direction. In the presentation Modules and survey analysis will be showed and explained in more details.

**Key Words:** education; emergency medicine; modules

## WHY FACULTY MENTORING MATTERS?

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This presentation aims to introduce the Texas Tech University Health Sciences Center El Paso (TTUHSC EP) Faculty Mentoring Program (FMP). This comprehensive, outcome-driven two-year FMP assists junior and mid-career faculty in improving their teaching, research, and administrative/leadership skills to succeed in their academic career. Before enrollment, mentors undergo training to develop their mentoring, time management, and communication skills. They are informed about their mentorship responsibilities in providing structured guidance and constructive feedback to their mentees. The orientation session helps both parties establish a psychological connection, set the goals of their mentoring relationship, and communicate the expectations. The effectiveness of faculty mentoring programs is measured by comparison of the key performance indicators (e.g., number of peer-reviewed publications and presentations at local, regional, national, and international conferences, teaching evaluations, and administrative roles and experiences) before enrollment in the FMP (baseline data), over time (e.g., achievements outlined in the quarterly progress reports), and at separation. Anonymous surveys are used for subjective assessment of the mentoring relationship and experiences. Long-term objective data, such as scholarly productivity and indicators of career advancement (e.g., promotional paths), available from different sources (e.g., PubMed, public information on promotion success), are regularly evaluated by the TTUHSC EP Office of Faculty Development. A thorough evaluation of TTUHSC El Paso FMP indicated that most mentees achieved or exceeded their goals, meaning that institutional investment was successful.

**Key Words:** Academic Career; Administrative Skills; Faculty Mentoring; Leadership Skills; Research Skills; Teaching Skills

## **Session C7: CLINICAL SKILLS AND SIMULATION**

### **IMPLEMENTATION OF THE 6-YEAR LONGITUDINAL COURSE ON FUNDAMENTALS OF MEDICAL SKILLS IN THE CORE CURRICULUM: IMPACT ON STUDENTS/GRADUATES AND EDUCATORS**

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Setting standards in undergraduate medical education is a crucial but still developing research area in Croatia. Improvement and innovation in teaching and education are primary goals of the University of Zagreb School of Medicine program. A definite step in this direction was made by the introduction of the 6-year longitudinal course Fundamentals of Medical Skills (FMS) in 2011. The course content follows the core curriculum subjects. FMS is focused on communication as well as practical and clinical skills. It delivers content through a combination of simulation on mannequins, role-play and meet-my-patient scenarios. The course involves 212 tutors and 1,800 students (sds) in each academic year. It comprises practical skills such as washing hands; basic, advanced, paediatric and trauma life support; drawing blood; urinary catheter and nasogastric tube insertion; intravenous/intramuscular/subcutaneous injection; out-of-hospital labour; immobilisation; clinical case simulations; role-playing situations and standardised patients – all with the aim to prepare sds for residency or clinical practice as graduated junior doctors. Participants get the opportunity to experience the advantages of teaching methods including practical, clinical and communication skills by participating in prepared scenarios. The Calgary-Cambridge model was adopted and sds are expected to take an active role in the learning process. The same tutor follows a group of 10 sds throughout all six years, for 30 teaching hours per each academic year.

Tutor/mentor characteristics are also an important component of the process. They should have basic core teaching skills, be trained for their role and provide high-quality education. Standardisation of the teaching is ensured by two-day courses for tutors, followed by pre-course training every academic year, teaching session plans and a tutors' guidebook including a detailed teaching plan, materials, aims and learning outcomes. Each year ends with an exam comprising 3 Objective Structured Clinical Examination (OSCE) stations.

Assessing sds' and tutors' attitudes toward learning is essential. Their feedback provides awareness as to which aspects of the course could be enhanced or changed. In five generations 83.7% sds found the course useful, 92.9% favoured practical over communication skills, 86.5% preferred to be taught on patients, 62.4% were able to use the skills acquired through FMS in other courses during the study, 82.3% found practical skills more useful in the higher years and reported implementation of the skills acquired through FMS in other courses during their study, 75.2% found that more time for practice on mannequins would be desirable. However, they appeared to underestimate the importance of communication skills. 78% preferred OSCE stations to traditional oral exams. Among lecturers' qualities, knowledge (89.4%), communication skills (75.2%) and approachability (73%) were most valued.

**Key Words:** education development; undergraduate; medical education; communication; clinical skills

### **DESIGNING CLASSES FOR MEDICAL STUDENTS WITH LITTLE OR NO EXPERIENCE IN SIMULATION**

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In Croatia, not a single Faculty of Medicine has a standardized multidisciplinary simulation centre. Simulation is present throughout all the years of studying but significantly varies between Faculties and between Depart-

ments. Students unfortunately, for the most time throughout all the years of study, do not practise simulation systematically. Due to the lack of simulation experience, trying to copy simulation protocols from different curriculums usually means problems and hardly achieves wanted goals. The author provides the experience of Kabinet vještina (Skills Lab), a small simulation centre of the Department of Anaesthesiology, Reanimatology, Intensive Care and Emergency Medicine at the Faculty of Medicine at the University of Rijeka in creating classes for such students and the ongoing evolution of advanced simulation courses for final year medical students with minor experience in simulation.

**Key Words:** advanced simulation courses; adapting simulation; healthcare simulation; Kabinet vještina (Skills Lab); medical simulation

## SKILL LAB

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The basic purposes of developing a simulation center come from the fact that practicing in a realistic resuscitation situation is ethically unacceptable, that exercise after suspended resuscitation is ethically considered controversial and that skills and knowledge in clinical medicine cannot be fully mastered during a stay in different departments. Due to the impossibility of learning these procedures on patients, simulation centers allow the possibility for students and course participants to practice them on „models” in places built exclusively for that purpose. The aim of this lecture is to present the Skill lab – a teaching base of the Faculty of Medicine, the Faculty of Health Studies and the Faculty of Dental Medicine.

Our first Skill lab was constructed 2001 and the first equipment included teaching models for cardiopulmonary resuscitation procedures, including „Airway“, „Basic Life Support“ and „Advanced Life Support“. In 2013, the Skill lab moved to a new, adapted space within the University Campus of the University of Rijeka. It extends to 160 m<sup>2</sup> and is equipped with the latest simulation equipment that can be used to train both lay people and highly specialized health professionals. The main principles of education in Skill lab include working in small groups, individual approach, active exercises on models while respecting the predetermined exercise structure and time limits, preparation of the skill station, creation of scenery – simulation of reality and preparation of the scenarios of certain medical conditions. The teaching staff follows the doctrine and algorithms of the European Resuscitation Council and includes 46 ALS instructors, 21 ETC instructors and 8 students demonstrators. At the Ultrasound Skills lab we offer several courses, including „Airway, thorax and abdomen ultrasound in emergency medicine“, „Ultrasound guided regional anesthesia“, „Summer school“, „Ultrasound in intensive care and emergency medicine“, „Focus Assessed Transthoracic Echocardiography – basic and advanced Heart US“, „US guided Percutaneous Dilatative Tracheostomy“.

**Key Words:** skills lab, simulation center, cardiopulmonary resuscitation procedures, clinical simulation

## CHALLENGES IN IMPLEMENTING OSCE AT THE UNIVERSITY OF SPLIT SCHOOL OF MEDICINE PHARMACY PROGRAM

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The preparation of the first Objective Structured Clinical Examination (OSCE) introduced at the University of Split School of Medicine Pharmacy program will be described. OSCE is held as the last or sixth partial exams of the 6-month Professional training course of pharmacy students. This OSCE comprises of seven stations, five of which are interactive. Starting point was to define the skills that will be examined for which we used the Croatian Competency Framework for Pharmacists as template. Furthermore, it was necessary to ensure adequate



number of rooms in which the examination will be held in the way that communication among students is not possible and to prepare adequate number of qualified professors and staff members that was needed to conduct the examination. For this, support from the Faculty was critical. Duration of exam was taken into consideration as it should not be too overwhelming for students, actors or examiners. Finally, predicting possible problems that may occur during the examination and means to overcome them were developed. This OSCE was first pilot-tested and this pilot led to some modifications in number of tasks per station as well as the point threshold at some stations. Finally, it was necessary to make substantial changes in the program to ensure students were prepared for this type of exam. Areas in which today's OSCE is limited and where it may be improved will also be presented and analysed.

**Key Words:** OSCE ; Pharmacy ; Professional training

## **Session C8: INNOVATIVE LEARNING METHODS**

### **STUDENT-CENTRED LEARNING IN THE CONTEXT OF EXTERNAL QUALITY ASSURANCE**

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Quality assurance and management of higher education institutions and programs is in the centre of attention of various policies at the European and national level. The paradigm focusing solely on the quality of teacher and teaching process is transforming into one aiming at student learning. According to this approach, students have an active role which enables the effective learning process and taking responsibility for one's own learning. Within the quality assurance framework, the learning-centred approach was emphasized throughout the 2015 version of Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) and translated into the national quality assurance context through external institutional evaluation standards. The aim of the analysis of 7 SCLT elements (inclusive curriculum and pedagogy; flexible learning pathways; technology-enhanced learning; learning and teaching support; inclusive learning spaces and libraries; community engagement and partnerships) related to student-centred learning deriving out of institutional accreditation reports is to indicate institutional practices and obstacles related to the implementation and improvement thereof. As the review teams' findings indicate, SCLT is present at Croatian universities in various forms, however, a systematic approach to its implementation and evaluation is still lacking. Institutional quality mechanisms aimed at encouraging the autonomy and responsibility of student learning ultimately leads to the improvement of institutional and program quality so higher education institutions as well as evaluation methodologies should consider implementing this approach in a more harmonized and systematic manner.

**Key Words:** student-centered learning; quality assurance; institutional evaluation

### **APPLICATION OF PEER-ASSISTED LEARNING MODEL IN ANATOMY PRACTICAL LABORATORIES TO IMPROVE MEDICAL EDUCATION**

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“Peer-Assisted Learning Model”, can be defined as a learning method in which the students are placed in a multimodal learning, teaching, and discussion environment. In the present study we applied this this teaching

method to our medical students in the Anatomy labs. The aim of this teaching approach is to get the highest efficiency from the models and the cadavers used in the demonstrations and overall to improve our medical education. To investigate the outcome of “Peer-Assisted Learning Model” a survey was applied to the first- and second-year medical students in the Anatomy practical labs. “Peer-Assisted Learning Model” is applied in each table of 5 students. After each amphitheater class the presenter gets prepared for the next couple of days and the presents their topic to the lecturer. The lecturer fills the gaps and makes the necessary corrections and makes the presenter fully prepared for his lab presentation by using the Anatomic models and cadavers. At the end of the year a survey of ten questions was applied to total of 270 medical students at Istanbul Aydın University. The results were evaluated using the ANOVA-T test. The results show the followings: (1) due to the secure environment formed by the students the students can ask their questions without any hesitation, (2) since the presentation proceeds in a Q&A format it was possible to analyze the topic in depth, (3) it was obvious that the presenter learned and assimilated the topic much better, (4) the presenter established a behavior of self-confidence and sense of responsibility was developed. The present results were found to be statistically significant. In conclusion, application of “Peer-Assisted Learning Model” in the Anatomy labs is more beneficial than the classical sessions.

**Key Words:** peer, anatomy, medicine, education, laboratory

## INNOVATIVE PEDAGOGICAL APPROACHES IN MEDICAL EDUCATION

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Medical education has undergone significant development in the last three decades, with advancements in digital technology playing a critical role. These technologies have opened entirely new fields in medical education, such as artificial intelligence, deep learning, telemedicine, learning analytics, gamification, virtual patients, and augmented and virtual reality, facilitating significant changes in how students, physicians, and other primary care professionals are educated and trained. Incorporating these technologies effectively into teaching requires a significant effort to redesign the curriculum, provide teacher training, and develop the necessary infrastructure. However, the introduction of digital technology in medical education requires a fundamental shift in the pedagogical approach to teaching and learning. Teachers need to become familiar with the new tools and strategies and learn how to use them effectively to engage and motivate students and promote their learning. Flipped classroom (FC) model is an innovative pedagogical approach, that has been gaining substantial attention in the last decade because it put the student at the center of the teaching process and assigns them an active role in the learning process. This approach is in accordance with the learning theory of Bloom’s revised taxonomy, as students first gain basic knowledge and comprehension (the lower levels of cognitive work) outside of the classroom which frees up class time for active learning (the higher forms of cognitive work) when they have the support of their teachers and classmates. The advantage of the FC model is its scalability and adaptability to meet students’ learning needs. It can include flipping just a particular learning unit, only a part, or even the whole course. Despite the fact that there is no single model for the flipped classroom, core features generally include: providing content in advance (generally a pre-recorded lecture), educators’ awareness of students’ understanding, and higher-order learning during class time. In order to implement the FC, educators need to redesign their curriculum to integrate pre-class activities into f2f classes with active learning pedagogies founded upon a constructivist theory. Introducing the FC approach in our physiology course had a significant impact on teaching and learning. Our students expressed high levels of satisfaction with the FC approach because it increases their motivation to learn and enhances their level of engagement, and interest in the subject matter.

**Key Words:** medical education; flipped classroom; Flipped learning

## MEANINGFUL LEARNING DESIGN AND LEARNING ANALYTICS

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Learning analytics (LA) has been opening new opportunities to support learning in higher education (HE). LA dashboards are an important tool in providing students with insights into their learning progress, and predictions, leading to reflection and adaptation of learning plans and habits. There is a growing interest in coordinating learning design (LD) with LA, as the two can mutually provide valuable input and enhance quality of teaching and learning. Furthermore, to ensure the validity of an assessment program, it is essential to align it with the intended learning outcomes (LO).

Therefore, a comprehensive LD concept and tool is needed that considers the needs of educators. The Balanced Design Planning (BDP) concept and tool (learning-design.eu) aim at implementing contemporary research findings and theory to support balanced LD planning and development. The student-centered BDP concept and tool provide innovation to LD planning by strongly focusing on learning outcomes LOs and student workload, aligning study program and course level LOs, ensuring constructive alignment and assessment validity, enhancing LD by using learning analytics, and enabling flexible use in different contexts and pedagogical approaches.

Moreover, even though the BDP concept and tool can support the implementation of various pedagogical models and approaches, as they are based on LOs and student workload, they are envisaged as student-centered with the constructivist theoretical approach, and therefore not completely pedagogically neutral. Flipped classroom (FC) approaches, work-based learning and other innovative teaching and learning approaches have been proved successful when planned, implemented and monitored with care and based on LD and LA. Finally, well-planned innovative learning approaches are invariant of mode of delivery. For example, research findings indicate that those who had used FC approaches in face-to-face or blended learning environments more successfully continued to use them more successfully in online environments than those who had not used it before.

**Key Words:** flipped classroom; learning analytics; learning design; work-based learning

## PERSPECTIVES OF USING LEARNING ANALYTICS IN MEDICAL EDUCATION

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The purpose of medical education is to enhance the abilities of doctors, nurses, and allied healthcare professionals to meet the health needs of patients, communities, and populations. Digital education, which is learning through electronic technology, is becoming a popular form of continuing education in both academic and clinical settings. With the onset of COVID-19, learning through digital platforms has become the standard worldwide. These platforms are online systems that automate the management, delivery, tracking, and reporting of learning activities, thus generating large amounts of data about student learning, which can be further analyzed with Learning Analytics (LA). LA can be defined as the “measurement, collection, analysis, and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs.” In this lecture, we will first present a life cycle of LA starting from digital education content creation, followed by the data collection process, the use of analytics to process the collected data, and the purposes for which LA was used. Then we will present the identified the gaps in the current practice and finally propose how to close them.

**Key Words:** Cooperative/collaborative learning; COVID-19; Data science applications in education; Distance education and online learning; Distributed learning environments; 21st century abilities

## Session C10: e-LEARNING

### HeMED PLATFORM – CROATIAN ELECTRONIC MEDICAL EDUCATION

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HeMED is the acronym for Croatian electronic medical education („HRVATSKA ELEKTRONIČKA MEDICINSKA EDUKACIJA“). HeMED is the contemporary technological solution on Croatian language for medical professionals and patients provided on web page and mobile application. Inspired by Željko Ivančević, MD, the project was successfully launched and finished with the help of Croatian medical chamber and If! (Innovative pharmaceutical initiative).

On the pages of hemed.hr important international textbooks and an always up-to-date drug database are translated for medical professionals and the public.

The editions available for searching and reading are: MSD Handbook for Patients (2019), MSD Handbook for Professionals (2018), MSD Handbook of Disease Symptoms, Pharmacogenetics in Clinical Practice (2021), Harrison: Principles of Internal Medicine of Medicine (pocket manual) (2019) and Harrison: Principles of Internal Medicine (textbook). All of the mentioned editions are connected to the drug database, which is regularly updated. When reading the text, each drug that is listed can be opened directly in the drug database, also by viewing the drug readers can see all texts that have that drug in it.

The goals of HeMED are to encourage citizens' health literacy, provide students with contemporary literature in the Croatian language, and support doctors in their daily work.

Hemed.hr is used daily by 6,000 users with a growing tendency. In the future, we plan to update all translations with the latest editions and include other important editions on hemed.hr.

In conclusion, HeMED is the result of the volunteer work of about 400 medical doctors of all specialties and all age groups who diligently translated about 20,000 pages of medical literature to help their colleagues and patients.

**Key Words:** electronic medical education, health literacy, medical literature

### EACADEMY OF THE CROATIAN MEDICAL CHAMBER

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The eAcademy of the Croatian Medical Chamber represents an innovative e-learning platform designed for physicians and medical professionals, providing free access to professional education and continuing medical education. The platform consists of two key elements: Hemed, an education management system, and Panopto, a platform for videoconferencing and recording lectures.

E-learning offers numerous advantages, such as flexibility, accessibility, and individual customization. The goals of the eAcademy of the Croatian Medical Chamber include promoting continuous education, integrating membership, encouraging personal development, improving knowledge and skills, creating a knowledge base, and informing members.

The content of the eAcademy encompasses professional education, access to electronic medical publications (HeMED), education in law and medicine, skill development, and information from healthcare and the medical profession. The future of e-learning in medicine suggests greater integration with advanced technologies, which will enable a better learning experience and improved competencies for medical professionals.

In conclusion, the eAcademy of the Croatian Medical Chamber provides advanced tools and resources for e-learning, offering numerous advantages compared to traditional educational methods. Through free access to various forms of education, the eAcademy enables professional and personal development for its members, enhancing healthcare quality and promoting the medical profession.

**Key Words:** Croatian Medical Chamber; innovative e-learning platform; professional education

## **INTERACTIVE TEACHING MATERIALS IN THE MOODLE SYSTEM**

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Education is a continuous and flexible process that requires great investment and effort from both sides, from us who teach, but also from the students who learn. Information and communication technology (ICT) has been used for educational purposes for many years, and since Pandemic 2020, any teaching and learning process is unthinkable without the use of ICT.

However, the use of new technologies primarily requires a high level of digital literacy on the part of lecturers, as well as the motivation and willingness to improve and perfect their own ICT skills in order to create a new teaching environment. To meet the needs of lecturers and the education system, a free online teaching platform, Moodle, was created.

The Moodle system is used for the creation of electronic educational content and distance learning. It has been used at the University of Rijeka since 2006, first under the name MUDRI and today under the name Merlin. What is special and useful about such a system, apart from the provision of online courses, are the various forms of interactive teaching it offers. The most commonly used interactive tools in the Moodle system are: UCL Connected Learning Baseline; Discussion Forums, Glossary, H5P, Hot Question, Group Choice, Lesson, Wiki, Workshop, Collaborate, Book, Questionnaire, Activity Completion, Chat and Quiz.

Considering the purpose and application for which we use them, each of these tools has certain advantages and disadvantages that need to be known in order to make the most of them and use them in online courses.

**Key Words:** education; information and communications technology; interactive teaching material; moodle system; online learning

## **E-LEARNING FOR TEACHING AND IMPROVING ULTRASOUND AND CLINICAL SKILLS COMPETENCIES**

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This presentation discusses the best practices for using virtual reality (VR) and artificial intelligence (AI) in e-Learning and simulation in healthcare. A review of the examples for incorporating VR and AI to improve ultrasound, clinical, and surgical skills competencies enables participants to understand the importance of technology-assisted training across the continuum of medical education. VR provides a realistic environment to learn and improve clinical, imaging, and surgical skills. Advantages include using realistic virtual patients and virtual instructors, quick and objective assessment of multiple students, and improved patient safety. Because AI may examine a large volume of medical images, assess patterns consistently, and save costs, it could be efficiently used for screening and initial image interpretation. Pattern recognition is useful for the rapid evaluation of patient history and the introduction of standardized management and therapeutic procedures consistent with the most current algorithms and protocols. Deep learning algorithms may be utilized to model expert clinicians' skills during patient encounters and surgeons' skills during surgical procedures. Extracted real-time haptic signals could guide instructing trainees to perform the procedure or assist supervisory physicians in providing

objective feedback. Models for intraoperative guidance based on tissue tracking are already implemented in robotic surgery, which improves instrument positioning and manipulation of surgeon novices. Computer-assisted surgery may use preoperative planning based on the patient's medical records and MR/CT surface models for optical tracking of instruments and anatomy, which is advantageous for trainees. Superposition of anatomy landmarks to real-time ultrasound images is an example of providing learners and clinicians with real-time support and guidance during ultrasound-guided procedures (e.g., regional anesthesia) to enhance precision, leading to improved clinical and patient outcomes.

**Key Words:** e-Learning; clinical simulation; virtual reality; artificial intelligence; ultrasound skills; clinical competency

## **Session C11: PATIENT AND POPULATION EDUCATION**

### **COMMUNITY – BASED PREVENTION AND DESTIGMATIZATION: A PRACTICAL VIEW**

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The lifelong prevalence of psychiatric disorders in the general population is twenty-five percent. At the same time, it is mostly about conditions from the anxiety-depressive spectrum and the spectrum of addiction. Timely recognition, as well as adequate multidisciplinary professional interventions, enable better outcomes of treatment and recovery. Therefore, prevention, health literacy programs and destigmatization of people with psychiatric disorders are essential and necessary activities in the community with the aim of mentally empowering society and individuals. The Integrative Centre of Mental Health was founded in Karlovac in 2017, and represents a platform for a range of programs, projects, campaigns and activities for the promotion and protection of mental health and public health. On the other hand, by developing the concepts of community-based psychiatry, the best approaches to people with experience of psychiatric disorders are possible.

**Key Words:** mental health; health literacy; destigmatization

### **PUZZLES OF HEREDITY: EDUCATING CHILDREN IN GENETIC LITERACY THROUGH INTERACTIVE WORKSHOPS**

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Puzzles of Heredity is a project conducted since 2021 by the Centre for Genetic Education at the Faculty of Medicine in Rijeka and CroMSIC – Croatian Medical Students' International Committee. The workshop is intended for children of preschool and early school age (grades 1–4), and the aims are to introduce children to the hierarchical structure of the human body, as well as the basic concepts of genetics and principles of inheritance, and raise awareness in children about the importance of respecting differences between humans and other living beings. The workshop is conducted by genetic educators from the Centre for Genetic Education, as well as specifically trained student genetic educators from CroMSIC. Genetic educators use different types of educational materials for the workshop, including a picture book and three didactic toys, which were designed by a preschool teacher, Montessori pedagogue.

The Puzzles of Heredity workshop encourages the development of genetic literacy in children from an early age, enabling the acquisition of knowledge about basic genetic concepts, developing positive attitudes towards the appreciation of differences between living beings, as well as developing respect for life in general. Genetic diseases are not exclusively rare diseases and low levels of genetic literacy among healthcare professionals and the general population are the main cause of discrimination and mistreatment of people who are born “different”. Therefore, increasing genetic literacy in children is of the utmost importance because knowledge is the only way to release fear and development of negative attitudes.

The aim of this lecture is to present the aims, concept, results and significance of conducting the Puzzles of Heredity workshop in children of preschool and early school age. In addition, the aim is to emphasize the important role medical educators and medical students have in the transfer of highly specific knowledge to the general public.

**Key Words:** medical education; genetic education; medical students; genetic literacy

## **Concurrent Session C13A: MOBILITY AND INTERNATIONALIZATION**

### **INTERNATIONALIZATION OF MEDICAL STUDY PROGRAMS**

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“The art of medicine consists in amusing the patient while nature cures the disease”, the famous writer and philosopher Voltaire once said. In order to heal patients, the key is to educate future medical doctors that will be capable of integrating different aspects of medicine and education. Accordingly, the main vision of the Faculty of Medicine Rijeka is internationalization as one of the most powerful ways to create a world without borders, a world where medicine knows no frontiers. With its scientific, professional, and general intellectual capacity, based on tradition and continuous development, the Faculty of Medicine Rijeka is an important factor on the biomedical map worldwide. We widely open new doors of cooperation and partnership with the international academic community by promoting the input and output of scientific and educational mobility and rapid flow of information, education, and ideas. Our mission is to educate, inspire, and encourage future physicians to create a better and healthier world focused on humanity and altruism. Internationalization is a bridge that connects people to the world of science and education. Since the academic year 2017/2018, the Faculty of Medicine at the University of Rijeka introduced the University integrated undergraduate and graduate study program of Medicine in English. Today we count more than 250 students from different parts of the world, including many European countries, the United States, Canada, the United Kingdom, China, Africa, Brazil, the Middle East, and many others, who study together and grow as a unique part of the educational process, constantly expanding our horizons and international visibility.

