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The Cover Picture: Slobodan Braco Dimitrijević (1948 -), "The Artists are Coming", 1994, installation. Courtesy of Art Gallery of Bosnia and Herzegovina, Sarajevo.

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Family medicine defines its academic niche: The Split Initiative

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Increasingly, medical education is gaining its importance in the academic arena. Although it is still considered to be less important than research, it is now widely acknowledged that this area of science also needs attention. It is no longer acceptable for the medical schools not to pay close attention to teaching aims, methods of teaching and assessment (1-8). Teachers of medicine at all levels must also be in contact with the latest developments in education, not only in science.

In the last decades, medical education has changed considerably. The old fashioned methods of passive teaching methods are slowly giving way to more active methods of teaching (9). The aims of medical education are changing and more emphasis is given to changing attitudes and shaping the future doctors so that they will become self-directed learners for the rest of their professional careers (10).

The changes of medical curricula that are being experienced worldwide have some common characteristics. One of them is the introduction of practice-based teaching in primary care. Since this is a relatively new area, new departments are sometimes struggling to survive in the academic arena. Exchange of experience on international level is therefore important (11) and indispensable.

This theme issue of the *Acta Medica Academica* (*AMA*) is the result of the continuous education course held at School of Medicine, University of Split, in October 2011. The participation and the lecturers were family medicine teachers from Slovenia (Ljubljana and Maribor), Bosnia and Herzegovina (Mostar), Montenegro (Podgorica), and Croatia (Zagreb, Osijek, Rijeka and Split). The aim of the

organizers was to renew our collaboration and to exchange information on the way we conduct teaching of family medicine in our departments. Most of the participating countries are in the process of joining the EU and we all had to adapt our medical curricula to European standards (12). We wanted to learn from each others' experiences in changes of teaching of family medicine, and to try to ourselves modify our curricula to the best level possible for the given local conditions.

To our surprise, the reform of curriculum of School of Medicine in Split (13, 14), which significantly affected the curriculum of local family medicine education, sounded so refreshing, modern and elegant that both lecturers and participants not only enjoyed the entire course, but felt that a new initiative in family medicine teaching was born, and that we all witnessed to the event. On that behalf, the conclusions we were able to list at the end of the meeting we named *The Split Initiative*. It contains a number of precious conclusions, from those on the strategies of research and teaching in family medicine (in this *AMA* issue) to our firm promise to meet again each year.

The program of the course, as well as the sections of this theme issue, was divided in 4 sections: Innovative approaches to medical education, New models in family medicine education, Teaching family medicine in rural and urban areas and Continuous education of family medicine teachers. The works presented in these sections reveal a vivid and knowledgeable, caring and patient-centered approach to curricula and teaching methods, clearly influenced by modern trends both in family medicine concepts and in design of medical school curricula. We believe that the readers of the material published in this theme issue will find bits of novelty in every contribution, more so because of differences in approaches and contents. The presentation of the spectrum of differences and novelties reveals both achievements and obstacles in our striving for better teaching, which will help our future effort to select and standardize the best pieces in a common nucleus of principles and strategies of pregraduate education in family medicine.

Two key strategic standpoints have emerged among the presented works. The first, arriving from Ljubljana, already in the European Union, is that family medicine has firm and vast grounds for own specific research, and that the research in family medicine in principle does not differ from the research in other clinical disciplines. The researchers in family medicine should accept, follow and fulfill criteria of other clinical sciences to join these other sciences as the equally valuable and productive partner. This approach should resolve endless doubts and discussions on what the true research in family medicine is, is it possible, promising, productive, significant, and how it can be performed within the specificities of the profession, some of which sometimes look or are unfavorable for the research in the field. This standpoint should, even more importantly, show the academic, scientific direction for the future to family medicine physicians, and enable them to regain the self confidence in their profession and themselves as the science and science workers.

The second strategic point was skillfully and bravely picked and put in life by our colleagues in Split. They maintain that they based their curriculum reform on the definition of their profession and research, which they chose to be the quality of communication with the patient and his or her family, and evidence-based medicine. They developed several research projects in these two areas, but at the same time engaged students, during their regular teaching schedule, to both practice in the two areas and contribute to the research. Students' work and achievements were subsequently elegantly transformed into the evaluation of

their educational achievements, at the same time actually being the collected research data. Regardless of the medium- and long-term outcome of this project, its very existence, and presentation at this course and in this theme issue, should be praised not only for bravery and compliment to profession of family medicine, but also as an inspiration that should for a long time keep our attention and our spirits as high as that in October 2011 in Split – when we have scored our best joint professional results.

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Medical students writing letters to their patients: Teaching communication and empathy

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This Editorial was written as an encomium to Doctors Mrduljaš-Đujić, Pavličević, Marušić and Marušić to acknowledge their contributions to medical education in the article they have authored for this issue of *Acta Medica Academica* (1). However, before I address the key features of that article allow me first to describe the problems of teaching humanism in medical schools, at least the way I see them.

Over the last 150 to 200 years the medical knowledge has grown at an exponential rate. Reflecting this fact and the needs of the society, the medical educators have tried to keep pace with the scientific advances, while at the same time preserving the traditions of medical humanism. A typical see-saw conflict ensued between the technocrats and basic scientists on one side, and the humanists and the socially minded providers of health care on the other. In most medical schools the scientific camp has been winning the minds and the hearts of most medical students, and thus dominating the battlefield. Since confrontations rarely solve the problems, the main issues of medical education remain unresolved.

Like the society in general, medical educators have been fascinated by technological advances. The teaching of art *and science of medicine* has been replaced by teaching or science at the expense of art. Imprinted by their role models, the professors practicing technology driven medicine, the graduating physicians began entering preferentially into subspecialties of internal medicine and surgery requiring complex instrumentation, narrow specialization, and high efficiency. The field of general medicine, based on the practice of compassionate but

time consuming interaction between the doctor and his/her patients, became less attractive and understaffed in many advanced countries. In the USA, physician assistants and nurse practitioners have replaced in many places the medical doctors and often function as the primary care providers. The proliferation of alternative medicine, a multibillion dollar industry worldwide, has been yet another consequence of the lack of dedicated primary care physicians who are willing to listen to patient's complaints and try to compassionately solve them.

The reasons why medical students choose more lucrative careers in subspecialties of clinical medicine and forego family practice are in part financial and in part societal. Medical educators are not entirely faultless in this context, but admittedly, some problems are hard to solve. For example, as an academic pathologist teaching pathology as the basis of medical practice, I am probably luring some students away from family practice. Since pathology is a combination of basic sciences and clinical medicine, my task in convincing students to study hard and dream about a clinical specialty is relatively easy. At the same time I have witnessed year after year the Sisyphean efforts of my family practice colleagues teaching, what the students call colloquially "soft subjects", such as Introduction to clinical reasoning, Medical ethics, Medical deontology, or Medical professionalism. The reality of medical education is that is the students spend more time dissecting cadavers, studying nerve conduction, or the motility of the intestines rather than the art of communication with the patient.

How could we, as a team of teachers, convince students that the art of communication is more important for their future practice than the tumor suppressor gene *TP53*? Especially since *TP53* will be on the final examination and national examinations like United States Medical Licensing Examination (USMLE). Furthermore, the knowledge of communication skills cannot be tested readily by multiple choice questions and those questions that show up on the exams can be answered by using common sense, as one medical student told me. International committees on medical education including the American Accreditation Council for Graduate Medical Education (ACGME) consider communication skills to be one of the essential skills, to be mastered by all medical students, but that will not convince too many students to take this task more seriously. Attempts to measure communication skills objectively have not been widely used except in psychometric studies (2, 3). Objective measurement of empathy, another crucial attribute of future physicians, has been studied scientifically (4), but translating scientific data into practice takes time and most medical schools still do not know how to teach empathy in practice.

Fascination with science, although essential for the future of evidence based medicine, must be counterbalanced by a more humanistic approach to medicine to meet the true needs of the society. The society is still expecting from medical schools to educate well rounded physicians, who will be capable of providing basic health care for the populace at large. Two key words loom large in this context: communication and empathy. These two words bring us back to the article by Mrduljaš-Đujić et al. (1), in which they describe their experience in "epistolary medicine" (5) with senior students from the School of Medicine in Split. Mrduljaš-Đujić et al. (1) show convincingly that the art of medicine is not dead and that it can be taught to medical students. By asking the medical students to write letters to their patients, the professors from Split have shown that a personalized experience can teach more than a formal lecture. Even more importantly, they demonstrate that students, if given a life – like experience, can live up

to the professors expectations and clearly perform complex task requiring excellence in communication and high dose of empathy. Students from Split have in this teaching module shown not only a high level of literacy, but also an impressive command of medical facts, and a capacity to translate their knowledge into words understandable by a lay person. The students' letters translated from Croatian into English and published in this article illustrate the benefits of the epistolary approach (5) to teaching the art of communication in practice. Both the professors and students deserve kudos for their efforts and enthusiasm which could serve as examples to others. Paraphrasing an old article, that forestry cannot be learned out of a lumberyard (6), it is obvious that medical communication and empathy cannot be taught *ex cathedra*, and that in medical education, practice always trumps theory.