**Key Words:** Education; Internationalization; Medical Studies; Mobility

## TEACHING PHARMACOLOGY FOR LEARNING IN PRACTICE IN MEDICINE & PHARMACY DEGREES

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The International Student Mobility has become a feature of higher education policy across all disciplines. Due to increasing individual tourism and migration, physicians and pharmacists progressively require intercultural skills in their home country. The University of Padova (UniPD) has various international student mobility initiatives. Overall, 80% of outgoing and incoming students come under the Erasmus+ Studio, Erasmus+ Traineeship, Erasmus Mundus and Arqus schemes, or bilateral agreements. In 2016–2017 compared to other Italian Universities, UniPD ranked second for its proportion of outgoing students (2.8%) and third for incoming (2.2%). With the about 200 Erasmus cooperation agreements, the number of incoming students has increased constantly from 4.9% to 7.5% in UniPD Medicine and Pharmacy Courses between 2019 and 2023. In this respect, the PhD program in Pharmacological Sciences strongly promotes international exchanges, with about 35% of graduate students' participation on the different initiatives. In parallel, the UniPD Department of Pharmaceutical & Pharmacological Sciences (DPPS) has organized various international summer programs (ISPs) for medical and pharmacy students with the financial support from UniPD Internalization Program and scientific nonprofit organizations. These ISPs are characterized by clinical sessions on drug information, healthcare delivery and patient cases as well as scientific sessions on pharmacological mechanisms and drug design. The main topics ISPs ranged from *Drug misuse and related clinical and toxicological issues to Theranostic Radiopharmaceuticals for Implementing Precision Medicine*, highlighting the pharmacological mechanisms and drug effects from scientific and clinical perspectives. One virtual ISP, denominated *MINDinGUT*, was launched during COVID-19 pandemic which enrolled over 65 young participants from the four continents, interested in understanding research on the microbiota-gut-brain axis. These different mobility initiatives trigger innovative effects on medicine & pharmacy education and clinical practice offering the opportunity of sharing ideas on an international level and helping students in their professional careers.

**Key Words:** education; mobility; pharmacology; clinical practice; scientific perspectives

## Session C14: CURRICULUM DESIGN & INTEGRATION

### LESSONS LEARNED FROM CURRICULUM REDESIGN

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Washington University school of Medicine in St. Louis, Missouri has undertaken a major curriculum renewal over the past 4 years. The recommendations of the so-called Flexner 2.0 report were incorporated into the curriculum design, one of the most important is curricular integration. The review describes the methods of integration incorporated in a horizontal and vertical fashion. Each of the three phases is described as well as the integration components in each phase.

**Key Words:** education; curriculum; integration



## CHALLENGES IN IMPLEMENTING CLINICAL ROTATIONS AT THE UNIVERSITY OF SPLIT SCHOOL OF MEDICINE

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The core curriculum of the University of Split School of Medicine (USSM) sets the standards for knowledge, skills, and attitudes that medical students should acquire. Clinical rotations as the final act of acquiring clinical skills at the USSM consist of four courses: Emergency (3 ECTS); Internal Medicine (5 ECTS); Surgery (5 ECTS); and Mother and Child (5 ECTS), and are organized in the sixth academic year involving 540 hours. In a group of two, students spend time in outpatient clinics of the University Hospital of Split, the Emergency Department of Split-Dalmatia County, and on other teaching bases. A traditional rotation involves a supervising faculty member (mentor) making assignments and working with a limited number of medical students. Students work as part of the medical team and actively participate in diagnosing and treating the patient by applying the knowledge they have acquired and improving their clinical skills to enable them to practice independently. In addition, students participate in interactive seminars where they are expected to apply their knowledge in managing clinical cases. Seminars are organized in the form of problem-based learning (PBL). Finally, the formative OSCE with immediate feedback is performed at the end of the Clinical rotations to evaluate students' clinical competence when taking the history, performing the physical examination, and in clinical reasoning. Internal SWOT analysis performed following the student's survey revealed that acquisition of skills and knowledge in small groups of students, thorough familiarization with the hospital treatment protocol of the patient, a unique opportunity for the student to participate actively under the supervision of the mentors in the patient care in different clinical scenarios, and flexibility of performing practical from clinical rotations that do not require additional material costs for the USSM and/or the University Hospital of Split are the main strengths. On the other hand, mentors are not paid for this work, and they are overloaded with regular clinical work. Variability in the quality of clinical rotation between departments and the disproportion in duration and scope of individual components are the main weaknesses. Differences in organization of clinical skills and capacity across medical schools are acknowledged. Still, constant improvement and steps toward in clinical decision-making of future physicians become a crucial features of the core curriculum of medical schools.

**Key Words:** clinical skills; curriculum; medical education; medical student; OSCE

## CLINICAL TEACHING IN DENTISTRY

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In the study of dentistry, teaching is organized by lectures, seminars, pre-clinical exercises and clinical exercises. Before the clinical part, students acquire skills in the preclinical exercises by working on models. Both in the preclinical and later in the clinical part, the work task is important because it forms the basis for the learning process and stimulates further learning.

Three people are involved in this process: the patient, the student, and the teaching clinician.

In this process, the student must acquire theoretical knowledge, the ability to perform clinical examinations and communicate with patients, receive comprehensive dental education that can be applied in all areas of clinical dentistry, and collaborate with other health professionals in solving everyday dental cases.

While working on clinical cases, students are exposed to a typical or common problem, acquire new knowledge about a previously known problem, and sometimes have the opportunity to encounter a rare problem in dental casuistry.

In the sixth year of study, they deepen their skills in the context of professional practice in cooperative institutions of the faculty, where they meet and work on various case studies The Doctor of Dental Medicine is

qualified to engage in activities involving the prevention, diagnosis, and treatment of anomalies and diseases of the mouth, oral cavity, and associated tissues.

In small learning groups, student teams examine real patient cases that represent key concepts in the curriculum. The cases represent typical clinical scenarios they will encounter in their 3<sup>rd</sup> and 4<sup>th</sup> years of study and throughout their dental careers. This learning approach helps students develop valuable critical thinking and problem solving skills that are in high demand in today's health care professions.

**Key Words:** clinical; dentistry; teaching

## HOW TO WRITE A STUDY PROGRAM?

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When creating new study programmes, we need to take into account the programme's compatibility with the labour market. When we know the needs of the labour market, we start creating a study programme whose learning outcomes are the basis for key jobs within the health system. The study programme should be in accordance with the qualification standard of the Croatian Qualifications Framework (CQF), which clearly defines the learning outcomes and competencies a person must have. Learning outcomes are the basis for creating occupational standards and qualifications, and they are acquired by mastering the material. Competencies are shown through the knowledge and skills that a person acquires upon completing the study programme. Learning outcomes and competencies often overlap, which is especially the case in health professions.

The study programme must contain learning objectives and outcomes that ultimately lead to a qualification of a certain level. Imprecise verbs are used to describe the course's objectives (to have the knowledge, to learn, etc.). The American psychologist Bloom defined three areas of intellectual behaviour during learning, and he systematised each area from the lowest to the highest level of knowledge acquisition. Active verbs of levels 4 and 5 of Bloom's taxonomy, which correspond to level 5 of CQF, are used for the purpose of creating learning outcomes, while verbs of level 6 of Bloom's taxonomy correspond to levels 6 and 7 according to CQF. When creating the study programme, it is necessary to define about 20 learning outcomes of the study programme, which must be linked to the learning outcomes of each individual course. When describing each course, 4 to 10 expected learning outcomes must be specified (the number of learning outcomes depends on the teaching load of the course), at least one of which must be related to the learning outcomes of the study programme. Every outcome must be measurable and verifiable.

**Key Words:** Bloom's taxonomy; learning outcomes; study program

## AS INTERDISCIPLINARY AS IT GETS – THE ROLE OF MEDICAL DOCTORS AS TEACHERS IN SPEECH AND LANGUAGE PATHOLOGY STUDIES

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Speech and language pathologists (SLPs) provide treatment, support and care for children and adults who have difficulties with communication, hearing, or with eating, drinking, and swallowing. In most countries SLPs are allied health professionals guided by the idea and mission immanent to medicine: therapy is an attempted remediation of a health problem, usually following a medical diagnosis. Speech and Language Pathology is however, immensely interdisciplinary field that encompasses a wide range of disciplines: from linguistics, phonetics and acoustics, to psychology, education and number of medical disciplines as neurology, otorhinolaryngology or genetics. This makes the discipline particularly attractive, but also challenging when it comes to creating a pro-

gramme of study. This presentation will highlight some of these challenges, but also advantages and distinctives the programme comprises. Particular emphasis will be placed on the role of medical doctors as teachers in Speech and Language Pathology Studies and opportunities for knowledge transfer between disciplines, in both directions.

**Key Words:** education in allied health professions; speech and language pathology; study programmes

## **Session C17: QUALITY IMPROVEMENT IN MEDICAL EDUCATION**

### **INSTITUTIONAL FRAMEWORK FOR IMPROVING QUALITY OF L&T AT UNIVERSITY OF RIJEKA**

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The quality of learning and teaching is assessed, as is customary worldwide, on the basis of the results of surveys of student satisfaction with the teaching and teachers after completion of the courses. UNIRI has long gone beyond this and conducts regular and comprehensive surveys of recent graduates at all levels (Bachelor, Master and PhD), as well as surveys of academics and administrative staff, the results of which are used as a basis for decisions to introduce measures to improve not only the quality of L&T and student satisfaction, but also measures to improve the skills and competences of students, academics and support services. In this context, UNIRI launched the UNIRI CLASS programme in 2021, which consists of 5 project lines with the sole objective of supporting all education stakeholders to achieve the University's strategic objectives in L&T. The project lines are: A1. Open personalised education (development of subsidiary subjects / micro-credits offered as electives within the study programme or the LLL programme), A2. Digital Society – Innovations in L&T (developing innovative applications of digital tools and pedagogical approaches for L&T), A3: Practical Skills for the Future (developing an industry-academia network for co-supervision of 3–6-month internships), B: Student Wellbeing (supporting student counselling centre services – psychological support, career counselling) and C. UNIRI – Coursera partnership in L&T. All project lines have started and the results will be presented.

**Key Words:** Quality of L&T; Innovations in L&T; Strategic objectives in L&T

Lovran  
(Photo: Nina Pereza)



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STUDENT SYMPOSIUM  
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## Session S1: WORKSHOPS I

Anesthesiology Section, Faculty of Medicine, University of Zagreb

### A CRASH COURSE (OVER COFFEE) ON AIRWAY MANAGEMENT

Điđi Delalić, Romana Kuzmić, Frano Šušak, David Palijan, Mihael Grzelja, Luka Zvekić, Anja Ćuk

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Airway management is one of the most crucial aspects of managing a critically ill patient. Being acquainted with the basic airway opening maneuvers and airway securing techniques like the placement of a supraglottic airway or endotracheal intubation is an obligatory prerequisite for working in any field of medicine that deals with treating critically ill patients, be it emergency medicine (both prehospital and hospital), anesthesiology or critical care medicine. Although singular workshops do not provide nearly enough experience to make a participant truly proficient in airway management, they provide a solid framework for learning the fundamental mental processes and physical tasks related to successfully securing an airway and allow for learning in a safe, controlled and risk-free environment. This workshop aims to provide its participants with an opportunity to learn basic and advanced airway management techniques through medical simulation, hands-on practice and question and answer (Q&A) sessions with the workshop instructors. The workshop will cover basic airway opening maneuvers, placing an oropharyngeal or nasopharyngeal airway, placement of a supraglottic airway, laryngoscopy, endotracheal intubation and using a videolaryngoscope with a standard geometry blade.

**Key Words:** Airway Management; Endotracheal Intubation; Supraglottic Airway

Student Section for Radiology, Faculty of Medicine, University of Zagreb

### E-FAST

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e-FAST (Extended Focused Assessment with Sonography in Trauma) is an ultrasound protocol designed for the detection of peritoneal fluid, pericardial effusion, and pneumothorax/hemothorax in trauma patients. Ultrasound is a necessary diagnostic tool that greatly facilitates the detection of diseases and enables their proper treatment. The use of portable ultrasounds is very useful in emergencies. Because it is easy to transport to the scene of emergency intervention, it can give the doctor an insight into what is happening with the patient in the earliest moments and start treating him properly. This is extremely important in emergency medicine where seconds depend on whether the patient will survive or not.

The workshop aims to educate medical students about the techniques of performing an ultrasound examination in the conditions of a family doctor's office and an outpatient emergency medical service. The workshop would allow students to practice the manual skills of examining with a portable ultrasound device and give them opportunity to practise skills that are not sufficiently represented at the university but are very important in the clinical environment.

**Key Words:** emergency; FAST; ultrasound

## Session S2: WORKSHOPS II

Pharmion Section, Faculty of Medicine, University of Mostar

### MENTHOLUM – MAGISTRAL WORKSHOPS

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Master preparation workshop – Mentholum is a workshop whose goal is to provide young doctors with the experience of preparing a master preparation; something that pharmacists deal with every day in their laboratories. Making a recipe is not just about combining ingredients. It is an art that requires a good knowledge of medicinal drops and the manual skills of making them to get the maximum benefit from them. As part of this workshop, we want to repeat the basics of pharmacography, teach participants how pharmacists interpret prescriptions prescribed by doctors, create a prescription and label it appropriately.

At the end of the workshop, participants should be able to:

1. Write a prescription correctly (controlled and uncontrolled substance)
2. Understand how to interpret a written prescription from the point of view of a pharmacy technician / Master of Pharmacy
3. Understand the technique and skill of making a prescription for the purpose of better communication between doctor, pharmacist, and patient

**Key Words:** master preparation; education; students; pharmacy

Student Union of the Faculty of Medicine in Rijeka

### WORKDAY OF THE STUDENT REPRESENTATIVE

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The workshop aims to provide attendees with a more practical and hands-on understanding of the responsibilities and challenges that student representatives face on daily basis. It will delve deeper into the organization and management of their roles, shedding light on the various strategies and techniques they use to prioritize and execute their responsibilities effectively. The workshop will also explore the busy day-to-day schedules of student representatives, giving attendees an insight into their typical day and the tasks that they perform. This may include attending meetings with university officials, liaising with faculty members and student organizations, responding to student inquiries and concerns, and engaging in advocacy work to promote the interests and rights of the student body. Attendees will also have the opportunity to learn about the skills and qualities that are essential for student representatives to succeed in their roles. This may include skills such as effective communication, time management, conflict resolution, and leadership. The workshop will highlight practical examples of how these skills can be applied in real-life situations, and how student representatives can use them to overcome the various challenges that they may encounter. In addition to exploring the day-to-day responsibilities of student representatives, the workshop will also focus on how student representatives can acquire and utilize various skills to solve practical problems. Attendees will have the opportunity to engage in interactive exercises and case studies that simulate the types of challenges that student representatives face, allowing them to practice their



problem-solving skills and gain a better understanding of the skills and qualities that are essential for success in this role. Overall, the workshop aims to provide attendees with a more in-depth understanding of the role of student representatives and the skills and qualities required to perform the role successfully. Through a combination of practical examples, interactive exercises, and case studies, attendees will gain valuable insights into the organization, management, and execution of student representative responsibilities, as well as the various skills and strategies that can be used to overcome common challenges.

**Key Words:** Management; Problem-solving skills; Student representative

## **Session S3: WORKSHOPS III**

Section for Gynecology, Faculty of Medicine, University of Zagreb

### **ESSENTIAL OB-GYN SKILLS**

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At the beginning, we will briefly repeat the anatomy of the female genitourinary system, on the gynecological patient education models, for the purpose of successfully conducting the workshop. Students section for Gynecology and Obstetrics will try to help the future medical doctors to get familiarized with the mechanism of normal childbirth, specifically, in outpatient conditions. Several questions will be answered – what are you supposed to do when you're facing childbirth with normal presentation and what do you have to do when breech presentation is occurring; who to call for help; which procedures do not cause additional harm, and which you should conduct for the woman's and her baby's well-being. There are on-call numbers to which on-call gynecologists answer, who can guide us through and ease this stressful situation. In addition to childbirth, it is important to show how to properly perform a basic gynecological examination, which includes a bimanual examination and an examination in speculums. Also, we want to emphasize the importance of communication since Ob-Gyn is a delicate field in medicine, where preservation of dignity and patient's privacy can be easily violated. It is necessary to adapt the approach to different age groups – from young women who come for the first time for an advice or examination to older women who have different needs. No matter what field of medicine a medical doctor is engaged in, it is likely that one will have to treat a pregnant woman or woman with certain gynecological problems. By learning these essential Ob-Gyn skills, one will know how to confidently recognize and distinguish gynecological emergencies from non-gynecological ones, all for the purpose of better triage and consequently better care for patients.

**Key Words:** childbirth; communication; essential; Ob-Gyn; outpatient; workshop

## Section for Transfusion Medicine, Faculty of Medicine, University of Zagreb

### THE PROCESS AND IMPORTANCE OF BLOOD GROUP TYPING

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Blood transfusions are a crucial part of everyday clinical practice. The correct blood group determination and compatibility of the donor and the recipient is paramount for a successful blood transfusion. From the abundance of blood group systems, only a handful are standardly determined. Almost everyone has heard of ABO and Rh systems and the reason for that lies in their high immunogenic potential. Incompatibility between the donor and the recipient in these blood groups can cause consequences, such as severe transfusion reactions and even death. Throughout history, many methods have been used in blood group typing in the hospital setting. In this workshop, we will demonstrate the oldest one, which showcases the physiology of antigen-antibody reaction. Even as the methods became faster and more reliable, the physiological principle has remained the same. In the workshops, students will determine their blood groups and learn something about the process of blood group typing and the transfusion reactions.

**Key Words:** blood groups; transfusion medicine; transfusion reaction

### Session S4: WORKSHOPS IV

Student Section of Medicina Fluminensis, Faculty of Medicine,  
University of Rijeka

### STUDENT SECTION OF MEDICINA FLUMINENSIS – EVERYTHING STUDENTS NEED TO KNOW ABOUT SCIENCE IN 60 MINUTES

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The aim of this workshop is to provide a short overview of the basic concepts in research methodology that are essential for every student in the healthcare profession. The workshop is structured into three parts. The first part is dedicated to the structure and function of case reports as a scientific article, conference abstract, poster and oral presentation. In the second part, students are introduced to the types of scientific articles, whereas the third part focuses on literature search. The workshop is conducted exclusively through active learning methods, using examples from actual research practice. At the end of the workshop, every participant is assigned with a short homework with the aim of developing specific skills in research methodology.

**Key Words:** medical education; student development; research methodology; science popularization; medical students

## European Medical Students' Association, Faculty of Medicine, University of Rijeka (EMSARI)

### EMSA'S SOFT SKILLS TRAINING

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Training center of excellence (TCE) is a project of the association EMSA (European Medical Student's Association) that conducts training of medical students, all over Europe, in "soft skills". "Soft skills", or popularly called power skills, include skills such as public speaking, critical thinking, working in a team, organization, communication... Each of the mentioned skills finds its place within the work team and improves its efficiency and organization. Their application improves student associations and other student activities within the faculty, that is, universities. Also, they contribute to the development of the individual in everyday life. Workshops medical students are given the opportunity to master the above-mentioned skills so that they can understand the dynamics of the work team and, after graduating from college, find your place within it him.

**Key Words:** communication, efficiency, soft skills

### Session S5: WORKSHOPS V

## Association StEPP, Faculty of Medicine, University of Zagreb

### READY, STEPP, GO!

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Medical workers working in emergency medicine are daily confronted with challenging patients whose management requires a specific skill-set. Trauma patients make up a special group of patients that those in emergency medicine come into contact with. The goal of this workshop is to introduce the participants to the specifics regarding the approach and management of a trauma patient, while stressing the importance of logical thinking and teamwork. We strive to use certain teaching techniques that improve the quality of learning these complex skills and retaining knowledge, such as learning through algorithms, using a modified 3-step approach, role-playing, etc. Maintaining an open airway and adequate ventilation in a trauma patient can be a challenge in any setting. In the Airway Management skill station, participants will have the opportunity to practice the techniques necessary to secure and maintain an open airway using different airway devices. Besides that, they will also be able to learn and practice how to achieve effective ventilation using Bag-Valve-Mask ventilation technique. In the Trauma Algorithm segment of this workshop, participants will be given a chance to learn how to systematically and logically approach a severely injured person in a pre-hospital setting using the "DR ABC DEFGH" mnemonic. Utilization of this mnemonic gives the future doctors a way to make sure they didn't miss any life-threatening conditions in the initial assessment of a patient, even in a very stressful environment. As spinal cord injury is a devastating and potentially life-threatening condition, all emergency care providers must be able to prevent it whenever possible and manage it when suspecting that it has already occurred. In this part of our workshop, participants will learn how to restrict spinal motion and then practice that technique using a long backboard.

**Key Words:** Airway Management; Emergency Medicine; Spine Management; Trauma Assessment

## Session S7: FACULTY STUDENT UNIONS

### Student Union of the Faculty of Medicine in Zagreb

#### STUDENT-ORGANIZED EDUCATION VIA CROSS AND HSSB

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The main goal of our lecture is to present CROSS and HSSB, our representative projects that play an important role in the education of medical students and young doctors. Croatian Student Summit or CROSS is an international scientific congress for students and young scientists in the biomedical field and it will be held this year for the 18th time. CROSS is a place for exchanging ideas, spreading information, establishing collaborations, partnerships, and long-term acquaintances. The main goal of CROSS is to enable students and young scientists at the very beginning of their careers and scientific papers to learn the importance and the purpose of participating in congresses as part of their further education. Throughout four days of an extensive program, CROSS intends on providing its participants with interesting lectures and novelties in the field of biomedicine, practical skills through structured and detailed workshops, and a platform to present their scientific work in terms of a poster presentation. Also, participants are invited to take part in the social program as a place of good fun, laughter, and new acquaintances. HSSB or Hrvatski studentski simpozij o bioetici (Croatian Student Symposium on Bioethics) is our relatively new project and is a scientific meeting for medical students, other students of biomedical fields, as well as young scientists. By organizing the Symposium, we gather students from different faculties and experts from different spheres of society in a unique place where, along with making new acquaintances and professional partnerships, a civilized discussion between different perspectives broadens horizons on various topics of society, and ultimately develops empathy for colleagues with different points of view. We believe that in today's time of ideological divisions, empathy as the main product of the discussion is extremely important for everyone, especially for future and current experts in biomedical fields and healthcare.

**Key Words:** Bioethics; Congress; Education; Science; Symposium

### Student Council of the Faculty of Medicine, University of Maribor in Slovenia: Division for Student Research and Publishing

#### ACTIVE STUDENT PARTICIPATION IN FACULTY DEVELOPMENT AT THE FACULTY OF MEDICINE, UNIVERSITY OF MARIBOR

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The Student Council (SC) at the Faculty of Medicine (FM) of the University of Maribor (UM) has recently been reorganized to build a long-term vision of student representation. This paper presents the operating scheme of the SC and highlights the importance of student involvement in FM UM's development. The SC is the main official student body of FM, chaired by the Vice-Dean for Student Affairs. Students represent at least one-fifth of the members of the Faculty Senate (FS) and have two members in most of the Standing Committees of the FS. The Vice Dean's Advisory Board (VDAB) is a new addition to student representation at FM UM, composed of the Head of Internal Affairs, the Head of External Affairs, the Coordinator of the Division for Student Research and Publishing, the Secretary, and the Vice-Dean for Student Affairs. The SC also leads two main projects. The

longest-running project is Tutoring, which aims to pass on experience, knowledge, and clinical skills of older students to younger students. This includes introductory, subject-specific, and clinical tutoring, supervised by the Tutoring Coordinator, appointed by the Student Council of FM. The second project is the newly established Division for Student Research and Publishing, which promotes research and publishing work of students and organizes pre-clinical and clinical scientific research work at FM UM. In conclusion, the SC's reorganization at FM UM has built a systematic and long-term vision of student representation. The SC's projects, Tutoring and Division for Student Research and Publishing, additionally promote student involvement in the FM UM's development, contributing to its overall success.

**Key Words:** Faculty of Medicine; Student Council; student representation; student research; tutoring; University of Maribor

## Student Union of the Faculty of Medicine in Rijeka

### **STUDENT REPRESENTATIVE? JURIST? POLITICIAN? ECONOMIST?**

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Student representatives are individuals who are elected or appointed to represent the interests and concerns of their fellow students. They play a vital role in ensuring that the student body's voice is heard and that their needs and preferences are taken into consideration by the university's administration. However, many students and even professors may not fully understand the role and responsibilities of student representatives, nor the skills and qualities required to perform the role successfully. During the lecture, attendees will gain an in-depth understanding of the day-to-day responsibilities of student representatives. This includes attending meetings with university staff, faculty, and administrators to discuss student concerns and issues, representing student interests on committees and boards, and advocating for changes that benefit the student body as a whole. In addition to specific responsibilities, student representatives also require a range of skills and qualities to perform their roles effectively. They must possess strong communication and interpersonal skills, as well as the ability to work collaboratively with other stakeholders. They should also have strong organizational and problem-solving skills, as well as the ability to analyze and interpret complex information. The lecture will also explore the benefits and drawbacks of being a student representative. On the one hand, student representatives can have a significant impact on the university's policies and practices and gain valuable leadership and networking experience. On the other hand, the role can be time-consuming and demanding, and student representatives may face challenges in balancing their academic workload with their representative responsibilities. Finally, the lecture will aim to debunk some of the myths that surround the role of student representatives. For example, some may believe that student representatives have a limited impact on decision-making processes, or that the role is purely ceremonial. The lecture will aim to clarify these misconceptions and demonstrate the significant impact that student representatives can have on their university communities.

**Key Words:** Student body; Student representative; University community

## Session S8: INDEPENDENT MEDICAL STUDENTS' ASSOCIATIONS

### Croatian Medical Students' International Committee (CROMSIC) – Peer to Peer – Medical Education of Children and Adolescents

#### THE TALK

Mia Kovačević Žižić, Bruno Kontri

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By participating in various projects and actions of the association, medical students earn points for participating in exchanges. Exchanges within the IFMSA program enable students to expand their theoretical and practical knowledge in other countries of the world and to compare it with foreign colleagues. Also, in addition to spreading knowledge, exchanges create new acquaintances and friendships that can one day turn into useful professional collaborations. Students can get to know various ideas and innovations in contact with their peers around the world and can bring them to Croatia. The exchanges we offer are professional and scientific, they last 4 weeks, and students are allowed to go to over 140 countries around the world.

**Key Words:** medical education; volunteers

### Croatian Medical Students' International Committee (CROMSIC) – Peer to Peer – Students for Students

#### EMERGENCY CYCLE

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In the academic year 2020/2021, the Committee for Medical Education of the International Association of Medical Students Croatia – CroMSIC launched a project called “Cycle of Emergencies in Medicine”. During the 3 years of project implementation, by holding panels on a monthly basis, medical students and all interested parties had the opportunity to familiarize themselves with emergency situations from various fields of medicine and thereby gather information that will be useful for their further clinical work and professional development.