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Ways to address the challenges of a modern medical curriculum: Living academic medicine at the University of Split, School of Medicine

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Structure of a modern medical curriculum should follow recommendations of professional bodies (like World Federation for Medical Education) in order to educate and train medical professionals equipped with problem solving/critical thinking skills entering a world of evidence-based medicine and demands of contemporary medical practices. Also, political and socio-economic realities in addition to traditional and cultural values should be taken into account in order to avoid creating an unsustainable program. Requests for curricular changes by the European Union Commission were used as a chance to shape our program into an original blend of traditional pre-clinical and clinical subjects with several vertically integrated subjects focusing on mastering clinical skills, professional attitudes, information management and critical as well as evidence-based reasoning and decision making. Reasons for introducing curricular changes in addition to detailed structure of current medical course at the University of Split School of Medicine is presented in this paper.

Key words: Education, Medical, Curriculum, Contemporary.

Introduction

Medical education at the tertiary level has been in existence since 1979 in Split, initially as a branch of the University of Zagreb School of Medicine and since 1997, as an independent School of Medicine within the University of Split (1). Establishing and developing new medical school is a long, laborious and expensive process, requiring not only infrastructural prerequisites, but also highly motivated and educated human resources. Carefully planned recruitment and training of academic staff members (2, 3) resulted in the fact that most, if not all,

staff members have extensive international experience in (mainly US) centres of biomedical excellence, where high-level academic medicine is practiced. Hence, young academic trainees from Split mastered the "trade" from colleagues who were constantly trying to balance three principal missions of academic medicine: health care, research and teaching (4, 5). Upon their return to Split, young academics strived to incorporate those habits not only into their daily routine, but also into our medical curriculum, which was different and original from the commencement of the course. Recent requests for curricular changes by the European Union Commission (below) helped shape our program into a rather unique and original mixture of "old and new". Hence, in addition to the traditional pre-clinical and clinical subjects, our curriculum includes several vertically integrated subjects focusing on mastering clinical skills, professional attitudes, information management and critical as well as evidence-based reasoning and decision making (6).

What are the main problems associated with the traditional medical curriculum?

Everyone involved in biomedical education has an opinion about medical curricula. How many times have we heard that the "curriculum is overloaded", that there is an "overemphasis on the recall of facts at the expense of scientific reasoning", that there is "failure to integrate basic science with clinical practice", perhaps there is "failure to produce students capable of self- initiated learning and critical thinking" or sometimes that the medical curriculum is not "responsive to the evolving needs of society". It is fascinating that all of the abovementioned opinions and impressions are actually highlights of an article dealing with a need to reform medical curriculum published in 1933 (7)! More recently, several publications have dealt with the need for fundamental changes in the organisation of medical curricula in order to prepare modern medical professionals to cope with rapid expansion of scientific biomedical knowledge and modern diagnostic/therapeutic technology. These papers also reflect the needs and expectations of modern society and changing conditions of the health care delivery systems (8, 9). Accepting and appreciating habits of lifelong learning and mastering new information technologies are now also seen as a must in a modern medical curriculum. Numerous reports have been put together by the World Federation for Medical Education (WFME) (10) suggesting the following recommendations with regards to aims and content of medical education:

- balance of academic and practical professional competences (skills, attitudes and communication abilities) should be achieved,
- core curriculum should be supplemented by well defined optional content,
- focus should be on prevention of disease and promotion of health and well being, in addition to the acquisition of basic biomedical, psychosocial and clinical knowledge and skills,
- when planning educational programmes, health needs of society should be considered,
- curriciculum should be adaptable to changes in regard to the spectrum of diseases as well as to demographic changes with a significant part of the curriculum in the primary care sector,
- research methodology and electives should be part of the curriculum as well as training of teamwork skills,
- careful coordination of basic, research, general postgraduate, specialist and continuing medical education phases of education should be in place,

– teaching skills and developments should be given the same credit as research activities of academic staff members,
– a central curriculum committee looking after the structure of integrated curriculum and select methods of education and examination should be established,
– medical education should be recognised in faculty budgets the same way as research activities. Similar recommendations were produced concerning the learning process and assessment methods in medical education (see tables in reference 10).

Why is there resistance to changes?

Although everyone understands and agrees that changes in medical education are necessary, few are prepared to incorporate the above recommendations in their curricula. The lack of initiative is driven perhaps by robust traditional and cultural as well as political and socio-economic realities. Strong factors most certainly include a built-in conservatism of staff members, shortage (or complete lack of) educational budgets in addition to inadequate supervision of educational programmes and lack of academic incentives for teaching activities. Despite these, in the last three decades numerous new approaches have been mastered and implemented (with various success) in many medical faculties worldwide. Perhaps the most recognizable form of reformed medical curricula is the so called Problem Based Learning (PBL) approach, in which "real case-based" scenarios are used as triggers for teaching anatomy, physiology, biochemistry, pathology (and other pre-clinical disciplines) while at the same time adding clinically relevant meaning, resulting in a more enthusiastic approach by students (11). In addition to this, both horizontal integration (between disciplines) and vertical integration (between basic and clinical sciences) are supposed to bring academics from different departments together and "force" them to work on the above-mentioned common goals. This, in addition to very early contact with clinical scenarios, is helping students to lose their perception of the medical curriculum being disjointed, fragmented and, particularly during first few years, detached from clinical situations/ patients.

Recent changes to our curriculum could not be resisted

The new curriculum at the School of Medicine in Split was designed in line with recommendations of the Committee of experts which assessed the situation in five regulated professions in the health sector in the Republic of Croatia (conducted from 7 to 10 July 2008) and in accord with the provisions of the Regulated Professions and Recognition of Foreign Professional Qualifications Act passed by the Croatian Parliament in 2009 (12). The key determinants of the new program are six years of study, 5500 hours of direct teaching and 360 ECTS points. The program includes 190 hours of elective courses in the first 4 years of the course (worth 14 ECTS points) and 640 hours (24 ECTS points) of clinical rotations, a total of 890 hours or 44 ECTS credits. Detailed composition, including all subjects and teaching hours of our curriculum, is presented in Table 1. Some of the above changes were close in line with curricular modifications introduced almost 10 year ago when the first major reconstruction was performed (13).

Table 1 List of compulsory subjects and/or modules with hours of active teaching required and ECTS points allocated in the new program of Medicine in Split, Croatia.

YEAR 1	Hours*		ECTS†
Subject	Total	L+S+P	
Medical Humanities I – Introduction to Medicine	25	10+5+10	2
Medical Biology	100	34+34+32	9
Medical Physics and Biophysics	70	34+15+21	6
Social Medicine	25	15+10+0	2
Anatomy	200	60+70+70	20
Histology and Embryology	110	30+40+40	10
Clinical and Social skills I	85	10+5+70	3
Research in Biomedicine and Health I	50	10+15+25	4
Elective course (two)	50	10+20+20	4
Total	715		60

YEAR 2	Hours		ECTS
Subject	Total	L+S+P	
Medical Chemistry and Biochemistry	190	50+80+60	17
Research in Biomedicine and Health II	25	0+10+15	2
Physiology	170	19+95+56	15
Immunology and Medical Genetics	90	24+42+24	6
Basic Neuroscience	95	21+42+32	9
Clinical and Social skills II	85	10+5+70	3
Medical Humanities II – History of Medicine and Social Responsibility of Medicine	50	20+30+0	4
Elective courses (two)	50	10+20+20	4
Total	755		60

YEAR 3	Hours		ECTS
Subject	Total	L+S+P	
Basics of Medical Microbiology and Parasitology	80	12+20+48	7
Research in Biomedicine and Health III	25	0+10+15	2
Pathology	180	40+70+70	16
Psychological Medicine I	30	10+10+10	2
Patophysiology	110	40+40+30	9
Pharmacology	115	25+50+40	10
Clinical propedeutics	180	45+45+90	8
Medical Humanities III – Communication Skills	25	10+15+0	2
Elective course (two)	50	10+20+20	4
Total	795		60

Table 1, continued

YEAR 4	Hours		ECTS
Subject	Total	L+S+P	
Radiology	70	20+10+40	4
Nuclear Medicine	30	10+8+12	2
Internal Medicine	360	72+72+216	20
Infectology	75	15+20+40	5
Clinical microbiology and parasitology	30	12+18+0	2
Psychological Medicine II	30	10+10+10	2
Neurology	85	20+25+40	6
Neurosurgery	15	4+6+5	1
Psychiatry	105	30+20+55	6
Dermatovenerology	80	20+20+40	5
Medical Humanities IV – Medical Ethics and Bioethics	50	10+40+0	3
Research in Biomedicine and Health IV (parallel with selected clinical courses)	25	0+10+15	2
Elective course	25	5+10+10	2
Total	980		60