The project program included 13 panels attended by medical students from the 1st to 6th year of medical studies from medical faculties from all over Croatia and the region, doctors, health professionals and the general public. The panel is designed as a combination of lectures and seminars – lecturers give a lecture on a given topic, present clinical cases and discuss with each other and live with student panelists who also actively participate in the panel. All participants have the opportunity to ask questions in the Q&A section and participate interactively and answer the lecturer's questions using the Menti quiz system. At the end of the panel, the participants determine their knowledge by solving a Kahoot quiz prepared by the lecturer. On each panel, emergency situations from one area of medicine are presented, and the topic of the panel is defined on the basis of questionnaires conducted among students, with the aim of creating additional extracurricular content according to the interests and needs of students. The panels held so far covered the topics of acute coronary syndrome, heart failure, cardiogenic shock, pulmonary embolism, bleeding from the upper and lower digestive system, pneumonia and the COVID-19 virus, multisystem inflammatory syndrome, headaches, electrolyte disorders, life-threatening conditions, procedures in mass accidents and emergencies in oncology and psychiatry.

Support and contribution to this student initiative was also provided by 37 specialist doctors who shared their knowledge and rich clinical experience with the participants through online panels and presentations of clinical cases.

“Cycle of emergency situations in medicine” aroused great interest among students and doctors experts, and the quality of the content was also recognized by the Croatian Medical Chamber by including “Cycle” in the program of permanent medical training. In April 2022, the “Cycle of Emergencies in Medicine” was presented at the Activities Fair as part of the European Regional Meeting of Medical Students, where it was awarded 1st place according to the votes of the expert jury and the audience, and the first prize was also awarded 4 months later., at the SCOME activity fair, held as part of the World General Assembly of Medical Students in Istanbul.

**Key Words:** Cycle;discussion; emergency; health professionals; lectures; ; Q&A section

## Croatian Medical Students’ International Committee (CROMSIC)

– *Peer to Peer – Education without Borders*

### THE TALK

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THE Talk is a project to educate young people about sexual and reproductive health, is a public health project aimed at educating the adolescent population about sexual and reproductive health topics, and raising awareness of the importance of taking care of one’s own reproductive health. The project was initiated by the Committee for Sexual and Reproductive Health and Rights including HIV and AIDS (SCORA), the International Association of Medical Students Croatia – CroMSIC with the help of the Croatian Institute of Public Health (HZJZ) and the support of the Croatian Association for the Fight against HIV and Viral Hepatitis (HUHIV). The goal of the project is to introduce young people to topics that parents and teachers should traditionally discuss with teenagers as part of sex education. It is necessary to educate the younger population about ways to protect sexual health, but also about the biology of our reproductive system, its structure, protection and planning of offspring. For a complete picture of human sexuality and reproducibility, it is the conversation – THAT conversation!

The main activity of the project is conducting THE Talk workshops in high schools and homes for neglected children, and the workshops are conducted by previously educated students of the Medical Faculties who have completed a two-day education. We believe that peer education is an excellent way to transfer knowledge about these important public health topics, because as young people we are aware and remember how many doubts and questions to which we could not find answers arose during adolescence, and we manage to create a relationship of trust and an interactive atmosphere with students.

The total number of workshops held by educators from 4 branches of CroMSIC (Zagreb, Osijek, Rijeka and Split) since the beginning of the project in 2020 is 1,528. Since 2020, more than 17,000 high school students have participated in THE Talk workshops in 12 counties of the Republic Croatian. The project is recognized and supported by the schools and institutions with which we have cooperated so far in the form of holding educations, in 2021 the International Federation of Medical Students (IFMSA) included it among the 8 best medical student projects in the world, and in 2022 among the 3 best worldwide SCORA project of medical students.

**Key Words:** Words: HIV; education; institutions ; reproductive health ; sexual health; workshops

## Croatian Medical Students' International Committee (CROMSIC) – *Peer to Peer – Education without Borders*

### CROMSIC- ABOUT OUR EXCHANGES

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**Background:** By participating in various projects and actions of the association, medical students earn points for participating in exchanges. Exchanges within the IFMSA program enable students to expand their theoretical and practical knowledge in other countries of the world and to compare it with foreign colleagues.

**Aim:** The aim of this project is to give our students a chance of getting to know different cultures and learn as they travel.

**Activities:** The main activity of the project are of course student exchanges. The exchanges we offer are professional and scientific, they last 4 weeks, and students are allowed to go to over 140 countries around the world.

**Conclusion:** In conclusion project gives medical students a great opportunity to travel the world and learn from some of the best medical experts.

**Key Words:** exchange; different cultures; medical students

## European Medical Students' Association Split (EMSASt)

### THE FUTURE OF MEDICINE BELONGS TO STUDENTS

Ivan Bućan, Toni Elezović, Niko Morović, Martina Nevistić

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**Corresponding author:** ivanbucan001@gmail.com Ivan Bućan

The world of medicine is rapidly evolving, and it's no secret that it's the students who are at the forefront of these changes. With the increasing use of technology and a growing demand for personalized healthcare, the future of medicine undoubtedly belongs to the students. Students are the ones who are most in tune with the latest advances in medical technology, from telemedicine to artificial intelligence. They have grown up in a world that is constantly connected and are therefore more likely to embrace these new technologies and find innovative ways to use them to improve patient outcomes.

Furthermore, students have a fresh perspective on healthcare that is sorely needed in today's rapidly changing world. They are not bogged down by the old ways of thinking and can approach problems with a more open mind. This is critical when it comes to addressing complex health issues that require creative solutions. In addition to their technological savvy and fresh perspectives, students also bring a level of enthusiasm and passion to the field of medicine that is contagious. They are driven to make a difference in the lives of their patients and are willing to work tirelessly to achieve this goal. This dedication is what drives innovation and progress in the field of medicine.

Ultimately, the future of medicine belongs to the students because they are the ones who will shape it. They have the tools, the knowledge, and the drive to make meaningful changes that will improve the health and well-being of people around the world.

As a society, we must do everything we can to support and encourage these bright young minds so that they can continue to lead us into a brighter, healthier future

**Key Words:** students; medicine; future



## Faculty committee of all students of the Faculty of Medicine in Rijeka (FOSS)

### “JUST FOSS OR SOMETHING ELSE?”

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FOSS MEDRI (Faculty Committee of all Faculty of Medicine in Rijeka) is a nonprofit, nonpartisan, and nonpolitical student association that operates at the Faculty of Medicine in Rijeka. The Association's goals are to improve the standard and quality of studies and to connect our Faculty and students. These goals are achieved throughout the year by implementing projects that include the biomedical and social fields of science: public health campaigns, awareness-raising about disease prevention and health promotion, scientific symposiums, international congresses, thematic forums, seminars, lectures, etc. How volunteers' involvement in various projects helped them in their education and beyond is the main focus of the panel discussion with the theme “Just FOSS or something else?” it will contain five different topics which will be covered through conversations. These include obligations, finance, relationships, giving back to the community, and entertainment. Each topic will be built on the previous one with the help of moderators and volunteers who will show, from their perspective, what it is like to be part of FOSS.

**Key Words:** medical education; volunteers

## Association of medical students in Bosnia and Herzegovina (BOHEMSA)

### BOHEMSA STUDY-BUDDY LEARNING PLATFORM

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**Background:** BoHeMSA, as the biggest student-body organization of medical students in Bosnia and Herzegovina, aims to improve the level of knowledge of all students from the Balkan region. Spaced-repetition learning has been proven to be the best method of memorization and retention of information. Currently, medical students from Bosnia and Herzegovina use less efficient, so-called „traditional“ methods of learning. Students in the UK and USA incorporated the more efficient methods into their studies, such as active recall through spaced-repetition learning.

**Aim:** We aim to provide medical students with a high-quality learning platform that is „“ into their curriculum and can be used to effectively memorize important information learned through medical school.

**Materials and Methods:** BoHeMSA StudyBuddy is based on an „Sm-18“ spaced-repetition algorithm. It utilizes the efficiency of active recall by presenting students with the flashcards in different frequencies depending on their knowledge on the subject. We used „“ to code the phone application for both Android and iOS to make it more accessible to all users. For the design of the application, we used Photoshop and Canva.

**Results:** Today, BoHeMSA StudyBuddy platform contains a complete collection of Medical Physiology flashcards, based on Guyton and Hall's „Basics of Physiology“ book, available to students of all Universities in Bosnia and Herzegovina.

**Conclusion:** The traditional learning and revision methods typically used by medical students have been proven ineffective. Establishing a platform with the spaced-repetition learning algorithm used in the USA, UK, and Canada and incorporating it into the educational systems of Medical Schools from the Balkan region, could prove very beneficial for medical students and medical systems in general.

**Key Words:** spaced-repetition learning; learning platform; forgetting-curve

## Session S9: STUDENTS' SCIENCE SECTIONS

### Student Section of Medicina Fluminensis, Faculty of Medicine, University of Rijeka

#### HOW TO MAKE SCIENCE INTERESTING?

Tina Grgasović<sup>1</sup>, Marija Kostanjki<sup>1</sup>, Marija Sabol<sup>1</sup>, Lana Oštro<sup>1</sup>, Jana Mešić<sup>1</sup>, Lea Šarić<sup>1</sup>, Tiyya Selimović<sup>1</sup>, Nina Pereza<sup>2,3</sup>

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Medicina Fluminensis is the official scientific journal of the Croatian Medical Association–Rijeka Branch and Faculty of Medicine in Rijeka, Croatia. The journal is indexed in Scopus and published in electronic and printed editions four times a year.

The initiative to establish the Student Section of the journal was started in 2017 and all activities are implemented based on the teamwork of the Executive Editor for the Student section, student representatives in the Editorial Board, and students involved in the scientific program of the Faculty of Medicine in Rijeka. The main aim of the Student Section is to promote and enhance student scientific activities through three main activities, including conducting scientific education, providing professional support to student scientific meetings and science popularization.

The student section is an educational base that enables the acquisition of knowledge and skills in scientific methodology, strengthening and providing security to students in a structural framework so that they can achieve the highest level of creative freedom in their scientific activities. Therefore, we want to provide students with quality and easily accessible science education. The main feature of our workshops is that they are conducted exclusively through active learning methods.

**Key Words:** education; science; students

### Scientific Section of the Faculty of Medicine Novi Sad

#### STUDENT'S FIRST STEPS IN SCIENCE – EXPERIENCE OF SCIENCE CLUB MEDICAL FACULTY OF NOVI SAD

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Our Science Club was founded to gather students in order to involve them in scientific research work. This lecture aims to present our experience in students' scientific research works. We would like to present our solutions when it comes to the popularization of science among students and the way we organize activities both at our faculty and at the national level. We will get closer to the work, the structure of the organizing committee, and the way of establishing communication with the teaching council. As multidisciplinary is the golden standard of any recognized research, we will try to present the cooperation we have achieved with other organizations within the entire University. To spread scientific thought among colleagues, we try to regularly organize an educational program that goes beyond the standard curriculum and program framework, therefore we invite experts with experience in writing and presenting scientific papers to bring students closer to the process of research. Since research has no value until it sees the light of day, this year we are organizing invited lectures by some of the most cited medical workers, with publications in the most prestigious journals. A majority of our work involves the organization of the Congress of students of the Faculty of Medicine as well as the National

Congress of students of biomedical sciences with international participation, and through this lecture, we will share our experiences when it comes to the management of such large and demanding events. As learning through examples is an effective form of learning, through the example of one of the awarded papers from last year's National Congress, we will present the results of research on the topic of *Morphological and functional characteristics of the left atrium in women in the generative period with arterial hypertension*.

**Key Words:** Cooperation; Education of students; Scientific activity; Science club

Section for Neuroscience (SenzOS), Faculty of Medicine, University of Osijek

## IDEAS THAT AWAKEN THE SENSES

Ena Kolak, Stipe Vidović

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Knowledge of neuroscience, access to reliable sources of information, critical thinking, and research skills can help individuals make the right decisions regarding their health and well-being. This does not apply exclusively to students but also to a multi-professional audience that acquires new knowledge and skills and thus refines the content learned so far and goes beyond it. Therefore, the primary mission of the Section of Neuroscience Osijek is to popularize neuroscience by organizing lectures, writing various projects, working in the laboratory, participating in festivals and congresses, translating science-popular speeches, and many other creative ideas – ideas that awaken the senses. The main goal of this lecture is to present our activities and efforts in improving neuroscience education of the public and to inspire and guide others with similar interests towards practical solutions. In addition to educating the public, we contribute to science through various research. The section under the mentorship of experienced professors serves as an introduction to science and critical thinking, where students, for the first time, encounter the creation and writing of projects and scientific papers. Thus students develop experiences in various fields and topics of research. Furthermore, they are encouraged to follow up on various scientific issues and to determine the validity and accuracy of information by analyzing it and identifying it as valid or weak. With the new knowledge acquired through our research and the progress of science, we will strive to provide reliable information sources and improve the public's neuroscience education in cooperation with numerous experts in neuroscience and other disciplines. With our ideas, we will try to create a healthy and stimulating public opinion.

**Key Words:** Education; Information; Neuroscience; Paper; Research

Student Section for Neuroscience, Faculty of Medicine, University of Zagreb

## BRAINBUSTERS

Mario Zelić, Pavel Marković, Melita Klaić, Gracia Grabarić, Ana Adžić

Students' Section for Neuroscience, School of Medicine, University of Zagreb, Croatia

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The brain, being the organ where our knowledge and consciousness resides, is the part where all our misconceptions are being held. Did you ever hear that you use only five percent of your brain? Or maybe that the right hemisphere of our brain is for creativity and the left is for logic? These and many more similar myths are the prime targets for our section of brain-lovers. In this interactive lecture we will see how prevalent various brain myths are among medical students and we will try to rectify any that are too prevalent. Students' section for

neuroscience has been an active science promoter and populariser since 2005 collaborating with various faculties, universities and non-government organisations in organizing interesting, fun and interactive public health events, congresses and symposia for both students and the general public

**Key Words:** brain; myths; neuroscience; science popularization; students' section

Sekcija Pharmion, Faculty of Medicine, University of Mostar

## **EXTRACURRICULARS FOR STUDENTS AT SCHOOL OF MEDICINE, UNIVERSITY OF MOSTAR**

Ana-Zorica Pavičić

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There are three categories of the student experience: social life, studying and sleeping. Each student can choose only two of these categories for themselves. – this is one of the first things that professors and senior colleagues warn you about. But is that so? What if we combined the two categories into one?

Student associations, organizations and sections have been skillfully doing this for a long time, combining social life and learning into one unique category. As a representative of the students at the School of Medicine, University of Mostar, I will tell you what extracurricular activities medical students can participate in at the School of Medicine with an emphasis on student sections, their most important projects, and scientific and educational activities.

**Key Words:** education; students; activity; science; project

ZnanoST, Faculty of Medicine, University of Split

## **THE IMPORTANCE OF ACCESS TO SCIENCE IN MEDICAL EDUCATION: WHY AND HOW?**

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To understand the importance and basic principles of Evidence-Based Medicine, students have to be exposed to research work during their studies to better understand statistics, research design and particular methods. Theory lessons on research are often an insufficient tool to capacitate students on research topics. As a consequence, we have students graduating from medical schools and becoming doctors without the ability to evaluate research papers and make conclusions about treatments. In order to familiarize medical students with research topics, section ZnanoST works closely with Vice-dean for Science to offer students spots in research projects being conducted at the Split School of Medicine.

**Key Words:** education; research; undergraduate students

## Concurrent Session S10A: STUDENTS' CLINICAL SECTIONS I

Student Line for Rare Diseases, Faculty of Medicine, University of Zagreb

### EDUCATION THROUGH VOLUNTEERING

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This lecture aims to showcase all forms of medical education exercised through volunteering by showing various practices of the Student's Line for Rare Diseases. Through this project, medical students from the University of Zagreb School of Medicine collaborate with the Croatian Association for Rare Diseases to perform voluntary work. The Croatian Association for Rare Diseases, among others, features a helpline service for people affected by rare diseases and their family members. While the Association's employees reply to inquiries regarding social and administrative issues, Line's volunteers respond to inquiries regarding medical issues. This practice enables a significant flow of medical knowledge in multiple ways, and uses a modern and unique approach to convey it. Through Line's primary activity, volunteers are teaching helpline users about their disease with knowledge gathered throughout their studies, giving students a chance to apply their knowledge on real-life examples and to expand it by researching further about the disease using many reliable resources to enable responding to the full extent of the given query. Working as a team to solve users' problems, employees and volunteers learn from each other about different aspects of caring for patients' well-being. Apart from this activity, Student's Line for Rare Diseases educates by organizing a series of lectures about a specific rare disease, showcasing medical professionals sharing well-rounded knowledge about a disease as well as the patient's story about their life with it. The Annual Student's Congress on Rare Diseases aims to convey a message to its attendants that, as future doctors, they can expect to have interactions with patients suffering from rare diseases regularly. To educate wider audiences, Line uses social media to raise awareness and make medical knowledge enjoyable by utilizing simplified medical terminology, curiosities, and infographics.

**Key Words:** volunteering; medical education; Student's Line for Rare Diseases; project; students

Student Section for Infectious Disease, Faculty of Medicine, University of Zagreb

### KNOWLEDGE GONE VIRAL: THE STUDENT ASSOCIATION FOR INFECTIOUS DISEASES

Ivna Tomaš<sup>1</sup>, Lucija Strmota<sup>1</sup>, Sanja Krüger<sup>1</sup>, Dan Kudelić<sup>1</sup>, Sandro Kukić<sup>1</sup>, Karlo Gjurasić<sup>1</sup>, Tian Košar<sup>1</sup>, Marija Pavlović<sup>1</sup>,  
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The Student Association for Infectious Diseases from School of Medicine, University of Zagreb is a group of medical students, mentored by an infectious diseases specialist, seeking to advance their education and promote awareness about infectious diseases. Their activities include organizing forums, lectures, and workshops, volunteering at infectious disease wards, and participating in educational projects.

The association, founded in 2018, has undertaken several projects, including the "Volunteer at the Infectious Diseases Ward" project during the pandemic, which involved over 40 medical students volunteering for over 6,400 hours at the University Hospital for Infectious Diseases "Dr. Fran Mihaljević", and contributing to the

treatment of nearly 20,000 patients. The association also organized a forum called “COVID – Vaccine Explained without Deception, Tricks, or Illusions,” which was attended by approximately 6,500 individuals. Additionally, the association holds lectures and workshops aimed at educating medical students and professionals. Notably, the “Knowledge Gone Viral” project involved a series of 17 workshops focused on clinical cases from everyday practice. The association also runs the “On Duty at the Infectious Disease Ward” project, where each student is assigned a mentor to work with during their entire shift at the University Hospital for Infectious Diseases. Furthermore, the association participated in the interdisciplinary educational project, Student Health Days in Varaždin, which received the Rector’s award. In the current academic year, the association has organized the “Quizita” quiz, with proceeds being used to purchase Christmas gifts for users of nursing homes. Additionally, the association is hosting a one-day symposium called “Hepatitis Alphabet” in collaboration with the Student Section for Gastroenterology and Hepatology of the School of Medicine, University of Zagreb.

**Key Words:** infectious diseases; medical students; education; awareness; volunteering

## Gynecology Student Section, Faculty of Medicine, University of Zagreb

### INTRODUCTION – SHORT OVERVIEW OF OUR ACTIVITIES AND PROJECTS

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The student section of gynecology and obstetrics was established during the academic year of 2018. / 2019. on the initiative of students who found their area of interest in the branch of medicine which dwells with the question of women’s health. Today, the section consists of 89 members, alongside 9 members leading the project, mentored by doc. dr. sc. Josip Juras, dr. med. So far the section’s work has been based on the organization of interactive lectures and ultrasound workshops, alongside other activities available to students of any year of college, as well as to students who joined us from abroad. *Day of sections* is held yearly on our faculty as a way for all the various sections to present their past and future activities and to show other students what they can do if they join our section. During this academic year, we organized three lectures and offered students to experience being on duty in Ob-Gyn ward. Furthermore, in cooperation with the associations of the city of Zagreb, we celebrated *Dan mimoza* and *Dan narcisa*, where all members of the section could actively participate. On the 11<sup>th</sup> of March we held our first symposium regarding the polycystic ovary syndrome in KBC Rebro, in collaboration with three other sections, during which numerous specialists spoke about the importance of this disease. During the symposium the following workshops held place: *Example of hormone balancing menu and how to make one*, *Case reports – PCOS*, *Techniques of muscle relaxation for stress removal* as well as the *Daily skin routine*. Attendees and presenters received many awards which were given selflessly by our sponsors. We hope that we have succeeded to inspire other students to continue our practice and to figure out more ways of how to make Ob-Gyn more approachable to younger students.

**Key words:** lecture; Ob-Gyn; section; student

## Anesthesiology Section, Faculty of Medicine, University of Zagreb

### TEACHING CRITICAL CARE MEDICINE: HOW TO KEEP IT SIMPLE AND REAL

Điđi Delalić, Romana Kuzmić, Frano Šušak, David Palijan, Mihael Grzelja, Luka Zvekić, Anja Ćuk

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Critical care medicine is one of the most complex, integrative and conceptually difficult parts of medicine in general. To properly understand critical care medicine concepts, a thorough understanding of human physiology, pharmacology, pathophysiology and anatomy are necessary. Furthermore, critical care medicine is advancing with every passing day and the bank of available knowledge on the subject is steadily increasing, necessitating being up to date with the current literature with minimal delays, especially taking into account the improved accessibility of the newest scientific and clinical findings. Therefore, teaching critical care medicine, especially to a population without proper foundational knowledge (in our case, clinical year medical students) can prove to be quite an undertaking. Also, teaching a digital generation requires immersing oneself into the digital world and moving the teaching from the classroom to the social networks. As the Student Society of Anesthesiology, Resuscitation and Critical Care Medicine, we did exactly that, teaching our colleagues crucial critical care concepts through YouTube videos, Instagram stories and reels, question and answer (Q&A) sessions and hands-on workshops. This lecture, however, is going to concern live face-to-face teaching, naming and explaining techniques and routines using the insights from clinical psychology and didactics research that can improve the quality of your lectures and hands-on workshops, as well as the learners' attention and retention of relevant information.

**Key Words:** Critical Care Medicine; Didactics; Face-to-face teaching

### Concurrent Session S10B: WORKSHOPS VII

Student Section for Surgery, Faculty of Medicine, School of Medicine,  
University of Zagreb

### PRIMARY WOUND MANAGEMENT AND SURGICAL KNOTTING

Borna Vojvodić, Dominik Vicković, Tea Rosandić, Lorena Stamičar, Filip Hrestak, Dea Maras

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In the course "Primary Wound Management", we first introduce the students to the wound treatment and management itself. Further, we answer and elaborate on questions like for example: "Which procedures should a proper management consist of?" and "What needs to be done to ensure a surgically correct and accurate wound treatment?" For students, we have prepared a short Powerpoint-presentation, including taking history, physical examination (general and local status), tetanus-prophylaxis, wound cleaning procedures and administration local anesthetics. Because the students are from different years of medical school, we go through the presentation in a very simple and interactive way. The practical part of the course is carried out on a pig's foot, on which cuts are made to represent the wound, which needs to be surgically treated. In this case, due to the decision of the organizing committee, it was not possible to use pig's feet, thus the practical part of the workshop will be surgical knotting. The goal of the course is to familiarize students with theoretical and practical ways of tying knots by using one hand and an instrument. We only use the Dinsmore nomenclature for knots, combined with the most common Croatian and English knot names. For the purposes of the course, we use our own video materials in order to support the understanding of configurations of knots and to help with correct knotting. The concept of

the surgical tying course takes place in two learning stages. The first level of learning consists of mastering the basics of surgical knotting with thick green and white laces at workstation no. 1. After mastering the first level, one moves on to the second level, which consists of knotting at workstation no. 2 using surgical thread and gloves.

**Key Words:** Wound management; Knotting; Surgery

## **Session S11: STUDENTS' CLINICAL SECTIONS II**

Section for Transfusion Medicine, Faculty of Medicine, University of Zagreb

### **OUR CONTRIBUTION TO MEDICAL EDUCATION IN TRANSFUSION MEDICINE**

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The Students' Section of Voluntary Blood Donors and Transfusion Medicine was officially formed in 2018. The first goal of our section is to organize a voluntary blood donation campaign for students of the University of Zagreb. These are organized in collaboration with Croatian Institute for Transfusion Medicine. So far, we have organized 18 successful campaigns in student dormitories and the School of Medicine with a great response from both the students (donors) and the Institute. Our other goal is advancing student education in the field of transfusion medicine for medical students. We do this by organizing lectures, workshops and tours of transfusion facilities at the Institute and in the hospitals. We believe that the promotion of transfusion medicine among medical students is important because it is not sufficiently covered by our school's curriculum. This gives them an opportunity to familiarize themselves with this specialty of medicine and maybe pursue it as a career.

**Key Words:** transfusion medicine; medical education; blood donation

Student Section for Surgery, Faculty of Medicine, University of Zagreb

### **STUDENT SURGICAL SOCIETY**

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The student surgical society was founded in the 1970s. After a pause it restarted its operations in 2015. For many years it has been the only student section in the Republic of Croatia and the region, which holds traditional courses for surgical suturing (basic and advanced level), surgical knotting, local flaps in plastic, reconstructive and aesthetic surgery, vascular anastomoses, and also a course for tenoraphy. We expanded the content of the basic course for surgical suturing by introducing theoretical and practical knowledge about surgical washing of the operative field, administration of local anesthetics, cleaning of the wound, detailed examination and debridement of the wound, which together with basic surgical suturing comprises the Course "Primary Wound Management". We have a very positive feedback among the students of the school of medicine of the University of Zagreb. On average, about 40 students apply for the courses, while just 12 students can attend the workshop. By that lower number the section can secure the maximal experience and gains in theoretical and practical knowledge, since each participant receives one instructor. We currently count around 600 active members, who are



allowed to participate in courses and workshops, while the lectures are open to all interested parties. Here we intend to describe concepts of current workshops, we would like to keep, and additionally we would like to emphasize things, which we want further to develop and improve.