YEAR 5	Hours		ECTS
Subject	Total	L+S+P	
Anaesthesiology and Intensive Medicine	95	15+20+60	5
Surgery	205	36+54+115	13
Urology	40	10+10+20	2
Ophthalmology	60	15+15+30	4
Otorhinolaringology	70	15+20+35	4
Maxillofacial surgery and Dental Medicine	30	10+10+10	2
Orthopaedics	55	10+20+25	3
Physical and Rehabilitation Medicine	45	13+16+16	2
Gynaecology, Obstetrics and Reproductive Medicine	200	50+50+100	12
Clinical Oncology	30	5+10+15	2
Occupational and Naval Medicine with Environmental Health	60	20+20+20	3
Research in Biomedicine and Health V	25	0+10+15	2
Medical Humanities V – Clinical Ethics	25	9+16+0	2
Epidemiology	60	33+11+16	4
Total	1000		60

Table 1, continued

YEAR 6	Hours		ECTS
Subject	Total	L+S+P	
Forensic Medicine	60	10+26+24	3
Paediatrics with School Age Medicine	215	56+64+95	14
Laboratory Diagnostics	40	10+10+20	3
Health care organization and health economics	75	40+20+15	3
Medical Humanities VI – Ethics of Palliative Medicine	25	0+25+0	2
Research in Biomedicine and Health VI (Diploma thesis)	120	2+6+112	7
Family Medicine	80	20+60	3
Clinical rotation: Family Medicine	100	C. rotation	4
Clinical rotation: Internal Medicine	180	C. rotation	7
Clinical rotation: Surgery	180	C. rotation	7
Clinical rotation: Mother and Child	180	C. rotation	7
Total	1255		60

*L – lectures, S – seminars, P – practicals. † European credit transfer system.

Decisions that we had to make

A careful and objective analysis of the academic programs for Medicine in Europe, shows a surprising variety of programs, so vast that it is impossible to find a standard curriculum (14). Instead, we had the option of either copying the curriculum developed by a prestigious medical school or adopting the parts of individual programs which seemed best applicable to our own environment and make a "happy mix" of several different programs. We opted for the latter approach, keeping in mind the major weaknesses of our school, primarily the insufficient number of academic staff members, and secondly the lack of tradition and expertise in some contemporary approaches to medical training, such as "problem-based learning" (PBL) or complete structuring of preclinical curriculum to "organ oriented" organization of the course. In the case of these two concepts, the development of PBL is expected in a year or two as part of elective courses, whereas "organ oriented" teaching is emphasized in clinical subjects.

The framework of the curriculum for the Medical School in Split

In accordance with the Provisions of Directive 2005/36/EC of the European Parliament and the European Council on recognition of professional qualifications (from 7 September 2005) (15) and its amendments, our program redefines the competencies of a medical graduate by taking into account our original teaching experiences and modern trends in medical education. Recommendations from Article 27 of the Regulated Professions and Recognition of Foreign Professional Qualifications Act are specifically applied:

Training for medical doctors guarantees that the student acquired the following knowledge and skills:

- Adequate knowledge of basic sciences on which medicine is based on and a good understanding of scientific methods including the principles of biological functions and evaluation of scientifically established facts and data analysis.

- Sufficient understanding of structure, function and behaviour of healthy and sick

individuals as well as the interrelation of a person's health with his physical and social environment.

- Adequate knowledge of clinical disciplines and procedures giving an integrated image of both mental and physical illnesses, of medicine in general, from prevention to diagnosis and therapy, including human reproduction,

-Adequate clinical experience gained in health care facilities under appropriate supervision

Our curriculum particularly recognizes the need for increasing the level of clinical skills of medical graduates and this has been emphasised in the program. Basic elements of internship are also incorporated into the sixth year of the curriculum as so called "clinical rotations". Choice of this form of teaching organisation is based on the perception of medical education as the source of a) knowledge, b) skills and c) attitudes, in which the teaching units, at the end of the program, integrate previously acquired knowledge, skills and attitudes into a professional care for the patient. Knowledge and skills are gained gradually during the program to be finally integrated in clinical rotations.

Specific features of the program

Firstly, in the first two years new subjects called *Clinical and social skills I and II* were introduced, so that in conjunction with so called "clinical propedeutics" (in the third year), classical clinical subjects and clinical rotations lead to gradual acquisition of skills, beginning with practising on anatomical preparations then using models (phantoms) and finally in the context of hospital wards with real patients. *Clinical and social skills I and II* gained the status of obligatory subjects with ECTS points, and teaching was organised in allocated classrooms fitted with all the necessary equipment.