**Key Words:** surgery, students, student surgical society

## Student Section for Hypertension, Faculty of Medicine, University of Zagreb

### SILENT KILLER HUNT ACTION

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High blood pressure, i.e. arterial hypertension, is the most common disease today and its prevalence is unfortunately on the rise. In addition, hypertension has been the main risk factor for cardiovascular, cerebrovascular and renal disease for decades. Because of its vileness that does not cause disturbances for a long time, it is called the Silent Killer.

In order to reduce the incidence of hypertension and improve the control of treated hypertensive patients, the Silent Killer Hunt action has been started. Together with professors and students of numerous other faculties, the Student Section for Hypertension of the Faculty of Medicine in Zagreb has joined the Hunt.

As a part of the project, we organize trips of medical students to rural areas of the Republic of Croatia where access to medical care is not so accessible. Under the guidance of a mentor, students have the opportunity to independently perform and read an ECG, use a metabolic scale, measure arterial pressure, and educate patients about the importance of proper nutrition, exercise and proper therapy. We also want to educate students about the importance of proper communication with patients, therefore we think it is important for students to come to rural areas and understand what problems people who do not live close to a tertiary center struggle with.

From the results of blood pressure measurements, laboratory parameters and ECG readings, we take data for numerous scientific papers in which we also raise the level of awareness about the health needs of the population in rural areas, and we also get the opportunity to participate in various congresses with these papers. For the participation of our students in the last academic year, we were awarded the Rector's Award for socially useful work in the academic and wider community.

**Key Words:** arterial hypertension; medical care; Silent killer; Case Report

## Student Section of Medicina Fluminensis, Faculty of Medicine, University of Rijeka

### CAN YOU SOLVE THE CASES?

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“Case Night” project is an interactive event designed by students of the Faculty of Medicine and representatives of the “Medicina Fluminensis” Student section in Rijeka. Its goal is to present medical content in a fun and educational way, in which the participants, through active participation, apply the acquired knowledge in solving different case presentations and thus apply theory in practice. The entire event is supported by Nobula Case

application developed by Nobula Technologies d.o.o. The application serves as a tool for answering questions (displayed on the projector) by suggesting answers and evaluating the accuracy of the chosen answer. In case the participant answers the question incorrectly, the application provides feedback to why the chosen answer is incorrect. In this way, participants are not just passive observers, but, learning through mistakes, deepen their knowledge and develop abilities to solve future problems related to their profession. This project is conceived as an interactive process in which students will be able to participate in the creation of content and share their experiences with each other. In addition to improving knowledge, this project allows students to connect with colleagues from other years of study and to exchange opinions and experiences. Interactive tools like Nobula Case can help students better concentrate and motivate themselves to solve different clinical cases and apply their knowledge to concrete examples. Also, they can help students better understand complex concepts and processes, and the wealth of information contained in medical books can be absorbed in a faster and simpler way.

**Key Words:** Knowledge; Medicine; Students

## Session S13: WORKSHOPS VIII

Student Section for Orthopedics and Traumatology, Faculty of Medicine,  
University of Zagreb

### ORTHOBASICS: A DIDACTIC METHOD FOR TEACHING THE ORTHOPEDIC PHYSICAL EXAM

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The disorders of the musculoskeletal apparatus make up a major part of the cases which are encountered by young physicians, no matter their workplace. Traumatic events are a common incident in the younger population and degenerative diseases are more commonly encountered among the elderly. For our workshop, we integrate anatomy, kinesiology, and biomechanics in order to demonstrate the appropriate methods to inspect the locomotor apparatus. The workshop is a pilot project developed by the Student Society for Orthopaedics and Traumatology which introduces participants to the fundamentals of musculoskeletal examination. It is divided into two parts. The first part, ORTHObasics 1 deals with the examination of the lower extremity whereas ORTHObasics 2 is the second part and deals with the upper extremities. Each session begins with a short introduction with an overview of the anatomy, biomechanics, and pathology of the joint that is being examined. ORTHObasics 1 include the hip, knee, and ankle, while ORTHObasics 2 include the shoulder, elbow, and hand. Afterward, specific tests for diagnosing the pathology in each joint are demonstrated with explanations and comments. Participants are then divided into smaller groups and with the guidance of their demonstrator, practice clinical examination of each joint in the extremity. Except for clinical tests, the participants are practicing taking patient history, inspecting and palpating the patient, which can help in setting a suspicion of a certain pathology. After each workshop, handouts are given to the participants which contain a short summary of the clinical examination of each joint. The participants of the ORTHObasics workshops include medical students, but also students from the Faculty of Kinesiology and the University of Applied Health Sciences. The Student Society takes great pride in this fact as this demonstrates their idea of a multidisciplinary approach to the locomotor system.

**Key Words:** Clinical examination; Orthopedics; Practice; Workshop

# POSTER ABSTRACTS

Lovran  
(Photo: Vladimir Franolic)





## POSTER DISPLAY DURING THE ENTIRE CONFERENCE AND ADDITIONAL ORAL PRESENTATION OF THE POSTER AT A GO AROUND POSTER SECTION

### Concurrent Session C6A

#### SATISFACTION WITH STUDY ASPECTS AND GENERAL SATISFACTION AMONG GRADUATING STUDENTS OF MEDICINE AT THE UNIVERSITY OF RIJEKA

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**Background:** In recent years, the University of Rijeka collected data and tracked the level of satisfaction of graduating students at all faculties, including the Integrated Undergraduate and Graduate Study of Medicine (Medicine).

**Aim:** The aim of this research was to present the satisfaction of graduating students of the Medicine Study for the academic years 2017/2018, 2018/2019, 2019/2020, and 2020/2021. Various parameters of satisfaction with study aspects and general satisfaction with the study were monitored.

**Materials and Methods:** Data from the Center for Quality Assurance and Enhancement and institutional research of the University of Rijeka were used. The collected data were processed using the statistical software package IBM SPSS Statistics version 25.0 (IBM Corporation, 2017), with standard tools of descriptive and inferential statistics. The reliability analysis using Cronbach's Alpha (0.945) confirmed the high level of reliability of both scales. The responses to each set of statements were separately analyzed and their suitability for factor analysis was confirmed. The survey of student satisfaction was conducted in accordance with the instructions for using the student satisfaction questionnaire and the Manual for Quality of Studying at the University of Rijeka. A Likert-type scale of 5 levels was used to assess satisfaction with study aspects (1-not satisfied at all to 5-completely satisfied).

**Results:** Research measured the index of satisfaction with study aspects at MEDRI, student satisfaction with the availability of IT resources, the ability to use various forms of support at the University of Rijeka, satisfaction with the work of the student council and student organizations, and general satisfaction with the study. The average rating for all aspects was 3.87. The general satisfaction with the study monitored satisfaction with the expected study, contribution to personal development, ability to work in the profession, motivation for further learning, preparation for continuing education and entering the job market, overall satisfaction, and recommendation of this study to others. The worst rated area was the ability to work in the profession (3.55), while the best was the contribution of the study to personal development (4.28).

**Conclusion:** From the data presented, it is evident that graduating students of the Medicine Study at the University of Rijeka rate the availability of IT resources, contribution to personal development, and motivation for further learning the highest, while the ability to work in the profession and student satisfaction with the ability to use various forms of support at the University of Rijeka received lower ratings.

**Key Words:** Faculty of Medicine; Medical student; Research; Student satisfaction

## STUDENT ASSESSMENT OF TEACHERS' COMPETENCIES AT THE FACULTY OF MEDICINE IN RIJEKA

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**Background:** In light of recent extensive efforts to improve the quality of teaching at the Faculty of Medicine in Rijeka, a comprehensive research was conducted for the first time to determine the current state of teachers' competencies at the Faculty.

**Aim:** The main objective of this research was to assess the quality of teachers' competencies at the Faculty of Medicine in Rijeka by medical students of all study years.

**Materials and Methods:** The study involved students from all years of the Integrated Undergraduate and Graduate University Studies at the Faculty of Medicine in Rijeka, who anonymously and voluntarily completed an online questionnaire in the academic year 2021/22. The questionnaire consisted of four groups of questions: general information about the respondents; lesson planning (syllabi, learning objectives and outcomes, planned course content); learning methods; student assessment. All questions included grading from 1 to 5 on a Likert scale.

**Results:** A total of 136 students from all years of study participated in answering the questionnaire. The questions on lesson planning were answered with an average grade of 3.1, with a clear trend towards a decrease in grades in the later years of study. The questions on learning methods, which relate to the actual delivery of classes, received the same average grade of 3.1. In addition, in this part of the questionnaire, respondents assessed the degree of interactivity, individualization, and relevance of the course content in the different forms of teaching, with practicals receiving the highest average grade (3.6) and lectures the lowest (2.3). The average grade obtained for the questions on student assessment was 2.8.

**Conclusion:** The obtained results underline the importance of conducting education of medical educators with the aim of improving the quality of the teaching process, as well as teachers' competencies.

**Key Words:** faculty development; medical education; quality assessment; quality improvement; teachers' competencies

## SPECIFICITIES OF CLINICAL TEACHING: STUDENT ASSESSMENT OF TEACHERS' COMPETENCIES

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**Background:** In light of recent extensive efforts to improve the quality of teaching at the Faculty of Medicine in Rijeka, comprehensive research was conducted for the first time on students of the last three years of Medical studies to determine the current state of teachers' competencies in clinical teaching at the Faculty of Medicine in Rijeka.

**Aim:** The main aim of this study was to investigate the medical students' attitudes towards currently existing clinical teaching strategies and teachers' competencies at the Faculty of Medicine in Rijeka.

**Materials and Methods:** The study was conducted with 4th, 5th, and 6th year students of the Integrated Undergraduate and Graduate University Study Medicine at the Faculty of Medicine in Rijeka, who voluntarily and anonymously completed an online questionnaire in the academic year 2021/22. The questionnaire consisted of 3 questions about the general characteristics of the respondents and 9 questions about the methodology and

specificities of clinical teaching at the Faculty of Medicine in Rijeka. All questions on specificities of clinical teaching included grading from 1 to 5 on a Likert scale.

**Results:** A total of 54 students from the last three years of study participated in answering the questionnaire. The average grade for all questions on the specificities of clinical teaching was 2.4. The highest grade of 3.7 was given for the question “To what extent is the scope of the course material too detailed or too specialized for medical students?”, while the lowest grade of 1.5 was given for the question “Do teachers assess the different levels of clinical competences in students at the beginning of courses?”.

**Conclusion:** Considering the low average grade with which students answered all questions on the specifics of clinical teaching, this survey highlights the importance of continuous education for medical educators to improve teachers’ competencies, as well as the overall quality of the teaching process.

**Key Words:** clinical teaching; faculty development; medical education; quality assessment; quality improvement; teachers’ competencies

## Concurrent Session C9A

### REVIEW OF STUDENT SATISFACTION AT THE FACULTY OF MEDICINE, UNIVERSITY OF RIJEKA

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**Background:** Student satisfaction can be defined as an attitude arising from students’ subjective evaluation of educational environment, services, and facilities available through the higher education institution (HEI). Students make the most important contributors of the educational system and are therefore the most relevant internal indicators of its success and development. Over the years, surveying students has helped identify oversights as well as give examples of good practice, and better direct the work of the University and the Faculty staff. Through examination of student satisfaction with the most demanding course at the studies, we hope to present overall student contentment at the Faculty.

**Aim:** The aim of this analysis is to depict student satisfaction at the Faculty of Medicine of the University of Rijeka throughout two academic years, 2019/2020 and 2021/2022.

**Materials and Methods:** Data collection was done through the Faculty’s internal Student Evaluation Forms containing both open-ended and Likert 5-point scale questions, and questions with suggested answers. To objectify findings, only responses from closed-ended questions were processed. All Student Evaluation Forms were filled out through an online Microsoft Forms application and further quantified in Microsoft Excel.

**Results:** The evaluation survey of the Anatomy course was conducted in academic years 2019/2020 and 2021/2022. At the beginning of 2019/2020, an exceptionally high 83, 33% of students showed great interest while the average grade of the course at that time was 2,0. In 2021/2022 however, 75,93% of students showed great interest in the course, while the course was graded 4,5.

**Conclusion:** There is a significant difference in the average grade of the 2019/2020 and 2021/2022 Anatomy courses. It can be concluded that the course did not meet the initial expectations of the majority in the academic year 2019/2020. Such low rating can be attributed to online classes conducted during the pandemic. Additionally, a slight decrease in the percentage of students with great interest in the course is visible. A more in depth surveying of students should be done to further strengthen our interpretation of the results.

**Key Words:** Higher education institution; Student satisfaction; Survey

## STUDENT SATISFACTION AT THE MEDICAL STUDIES IN ENGLISH, UNIVERSITY OF RIJEKA

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**Background:** Medical Studies in English at the University of Rijeka was pioneered in 2017. As the first of its kind at the Medical Faculty, student satisfaction has been a crucial contributor to further development of the studies. Student satisfaction can be defined as students' subjective experience of academic environment encompassing services and facilities accessible through the institution of higher education. Over the span of six years, evaluation of student satisfaction surveys has helped steer the work of the Faculty and University staff, tailoring the program to its students.

**Aim:** The aim of this review is to portray and help follow a trend in student satisfaction at the Medical Studies in English of the University of Rijeka. **Materials and Methods:** Students filled in Faculty's internal Student Evaluation Form through an online Microsoft Forms application. The Evaluation Form consists of 20 questions out of which three have suggested answers and the rest are Likert 5-point scale questions. For the sake of conciseness, five questions from the survey with the highest turnout were selected and quantified in Microsoft Excel for this review. Grades averaging to < 3,5 were characterized as student dissatisfaction.

**Results:** Over the course of academic year 2021/2022, on a 5-point scale, students evaluated quality of the lectures of the evaluated course, with an average grade of 3,8. Evaluation of the seminars had a similar score of 3,7. Practicals had the lowest average score out of the three, with a score of 3,5. Student satisfaction with teaching staff affability was graded with an average of 4,2. Finally, student overall satisfaction with the conducted course averaged to 3,3.

**Conclusion:** Intangible products of the studies i.e., affability of the teaching staff, remain the main satisfiers. Assessment of the overall course conduction highlighted an area for improvement. Despite results showing general student satisfaction, more in-depth evaluation of student experience is needed to underpin current results.

**Key Words:** Evaluation forms; Medical studies in English; Student satisfaction

## Concurrent Session C12B

### BETTER HEALTH THROUGH INNOVATION IN EDUCATION – PERSONALIZED MEDICINE INQUIRY-BASED EDUCATION – PROMISE

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**Background:** Oxygen glucose deprivation (OGD) presents the most used model to study ischemic stroke in vitro. Since mitochondria play the key role in cell metabolism, they are very sensitive to reduction in glucose and oxygen levels which indicates the change of their network. Constant fusion and fission cycles regulate their shape which could be divided into tubular, intermediate and fragmented mitochondria.

**Aim:** The main goal of this study was to establish the adequate tool for automatic morphological analysis of mitochondria and analyse the influence of OGD on mitochondrial shapes of differentiating cells.

**Materials and Methods:** Neural stem cells (NSC) isolated from the telencephalic wall of 14.5 days old mouse embryos were cultivated in differentiation medium. On days 1, 7 and 14 of differentiation they were exposed to 24 hours long OGD treatment. Immunocytochemistry was performed using Tomm20, mitochondrial outer



membrane marker. Our in-house made tool, LUSCA, was used to analyse mitochondrial morphology. Experiments were repeated 3 times and statistical analysis were performed in GraphPad Prism using T-test and ANOVA.

**Results:** Image analysis algorithms which are automated and require less user input are preferred because they are less biased. LUSCA, running in the open access software platform FIJI (ImageJ), provides a reliable, accurate and fully automated analysis of mitochondrial shapes implementing machine learning. We successfully segmented tubular, intermediate, and fragmented shapes of mitochondria due to their configuration differences. Our analysis revealed OGD treatment decreases the total Tomm20 positive area in maturing NSC compared to the control group. Moreover, the control group manifested more tubular filaments while the OGD group had an increase of intermediate and fragmented mitochondria.

**Conclusion:** So far, we successfully applied LUSCA for mitochondria, vessel, and neuron analysis. The changes of mitochondrial shape reported here indicate that OGD stimulates fission cycles while fusion cycles were more present in the control group.

**Key Words:** image analysis, machine learning, morphology of mitochondria, oxygen glucose deprivation

## **MACHINE LEARNING IN MEDICAL STUDIES: WHAT DOES MITOCHONDRIA SHAPES TELL US?**

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**Background:** Oxygen glucose deprivation (OGD) presents the most used model to study ischemic stroke in vitro. Since mitochondria play the key role in cell metabolism, they are very sensitive to reduction in glucose and oxygen levels which indicates the change of their network. Constant fusion and fission cycles regulate their shape which could be divided into tubular, intermediate and fragmented mitochondria.

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**Key Words:** image analysis, machine learning, morphology of mitochondria, oxygen glucose deprivation

## NON-MEDICAL COURSES OFFERED BY EUROPEAN MEDICAL SIMULATION CENTRES: AN OVERVIEW OF WEB CONTENT

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**Background:** All advanced healthcare education programmes strive to deliver high-quality and interesting professional content using modern teaching methods, including simulation. High-quality implementation of simulation content in the work plan requires a review of existing and well-functioning simulation centres.

**Aim:** The review was conducted to evaluate the best practices of simulation centres in Europe.

**Materials and Methods:** In January 2023, a review of the two largest healthcare simulation databases in Europe was conducted. The Society for Simulation in Europe (SESAM) and the Society for Simulation in Healthcare (SSH) database were examined to identify simulation centres that provide training for healthcare professionals and other professions in addition to medical education. Inclusion criteria also included a sufficiently informative website.

**Results:** The final review included 58 health simulation centres. Of these, 27 were located at universities, 17 were located at general hospitals or university hospitals, and 14 were independent. Most simulation centres that met the inclusion criteria were located in France and the United Kingdom, followed by Germany, Switzerland, and Italy. The content most commonly offered by centres for nonmedical personnel is divided into health professions and “other professions”. For non-healthcare professions, simulation centres offer first aid courses at various levels for officers, navy, army, civil protection, firefighters and other professions. For healthcare professions, most courses focus on clinical skills (peripheral venous catheterisation, endotracheal intubation, management and administration of blood products...), crisis management training (teamwork and communication), first aid and emergency medical care (basic and advanced life support, triage), and “train the trainer” courses.

**Conclusion:** In Europe, there is a wide range of high-quality simulation centres that offer a diverse range of training for healthcare professionals and other professional profiles. Further research is needed on the financial sustainability of simulation centres and the extent of simulation content in university curricula.

**Key Words:** healthcare education; simulation centre; simulation courses.

## STUDENTS' SATISFACTION, ADVANTAGES AND DISADVANTAGES OF HYBRID AND ONLINE TEACHING DURING COVID-19 PANDEMIC

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**Background:** The research shows that the satisfaction with the quality of teaching affects the student academic achievement additively and cumulatively. During the COVID-19 pandemic, all Croatian universities switched to online and hybrid learning.

**Aim:** To investigate the level of satisfaction in clinical year students in period of online and hybrid learning during COVID-19 pandemic at The Faculty of Medicine of the University of Rijeka.

**Materials and Methods:** The study was conducted from April to May 2021 among 4th to 6th-year medical students (N=150) at the Medical Faculty of the University of Rijeka. An online questionnaire of 40 questions was sent to the target population of students through Facebook groups on three occasions, two weeks apart.

**Results:** Even 60% of the students believe that they will have worse knowledge with this type of teaching methods, while 80% of them believe that they will have worse practical knowledge. The level of student satisfac-

tion with hybrid and online learning was graded 2,84 (SD=1,16) and 2,71 (SD=0,99) with lectures and seminars. The practical online learning was graded 1,9 per average compared to face to face practicals that were graded 2,7 (P<0,001). Students rated listening to classes from their homes and more flexible use of study time as the biggest advantage, while the biggest disadvantage was the lack of practical training and too much sitting. When asked what they would keep from online learning, the most chosen answers were lecture recordings and recordings/instructions for exercises. When compared, students who volunteered at the COVID center were equally satisfied with hybrid and online teaching (P>0.05) as students who did not volunteer.

**Conclusion:** The students were satisfied with online lectures and seminars but believed that practical classes should be in conventional live form. In general, we can conclude that the students were satisfied with the hybrid and online lectures given during the COVID-19 pandemic and would prefer to keep certain forms of teaching in classic teaching forms, such as online lectures and recorded instructions for clinical training.

**Key Words:** COVID-19; distance education; medical; students; teaching method

## **EXAMINATION OF THE SATISFACTION OF TEACHERS OF THE FACULTY OF MEDICINE OF THE UNIVERSITY OF RIJEKA WITH DIFFERENT ASPECTS OF THE TEACHING PROCESS IN THE PERIOD FROM 2020 TO 2022.**

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**Background:** At the level of the University of Rijeka, a satisfaction survey of all stakeholders involved in the teaching process, including teachers who teach in different study programs, has been conducted.

**Aim:** The aim was to show the satisfaction of teachers who hold classes at the integrated undergraduate and graduate study of Medicine, Medicine in English, and at the undergraduate and graduate study of Sanitary Engineering from 2020 to 2022. Various parameters of satisfaction with aspects of studying, assessment of student development and acquisition of skills, and applied teaching measures were monitored.

**Materials and Methods:** Data from the Center for Quality Assurance and Improvement and Institutional Research of the University of Rijeka were used. Processing of the collected data was carried out using the statistical program package IBM SPSS Statistics version 25.0. Reliability analysis using Cronbach's Alpha confirms the high level of reliability of scales. The survey of teacher satisfaction was conducted in accordance with the instructions on the application of the questionnaire and the Handbook for the quality of studies. To assess satisfaction with aspects of studying, a 5-point Likert-type scale was used.

**Results:** The teachers are most satisfied with the organization of the course, and the least satisfied with the cooperation with students. Regarding the assessment of student development and the acquisition of skills, they rated the acquisition of learning outcomes the best, and the issue related to the skills of making conclusions and decisions was the lowest. The set of questions referred to the evaluation of the teaching measures. Teachers are most satisfied with interactive lectures, and least satisfied with students' practical work.

**Conclusion:** The above data clearly indicate the fact that there is room for additional improvement in teacher satisfaction, especially in the segment related to communication with students and the development of practical skills.

**Key Words:** Evaluation forms; Medical Faculty; Teachers satisfaction

## ATTITUDES OF MEDICAL STUDENTS FROM THE WESTERN BALKANS ON FACTORS INFLUENCING THE EFFECTIVENESS OF PUBLIC HEALTH ACTIONS

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**Background:** In recent years, there have been significant changes in the way people get information about health. The role of modern technologies is significantly increasing in everyday lives, and the current methods of educating medical students about how to promote a healthy lifestyle among general populations have proved not to be aligned with the ongoing social changes.

**Objectives:** The aim of this study was to determine attitudes of medical students about effectiveness of public health actions (PHA).

**Methods:** The cross-sectional study was conducted among 2452 students from 14 medical faculties in 5 countries of the Western Balkans (Slovenia, Croatia, Bosnia and Herzegovina, North Macedonia and Serbia). As a research instrument an online survey questionnaire was used.

**Results:** The largest number of students (81.4%) did not recollect PHA they last encountered. Students declared that PHA did have low impact on them (mean score=2.5 (max=5)). PHA success factors stated by students were: content creativity (51.9%), visibility (18.4%), adequate target group selection (17.6%), regulations adoption (5.9%), formal (3.9%) and informal education (2.3%). Almost 95% of students stated that PHA should be more adapted to the time we live and to the generation they are intended for. Female students inform about health on internet significantly more often than male students and stated that would use mobile applications for help to improve their lifestyle. Older in comparison to younger year students stated more often that in order to increase health of general population, it is necessary to introduce mandatory health education for general population, health education subjects in primary and secondary schools, as well as that trained peer educators could significantly improve knowledge on healthy life habits between members of the same generation.

**Conclusion:** In order to increase the effectiveness of PHA, it is necessary to adapt PHA to modern information technology channels of communication.

**Key Words:** medical students; public health; young adults; Western Balkans

## TEACHERS ALSO PROMOTE HEALTH

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Teacher Education students at the University of Zagreb believe they are not properly educated about health and therefore will not be able to pass this knowledge on to their future students. Because of this, they designed the preventive project called "Teachers Also Promote Health" within the Student Union's Healthy University program at the University of Zagreb. The project has been designed and is being executed by students of Medicine, Dental Medicine, Nutrition, Kinesiology, Psychology, and Social Pedagogy. The task of the peer educators is to provide lectures on the topic to future teachers so they can acquire knowledge that will benefit both their personal health and their future work. Therefore, they will feel more confident in dealing with specific health-related situations. Lectures are conducted through three workshops with topics on physical and oral health, the importance of balanced nutrition and physical activity, sexual health, mental health, as well as most common conditions in children. During the workshops, attendees had a chance to acquire not only theoretical knowledge but also practical skills, such as basic life support. After two cycles of workshops and fifty students finishing the program, the results were evaluated and they have shown that the project was found beneficial by the attendees. The average grade for both the topics and approach was 4.75, and 98.4% of attendees agreed that such a project

was much needed and should be continued. Education of future school educators on the topics is also relevant for public health as a whole because they can have a great role in health promotion and contribute to the prevention and early detection of disorders or difficulties. A holistic approach to education and health lays the foundation for raising healthy future generations and building a healthier society in general.

**Key words:** Future Teachers; Health Promotion; Peer Education

## **EARLY IMPLEMENTATION OF A “FLIPPED CLASSROOM” MODEL IN PRECLINICAL MEDICAL EDUCATION OR ATTEMPTING TO SELL A BIG MAC TO VEGANS**

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**Background:** The “flipped classroom” (FC) approach is a relatively novel strategy of teaching that foregoes the standard “ex-cathedra” teaching in favor of using the class time for active learning. This is enabled by pre-recorded video lectures, the viewing of which is mandatory prior to attending class, as well as self-evaluation tests that assist students with identifying potential knowledge gaps.

**Aim:** This study tries to achieve the following objectives: RQ1. to investigate students’ perception of the FC approach and RQ2. find out whether there are any significant differences in students’ perceptions between students having FC approach and students having mixed but mostly classical approach to teaching.

**Materials and methods:** For RQ1 the survey was performed among the 2nd year of medical students. For testing RQ2 two groups of students attending the physiology course were randomized to either the “classical” or the FC approach. The students were required to complete seven pre- and postseminar surveys on the various aspects of the education provided, as well as their self-perceived levels of preparedness and enthusiasm for participating in seminars.

**Results:** This study showed that the student’s perceptions of the usefulness of FC approach in our school were high. 75% of students see the FC approach as more useful than the classical approach. Comparison between the two examined student groups showed that the FC-group provided statistically significantly higher ratings for the quality of learning outcomes and self-evaluation tests provided to them. In general, the FC approach motivated students to study more and to become active rather than passive participants in the classroom.

**Conclusion:** FC approach facilitates students’ level of preparedness for the seminars and gives them a significantly higher level of autonomy over the education process. The students in our study reacted positively to this change, showing a significant preference for having learning outcomes and self-evaluation tests available before the actual seminar.

**Key Words:** E-learning; Flipped Classroom; Modern Teaching

## Concurrent Session S12B

### HOW TO CONNECT DON QUIJOTE AND CHRISTMAS – A DIFFERENT APPROACH TO TEACH DEMENTIA

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Dementia is defined as a neurocognitive disorder characterized by the presence of marked impairment in two or more cognitive domains, which represents a decline from the individual's previous level of functioning. Due to the rapid increase in the incidence of dementia, it's considered an epidemic of the 21<sup>st</sup> century. Knowing this, the Student Section of Psychiatry (SSP) of the School of Medicine, University of Zagreb, founded in October 2022, chose dementia as its first topic to try a different educational approach.

The first step is to repeat everything learned so far through lectures. The first lecture, held by the mentor of SSP, professor Ninoslav Mimica, at the Psychiatric Hospital "Vrapčce" was about Alzheimer's disease in which he included a movie with a true representation of a patient and a discussion about it. Afterward, professor Nenad Bogdanović, from the Karolinska Institute, held a lecture where he explained the connection between Robin Williams, Don Quijote, and Scooby-Doo which is Frontotemporal dementia. Although technology with classic lectures would often be enough, SSP decided to go further and connect two essential things – practice and charity. This was achieved with the humanitarian action called "U vaše živote kap naše dobrote" held in December which included users of homes for the elderly and patients with dementia. In this action, more than 50 students and professors bought gifts according to the user's wishes and visited them. More than 300 users of five homes in Zagreb, one in Pakrac, one in Pleternica, and numerous socially vulnerable individuals from these areas were covered.

This way of teaching through a combination of lectures, discussions, movies, and visiting the elderly gave everyone a valuable and unforgettable lesson. Also, this raises a question of the need to create a volunteer network that would include students which is a future goal of SSP.

**Key words:** Alzheimer's disease; Dementia; Education; Holidays

### BUILDING A FOUNDATION FOR FUTURE GASTROENTEROLOGISTS: THE STUDENT SECTION FOR GASTROENTEROLOGY AND HEPATOLOGY AT THE UNIVERSITY OF ZAGREB

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The student section for Gastroenterology and Hepatology was founded in 2019 and has been active at the University of Zagreb, in person and online. Our main goal is to provide students with practical and theoretical knowledge. This review offers insight into our results and achievements over the past year.

During the course of one year, we organized multiple workshops. Organizing in-person workshops, which included Ultrasound as well as History Taking and Physical Examination Workshops, in small groups (up to 4 students) has shown to be the best-acclaimed method. Small groups enable an individualistic approach and enhance teamwork. Both types of workshops were conducted in hospitals with doctors and student tutors. We educated 60 students during 15 History Taking and Physical Examination Workshops and 50 students during 7 Ultrasound Workshops in a year. Afterwards, students were surveyed about satisfaction. Overall, students were pleased with the workshops and were most delighted with the small-group concept. Organizing workshops doesn't require much funding, as they utilize the resources already available at the hospitals, making them easier

to conduct. However, since we mostly depend on lecturers' goodwill, we are also limited by the number of them as well as their free time.

Over the period we held numerous online lectures as well. Some were formed interactively, so the students could join in solving different cases of uncommon patients. Other courses mainly included listening to different endoscopic treatments, rare diseases, and new types of drugs in gastroenterology and hepatology. After the lectures, the students were surveyed on their satisfaction. Although students found the lectures useful, they weren't as satisfied as with interactive case-solving projects.

We successfully provided practical and theoretical knowledge to students through workshops and online lectures. Our small-group workshops and interactive case-solving projects have been particularly effective in enhancing student learning.

**Key words:** workshop, ultrasound, history taking, small group

## **A MULTIDISCIPLINARY APPROACH TO VOICE THROUGH THE CELEBRATION OF WORLD VOICE DAY.**

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As members of the Student Society for Otorhinolaryngology and Head and Neck Surgery, we are excited to celebrate World Voice Day every year on April 16th. This special occasion began in Brazil in 1999 and has since become a global event, involving voice groups, medical experts, and people worldwide to raise vocal health awareness. Each year, World Voice Day has a different theme that focuses on various aspects of vocal health and care. We understand the importance of the voice in human self-expression, communication, and identity, as well as its impact on physical health and well-being. Therefore, for the third year running, we are hosting a multidisciplinary celebration of World Voice Day, working with students from different faculties like the Music Academy, Academy of Dramatic Art, Faculty of Education and Rehabilitation, Faculty of Education, and Faculty of Philosophy. To provide a comprehensive diagnosis and treatment for vocal issues, we believe in a multidisciplinary approach that includes experts from different professions such as speech-language pathology, otolaryngology, music, and theater. Our approach acknowledges that the voice is a complex system involving the respiratory system, vocal tract, articulators, and larynx. Our week-long program involves lectures, workshops, panels, and round tables where we share our experiences and knowledge on vocal health and provide advice on what to do if voice issues arise. Our awareness week also highlights the value of prevention and focuses on peer education. We host leading experts in vocal health to share their insights, and we act on the public health level to ensure that the message reaches as many people as possible. We also emphasize the challenges faced by laryngectomy patients and ensure their voices are heard.

**Key Words:** education ; multidisciplinary; otorhinolaryngology; voice

## **LETTER DISSEMINATION – A QUANTITATIVE STUDY OF MEDICAL STUDENT ENGAGEMENT WITH LETTERS TO THE EDITOR IN INTERNATIONAL MEDICAL EDUCATION JOURNALS**

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**Background:** Letters to the Editor offer readers opportunities to engage with authors' publications bringing useful perspectives to the discussion. Letters are the shortest manuscript for medical students to publish and medical-education journals are best suited. UK Training Programmes reward achievement of publications with PubMed IDs. We hypothesise this is a motivation for medical students submitting Letters.

**Aim:** To analyse number and origin of Letters published by medical students in medical education journals.

**Methods:** A review of 15 international medical education journals with an impact factor was conducted to identify numbers, percentages and affiliation of Letters to the Editor by medical students between July 2018–June 2020.

**Results:** Over a two-year period, 299 Letters were published of which 45.9% were by medical students; with 60% increase in Letters by medical students published in the latter 12 months. 86% of Letters published by medical students were from UK medical schools. Five schools accounted for 60.5% of these Letters. The three medical schools with highest numbers of Letters published were King's College London, Imperial College London and University of Oxford.

**Conclusion:** The increase in Letters published by students, may represent greater awareness of Letters to the editor as means of dissemination amongst medical students. UK medical schools published many Letters, perhaps reflecting increasing importance to students of publications impacting on subsequent jobs. Results from our quantitative research reveal many Letters are written by medical students, with an overrepresentation of UK medical students, supporting our hypothesis that medical students are publishing Letters to achieve PubMed IDs. Further qualitative research is required to prove our hypothesis. Medical schools should have modules dedicated to academic training to highlight the importance behind research, to boost students' interest. Journals should find ways to encourage non-UK medical students to engage with their literature for a more diverse range of opinions.

**Key Words:** Letters to Editor; Medical Education; Medical Student; Research; UK Medical Schools

## SHIELD YOUR SKIN, SAY NO TO DISEASES

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As summer approaches, exposure to the sun and UV rays increases significantly, as do the risks of burns and skin cancer. We chose this topic based on the increase in melanoma cases in our country. During this interaction we will aim to educate about sun exposure and ways to protect our skin and health. I'm not saying that sunlight is bad for you, as it is required for the production of vitamin D. There is more than one way to protect our skin while still enjoying the sun or the beach. First and foremost is wearing sunscreen. SPF stands for sun protection factor and the higher the number is, the longer and better the protection is. We have to use it every day, summer and winter, because UV rays always pass through clouds. We apply it on the face, neck, scalp and hands in winter and everywhere in summer. Also, clothing can be an excellent barrier against UV rays. Its protection is consistent over time and doesn't wear off like a sunscreen that you have to reapply every few hours. But the best protection is to combine the two and stay in the shade as long as you can. Tanning beds are banned because they increase the risk of aging and skin cancer more than actual sunlight. Early detection is also crucial in protecting our skin as it can result in less consequences and a faster recovery. We hope to leave an impact and encourage the protection of our health.

**Keywords:** UV rays, skin cancer, melanoma, SPF, early detection

## HOW DOES SLOMSIC LJUBLJANA COMPLEMENT CLINICAL KNOWLEDGE AND PRACTICAL SKILLS OF FUTURE MEDICAL DOCTORS?

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**Background:** SloMSIC Ljubljana is an association of students from the Faculty of Medicine in Ljubljana. It encompasses 20 projects with active medical student participation, our presentation will focus on projects in the field of medical education.

**Aim:** Our aim is to present the activities and highlight the academic importance of 3 medical educational projects of SloMSIC Ljubljana: Emergency Medicine, Ultrafest Ljubljana and Surgical Suturing.



**Materials and Methods:** Emergency Medicine educates medical students on Basic trauma life support, Advanced life support, Rapid trauma assessment in the form of educational workshops. In 2022, the project members were awarded 1st place in the national Best CPR team competition. Ultrafest Ljubljana aims to improve the clinical skills of medical students in the area of imaging techniques, by organizing interactive workshops. In 2022 the first Slovenian book on Point-of-Care Ultrasound was published, authored by project members and clinical specialists. Surgical Suturing tackles the lack of practical knowledge in the surgical field by teaching medical students the basics of suturing and operating room etiquette. Every activity is followed by an evaluation in order to assess the contribution of the activity to clinical knowledge of students.

**Results:** Jointly, these projects reach around 470 students yearly through the organized activities. The participants of the last four ultrasound workshops rated their knowledge with an average score of 2 out of 5 before, and 3,8 out of 5 after the workshop. The last three ALS workshops were evaluated with an average score of 9,4/10. The practical workshop How to go to the operating room was rated with an average score of 9.6/10.

**Conclusion:** Medical educational projects of SloMSIC Ljubljana provide practical education for medical students, enriching their knowledge, acquired during the official courses. Evaluation has demonstrated that students' clinical skills benefit as a result of attending the workshops

**Keywords:** Clinical knowledge and skills; Emergency medicine workshop; Medical education; Surgical suturing workshop; Ultrasound workshop

## Poster display during the entire conference and joint discussion at the Concurrent Session S12C: Poster Section

### CAN WEED MAKE YOU BLEED? A CASE OF A RARE CAUSE OF HEMOPTYSIS ASSOCIATED WITH MARIJUANA CONSUMPTION: CASE REPORT

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**Background:** There are several sources of bleeding within the lung and bronchi responsible for hemoptysis. Bleeding from a bronchial artery may cause life-threatening hemoptysis in 90 percent of cases.

**Aim:** We present a case of a 34-year-old patient with cryptogenic hemoptysis associated with the menstrual cycle and cannabis consumption.

**Case presentation:** A 34-year-old female patient presented to the emergency department due to recurrent hemoptysis. Hemoptysis had increased in severity over the last few days, around 50–100 mL of blood per day. The patient mentioned being in physical contact with her grandmother who had tuberculosis. Tests allegedly came back negative. She reported the bleeding to be related with the menstrual cycle, always occurring as premenstrual or during menstruation. Among the habits, she pointed out the consumption of marijuana for the purpose of pain relief. She was admitted to the hospital for diagnostic purposes. X-ray findings were normal and CT angiography excluded pulmonary embolism. Thoracic MSCT showed a larger area of ground glass opacities in the apicoposterior segment of the left upper lobe. Given the history, it was considered as catamenial hemoptysis, a rare manifestation of intrathoracic endometriosis. An emergency bronchoscopy identified the source of bleeding from the apical segment of the left upper lobe of the lung. Digital subtraction angiography was performed. It showed a tubular serpiginous structure along the left bronchial artery that corresponds to an arteriovenous malformation (AVM). Surgical treatment in the form of segment resection or upper lobectomy was indicated.

**Conclusion:** There have been 7 reported cases of cannabis-associated hemoptysis so far. 4% of pulmonary AVMs are considered to have systemic arterial supply. Rarely the bronchial artery can be the vessel feeding the

AVM. It is still unclear whether cannabis was a trigger for this patient's symptoms. Bronchial arteriovenous malformation should be considered as a potential cause in patients presenting with cryptogenic hemoptysis.

**Keywords:** hemoptysis; endometriosis; arteriovenous malformation, Case Report

## NEUROLOGICAL COMPLICATIONS OF EPSTEIN-BARR DISEASE REACTIVATION

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**Background:** Infectious mononucleosis (IM) is an acute disease caused by Epstein-Barr virus (EBV) infection which affects adolescents and young adults. Clinically, IM is manifested by fever, lymphadenopathy and tonsillar pharyngitis. Neurological complications of IM include cranial nerve palsy, encephalitis, aseptic meningitis, transverse myelitis, peripheral neuritis, optic neuritis, encephalomyelitis, and rarely Guillain-Barré syndrome (GBS), especially the so-called overlapping/atypical variants, which in some cases can be life-threatening.

**Aim:** The aim was to present a very rare and educational example of neurological complications during isolated reactivation of EBV infection in 15-year-old previously healthy girl. During hospitalization, she developed very serious neurological complications, as well as mesial temporal sclerosis and a minor cognitive deficit upon recovery.

**Case report:** A 15-year-old girl was admitted for hospital treatment on the third day of a febrile illness with symptoms of viral meningoencephalitis. On the sixth day of hospitalization, she developed a series of generalized onset motor tonic-clonic seizures. A brain MRI showed diffuse meningitis and encephalitis localized in the left temporal region. EBV was proven from the cerebrospinal fluid. Other possible infectious causes were excluded. From the 14<sup>th</sup> day of hospitalization, the treatment was complicated by the development of Gullian-Barre syndrome and Miller-Fischer syndrome. Immunological processing was normal. Anti-MOG, antiganglioside antibodies, aquaporin antibodies, and panel for autoimmune encephalitis were negative. The therapy consisted of antiviral and anti-inflammatory medications and 8 cycles of plasmapheresis and levetiracetam as an anticonvulsant drug. With physical therapy there is no motor deficit, but she has learning difficulties, and mesial temporal sclerosis on the control brain MRI.

**Conclusion:** With this clinical presentation it was necessary to exclude optic neuritis, multiple sclerosis, acute disseminated encephalomyelitis and myelin oligodendrocyte glycoprotein antibody-associated disease. Clinical monitoring, prevention of epileptic seizures with properly chosen antiepileptic therapy, and well-chosen timing of neurosurgical intervention will be especially demanding.

**Keywords:** Epstein-Barr virus, epilepsy, Gullian-Barre syndrome, mesial temporal sclerosis, Miller-Fischer syndrome

## WHEN PNEUMOTHORAX IS MORE THAN MEETS THE EYE: A CASE REPORT OF LUNG CANCER DIAGNOSIS

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**Background:** Spontaneous pneumothorax is a rare manifestation of lung cancer with a frequency rate of 0.03 – 0.05%. Most often the cause is unknown, although this condition can arise from the mechanism of tumor necrosis or the rupture of emphysematous bullae. It can be the first sign of lung cancer but occurs primarily in an advanced tumor stage.

**Aim:** To highlight the importance of considering lung cancer as a potential cause of spontaneous pneumothorax.

**Case Report:** Our 46-year-old male patient, a smoker (40 pack years), comes to the emergency department because of severe pain in the right hemithorax after physical exertion. An X-ray of the heart and lungs was done, which showed an extensive right-sided pneumothorax. As a treatment, the thoracic drain was placed. However, the pneumothorax hadn't resolved and it remained on the control radiograph. Consequently, a chest CT scan was performed. In addition to the pneumothorax, bilateral bullae and a 28 mm spicular lesion in the right upper lobe were described. Although the conducted bronchoscopy findings seemed negative, the cytological analysis showed non-small cell carcinoma. The patient underwent VATS lobectomy of the right upper lobe with dissection of the mediastinal lymph nodes and resection of the bulla in the middle lobe. In the pathohistological findings, adenocarcinoma was constituted, staged T2N1M0. This led to oncological treatment with chemotherapy being started.

**Conclusion:** Spontaneous pneumothorax is one of the rarest presentations of lung cancer. Underlying malignancy as a cause of spontaneous pneumothorax should be considered in patients who have a history of being smokers, had chronic bronchitis/emphysema, and especially in whom a complete lung re-expansion does not occur after thoracic drainage. Following these parameters increase the chances of an earlier diagnosis and a better prognosis of the malignancy, as was the case with our patient.

**Key Words:** Bronchoscopy; Lung Neoplasms; Spontaneous Pneumothorax, Case Report

## **PERIANASTOMOTIC STENOSIS FOLLOWING SURGICAL MANAGEMENT OF CONGENITAL ESOPHAGEAL STENOSIS WITH A PUNCTIFORM OPENING IN AN INFANT**

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**Background:** Congenital esophageal stenosis is a rare condition that can lead to life-threatening complications.

**Aim:** Highlighting the challenges in managing congenital esophageal stenosis.

**Case Report:** Our case report describes the experience of an 8-month-old girl who presented to our emergency room with acute onset dysphagia and regurgitation after just a few sips of milk. The patient had a history of delayed growth and slight hypertonicity but was otherwise healthy. The mother reported that the patient had experienced similar incidents, with the first occurring one month prior after ingesting vegetable soup. The patient had asymptomatic periods but also experienced multiple episodes of symptoms, including choking on saliva. Upon contrast imaging, we discovered a stenotic, barely patent esophagus at the level of the acromioclavicular junction, with pre-stenotic dilatation of 12–13 mm in diameter. During esophagoscopy, we observed a constricted part with a small, <1mm wide punctiform opening at the end. Due to an inability to scope, we performed a CT scan to determine whether the finding was a stenosis or a membrane. The constricted part was found to be 2 cm long, and we ultimately decided on a transthoracic surgery with termino-terminal anastomosis. After surgery, food was gradually introduced, but unfortunately, 2 weeks after the surgery the patient started to vomit solid food. We discovered perianastomotic stenosis upon contrast imaging and performed an esophagoscopy with endoscopic balloon dilatation. The dilatation was repeated after 6 weeks. The child recovered and 6 weeks later the adult scope could pass the stenotic part, therefore no further dilatation was needed.

**Conclusion:** This case highlights the challenges of managing congenital esophageal stenosis and the importance of ongoing monitoring and management even after surgery. It also emphasizes the need for increased awareness of this rare condition among doctors, as early diagnosis and intervention can significantly improve outcomes.

**Keywords:** esophageal stenosis, congenital abnormalities, dysphagia, esophageal dilation, surgical anastomosis, Case Report

## AN ATYPICAL PRESENTATION OF CLEAR CELL SARCOMA METASTASIS IN THE MYOCARDIUM – EXPECT THE UNEXPECTED: A CASE REPORT

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**Background:** Clear cell sarcoma (CCS) is a rare type of soft tissue tumor that typically affects adolescents and young adults. CCS most commonly develops in the muscles or tendons of the extremities, particularly of the foot and ankle. Treatment of CCS typically involves surgical removal of the tumor, as it is often resistant to chemotherapy and radiotherapy. CCS can metastasize to other parts of the body, including the lymph nodes, lungs, liver, bones, and brain.

**Aim:** To report an atypical location of CCS metastasis in the heart muscle.

**Case Report:** A 39-year-old female reported to the ER due to cough and pain under the left costal arch in respiratory movements that had lasted for seven days. Six years prior, the patient had a below-knee amputation as she was diagnosed with CCS located in the left foot. The following year the patient had a PET-CT scan that showed no pathological uptake. Upon admission, laboratory results showed slight elevation of inflammatory parameters. A CT of the thorax was performed, demonstrating multiple solid nodes bilaterally in lung parenchyma as well as an irregular heterogenous soft tissue lesion in the apex of the myocardium. The lesion measured 5x3 centimeters. Pericardial effusion was also noted. Due to the findings, a fine needle aspiration biopsy of a lung lesion was undertaken, characterizing the lesion as a CCS metastasis. Echocardiography was also performed without any pathological findings. Considering the risks of myocardial biopsy and its indications it could only be assumed that the myocardial mass was indeed a CCS metastasis. The patient was referred to an oncologist for further treatment.

**Conclusion:** Due to a high metastatic potential, early detection and aggressive treatment of metastatic disease is important for improving outcomes in patients with sarcoma.

**Key Words:** Clear Cell Sarcoma; Heart; Metastasis

## THE IMPORTANCE OF A COMPREHENSIVE APPROACH TO THE PATIENT – AN EXAMPLE OF THE DIAGNOSTIC TREATMENT OF A PATIENT WITH AN AUTISM SPECTRUM DISORDER

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**Background:** Early communication disorders, especially autism spectrum disorders (ASD) are manifested by permanent disturbances in social communication with limited, repetitive behavior patterns and activities, frequent absence of speech development and motor deviations. The comorbidity between ASD and epilepsy is well known in the medical literature. Numerous genes associated with ASD are also associated with epilepsy. The prevalence of epilepsy in patients with ASD is significantly higher than in the general population (1.8–60%).

**Aim:** Using the example of a patient with an autism spectrum disorder, demonstrate the necessity of a comprehensive approach and adherence to the recommended guidelines for diagnostic processing.

**Case report:** Boy aged 13 year, with ASD, previously exclusively polyvalently stimulated, neuropediatrically untreated, referred to our clinic due to episodes of staring. Family and personal history unremarkable. After the examination, due to poor cooperation and the inability to sleep deprivation, an all-night EEG was performed – focal changes in the left centrofrontoparietotemporal area. Diagnosis of epilepsy was established, levetiracetam therapy started. Brain MRI with spectroscopy showed a thalamic hamartroma in the left pulvinar. Neurometabolic processing neat. aCGH analysis find duplication of 2q14.3, that contains a protein-coding gene, CNT-

NAP5, associated with the development of autism.. The described change was inherited from the mother. In clinical exome we find heterozygous missense variant in the CACNA1H gene also linked to autism. Through processing, we clarified the basis of disorders from the autism spectrum, but also the clinical picture of epilepsy.

**Conclusion:** Good clinical practice includes a comprehensive approach to the patient. It is necessary to take detailed anamnestic data, carefully examine the patient, and follow the diagnostic processing guidelines that will lead us to the correct diagnosis setting. In our patient, unfortunately, this happened after 10 years of habilitation procedures without clarifying the etiology of the disorder.

**Keywords:** autism, CACNA1H gene, 2q14.3 duplication, epilepsy, thalamic hamartoma

## SCIATIC NERVE ENDOMETRIOSIS: A CASE REPORT

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**Background:** Endometriosis is the presence of endometrial-like tissue outside the uterine cavity. Epidemiologically, endometriosis presents a problem for approximately 10% of women of reproductive age and for up to 70% of females presenting for evaluation of chronic pelvic pain.

**Aim:** The aim of this case report is to present an extremely rare situation in which the sciatic nerve is affected by endometriosis.

**Case report:** Our patient is 40 years old female with regular, 28-day menstrual cycles with a history of two vaginal births. She has suffered from moderate dysmenorrhea for decades and for the last two years feels sciatic pain in her right leg during menstruation. An intrauterine device was implanted, which stopped the menstrual bleeding, but not the cyclical pain. Dienogest therapy was prescribed, which mitigated symptoms. During the examination at the Clinic for Women's Diseases and Childbirth, adenomyosis and endometriosis in the area of the right sciatic nerve were assumed. A magnetic resonance image (MRI) of the pelvis was requested, the findings of which supported the assumptions. The patient was admitted to the Department of Gynecological Surgery and Urology for a planned laparoscopic procedure. During the procedure, at the exit of the sciatic nerve from the pelvis next to the piriformis muscle, a cystic endometrioma with surrounding fibrosis was found. During resection, chocolate-like content flew out from endometrioma and the sciatic nerve was completely decompressed. Endometriosis was confirmed with pathohistological diagnosis. The patient was discharged home in good general condition with antibiotic therapy and recommendation of dienogest and physical therapy.

**Conclusion:** Foci of endometriosis throughout the sciatic nerve, although rare, are possible and should be considered in the differential diagnosis of otherwise unexplained sciatic pain.

**Key words:** Endometriosis; Sciatic Nerve; Sciatic Pain

## TREATMENT OF BILATERAL PATELLAR TENDON RUPTURE – A CASE REPORT

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**Background:** Bilateral patellar tendon rupture is a rare injury of the knee extensor mechanism. It is usually seen in younger males with predisposing factors such as systemic disease or corticosteroid use.

**Aim:** The goal of this report is to present a case of surgical treatment of bilateral patellar tendon rupture in a young patient with no comorbidities, but with a history of steroid use.

**Case report:** A 30-year-old male presented to the hospital in June 2021. with a bilateral inability of knee extension and pain. He reported that he felt sudden weakness beneath the kneecaps while running, making him fall to the ground. Detailed patient's history revealed he was taking steroids in the past and worked out regularly in the gym. Physical examination revealed swelling, elevated patellar height, and lack of active knee extension in both knees. The patellar ligament was not palpable on either side. The x-ray and magnetic resonance imaging (MRI) confirmed the diagnosis of bilateral patellar tendon rupture and surgery was indicated. Transosseous suture repair of the tendon was performed, followed by suturing of the retinaculum and fixation of the patellae to the tibial tuberosity with a cerclage wire. The early postoperative period was uneventful and the patient underwent physical therapy. After continued physical therapy flexion of the right knee was still limited to 90°. Thus, five months postoperatively, the cerclage wires were removed in both knees, and arthroscopic removal of adhesions in the right knee, together with manipulation under anesthesia, was performed. In January 2022. the patient regained active extension in both knees, as well as full flexion in both knees, and was able to return to his daily activities.