According to the latest European and American trends, a *Medical humanities* course was introduced (16), and vertically integrated through all six study years. This course includes Introduction to Medicine, Medical Sociology, Medical Ethics, History of Medicine, and Medical Humanities in the narrow sense. Introduction of "Medical Humanities" into the Medicine curriculum is considered to be one of the latest achievements of medical education, introduced with the intention of expanding the physician"s worldview, "softening" heavily structured and specific programs with the aim of stimulating empathy in future physicians towards their patients (17, 18).

Psychological medicine I and II was expanded during the third and the fourth year of the course, aiming to prepare students for challenges related to direct contact with (demanding and difficult) patients.

Following recommendations of the World Federation for Medical Education (19) the vertically integrated subject *Research in Biomedicine and Health* was introduced. It contains courses from the old program: Introduction to Research in Medicine, Medical Statistics, and Medical Informatics. It has been expanded with new topics including: Principles of Evidence Based Medicine (EBM), Evaluation of Health Care Excellence and finally by conducting a research project resulting with production (and defence) of a research thesis (20). From the first year, students are introduced to the principles of evidence-based medicine and are instructed to constantly use that concept in learning and practice so it can be adopted as a "way of thinking" for each medical student. Stanford University School of Medicine's strong commitment to student research is founded on the principle that investigative experience sharpens critical reasoning (21). Students who are educated in a research environment are stimulated to seek so called "deeper understanding" of disease

and develop their ability to analyse scientific literature, making them valued members of any medical field, whether it be academic medicine, community-based practice, health care policy or emerging technologies (21). We were guided by the belief that the practice of medicine requires education in scientific principles, acquisition of knowledge, as well as an understanding of how current medical knowledge is scientifically justified and how that knowledge changes.

Family Medicine changed to a subject with a relatively small portion of teaching hours allocated to lectures/seminars and a strong focus on practical work/clerkship in primary care environment in both city and country/suburban practices.

Medical genetics was modernized towards bioinformatics, genomics and proteomics and is with Immunology "integrated" into a single subject and a single exam.

A new course, *Medical Diagnostics*, was introduced in the final year, since even routine medical diagnosis is accompanied with complicated "personalised" diagnostic procedures (e.g. genomics, bioinformatics, proteomics, and individualized medicine).

What are "Clinical rotations?"

Using the idea of professional apprenticeship, a new form of teaching/learning (which basically replaces the former internship) was introduced with the aim to provide each student with the unique experience of independent-but-supervised professional training in the final year of the medical course. Rotations are shaped so that students can integrate acquired knowledge and skills and apply them to everyday work on patients. Rotations are: Internal Medicine, Surgery, Maternal and Child Health and Family Medicine, with 640 hours divided between these four rotations. Students are guided by their clinical supervisors in a one-to-one fashion.

Within the clinical rotations in Internal Medicine, Surgery and Maternal and Child Health students are given the choice of subspecialties (e.g. neurology in Internal Medicine rotations) while in Family Medicine they can experience working in a specific environment (city, countryside, island etc.). Supervisors are chosen from senior residents and junior ward physicians. Their only mission is to make their student-protégé a close follower of their work and their substitute, whenever that is possible.

Openness of the program towards student mobility and diversity of extracurricular activities

In addition to taking elective courses that are a formal part of the School's program, students can satisfy requirements for an elective course in the following way: 1) by spending time, during the summer holidays, in a hospital or research laboratory abroad; 2) by volunteering in social institutions; 3) through Erasmus programs and schemes (if student's work under this program lasts for two months or more, he/she will be acknowledged up to two elective subjects); 4) through publication of a scientific article (co-authorship on a research paper published in a scientific journal, which is not used in the final thesis); 5) active participation in educational activities of the Croatian branch of the Italian Cochrane Centre (CBICC), active participation in CroCoS seminars (annual CBICC meeting) and successfully completed electronic CBICC course is also acknowledged as an elective course.

Additional exams that students want to sit!