**Conclusion:** Although rare, bilateral patellar tendon rupture may occur in otherwise healthy patients, especially in cases of steroid usage. Described surgical treatment can provide a good functional outcome in such cases.

**Keywords:** bilateral; patellar tendon; rupture.

## CEUS AS AN ADDITIONAL TOOL FOR BIOPSY OF METASTATIC LIVER LESIONS ORIGINATING FROM UROTHELIAL CARCINOMA

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**Background:** Contrast enhanced ultrasound (CEUS) is innovative and affordable, especially useful for the characterization of focal liver lesions (FLLs). Even though at this time CEUS is still not routine practice for FLLs diagnostics, it is slowly becoming an indispensable part of diagnostic algorithms, alongside contrast enhanced magnetic resonance imaging (CEMRI) and contrast enhanced computed tomography (CECT).

**Aim:** The aim of this research paper is to highlight the importance and effectiveness of contrast enhanced ultrasound (CEUS) as a diagnostic tool for the characterization of focal liver lesions (FLLs) and to demonstrate its potential role in guiding liver biopsy for the diagnosis of liver metastases in patients with reduced renal function.

**Case Report:** A 67-year-old male presented at routine ultrasound exam with third-degree hydronephrosis. It was assumed to be caused by a mass invading surrounding tissue, which was further confirmed by computed tomography (CT). Due to acute kidney injury, intravenous contrast was not applied at the CT exam and abdominal MRI was indicated. Numerous FLLs were found during MRI examination, while both ultrasound and unenhanced CT only demonstrated inhomogeneous hepatic parenchyma. It was assumed that it was a primary urothelial carcinoma which metastasized to the liver. Due to the patient's reduced renal function, it was decided to attempt a CEUS guided liver biopsy to confirm the diagnosis. Following application of contrast medium, several hypoechoic lesions appeared. Pathohistological findings confirmed the diagnosis of invasive urothelial carcinoma with liver metastases.

**Conclusion:** Due to its availability and affordability with minimal side effects, CEUS is becoming an increasingly useful diagnostic method in the evaluation of FLLs. The future routine use of CEUS in Croatia is still very much unclear as it is used only sporadically, and much education is still needed for both doctors performing the exam and the referring physicians.

**Key Words:** Biopsy; Radiology, Ultrasonography

## CYSTINURIA – THE DIAGNOSIS AND MANAGEMENT

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**Background:** Cystinuria is a rare genetic kidney stone disorder inherited in an autosomal recessive pattern. Patients with cystinuria have decreased reabsorption of filtered cystine in the proximal tubule of the kidney. It results from the malfunction of the specific membrane transport system located on the membrane of the renal proximal straight tubule. Due to limited cystine solubility, the main clinical presentation is formation of kidney stones. Patients have recurrent stone formation that can lead to chronic kidney disease.

**Aim:** The aim is to present the diagnosis and management of cystinuria.

**Case Report:** A 30-year-old patient was diagnosed with cystine nephrolithiasis after presenting with painful renal colic and macrohematuria. In 24-hour urine collection cystine was 1735 umol/dU (referent interval <316 umol/dU). He was treated with potassium citrate, dietary sodium restriction, urinary alkalization and increased fluid intake. A concentration of cystine in 24-hour urine collection decreased at 1497 umol/dU, and after that, he was treated with tiopronin. Also, surgical therapy for stone removal was performed two times, due to urinary obstruction. Four years later, cystine concentration in the urine sample amounts to 79 mmol/mol crea (referent interval 3–17 mmol/mol crea). The ultrasound of the urinary tract showed 6 mm kidney stone in the right kidney and no dilatation of the canal system. The symptoms have decreased with continuous conservative treatment. Sometimes he experiences renal colics with pain and hematuria and sandstone urination.

**Conclusion:** Cystinuria accounts for 1% to 2% of all urolithiasis in adults and 6% to 8% of urolithiasis in children. It should be suspected in every patient with urolithiasis, especially those with early-onset kidney stones (in childhood), large or recurrent kidney stones, and a family history of urolithiasis. After the diagnosis is confirmed, initial therapy is conservative. Tiopronin is a second-line therapy used to control the rate of cystine precipitation and excretion, therefore preventing kidney stone formation. The treatment should be continuous and permanent.

**Key Words:** cystinuria; nephrolithiasis; tiopronin; urine alkalization

## TRAUMATIC DISLOCATION OF L4 VERTEBRA, ASSOCIATED WITH PERFORATION OF SMALL INTESTINE AND DISSECTION OF INFRARENAL AORTA

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**Background:** Traumatic dislocation of the L4 vertebra is a rare condition, usually caused by high-energy force.

**Aim:** The purpose of this case report is to demonstrate the diagnostic and treatment approaches for spondyloptosis, as well as the potential complications that may arise.

**Case Report:** A 39-year-old female suffered severe polytrauma in a car accident as a passenger. On the initial physical examination, she presented as normally conscious (GCS 15), complained of pain in the left shoulder, thorax and abdomen, had a haematoma consisted with seat-belt injury and had total paraplegia (ASIA-1) below L1 level. Native CT-scan of the head and cervical spine and contrast-enhanced CT-scan of the chest, abdomen and pelvis were performed and showed pneumoperitoneum, perforation of the small intestine, spondyloptosis of the L4 vertebra, dissection of the infrarenal aorta and retroperitoneal haematoma. The patient was immediately taken to the operating room and an emergency laparotomy was performed. Multiple contusions and lacerations were present and resection with T-T anastomosis was performed. Infrarenal aortic dissection was treated by

Covered Endovascular Reconstruction of the Aortic Bifurcation. The patient underwent a posterior approach with reduction, transpedicular fixation and laminectomies of L4 and L5. Exploration of the spinal canal showed multiple dural lacerations and avulsions of cauda equina nerve roots. Repositioning of neural structures in the dural sac and reconstruction of the dura with polyester urethane and monofilament sutures were performed. At the 2-week follow-up, the patient recovered right hip active flexion and right knee extension and normal gastrointestinal function.

**Conclusion:** Traumatic spondyloptosis of L4 is very rare and due to its association with high-energy trauma it can be followed by injury of other organs. Overall, early recognition and proper management of traumatic spondyloptosis of L4 are essential to avoid complications and improve the patient's quality of life.

**Key Words:** aortic dissection, polytrauma; small intestine perforation; spondyloptosis

## VOCAL FOLD NODULES IN KINDERGARTEN TEACHER – A CASE REPORT

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**Background:** Vocal fold nodules are defined as bilateral benign growths of a variable size found at the mid-part of the membranous vocal cords. They are more common in women and associated with chronic vocal abuse.

**Aim:** The aim of this case is to emphasize the importance of proper use of voice and prompt diagnosis of voice disorders for kindergarten teachers, which are often not recognized and treated as voice professionals

**Case Report:** A female patient, working as a kindergarten teacher, presented to the ENT department with a voice disorder that started 6 months ago with a mild cold. After the cold, hoarseness appeared and hasn't resolved since, with symptoms being most noticeable in the afternoon. Her voice is rated as G2R1B0A0S2 on a scale that measures the grade of hoarseness, roughness, breathiness, asthenia, and strain. Acoustic analysis of voice showed f0 value of 195 Hz, jitter 0,11 %, shimmer 7,02 %, and intensity of 72 dB, altogether indicating a mild degree of hoarseness. Digital stroboscopy showed white vocal cords, with normal vocal cord mobility, bilateral small soft vocal nodules which create two gaps during phonation, with shortening of laterolateral laryngeal diameter. The total score for the voice handicap index (VHI) was 12. The patient received instructions about voice hygiene and was educated about the most common voice problems. Voice therapy was suggested as the treatment of choice.

**Conclusion:** Vocal fold nodules are a common pathology, that often requires a multidisciplinary approach because of the complexity of therapy, making prevention the best kind of treatment.

**Key Words:** otorhinolaryngology, stroboscopy, vocal fold nodules, voice therapy

## INFORMED CONSENT FORMS IN THE REPUBLIC OF CROATIA: ARE THEY SUFFICIENT FOR THE PROTECTION OF ORTHOPEDIC PATIENTS' RIGHTS?

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**Background:** In the Republic of Croatia, information patients undergoing a procedure have the right to receive is regulated by article 8 of the Law for the protection of patients' rights. The consent form is regulated in detail in the Bylaw of the form of acceptance and rejection of specific diagnostic or therapeutic procedures. No state-level regulated form provides patients with information about matters regulated by article 8 of the Law.

**Aim:** We aimed to examine whether the Croatian law and medical practices of informed consent are sufficient for protecting orthopedic patients' rights.



**Materials and Methods:** We reviewed sources of Croatian legislation and collected informed consent forms from 9 orthopedic departments, including six public and three private healthcare facilities. We analyzed forms for completeness and evaluated their adherence to the requirements of the Law. We also conducted a review of the IUS-INFO database to examine the implications of informed consent in medical jurisprudence.

**Results:** Our analysis revealed that 55% of the informed consent forms lacked information on the benefits of the procedure, risks of not undergoing the procedure, course of the procedure, alternatives for the procedure, and recommended lifestyle after the procedure. Surprisingly, none of the forms mentioned health insurance rights. Fisher's exact test did not show significant differences between public and private hospitals in adherence to article 8 of the Law. Our review of the IUS-INFO database revealed a Supreme Court trial and a Constitutional Court trial involving informed consent involving complications of orthopedic procedures.

**Conclusion:** Croatian legislation does not sufficiently regulate the means of informing the patient. This may lead to controversial legal proceedings. Medical care providers are left to compose informed consent documents tailored to their patient's needs. The complexity of medical events and patient vulnerability requires a more detailed regulation of the means of information for patients. This study highlights the need for further development of the informed consent process in Croatia.

**Key Words:** Informed consent; Medical jurisprudence; Orthopedic surgery; Patient's rights

## OCCIPITAL PENETRATING BRAIN INJURY CAUSED BY ATHLETIC SPEAR – CASE REPORT

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**Background:** Traumatic brain injury is a worldwide health problem that affects millions and causes large morbidity and mortality. Penetrating brain injuries are defined as open injuries that break through the skull, dura and cause brain tissue damage. Occipital penetrating brain injuries are not so common because of the specificities of the occipital bone, but they will cause great visual problems.

**Aim:** This case report stands out the importance of early treatment and that insufficient triage and poor initial examination can lead to serious consequences.

**Case Report:** The presented case shows a very rare penetrating brain injury of the occipital lobe by an athletic spear. The patient had removed the spear by himself and came to the emergency department because of minor bleeding and visual deficits. Unfortunately, the patient was not recognized as an immediate emergency, but the head CT with angiography was done after the examination by the neurosurgeon which showed a commutative impression fracture of the right occipital bone 20 mm from the superior sagittal sinus with hemorrhage. The urgent decompressive craniectomy was made and with good postoperative care and antibiotic prophylaxis. He was released home with a visual field deficit that was diagnosed as left homonymous hemianopsia. During the 21-month follow-up, the patient had decreased visual acuity that was managed with eyeglasses, but the visual field defect resolved completely.

**Conclusion:** Diagnosis of atypical late-onset Fabry disease complicated with secondary hyperaldosteronism was concluded after the finding of angiokeratomas and agalactosidase-A level and activities. Patient was referred to a higher range clinic center.

**Key Words:** Case report; Compound depressed skull fracture; Hemianopsia; Occipital bone; Traumatic brain injury; Triage

## FABRY DISEASE COMPLICATED WITH HYPERALDOSTERONISM – CASE REPORT

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**Background:** Fabry disease is an inherited neurological disorder that occurs when the enzyme alpha-galactosidase-A cannot efficiently break down lipids into smaller components that provide energy to the body. Lipids then accumulate in the part of the nervous system that controls involuntary functions such as breathing and heartbeat, as well as in the eyes, kidneys, and cardiovascular system. Males are primarily affected. Angiokeratomas may develop on the lower part of the trunk of the body and become more numerous with age.

**Aim:** To illustrate the challenges of diagnosing Fabry disease.

**Case Report:** A 38-year-old man was hospitalized due to constellations of symptoms that indicated systemic collagenosis. From past medical history he had frequent URSI, slow progressing stress intolerance and dyspnea in previous year. Physical activity and warm environment induced plethora as the cold environment induced Raynaud-like phenomena (without phase 2). Backpain and degenerative changes in hips and knees were later linked to scoliosis and malrotation of LS segment and disruption of the kinetic chain after the MRI was performed. He had morbid obesity (BMI 46.28), polytrauma, celiac disease that was confirmed by HLA-typing as the patient was already on a gluten-free, dairy-free diet, low on disaccharides. He stopped consuming salt after noticing water retention (up to 10kg). Due to his uncontrolled weight loss and restricted high-protein diet he acquired bile reflux gastritis and GERD. Spastic hemiparesis after CVI. Night blindness, blepharitis and keratoconjunctivitis sicca. Clinical examination showed angiokeratomas on his lower abdomen and agalactosidase-A tests were acquired from a larger clinic center. During contrast brain MR, TIA occurred, and the patient no longer gave consent to any more diagnostic procedures. From the diagnostics that have been performed we highlight renin 0.7 ng/mL/h, serum creatinine 51 umol/L, serum urea 11.6 mmol/L, potassium 3.8 mmol/L, sodium 138 mmol/L, aldosterone 270 pmol/l, agalactosidase-A 2,54 m/h/L, agalactosidase-A enzyme activity 21%, diuresis 1500, creatinine clearance 263 mL/min, potassium clearance 154 mmol/L, sodium clearance 42 mmol/L. MRI of the brain revealed zone of encephalomalacia with surrounding gliosis and retraction of the trunk of the cerebral ventricle in the left periventricular along the lateral wall of the lateral ventricle, CT of thorax showed a mass that was highly indicative of thymoma.

**Conclusion:** Due to lack of adequate penetrating brain injury management guidelines the need for updated guidelines is great. Initial examination and triage of patients is crucial in the management of any emergency. Although errors in triage are not so rare, they should be minimized, but that is possible only with excellent medical education. Despite low occipital lobe injury incidence, early recognition of visual field defects is the most important step in a good outcome and complete withdrawal of symptoms.

**Key Words:** Comorbidities; Dieting; Fabry disease; Hyperaldosteronism

## “DON’T ASK, DON’T TELL”: AN ANALYSIS OF CROATIA HIGH SCHOOL STUDENTS’ COMMUNICATION WITH PARENTS ON SEXUAL AND REPRODUCTIVE HEALTH

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**Background:** Adequately trained medical students educate high-school students (14–19 years) about Comprehensive Sexual Education (CSE).

**Aim:** The purpose of this study was to examine the level of parental involvement and overall Croatian high school students’ satisfaction with education in the areas of sexual and reproductive health.

**Materials and Methods:** Data was collected from September 2022 to January 2023 through a Google form distributed by educators and filled out anonymously by high school students.

**Results:** We have received 180 responses, from ten high schools in four cities. Almost two-thirds, 109 (60%) of our participants were female students. This fact may be interesting from the perspective of answers to the question: “Did you ever talk to a parent about sexual/reproductive health?” Little less than half of students, 76 (42%), claimed that they haven’t talked to any parent about these topics. Among other 99 (55%) positive answers, 54 (55%) of them discussed only with the mother, 9 (9%) of them talked only to the father and 36 (36%) of them spoke to both.

As for the question of wanting to address these topics with parents, exactly two-thirds of them, 118 (66%), tend to avoid that type of interaction.

Besides the (non)contentment of parental (non)involvement in education, students aren’t overall satisfied with the current state of sexual/reproductive education. This was shown by the responses, 131 (73%) of them want the better implementation of CSE in the school curriculum.

**Conclusion:** Little less than half of Croatian high school students had not discussed sexual and reproductive topics with their parents, and the majority don’t even have the intent to do so. Based on the answers, there is a need for improved education in schools to ensure that students receive accurate information and support in making informed decisions regarding their sexual and reproductive health.

**Key Words:** Adolescent health; Education; Parent-child relations

## **GASTROSCHISIS WITH PROLAPSE OF THE STOMACH, INTESTINES, AND FALLOPIAN TUBES WITH PRIMARY CLOSURE: CASE REPORT**

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**Background:** Gastroschisis is a birth defect where organs protrude through an opening in the abdomen, typically on the right side of the umbilical cord. We report a case where the stomach, small and large intestine, and fallopian tubes were outside the abdominal cavity during routine prenatal ultrasound.

**Aim:** The aim of this report is to raise awareness about proper management of newborns with gastroschisis and possible complications.

**Case report:** A female newborn with prenatally diagnosed gastrochisis was scheduled for an elective cesarean section at 37+2 weeks gestation. The baby weighed 2560 g and had an Apgar score of 10/10. After birth, a large defect in the abdominal wall was visible, through which intraabdominal organs protruded. The baby was examined by a surgeon, anesthesiologist, and cardiologist, who diagnosed an open ductus arteriosus. During surgery, it was observed that the stomach, small and large intestines, and fallopian tubes were outside the abdominal cavity. The small intestine was significantly shortened, with a patent stenosis 20 cm from the Treitz ligament. The abdominal wall defect was extended cranially and caudally during the operation, and the stomach, intestine, and adnexa were successfully returned to the abdominal cavity with primary closure of the defect. The baby received parenteral nutrition for seven days postoperatively, followed by enteral feeding. On the second day after starting enteral feeding, the baby became febrile, and its general condition worsened, leading to dual antibiotic therapy. Bacterial sepsis was suspected. On the fifth day after fever cessation and with sterile microbiological samples and good general condition, the baby was transferred to the pediatric surgery department. A pediatric cardiologist examined the baby because of the previously diagnosed ductus arteriosus, which was no longer present. The baby was discharged in good general condition and with recommended follow-up visits with a pediatric surgeon.

**Conclusion:** Gastroschisis is a birth defect where organs protrude through an opening in the abdomen. Survival rates for newborns with gastroschisis have increased due to better prenatal diagnosis, neonatal care, and surgical techniques.

**Key Words:** gastroschisis, neonatal intensive care unit, prenatal diagnosis, surgery

## BATTEN DISEASE (CLN2 TYPE) – FIGHTING FOR A STEP, A WORD AND A SMILE; CASE REPORT

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**Background:** Neuronal ceroid lipofuscinosis type 2 (CLN2) is rare, autosomal recessive, pediatric neurodegenerative disorder, known as Batten disease. It is caused by an enzyme deficiency of Tripeptidyl-peptidase 1 (TPP1) which lead to lysosomal storage disease. First symptoms usually begin between ages 2 and 4 with epileptic seizures and language delay, followed by loss of all motor function in period 4 to 6 years and deaths by adolescence.

**Aim:** Present the importance of early diagnosis that significantly affect the course of the disease.

**Case report:** A 7-year-old girl, from unrelated healthy parents, had normal development until 2 years and 8 months, when she had first febrile seizures. Few months later, girl had frequent epileptic seizures, neuropsychomotor regression and progressive vision loss began. After the lysosomal enzymes tests were performed, the enzyme activity of TPP1 was significantly decreased. NCL type 2 was confirmed with genetic tests; heterozygous mutation was detected: c.[509-1G>C];[614T>A]. Enzyme replacement therapy (cerliponase alfa) was started at age 3 years and 8 months. This was the first such treatment performed in Croatia. Nowadays, she is 8 years old, with good controlled epilepsy, mild language delay and good ambulation. Her visual loss is stable and she gets therapy every two weeks.

**Conclusion:** Natural progression of the disease can be slowed down with cerliponase alfa enzyme therapy. Therefore, it is extremely important to recognize the symptoms of this disease and diagnose it early to at least prolong the smile in the family, for which everyone fought hard together.

**Key Words:** Autosomal recessive; Batten disease; Case Report; Cerliponase alfa; Tripeptidyl-peptidase 1

## A CASE REPORT OF CROHN'S DISEASE DEVELOPING IN A PATIENT TREATED WITH SECUKINUMAB DISEASE (CLN2 TYPE)

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**Background:** Secukinumab is a human IgG1/κ monoclonal antibody that selectively binds to and neutralizes the proinflammatory cytokine interleukin 17A (IL-17A). IL-17A is a naturally occurring cytokine involved in normal inflammatory and immune responses but also plays a vital role in the pathogenesis of several diseases. Among the indications for secukinumab are plaque psoriasis, juvenile idiopathic arthritis, and spondyloarthritis. Crohn's disease is a chronic inflammatory bowel disease of unknown cause.

**Aim:** An interesting case study is a simple and memorable way to improve your clinical practice.

**Case Report:** A 40-year-old woman was diagnosed with seronegative spondyloarthritis 20 years ago. She was treated with sulfasalazine for 19 years, when a year ago, due to inadequate disease control, her treatment was switched to secukinumab. For the past three months, the patient complained of frequent, sometimes bloody, stools (up to ten times a day), tenesmus, and significant weight loss. It is important to note that the patient's mother was diagnosed with ulcerative colitis, a type of inflammatory bowel disease. Considering her genetic predisposition and recent symptoms, the patient was referred to a gastroenterologist. A complete blood count test showed anemia, most likely caused by frequent bloody stools. Fecal calprotectin was elevated (253,3 mg/kg), suggesting inflammation in the intestines. Colonoscopy and MR enterography were performed and showed severe inflammation of the terminal ileum, as well as hyperemia and focal erosions aboral from the lial flexure. A PHD analysis of a sample taken during the colonoscopy showed morphologic changes consistent with inflam-

matory bowel disease. These results confirmed the diagnosis of Crohn's disease. Adalimumab treatment was started, and the patient was released home.

**Conclusion:** Although rare, inflammatory bowel disease is a possible severe adverse effect of treatment with secukinumab. Rheumatologists should be careful when prescribing this medicine, especially in patients with familial cases of inflammatory bowel disease.

**Key Words:** adverse effect; Crohn's disease; secukinumab

## **A RARE FORM OF CHRONIC PANCREATITIS PRESENTING AS PANCREATIC ADENOCARCINOMA – A CASE REPORT**

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**Background:** Groove pancreatitis (GP) is a rare form of chronic pancreatitis affecting the “groove” between the pancreatic head, duodenum, and common bile duct, characterized by fibrotic scarring. Its etiology is unknown; however, it more frequently appears in males with long-term smoking and alcohol abuse.

**Aim:** This case report stands as a reminder to always keep in mind less common differential diagnoses of obvious presentations.

**Case Report:** A 52-year-old male smoker with no history of alcohol abuse presented with complaints of abdominal pain in epigastric region spreading to his back, acholic stool and darker urine. Blood analysis revealed elevated amylase (225 U/L) and lipase (1090 U/L) as well as cholestasis (bilirubin 127 µmol /L, AP 297 U/L, GGT 1970 U/L). Initial ultrasound showed a dilated intrahepatic bile ducts and common bile duct, while the pancreas was not detectable. A CT scan found a well-defined predominantly hypodense mass in the pancreatoduodenal groove that narrowed the duodenum. Due to obstructive icterus, during the diagnostic ERCP, biliary sphincterotomy and implantation of biliary stent were made, resulting in adequate biliary drainage. Brush samples from duodenum around papilla minor showed acute inflammatory process and no signs of tumor, which along with previous imaging and normal levels of tumor markers CEA and CA 19-9 led to the diagnosis of groove pancreatitis.

**Conclusion:** The differential diagnosis of GP may vary from anatomic variants to malignancies. The most relevant diagnosis is adenocarcinoma of the head of the pancreas. Clinical diagnosis of GP is challenging and the potential to fail in distinguishing it from other more common causes of recurrent pancreatitis, including malignancies is always present.

**Key Words:** Cholestasis; Chronic pancreatitis; Pancreatic carcinoma

## A PATIENT WITH MENSTRUATION-RELATED SPONTANEOUS PNEUMOTHORAX DUE TO ENDOMETRIOSIS, A CASE REPORT

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**Background:** Endometriosis is characterized by the appearance of ectopic endometrial tissue and affects women in reproductive age. It often causes infertility and one of the rarest ectopic locations is thoracic cavity.

**Aim:** Through this case report we want to emphasize the importance of having endometriosis as a differential cause of spontaneous pneumothorax, a life threatening condition.

**Case Report:** A 32-year-old woman often had dyspnea a few days before her period. When her severe dyspnea first appeared, she was admitted to a hospital and diagnosed with spontaneous pneumothorax of unknown origin. A chest tube drainage was performed and as a complication she had pneumonia which was successfully treated. One year later she was again hospitalised due to spontaneous pneumothorax and a chest tube drainage was performed again. A few months later she was again hospitalised due to pneumothorax. After malignancy has been excluded through PET – CT a thoracic surgery was performed. Intraoperatively right side of diaphragm had lesions highly suspicious of endometriosis. Ultrasound has also shown a cystic structure above right ovary highly suspicious of endometriosis and CA-125 has been elevated (49.9 kIU/L). Two years after she was diagnosed with endometriosis she visited a gynaecologist due to not being able to conceive naturally. Her partner had oligoazoospermia and her AMH was lower (8.5 pmol/L). After 4 unsuccessful ovulation inductions and in vitro fertilisation the couple has conceived naturally. Pregnancy did not have any complications and a female child has been delivered through Caesarean section.

**Conclusion:** Eventhough thoracic endometriosis is rare, it should always be considered in young women with dyspnea reoccurring a few days before menstruation.

**Key Words:** endometriosis; infertility; pneumothorax; thoracic endometriosis

## ATTITUDE OF MEDICAL STUDENTS TOWARDS INTRODUCING SSRIS AS A POTENTIAL THERAPY FOR PREVENTION OF SEVERE COVID-19 ILLNESS\*

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**Background:** During the COVID-19 pandemic, many drugs were tried in therapy. Drugs that act as lysosome targeting agents have shown a significant shift in treatment. Thus, SSRIs were introduced in therapy since the first studies showed a reduction in the number of hospitalizations and mortality due to COVID-19.

**Aim:** The attitude of medical students towards taking SSRIs for the prevention of a severe COVID-19 was investigated. They were questioned about their attitude towards SSRIs in general, vaccination status among students and what would bother them most about taking SSRIs.

**Materials and Methods:** We conducted a cross-sectional study among medical students of all years attending School of Medicine, University of Zagreb from October 2021 to January 2022. The study was carried out as an anonymous survey through an online questionnaire consisting of three parts. The first part included questions about basic information of participants, the second part focused on general information and attitude towards COVID-19 infection and in the last part students were able to choose what is their main worry about taking SSRIs.

**Results:** The questionnaire was filled out by 526 participants: 299 female and 227 male students. The vaccination rate among students was 95.4% (n=502/526). About 2/3 – 61.2% (n = 322/526) of students were open to

trying out SSRIs as a preventive measure in treating COVID–19 infection, but about ½ – 55.7% (n = 293/526) would rather take other types of drugs if available. Furthermore, the students were notably concerned about the side effects of the SSRIs – 75.7% (n = 398/526). Others were worried about social stigmatization and the lack of information. Finally, the differences in attitudes towards different side effects of the SSRIs due to gender have proven statistically significant (p<0.05).

**Conclusion:** Our study has shown that medical students were relatively open to trying SSRIs for prevention of severe COVID–19 illness, but with certain restraints since SSRIs are known for their side effects, as well as lack of knowledge about potential benefits of their administration.

**Key Words:** COVID-19; medical students; side effects; SSRIs

## **DRUG REACTION MASKED BY WORSENING OF PREEXISTING SEBORRHOEIC DERMATITIS: CASE REPORT**

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**Background:** Seborrheic dermatitis is a chronic inflammatory skin disorder that often affects young and middle-aged adults in sebaceous gland-rich areas like the face, scalp, and upper part of the trunk. EEM is a reactive skin disorder caused by viruses, drugs, or vaccines. The major type has fever, fatigue, mucosal lesions, and targetoid skin lesions.

**Aim:** This case report aims to raise awareness of skin drug reactions caused by medications or vaccines and ensure timely diagnosis and treatment.

**Case Report:** A 39-year-old patient presented to the Dermatovenereology office two days ago due to a rash appearance. Dermatologic status showed moderate erythema and desquamation of the eyebrows, nasolabial and presternal area. Patient had seborrheic dermatitis, treated with antimycotic cream and shampoo. Patient returned to dermatologist after 3 days due to worsening and spreading of changes. On second visit, seborrheic dermatitis still present. Patient had new annular targetoid lesions on chest, extremities, and palms. Lips were eroded. Patient reported mild burning sensation with skin lesions. New lesions had EEM major type, so hospitalization was recommended. Blood test revealed leucocytosis. Patient had a cold with a cough and was taking pholcodine, ibuprofen, vitamin C, and immunoglucan 10 days before the lesions appeared. Patient was taking olanzapine in chronic therapy. One day before EEM rash onset, patient received a flu vaccine. During hospitalization, patient received systemic and local corticosteroid therapy, improving skin changes significantly. Patient was discharged from the hospital soon after.

**Conclusion:** Considering medication or vaccination as a possible cause of adverse reactions during patient history-taking is always necessary, and monitoring the patient after drug or vaccine administration is important. Patient's pre-existing seborrheic dermatitis masked the drug reaction, causing failure to recognize EEM initially. Early identification and diagnosis of drug reactions are critical as they can rapidly progress and pose severe or life-threatening complications, requiring immediate medical attention.

**Key Words:** Drug reactions; Erythema exudativum multiforme; Steven-Johnson syndrome; Seborrheic dermatitis

## SURVEY OF THE KNOWLEDGE, ATTITUDES AND PRACTICE TOWARDS ANTIBIOTIC USE AMONG PROSPECTIVE ANTIBIOTIC PRESCRIBERS IN SERBIA – ARE THERE OPPORTUNITIES FOR IMPROVEMENT?

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**Background:** The complex issue of antibacterial resistance (ABR) requires actions taken with the One Health approach, involving both human and veterinary medicine. Health profession students, as the future antibiotic providers, can greatly impact antibiotic-related issues in the future.

**Aim:** The study was conducted to evaluate knowledge, attitudes and practice of future antibiotic prescribers in relation to judicious use of antibiotics.

**Materials and Methods:** This cross-sectional, questionnaire-based study was performed on 400 students of health professions who were allowed to prescribe antibiotics of the University of Novi Sad, Serbia.

**Results:** Students of medicine and students of dentistry showed a significantly higher knowledge score compared to students of veterinary medicine ( $p = 0.001$ ). Multivariate regression identified predictors of adequate antibiotic knowledge: being a female student ( $B = 0.571$ ;  $p = 0.020$ ), higher grade average ( $B = 1.204$ ;  $p = 0.001$ ), students of medicine ( $B = 0.802$ ;  $p = 0.006$ ) and dentistry ( $B = 0.769$ ;  $p = 0.026$ ), and students who used a complete package of antibiotics during the last infection ( $B = 0.974$ ;  $p = 0.001$ ) or for the period recommended by the doctor ( $B = 1.964$ ;  $p = 0.001$ ). Out of the total sample, self-medication was reported among 42.8% of students. The identified predictors of self-medication were: more frequent ( $B = 0.587$ ;  $p = 0.001$ ) and irregular ( $B = 0.719$ ;  $p = 0.007$ ) antibiotic use, taking antibiotics until symptoms disappeared ( $B = 2.142$ ;  $p = 0.001$ ) or until the bottle was finished ( $B = 1.010$ ;  $p = 0.001$ ) during the last infection.

**Conclusion:** It seems prudent to reevaluate the educational curricula regarding antibiotic use and ABR of prospective prescribers in Serbia.

**Key Words:** Antibiotics; Habits; Self-medication; Students

## NODULAR FASCIITIS OF THE ORBIT: CASE REPORT

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**Background:** Nodular fasciitis is a benign proliferation of fibroblasts and myofibroblasts in the subcutaneous tissues. Typically, it presents as a solitary, rapidly growing nodule which is often confused with malignancy. The lesions most commonly appear on the forearms, legs, and trunk, and are rarely reported to occur on the eyelids, orbit, or conjunctiva. The condition usually affects adults between the ages of 20 and 40.

**Aim:** The aim of this case report is to point out rare diagnosis.

**Case Report:** A 41-year-old woman presented with a 6-month history of a progressively enlarging bump on her eyelid. The patient noted that the nodule was first on the lateral side of eyelid and that it migrated medially. Examination revealed a 1.5 cm firm mass palpated near the right medial supraorbital rim penetrating deeper parts of medial upper quadrant of the orbit. Further, her eye movement and pupillary responses were unaffected, and she denied diplopia. CT and MRI showed irregular lesion in cutis and subcutaneous adipose tissue measuring approximately 1 cm. An excisional biopsy was performed, and the wound was left to heal by secondary intention until pathohistological report confirmed diagnosis that would indicate further treatment steps. The plan was either to do expanded surgery in the case of malignancy or reconstruct the defect. Histopathology and immunohistochemistry confirmed the lesion to be nodular fasciitis. On the one-week postoperative follow-up wound was healing nicely with granulation tissue. The reconstruction procedure wasn't needed because of the excellent



healing capacity of the head due to rich blood supply. Wounds located on the concave surfaces of the face usually heal with functional and cosmetic outcomes that are similar or better than those achieved by reconstruction.

**Conclusion:** Nodular fasciitis should be included in the differential diagnosis of eyelid and orbital masses, especially in young to middle-aged individuals. Even though they are uncommon, clinical presentation is similar to malignant tumors and biopsy is needed to differentiate between those.

**Key Words:** benign tumor; nodular fasciitis; orbit

## **REDUCING THE RISKS OF SEVERE SCOLIOSIS SURGERY USING A TWO-STAGE PROCEDURE WITH HALO GRAVITY TRACTION – CASE REPORT**

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**Background:** Severe rigid idiopathic scoliosis (SRIS) is a spinal deformity with a curve measuring a Cobb angle over 90° and less than 25 % of correction on bending radiographs. Despite progress in surgical techniques, SRIS surgery carries high risks of neurological damage and other serious complications. Halo-gravity traction (HGT) is a method for gradually correcting SRIS with less demand placed on bone-anchor interfaces. HGT is believed to be safer than other methods, as patients are awake, and their neurological status is easily monitored.

**Aim:** We present a case of a patient with right thoracic SRIS who underwent a two-stage procedure using HGT.

**Case Report:** A 14-year-old female patient with a right-sided spinal curve and short stature presented to the Orthopedic Department. Clinical examination confirmed the diagnosis of right thoracic SRIS. AP radiographs showed Cobb's angle of 104°, with 20% correction to 84° on bending radiographs. To reduce risks and improve the outcome, a two-stage procedure with HGT was chosen. The first stage consisted of posterior release with multilevel Ponte osteotomies and transpedicular screw placement. The patient was then put on HGT. After two weeks, radiographs showed a decrease of 45% in Cobb's angle, from 104° to 58°. In the second stage, final correction and posterior instrumented fusion of the spine were performed. Cobb's angle after the final correction measured 28°, corresponding to a 74% correction. The patient also gained 12cm in height.

**Conclusion:** The two-stage procedure combining posterior release, halo-gravity traction, and posterior instrumentation reduces the risk of surgery and enables excellent correction of SRIS. The emphasis on the increasing height of the patient is noteworthy. Posterior release, followed by HGT and posterior instrumented fusion, is a promising method for treating SRIS, enabling better results in terms of correction and height gain with less risk. Further studies are necessary to evaluate long-term outcomes of HGT for SRIS.

**Key Words:** case report; orthopedic surgical; procedures; scoliosis; traction

## **CAN THROMBOPHILIA BE COMPLICATED BY BÜRGER'S DISEASE? A CASE REPORT OF RECURRENT ARTERIAL THROMBOSES IN A PATIENT WITH HEREDITARY THROMBOPHILIA**

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**Background:** Hereditary thrombophilia (HT) is an inherited condition that increases the risk of thrombosis. The genetic basis of HT encompasses various factors, including factor V Leiden, deficiency in protein C, deficiency in protein S, and antithrombin deficiency. Thromboangiitis obliterans (TAO) or Bürger's disease, is a

condition associated with thrombosis and is commonly seen in males between the ages of 25 and 45 who are smokers. The presence of prothrombotic factors has been associated with TAO.

**Aim:** We present a case of a 25-year-old male patient, smoker, who was diagnosed with arterial thrombosis (AT) of the femoral artery (FA) in August 2021.

**Case Report:** He was found to have protein S deficiency, elevated FVIII levels, and a homozygote PAI-1 5G,4G mutation, indicating a diagnosis of HT. The patient has experienced five episodes of AT of the FA in the subsequent six months, all while being on anticoagulation therapy with warfarin, later with low molecular weight heparin. The patient underwent multiple thrombectomy and endarterectomy procedures. A biopsy of the popliteal and distal FA showed signs of periarteritis, which may be related to TAO. A PET/CT scan was performed but showed no evidence of vasculitis.

**Conclusion:** AT is a rare occurrence in patients with HT. TAO is primarily diagnosed based on clinical presentation and is characterized by recurrent and migratory arterial thromboses in young smokers. Given the patient's history as a young smoker with recurrent arterial thromboses, clinicians should consider the possibility of TAO as a concomitant disease.

**Key Words:** Hereditary thrombophilia; Smokers; Thromboangiitis obliterans

## VEDOLIZUMAB SERUM CONCENTRATION AND ENDOSCOPIC REMISSION IN BIONAÏVE PATIENTS WITH INFLAMMATORY BOWEL DISEASE

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**Background:** Vedolizumab is a biological drug, an anti-integrin monoclonal antibody, used for treatment of patients with inflammatory bowel disease. Vedolizumab concentrations at week 6 of start of treatment predicted endoscopic remission in some studies which included patients who previously failed tumor necrosis factor alpha inhibitors. However, it is not clear if week 6 vedolizumab concentrations also predict endoscopic remission in patients that have previously not been treated with tumor necrosis factor alpha inhibitors (bionaïve patients) as such studies have not been performed.

**Aim:** We aimed to determine whether serum vedolizumab concentrations at week 6 correlate with endoscopic remission also in bionaïve patients treated with vedolizumab.

**Materials and Methods:** In this prospective observational study, we included 36 consecutive bionaïve patients, who started treatment with vedolizumab. We correlated serum vedolizumab concentrations determined with enzyme-linked immunosorbent assay at week 6 to treatment efficiency (endoscopic response) at week 30 after the introduction of vedolizumab (using the Mann-Whitney test).  $P < 0.0167$  was considered significant as this was corrected for multiple testing (3 outcome variables).

**Results and Conclusion:** Median serum vedolizumab concentrations were not statistically significantly different between patients who achieved and those who did not achieve endoscopic remission (24,4 µg/ml Vs. 26,6 µg/ml,  $p = 0.454$ ) remission at week 30 of treatment. Serum vedolizumab concentration at week 6 of treatment did not predict endoscopic remission in bionaïve patients with inflammatory bowel disease. Our findings do not support routine determination of week 6 vedolizumab concentrations in bionaïve patients.

**Key Words:** biologic drugs; Crohn's disease; endoscopic remission; TNF-alfa inhibitors; ulcerative colitis; vedolizumab

## EFFECTIVE MANAGEMENT OF METASTATIC HEPATIC CHOLNAGIOCELLULAR CARCINOMA

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**Background:** Metastatic cholangiocarcinoma is a rare malignancy with rapid progression and a statistically poor outcome with a reported 5-year survival rate of approximately 2%.

**Aim:** The case of the patient diagnosed with mCCC in 2012, who achieved sustained remission through chosen therapeutic methods, highlights the variation in individual prognoses.

**Case report:** A 60 year-old female patient was admitted to the hospital in 05/12, following recurrences of leftsided pleural effusion. Diagnostic thoracic and abdominal CT scans revealed a lesion in the upper left pulmonary lobe and multiple expansive hepatic lesions. Despite negative results on transthoracic biopsy, the diagnosis of cholangiocellular carcinoma was confirmed via histopathological analysis following liver biopsy. The patient received chemotherapy based on the GP (gemcitabine plus cisplatin) protocol, which resulted in condition stabilization after four cycles. Subsequently, the patient received six more cycles of the GP protocol. A hepatic bisegmentectomy (12/12) and an extirpation of the pleural lesion (03/13) were performed resulting in radiological verification of remission. However, liver lesions were detected on radiological examinations in 06/14. The patient underwent a ligation of the portal vein in 10/14 and an extensive dextral hepatectomy in 12/14. Regular surveillance led to verified remission until 11/16, when obvious hepatic lesions were detected on MSCT scan. The patient underwent hepatic segmentectomy in 01/17, with PET/CT scan confirming remission in 05/17 and has been continuously monitored. An abdominal MR scan performed in 04/19 indicated a 5 mm residual lesion without significant growth since then. The patient surveillance is still ongoing (02/23).

**Conclusion:** The personalized and comprehensive therapeutic approach enabled the patient to surpass the expected statistical survival rate which makes this a remarkable case of metastatic cholangiocarcinoma completely responsive to treatment resulting in a progression-free survival.

**Key words:** Case report; CR; mCCC; multidisciplinary approach; surveillance

## SUSPECTED AORTIC DISSECTION AS A STEP TO DIAGNOSIS OF A RARE DISEASE

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**Background:** It is estimated that every seventeenth citizen of the European Union are expected to develop symptoms of a rare disease in their lifetime meaning that most doctors will likely encounter these patients during their careers. However, the diversity of the causes and symptoms of these diseases often leads to a delayed diagnosis.

**Aim:** This case highlights the importance of recognizing patients with rare diseases, as early diagnosis and a multidisciplinary approach can prevent irreparable damage and enhance quality of life.

**Case report:** We present a 38-year-old patient experiencing heart palpitations and tingling on the left side of the face, neck, and arm, lasting for several days. The patient has a history of nearsightedness and eye procedures, and lost vision in one eye after giving birth. The patient's mother has an enlarged aortic root, but without eye symptoms. The patient's clinical status also includes high height, dolichostenomelia, significant vision loss, and arachnodactyly. After a normal ECG, an echocardiography was performed, revealing a bicuspid aortic valve and an enlarged ascending aorta with a suspected aortic dissection, which was later ruled out. The patient was referred to a geneticist, who confirmed a diagnosis of Marfan syndrome (MFS) through genetic testing. Due to the progression of the size of the ascending aorta, further monitoring and surgery are recommended, but the patient is not currently inclined to undergo these procedures. The patient is being treated with nebivolol and losartan instead.

**Conclusion:** MFS is a hereditary systemic connective tissue disease that affects the aorta, eyes, and skeleton and joint systems, caused by mutations in the FBN1 gene. The life span of patients with MFS has improved with better recognition and treatments, but cardiovascular complications remain the most common cause of morbidity and mortality.

**Key words:** aortic dissection; case report; Marfan Syndrome; rare diseases

## PAGET-SCHRÖETTER SYNDROME FOLLOWING STRENUOUS WORKOUT – CASE REPORT

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**Background:** Paget-Schröetter syndrome (PSS) is a rare cause of spontaneous unilateral upper extremity deep venous thrombosis (UEDVT), occurring in young patients usually due to subclavian vein compression at the thoracic outlet, following repetitive over-the-head strenuous upper extremity activity.

**Aim:** The aim of this case report is to bring awareness to Paget-Schröetter syndrome, whose symptoms can vary significantly in their severity, so that even in patients who are presenting with milder symptoms, PSS should be considered as a possible diagnosis.

**Case Report:** A 24-year-old male presented to the family medicine office after noticing a blue discoloration alongside his right upper arm and experiencing a dull pain in the shoulder area. He reported lifting weights in the gym nine days prior. Physical examination findings include a slight cyanosis of the right upper arm, and an increased venous pattern alongside shoulder area. The rest of the physical examination was normal. A week later, the patient was hospitalized in University Hospital Centre Zagreb. Full laboratory work-up was done, and the results were within a normal range. Chest X-ray and heart ultrasound were performed, showing no signs of pathology. Compression ultrasound (CUS) of subclavian vein visualized a blood clot causing an occlusion, and the patient was diagnosed with Paget-Schröetter syndrome (PSS) that occurred because of strenuous upper body exercise. Anticoagulatory low-molecular-weight heparin (LMWH) therapy was administered. The patient responded well to the therapy and two days later, he was discharged in a stable condition and rivaroxaban therapy was prescribed.

**Conclusion:** Although PSS is a rare cause of spontaneous unilateral UEDVT, it should be considered in patients who present with pain, discoloration or increased venous pattern alongside upper extremity, axillary or shoulder area, especially if they report a strenuous physical activity prior to symptoms presenting.

**Key Words:** Paget-Schröetter syndrome; subclavian vein; blood clot

## INFECTIOUS ENDOCARDITIS IN A PATIENT AFTER MELODY VALVE IMPLANTATION

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**Background:** Melody valve endocarditis is a complication during a follow-up in patients after right ventricular outflow tract reparation. It is most frequent in the first three years after transcatheter pulmonary valve implantation.

**Aim:** I present a case of a young male person with a history of tetralogy of Fallot diagnosed with staphylococcal infectious endocarditis and, as a result, a necessary cardiosurgical reintervention.

**Case Report:** A 17-year-old boy was admitted to the hospital for suspected infective endocarditis. He has a medical history of Tetralogy of Fallot and the installation of the Melody valve in 2021. When he was admitted to

the hospital, he had a high fever, a dry cough, and could not tolerate exertion. He also had elevated inflammatory parameters: CRP 306, L 12.5 with neutrophilia, NT-pro-BNP 4052. Ceftriaxone, flucloxacillin, and oseltamivir were initially introduced into the therapy. Staphylococcus aureus was isolated from the blood culture; therefore ceftriaxone was discontinued, and gentamicin was introduced into the therapy. Oseltamivir was also discontinued from therapy after the flu was ruled out. Echocardiography showed an enlarged right ventricle and turbulent flow through the Melody valve with stenosis and a slightly thickened valve. Vegetation could not be shown. CT pulmonary angiography showed condensations of the lung parenchyma of both lung wings with bilateral pleural effusions. Given the continuous febrility and a large number of positive blood cultures, a diagnosis of Melody valve endocarditis was made. At the consultation, the extirpation of the stent and melody valve from the right ventricular outflow tract was recommended, as well as the implantation of an aortic homograft between the right ventricle and the pulmonary valve.

**Conclusion:** Although the risk of infectious endocarditis of a Melody valve is significant, diagnosis is still very challenging. Approximately half of the patients require reintervention.

**Key Words:** Melody valve; tetralogy of Fallot

## **ANTHROPOMETRIC PARAMETERS AND MALLAMPATI INDICES IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA SYNDROME IN VOJVODINA – PILOT STUDY**

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**Introduction:** Sleep apnea is a serious disorder that causes a pause in breathing during sleep. Based on the cause of the disease, there are three types of sleep apnea: obstructive, central and complex. The most common type is obstructive sleep apnea. The airway narrowing is the most distinctive symptom, being caused by the relaxation of pharyngeal muscles. Risk factors for developing obstructive sleep apnea are obesity, tobacco and alcohol use and high Mallampati index.

**The aim:** Determining the correlation between anthropometric parameters and higher risk for the development of obstructive sleep apnea.

**Material and methods:** The study involved 28 participants, including 15 men and 13 women, mean age of  $45,39 \pm 17,03$  years. All subjects underwent polysomnographic tests, anthropometric measurements and Mallampati indices. Anthropometric measurements included the determination of body mass, body height, body circumference, body diameters and body fat mass. The investigation was performed at the Center for Respiratory Disorders during Sleep at the Institute of Pulmonary Diseases of Vojvodina in Sremska Kamenica.

**Results:** Participants were put in two groups, divided by their polysomnography results and apnea-hypopnea index (AHI): the control group (AHI<5) and participants who suffer from obstructive sleep apnea (AHI≥5). There was a statistically significant difference between the two groups in all measured anthropometric parameters except body height and all values were higher by patients with AHI≥5. Subjects with AHI≥5 had a Mallampati index of 3 or 4, while AHI<5 subjects had a Mallampati index of 1.

**Conclusion:** Men are more affected by obstructive sleep apnea. The disease correlates with a high Mallampati index (3 or 4) and obesity.

**Key Words:** Anthropometry; Mallampati Indices; Obesity; Obstructive sleep apnea

## THE DURATION OF QRS COMPLEX AS A PREDICTOR OF ADVERSE CARDIOVASCULAR EVENTS AFTER ACUTE ST-ELEVATION MYOCARDIAL INFARCTION

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**Background:** Ischemic heart disease most commonly occurs as a result of atherosclerotic changes in the coronary vessels. An acute form of coronary artery disease is ST-elevation myocardial infarction (STEMI). The duration of QRS complex is one of the ECG parameters whose change in dynamics can indicate the success of PCI as well as the size of the infarct zone.

**Aim:** Evaluation of the width of QRS complex as a predictor of major adverse cardiac events (MACE) in 6 years long follow up.

**Material and Methods:** This study included 200 patients with STEMI. Based on the duration of discomfort two groups were formed (N=100). The duration of the QRS complex was correlated with the duration of discomfort and occurrence of MACE.

**Results:** The survey included 71% of men and 29% of women with an average age of  $60.6 \pm 11.39$ . All-cause mortality was 12% (8% cardiovascular, 4% other). MACE occurred in 24.6% of patients. QRS complex width one hour after PCI affects MACE ( $p < 0.025$ ; OR=1.027). The average number of days until cardiovascular death is lower in group B (2187 vs. 2469;  $p < 0.012$ ). ROC analysis showed that the width of QRS complex one hour after PCI is a predictor of MACE ( $p = 0.014$ ; AUC=0.612; cut-off=99.0 msec). The sensitivity is 53.4%, and the specificity is 61.9%. Same parameter has a predictive value for cardiovascular death ( $p = 0.041$ ; AUC= 0.665; cut-off= 99.0 msec), with a sensitivity of 64.3% and specificity of 60.1%.

**Conclusion:** The width of the QRS complex is an independent predictor of MACE. Broadening of QRS complex by one millisecond, one hour after PCI, increases the risk of MACE by 3%.

**Key Words:** MACE; prognostic factor; QRS complex; STEMI

## LOWER GASTROINTESTINAL BLEEDING OF RARE ETIOLOGY: RIGHT HEPATIC ARTERY PSEUDOANEURYSM – CASE REPORT

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**Background:** Lower gastrointestinal (GI) bleeding is predominantly caused by hemorrhoids, angiodysplasias, diverticular disease, inflammatory bowel disease, or polyps. However, on rare occasions, it occurs from another etiology. Right hepatic artery (RHA) pseudoaneurysm is a rare entity, attributed to infections, trauma, and upper abdominal surgery. Most cases occur after biliary and pancreatic surgery. We present a case of a 60-year-old male with lower GI bleeding caused by RHA pseudoaneurysm tear.

**Case Report:** The patient with a history of chronic alcoholic pancreatitis and obstructive icterus was admitted to the hospital in March 2020 on account of experiencing syncope and the presence of bright red blood in his stool. His biliary obstruction was primarily treated by ERCP in 2019 but due to the persistence of symptoms he had undergone biliary surgery (cholecystectomy and choledochojunostomy) in January 2020. Physical examination revealed signs of hemodynamic instability and lab results showed signs of anemia. Esophagogastroduodenoscopy (EGD) was done to exclude upper GI bleeding and it was followed by a colonoscopy which showed fresh blood in the colon and terminal ileum. Computed tomography (CT) angiography showed no abnormalities. The patient was hospitalized and put on symptomatic therapy. In the following days, his BP dropped and he developed tachycardia as a sign of recurrent bleeding. EGD and colonoscopy were performed again and showed the same findings. Digital subtraction angiography (DSA) of abdominal arteries subsequently showed a pseudoaneurysm of the right hepatic artery, which was immediately treated by “sandwich” coil embolization. After

the procedure, the patient became stable and was discharged from the hospital without experiencing a relapse of gastrointestinal bleeding.