New exams have been introduced, similar to the German schools of medicine "*rigoroz*", "*physicum*", and the United States Medi-

cal License Examination (USMLE) 1, 2 and 3. Our exams are named "Comprehensive exam 1" (CE1 at the end of the third year of study and include all subjects from the first three "preclinical" years), Comprehensive exam 2 (CE2 at the end of the sixth year, including all clinical subjects) and an Objective Structured Clinical Examination (OSCE) also at the end of the sixth (final) year. Their purpose is the control (or restriction) of inconsistent and spasmodic studying, "scraping by" in exams and elimination of cheating in exams. We also wanted to create the possibility of a Gaussian distribution of students according to their performance, which is why these exams are strongly represented in the Diploma Supplement. An important dimension of this novelty is feedback on the quality of teaching of certain subjects as well as a chance to evaluate credibility of grades that students obtain.

Our curriculum has well defined boundaries

Our new program insists on strict compliance with the Bologna rules, guidelines and principles in accordance with the Regulations on the study and studying at the University of Split and School of Medicine in Split. This means that the school year runs from 1 October to 15 July, so that the prescribed number of hours of the program (5500) could be accomplished without compromising the recommendation that a student should have no more than 25-30 hours of direct teaching/instructions in one week. The year is not divided into semesters, and classes are conducted in blocks (cycles) for individual subjects. The first examination period is scheduled after the completion of lessons (cycles or blocks), after several free/study days (counting weekends and holidays). This interval is determined in proportion to the length of the block of a subject to which it refers. The second examination period is between 16 and 31 July, while the third and fourth examination periods are in September. The fourth examination period is always in front of an examination committee. In the case of unsatisfactory results (even after four attempts), a student has to re-enroll the subject.

Conclusion

It appears that a constant evolution (sometimes even a revolution) of medical curricula is driven by several major reasons: an exponential expansion of the amount of knowledge in biomedical sciences, changing "character" of contemporary medical practices and a strong push to educate and train practitioners with built-in problem solving/critical thinking skills in addition to the evidence-based professional mind-set. Our political and socio-economic realities leaning on (often restraining) traditional and cultural values do not allow major shifts in curricular designs, particularly in biomedical and health-related tertiary education. Our delay in introducing revolutionary curricular changes may not necessarily be bad, many forms of PBL-based curriculum did not pass the test of time (or financial sustainability) resulting with several iterations of the original "McMaster PBL" curriculum design; the latest adopted in 2005 is called COMPASS (concept-oriented, multidisciplinary, problem-based, practice for transfer, simulations in clerkship, streaming) model focusing on logical sequencing of basic/clinical concepts and the organisation of body systems (22).

We believe that one of the ways to address demands to reorganise the curriculum according to the latest recommendations is vertical integration of as many subjects/disciplines as possible. When this is done, a set of core problems/principles for every subject can be developed and followed, from early to late years, from simple to more complex concepts, from preclinical to clinical

scenarios and settings. This creates clear opportunities for students to not just gain basic/clinical knowledge but also to apply it to real clinical problems. For start, our vertical integration effort included medical humanities, principles of research in biomedicine, to a smaller degree psychological medicine and, perhaps most importantly, clinical and social skills. We believe that this approach should be adopted for subjects like pathology and pharmacology, for which a set of common principles could be applied to most if not all clinical problems and scenarios. Sub-specializing pathologists and clinical pharmacologists are already members of a wide range of clinical teams and their experiences should be incorporated into the core medical curriculum (within "classic" medical and surgical clinical subjects) in the form of clinicopathological/pharmacological case conferences or debates (23). Not a single innovation or intervention in the curriculum should pass without careful evaluation and monitoring, in which both students and teachers have equal say. In addition to this, we believe that student"s knowledge, skills and attitudes should be monitored and continuously assessed with exams which are not part of the compulsory set of subjects. Hence we introduced so called "Comprehensive exams 1 and 2" as well as an end-of-course OSCE. Results of the first Comprehensive exam 1 held in September 2011 are very encouraging with all but one student out of 58 achieving more than 60% of correct answers.

Introduction of changes and novelties always meet a lot of resistance and scepticism from both parties involved in the education process (students and teachers), but as long as they are based on solid educational research, on continuous assessment and evaluation and is financially sustainable it should gain both encouragement and support of the faculty administration.

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Professional achievements in medicine: Too many unresolved questions

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From pre-enrollment assessments, through medical education and post-graduate training, medical schools are trying to educate and facilitate the development of their students so that they become exemplary experts in their future fields. Yet despite the long history of medical education, scientific research has failed to provide correlations between medical schools' education processes and achievements of their students. Among the greatest obstacles for this is the primary definition of achievement, and, subsequently, its characteristics and measurement. In this review we present current findings related to medical education, discuss their implications and provide suggestions for medical schools on how to get the best out of their students while facilitating their personal growth.

Key words: Medical student, Collaborative learning, Social negotiation skills, Non-cognitive skills.