**Conclusion:** RHA pseudoaneurysm is a serious potential complication of abdominal surgery. Early recognition and emergency management of RHA pseudoaneurysm are crucial for a favorable patient outcome.

**Key Words:** Digital Subtraction Angiography; Embolization; Pseudoaneurysm; Right Hepatic Artery

## **FROM ABDOMINAL PAIN TO INDUCED COMA AND DEEP BRAIN STIMULATION – CASE REPORT**

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**Background:** Anesthesia and surgery have a wide range of effects on the cardiovascular system. Anesthetic agents, even in healthy patients having minor operations, can cause cardiac depression and hemodynamic instability.

**Aim:** This case report aims to highlight the importance of early recognition of intraoperative complications and further elaborate and discuss the steps in preventing and managing those complications.

**Case Report:** We report a case of a 33-year-old male presenting to the emergency department (ED) with the lower right quadrant pain that started four days prior and has since aggravated. After a thorough clinical exam, doctors suspected an acute appendicitis and sent the patient into surgery. After anesthesia medications were given, the electrocardiography (ECG) monitor showed ST elevation and the patient's blood pressure (BP) dropped immensely. The patient suffered a cardiac arrest and chest compressions were started. The resuscitation was successful as the monitor showed an electrical activity of the heart, but the peripheral pulse was weak on palpation. The patient was unconscious and was moved to an intensive care unit (ICU). Magnetic resonance imaging (MRI) was performed and revealed severe hypoxia to the basal ganglia, so the doctors put the patient in an induced coma and ordered a deep brain stimulation (DBS) therapy. After months had gone by, the patient regained consciousness and was moved to a rehabilitation facility for further treatment.

**Conclusion:** DBS has provided remarkable benefits for people with a variety of neurologic conditions, yet the mechanism of action remains unclear. In patients with hypoxic damage to the basal ganglia after successful cardiopulmonary resuscitation, induced coma with DBS therapy is an option to preserve the brain function, like shown in this case

**Key Words:** anesthesia; appendicitis; cardiac arrest; coma vigilans; deep brain

## **AN ATYPICAL PRESENTATION OF CLEAR CELL SARCOMA METASTASIS IN THE MYOCARDIUM – EXPECT THE UNEXPECTED**

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**Background:** Clear cell sarcoma (CCS) is a rare type of soft tissue tumor that typically affects adolescents and young adults. CCS most commonly develops in the muscles or tendons of the extremities, particularly of the foot and ankle. Treatment of CCS typically involves surgical removal of the tumor, as it is often resistant to chemotherapy and radiotherapy. CCS can metastasize to other parts of the body, including the lymph nodes, lungs, liver, bones, and brain.

**Aim:** To report an atypical location of CCS metastasis in the heart muscle.

**Case Report:** A 39-year-old female reported to the ER due to cough and pain under the left costal arch in respiratory movements that had lasted for seven days. Six years prior, the patient had a below-knee amputation as she was diagnosed with CCS located in the left foot. The following year the patient had a PET-CT scan that showed no pathological uptake. Upon admission, laboratory results showed slight elevation of inflammatory parameters. A CT of the thorax was performed, demonstrating multiple solid nodes bilaterally in lung parenchyma as well as an irregular heterogenous soft tissue lesion in the apex of the myocardium. The lesion measured 5x3 centimeters. Pericardial effusion was also noted. Due to the findings, a fine needle aspiration biopsy of a lung lesion was undertaken, characterizing the lesion as a CCS metastasis. Echocardiography was also performed without any pathological findings. Considering the risks of myocardial biopsy and its indications it could only be assumed that the myocardial mass was indeed a CCS metastasis. The patient was referred to an oncologist for further treatment.

**Conclusion:** Due to a high metastatic potential, early detection and aggressive treatment of metastatic disease are important for improving outcomes in patients with sarcoma.

**Key Words:** clear cell sarcoma; heart; metastasis; Case Report

## ROUTINE USE OF TTS BALLOON IN ENDO-THERAPY OF GIANT COMMON BILE DUCT STONE – A CASE REPORT

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**Background:** Endoscopic papillary balloon dilation (EPBD) has become one of the first lines of treatment for patients with common bile duct (CBD) stones. Alongside with limited biliary sphincterotomy, EPBD is commonly used for large stones (larger than 15 mm in diameter) primarily as a substitute for lithotripsy methods.

**Aim:** This case summary provides insight into an example of a simple method of treating a serious condition that allows avoiding side effects caused by more complex treatment options.

**Case Report:** A 91-year-old male presented with complaints of severe weight loss and occasional spikes of fever within the last two months. Physical examination revealed decreased body mass index (16,81 kg/m<sup>2</sup>) and the patient was icteric as well. Laboratory findings showed signs of cholestasis (bilirubin 168 µmol/L, AP 376 U/L, GGT 812 U/L). The abdominal ultrasound discovered a giant gallstone in the dilated CBD measuring 24 mm in diameter. A therapeutic ERCP was successfully performed with the intention of removing the stone. After minor biliary sphincterotomy, EPBD was performed with a TTS balloon with a diameter of 15 mm and finally the whole stone was removed using the balloon-catheter.

**Conclusion:** EPBD is very effective method of extracting large CBD stones and its use in endo-therapy of choledocholithiasis reduces the need for lithotripsy methods.

**Key Words:** Choledocholithiasis ; Endoscopic retrograde cholangiopancreatography ; Endoscopic sphincterotomy



## MARJOLIN ULCER – DEVELOPMENT OF SQUAMOUS CELL CARCINOMA IN A CHRONIC WOUND: A CASE REPORT

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**Background:** Marjolin's ulcer is a rare entity related to squamous cell carcinoma of the skin that develops in the area of a chronic wound, and has a more aggressive course, with infiltrative growth, a higher recurrence rate, a higher metastatic potential, and a higher mortality rate.

**Aim:** To raise awareness of the possibility of developing squamous cell carcinoma in the area of chronic wounds, and to discuss therapeutic options, since due to the specifics of Marjolin's ulcer, there is no unambiguous therapeutic approach.

**Case Report:** A 77-year-old patient was referred to the Dermatovenereology Clinic for an ulcer of her right lower leg. She stated that the ulceration on the lower leg lasted and recurred for many years, and the recent verrucous ulcerated change persisted for more than a year. After two months of unsuccessful conservative therapy, a biopsy of the chronic wound was performed, and the presence of squamous cell carcinoma was found. Due to the large local finding and the absence of metastases, it was decided that the patient receives primary radical radiotherapy. Three months after radiotherapy, a major lower leg defect was described which, compared to the preoperative finding, indicated regression of the tumor process. A week later, a pronounced edge of the change was observed. A biopsy was performed, but no recurrence of the tumor was found. One year after radiotherapy, a chronic wound without recurrence of squamous cell carcinoma but with delayed healing was described.

**Conclusion:** Although Marjolin's ulcer, an aggressive form of squamous cell carcinoma, is a rare entity, it should be considered when the chronic wound is not healing, in the absence of risk factors for ulceration. Future research is needed to determine a standard therapeutic approach, as well as the optimal follow-up period.

**Key Words:** dermatology ; leg ulcer ; squamous cell carcinoma ; wound healing

## CHERRY STONE AS A CAUSE OF ILEUS IN COLONIC STENOSING CARCINOMA: A CASE REPORT

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**Background:** Ileus caused by cherry pits is a very rare occurrence. Swallowed pits usually pass through the gastrointestinal tract without complications. We presented a case of a rare but no less important complication, which is a mechanical ileus caused by a cherry pit that got stuck at the proximal (oral) end of the tumor in the narrowest part and obstructed the colon.

**Aim:** The objective of this case report is to raise awareness of the possibility of intestinal obstruction caused by fruit pits in patients with colon cancer.

**Case Report:** A 68-year-old man came to the emergency room with a history of constipation and left para-umbilical pain. A native radiograph of the abdomen in the standing position shows air-liquid levels of the small and large intestine that point to ileus, and a CT examination is indicated to confirm the distension of the meridians of the small and large intestine with air-liquid levels and a stenosing neoplasm of the descending colon. The narrow, irregular lumen of the tumor was obstructed by a round foreign body, corresponding to a cherry bone. A surgical opening was made on the abdominal wall through which a segment of the intestine (anus praeter) was removed, and the patient was discharged from the hospital after recovery. Two months later, the patient was admitted to the surgery department, after the preoperative treatment, the planned surgery was started. However,

peritoneal carcinomatosis was found intraoperatively, and the planned radical procedure was abandoned. He was referred to the Clinic for Radiotherapy and Oncology, where cycles of chemotherapy were introduced. Next year, in September, the patient comes for the application of the 12th cycle. He felt well and was discharged home with the recommendation to continue the current therapy.

**Conclusion:** Fruit stone-induced ileus is a rare condition, but should be included in the differential diagnosis in patients with risk factors such as colonic malignancy. Patient education could reduce the number of swallowed stones, but on the other hand, they could lead to earlier cancer diagnosis.

**Key Words:** cherry stone; colon cancer; ileus

## SUCCESSFUL ELECTRICAL CARIOVERSION IN A 100-YEAR-OLD PATIENT WITH AN EPISODE OF TORSADES DE POINTES– A CASE REPORT

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**Background:** Torsades de Pointes is a type of polymorphic ventricular tachycardia with an electrocardiogram (ECG) finding of oscillatory changes of the QRS complexes. Torsades de Pointes is associated with a prolonged QT interval and some risk factors include older age, female gender and bradycardia. Sudden cardiac arrest is one of the most severe complications of Torsade de Pointes and the main difference in the algorithm is the administration of intravenous magnesium.

**Aim:** To demonstrate the importance of continuous ECG monitoring in high-risk patients.

**Case Report:** A 100-year-old female patient with a medical history of atrial fibrillation (AF) presented to our emergency department (ED) due to a high blood pressure (BP) measured at home and a headache that had been lasting for a few hours. At ED we measured BP of 200/90 mmHg. We also recorded an ECG, which showed a heart frequency of 31 bpm, a 3<sup>rd</sup>-degree atrioventricular block and a couple of ventricular extrasystoles, so our patient was transferred to the observation room with continuous ECG monitoring. After an hour, the patient lost consciousness and the ECG monitor was consistent with *Torsades de Pointes* without a pulse. Cardiopulmonary resuscitation was performed with an electrical cardioversion shock of 200 joules. Additionally, intravenous magnesium was administered. Consequently, the patient was hemodynamically stable and was transferred to our coronary unit where a temporary pacemaker was implanted. A few days after, the patient was transferred to another hospital with the aim of implanting a permanent pacemaker.

**Conclusion:** Even though *Torsade de Pointes* usually terminates spontaneously without any treatment, it may sometimes be the cause of a cardiorespiratory arrest. Therefore, continuous ECG monitoring is an important tool in patients with high-risk ECGs such as 3<sup>rd</sup>-degree atrioventricular blocks associated with prolonged QT intervals.

**Key Words:** cardiopulmonary resuscitation; continuous ECG monitoring; electrical cardioversion; prolonged QT intervals; Torsade de Pointes

## COMMON SYMPTOMS PRESENTING IN AN UNCOMMON HEADACHE – SPONTANEOUS INTRACRANIAL HYPOTENSION – CASE REPORT

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**Background:** Spontaneous intracranial hypotension (SIH) is a condition caused by a lower-than-normal volume of cerebrospinal fluid (CSF) surrounding the brain and the spinal cord, resulting in a downward displacement of the brain within the skull. This exerts traction on the pain-sensitive nerve endings of the dura and

the vessels at the base of the brain, which is particularly evident in the upright position due to the effects of gravity, causing postural headaches in patients.

**Aim:** To describe an uncommon and a frequently misdiagnosed entity.

**Case report:** A 33-year-old woman presented to the Emergency Department (ED) with the complaint of a headache that had gradually started the previous month. She experienced neck pain and occipital headaches radiating to the parietal regions on an everyday basis. Her symptoms would settle on lying down, but upon standing up, her headaches would suddenly develop, accompanied by blurred vision, dizziness, tinnitus, and occasionally, nausea and vomiting. The physical examination did not demonstrate any neurological deficits. She was also examined by an ENT and an ophthalmologist, who could not determine the cause of her symptoms. Consequently, a brain MRI was performed, showing distended dural venous sinuses, a reduced diameter of the ventricular system, pituitary enlargement and a hygroma. This was consistent with SIH and the patient was instructed to rest, maintain a high oral fluid intake and take analgesics when necessary.

**Conclusion:** SIH is an underrecognized cause of daily persistent headaches affecting mostly the young- and the middle-aged population. The advent of an MRI machine allowed us to set the diagnosis of a condition that had previously been largely unknown.

**Keywords:** cerebrospinal fluid, headache, intracranial hypotension, magnetic resonance imaging

## **SIGNIFICANCE OF VOCAL HEALTH AND THE LACK OF IT IN ELEMENTARY SCHOOL TEACHERS**

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**Background:** Healthy vocal apparatus is one of the primary and indispensable tools in teachers' work, particularly in elementary schools. At the same time, teachers often strain their voices trying to approach children in noisy classrooms. We present the pivotal involvement of vocal health professionals in their care and recovery for successful teaching.

**Aim:** With vocal analysis, we aim to objectify speaking difficulties in individuals whose voice is crucial in their professional surroundings, to rehabilitate them for successful return to work.

**Case Report:** We present female elementary school teacher with speaking difficulties for past 2 years. The patient suffers from hoarseness and sore throat with burning sensation and tenderness. There is severe vocal fatigue with longer morphosyntactic structures. The patient finds it difficult to talk over loud students and cannot sing high notes in music class. She is not a smoker. In spontaneous speech, voice oscillates a lot, from euphonic to aphonic voice. Digital stroboscopy showed white, motorically functioning vocal cords, and at the transition from the front to the middle third, there are polyps on both sides. There is incomplete adduction when performing high notes. The GRBAS scale presents a 2–3 grade of hoarseness manifesting as roughness(3), breathiness(1), asthenia(2), and strain(3). Hard glottal attack accompanies the onset of phonation and variability of speech tone is pronounced. Vocal acoustic analysis shows pathological values of fundamental frequency(158 Hz), shimmer(19.49%), and vocal intensity(79 dB) with normal value of jitter(0.16%). The total Voice Handicap Index is 52. Parameters show moderate degree of hoarseness.

**Conclusion:** The diagnosis is vocal cord polyp. Education on voice problems was carried out with instructions on voice hygiene. The joint opinion of the speech therapist and phoniatic ENT specialist recommends that after surgical operation, voice therapy is introduced once a week for 4 months to prevent wrong compensatory mechanisms.

**Key Words:** benign vocal cord lesions ; case report ; otorhinolaryngology ; vocal health

## VOICE AS A TOOL FOR WORK. WHAT HAPPENS WHEN IT “BREAKS”? A CASE REPORT OF AN ELITE VOCAL PROFESSIONAL.

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**Background:** Elite vocal performers face significant consequences for their career and well-being due to even minor vocal difficulties, highlighting the importance of maintaining vocal health and seeking appropriate treatment. Vocal nodules, small growths resulting from vocal strain and overuse, are common among professional voice users such as opera singers. These nodules can interfere with clear and powerful singing, causing hoarseness, roughness, and vocal fatigue, affecting an opera singer's ability to perform and maintain a consistent schedule. The Voice Handicap Indeks(VHI) is an important tool for evaluating the impact of voice disorders on patients' quality of life.

**Aim:** The aim of this report is to highlight the importance of conservative management in elite vocal professionals.

**Case Report:** A female opera singer(soprano) presented with vocal nodules and laryngopharyngeal reflux resulting in significant deterioration of her voice over the past two months and it has become impossible for her to perform shows. The patient reported feeling neck muscle tension and a lump in her throat, and also experienced great vocal effort after prolonged speaking. The patient does not smoke. She was assessed using a digital fiberoptic laryngoscope which revealed hard vocal nodules on a relatively wide base with moderate hyperemia of the interarytenoid and arytenoid mucosa. Objective voice analysis showed pathological values for FO, Jitter, Shimmer, and intensity, indicating moderate to severe hoarseness. Her VHI score was 65 which is considered a severe handicap. The patient received vocal hygiene recommendations, information on vocal issues, and was advised to pursue vocal treatment rather than surgery due to her profession.

**Conclusion:** Voice therapy for opera singers may involve improving vocal technique through breath support, vocal placement, and resonance. Proper treatment and vocal hygiene can help most opera singers with vocal nodules regain their full singing potential.

**Key Words:** Case Report; Elite Vocal Professionals; Otorhinolaryngology; Vocal Health; Vocal Nodules

## LONG-TERM OUTCOMES OF 2-DAY TRAINING ON PLANNING AND WRITING RESEARCH ON PUBLICATION OUTPUT OF MEDICAL PROFESSIONALS: 11-YEAR COHORT STUDY

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**Background:** Elite vocal performers face significant consequences for their career and well-being due to even minor vocal difficulties, highlighting the importance of maintaining vocal health and seeking appropriate treatment. Vocal nodules, small growths resulting from vocal strain and overuse, are common among professional voice users such as opera singers. These nodules can interfere with clear and powerful singing, causing hoarseness, roughness, and vocal fatigue, affecting an opera singer's ability to perform and maintain a consistent schedule. The Voice Handicap Indeks(VHI) is an important tool for evaluating the impact of voice disorders on patients' quality of life.

**Aim:** The aim of this report is to highlight the importance of conservative management in elite vocal professionals.

**Case Report:** A female opera singer(soprano) presented with vocal nodules and laryngopharyngeal reflux resulting in significant deterioration of her voice over the past two months and it has become impossible for her

to perform shows. The patient reported feeling neck muscle tension and a lump in her throat, and also experienced great vocal effort after prolonged speaking. The patient does not smoke. She was assessed using a digital fiberoptic laryngoscope which revealed hard vocal nodules on a relatively wide base with moderate hyperemia of the interarytenoid and arytenoid mucosa. Objective voice analysis showed pathological values for FO, Jitter, Shimmer, and intensity, indicating moderate to severe hoarseness. Her VHI score was 65 which is considered a severe handicap. The patient received vocal hygiene recommendations, information on vocal issues, and was advised to pursue vocal treatment rather than surgery due to her profession.

**Conclusion:** Voice therapy for opera singers may involve improving vocal technique through breath support, vocal placement, and resonance. Proper treatment and vocal hygiene can help most opera singers with vocal nodules regain their full singing potential.

**Key Words:** Case Report; Elite Vocal Professionals; Otorhinolaryngology; Vocal Health; Vocal Nodules

## **ARE PARKINSON'S DISEASE PATIENTS REFERRED TOO LATE FOR DEVICE-AIDED TREATMENT?**

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**Background:** Parkinson's disease (PD) is a common neurodegenerative condition with a chronic course divided into stages. The treatment of the condition is symptomatic and highly individualized. Due to the lack of clear guidelines, traditional oral and transdermal therapy is often unnecessarily prolonged resulting in lower efficacy of the treatment and patients' lower quality of life.

**Literature Review:** Assessment of advanced Parkinson's disease (APD) is mostly subjective and dependent on the clinician's personal judgement of the patient's condition. Even though the staging of the PD depends on the patient's expectations and demands regarding the effects of therapy, the clinician's judgement is still considered the gold standard of staging. Implementing screening tools for APD in clinical practice should contribute to more accurate assessment of the symptoms' severity. Moreover, treatment standardization is challenged by a lack of evidence-based guidelines regarding the device-aided treatment (DAT) in APD. Patients suitable for DAT were often overlooked or the recommendation came too late. Patient care should be optimized by defining the standard of care and maximizing the effect of conventional treatment options, but not unnecessarily prolonging them. Delayed referral for DAT also comes from poor patient and clinician education. Educational courses regarding advanced treatment options for APD are generally unavailable which contributes to the lack of motivation for further education about this issue. Early implementation of DAT could be greatly beneficial for some patients, not only helping with motor symptoms, but also with non-motor symptoms of PD.

**Conclusion:** Improving patient care should be an imperative, which calls for defining clear evidence-based guidelines for DAT in APD. Patient and clinician education starting from medical students is a logical first step in achieving improvement regarding the issue of delayed referral and poor recognition of patients who are suitable for DAT. Proper timing of introducing different therapy methods is crucial for the treatment's success.

**Key Words:** device-aided treatment; guidelines; Parkinson's disease; patient screening

## MESENTERIC CYST – A RARE CAUSE OF ABDOMINAL PAIN IN MCBURNEY`S POINT AND PRESENCE OF NEED TO URINATE IN SITTING POSITION: A CASE REPORT

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**Background:** Mesenteric cysts are rare benign intra-abdominal tumors manifested with lack of specific symptoms with importance of diagnosis because of various complications associated with suboptimal surgical management.

**Aim:** To raise awerness about unusual manifestation of mesenterial cyst at unusal age.

**Case Report:** A 19-year-old male adolescent came to local ambulance due to throat pain and appearance of need to urinate but only while he is sitting. During physical examination his throat was hyperemic and abdominal painful resistance was palpated in suprapubic area. He was given Cefuroxim and probiotic due to suspicion of cystitis. After three days on control examination his throat pain was gone but abdominal pain was still present. During this physical examination, a painful resistance was palpated in McBurney`s spot. Further examination indicated ultrasound, which showed round formation size approximately 3.5 cm located above the bladder, para-aortal. Behind formation was present acoustic enhancement. The patient was referred to general surgery department, the appointment was scheduled for next week. But in the evening that same day the abdominal pain increased so he went to emergency room. The patient underwent computed tomography. CT confirmed presence of cystic formation in right lower quadrant probably corresponding to mesenteric cyst of small intestine. Due to findings patient was referred to the surgery intervention to remove the cyst.

**Conclusion:** Mesenteric cysts are very rare conditions but different abdominal symptoms due to cyst localisation and specific ultrasounds findings should rise the suspicion of the abdominal cysts.

**Key Words:** adolescent; mesenteric cyst; need to urinate in sitting position; pain in McBurney`s spot

## MONKEYPOX IN SERBIA, REVIEW WITH CASE REPORT

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**Background:** In the shadow of the COVID-19 pandemic – an epidemic of monkeypox appeared. Monkeypox was first isolated and identified in 1958 when von Magnus et al. found that crab-eating macaque monkeys were infected with this virus. Twelve years later, in 1970, 6 confirmed human cases were reported in the Democratic Republic of the Congo, Sierra Leone and Liberia (aged 9 months to 24 years). Monkeypox belongs to the zoonoses of the Orthopoxvirus genus, which also includes variola vera and smallpox. They are an endemic disease in Central and West Africa, dominantly represented in the Democratic Republic of the Congo. It was thought that transmission takes place through body fluids, contact with skin lesions, or respiratory, through droplets in contact with diseased animals. Although human-to-human transmission was thought to be limited, recent experience has disproved this.

**Aim:** After searching scientific papers on PubMed and the WHO website, the aim of this study was to explain monkeypox through a case report with reference to the literature, for a better understanding of the evolution and manifestations of the disease.

**Case Report:** The patient, 28 years old, was examined in the admission ambulant of the Health Center, two days after the first examination without a diagnosis by a general practitioner. The patient was admitted with developed acute symptoms (myalgia, malaise, as well as pronounced generalized lymphadenopathy). On admission without elevated body temperature. In addition to the above symptoms, manifestations were observed on

the skin – panaritium on the small phalanx of the left hand, as well as two maculo-papular lesions on the dorsal root of the penis. Laboratory blood analysis showed a viral infection (Leu  $5.210^9/l$ , Lym 18.2%, or  $0.910^9/l$ , CRP  $< 5\text{mg/L}$ ), so the analyses were extended to include serological tests, and the patient was advised isolation. In addition, he was referred to the Clinic for Infectious and Tropical Diseases, to perform RT-PCR for Monkeypox virus. After an oropharyngeal swab, as well as swabs of skin manifestations, all samples were positive for the virus. The patient was advised symptomatic analgesic-antipyretic-anti-inflammatory therapy, vitamin therapy, treatment of skin changes with alcohol 70%, hydrogen 3% and povidone-iodide 10%, as well as the application of antiviral ointments. Panaritium was treated with drainage and local application of antibiotics. The patient's general symptoms subsided five days after the application of the therapy, and the changes epithelialized 22 days after the appearance.

**Conclusion:** A doctor should constantly improve himself, in order to recognize less common and prevalent pathology, especially if it is new at the given moment. The satisfaction is when, with his knowledge, effort, and commitment, he recognizes the disease, relieves the symptoms, because he has previously familiarized himself with the pathophysiology and picture of the described nosological entity. Therapy implies a quick and complex, as well as an adequate reaction of the doctor in terms of recognizing the disease, alleviating symptoms, and preventing the spread of infection.

**Key Words:** Case Report; Epidemic; General Practice; Monkeypox; Serbia; Skin manifestations

## WHEN CHICKENPOX STRIKES YOUR EYES; CASE REPORT

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**Background:** Chickenpox is a very common childhood illness caused by varicella-zoster-virus (VZV). Most cases of chickenpox are self-limiting and resolve without complications, but there are some very rare neurological and ophthalmic complications that can occur, such as Adie syndrome (tonic dilated pupil) and keratouveitis.

**Aim:** Present the potential ophthalmic complications that can arise from VZV infection.

**Case Report:** A 6-year-old girl was presented with anisocoria and redness of the left eye. Her left pupil was in mydriasis (tonic pupil), with absent light reaction and reduced visual acuity. At the same time, the child was suffering from chickenpox and the eye symptoms started on the fourth day of the typical rash. Brain and orbit magnetic resonance imaging (MRI) was performed, due to anisocoria, and was considered normal. Ophthalmological examination confirmed keratouveitis due to redness in the affected eye. The diagnosis of Adie syndrome was made based on the presence of a tonic pupil, reduced visual acuity, and absent light reaction. The girl was treated with systemic acyclovir for 7 days and topical steroid drops with tobramycin in her affected left eye. Keratouveitis was recovered, but anisocoria was persistent with mild hypermetropia.

**Conclusion:** Adie syndrome is a rare, but important diagnosis to consider in patients with pupillary abnormalities and a history of viral illnesses, so common in young children. Prompt recognition and treatment of these conditions can prevent potential long-term complications and improve overall vision outcomes.

**Key Words:** Adie syndrome; anisocoria, tonic pupil; varicella-zoster virus.



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