Introduction

The progress of all sciences, including medicine, lies on the achievements of creative and productive individuals and on dedicated, hard and demanding every-day work of those involved in the endeavor. In the last few decades societal expectations of medicine have greatly risen, especially concerning the quality and efficiency of medical care, and the professionalism, competencies and knowledge its providers must possess (1). In order to both meet the existing standards of care and to improve upon them, societies, in the milieu of ever-growing population and its demands, are struggling to organize and finance medical infrastructure and to train professionals that will be able to meet and surpass its goals. The public often perceives

the quality of medical professionals to be representative of the entire health care system of a state (1), and the quality of medical education to be the main determining factor of their quality. However, the definition of a quality physician and the achievements on which he or she is rated as such are incredibly diverse, which makes specific prerequisites and long term outcomes of medical education, along with their measurements, an ongoing debate since the origin of medicine itself.

Medical students are selected on the basis of their pre-medical achievements and enrollment testing, after which they become distinguished by their achievements in medical school, and ultimately by their professional achievements (Figure 1). However, in most countries long-term monitoring of these achievements and their indicators is not conducted and the majority of the students are never followed up after their graduation. This leaves firm scientific correlations between the pre, during, and post medical school achievements lacking in their credibility. Furthermore, almost no research has been conducted on the cultural, political and economic factors of physicians' educational environment and their influence on the success and achievements of physicians.

Student Admission

Necessitated today by the excess of applications to medical schools, pre-enrollment assessments are meant to identify the best applicants so that they could be made best physicians. Today's most prevalent pre-enrollment assessments are knowledge-based tests in biology, chemistry and physics. These tests have been proven to moderately predict those who are most likely to finish their studies on time, and be among the highest scoring students and residents in their formal evaluation tests and average grade scores (2). However, their ability to correctly predict achievements beyond residency, or achievements of those who choose other professions following their medical graduation has not been proven. In other words, pre-enrollment tests only predict scores of other tests similar in nature. Yet they say nothing of physicians' honesty, integrity and conscientiousness. Or of their empathy, conversational skills and humanness, which patients value most (3).

In 1971, Price et al. after 20 years of research, proposed 87 positive and 27 negative characteristics which predict future physician's performance (4). In 1985, using these traits, Sade asked his colleges to rate those which they feel make a "superior" physician and to mark those that can be taught in medical schools. His findings identified the existence of 20 essential traits that cannot easily be taught, but should be the focus of pre-enrollment assessment (5). We have listed these traits in Table 1 to stress the qualities that can be said are valued universally, but are extremely difficult to both measure and compare objectively.

Table 1 Top twenty qualities of a Superior Physician by Sade et al. (4)

1. Emotional stability	11. Decisiveness when facing uncertainty
2. Unquestionable integrity	12. Conscientiousness
3. Honesty	13. Insightfulness
4. High enthusiasm	14. Dedication
5. Above average intelligence	15. Foresightfulness
6. Genuine care for the ill	16. Willingness to learn from others
7. Logical thinking	17. Alertness
8. Empathy	18. Adaptability
9. Innate idealistic motivation	19. Availability
10. Ability to inspire confidence in others	20. Creativity

In 1978, the *Newcastle Experiment* began in Australia. It involved admission of half of the students based on academic marks only, and half based on personal qualities tested by psychometric tests and an interview (6). After 9 years of students follow up, the Experiment showed that those students with highest interview scores had a greater likelihood of completing their studies and graduating with honors. However, it is important to note that the half admitted for their interview scores, were invited for an interview only after they passed the knowledge-test threshold. The Newcastle Experiment was then followed by a study on interns' performance which showed that those previously admitted for their interview scores showed the same clinical competence as those selected through their knowledge-test scores, and yet they displayed higher scores in personal characteristics deemed desirable for a successful physician (7). In 2011 Haight et al. found communication skills, extroversion, conscientiousness and empathy to be the best predictors of clinical achievement (8).

Studies which followed personality traits of medical students over decades after their graduation found them to be stable through time (9). Those students, who during their education had high self-respect, were easy to adapt, were open to new experiences, had good relations to their parents, lower anxiety and depression, also felt good in their own skin as physicians in their middle or senior age. On the other hand, those who had lower characteristics previously mentioned and who experienced mental health issues during their studies displayed higher levels of burnout, substance abuse and suicide (10). Therefore it can be said that like knowledge-based tests, personality tests show considerable correlations with similar future personality tests.

Research on the predictive value of letters of recommendation is inconsistent. On one hand, due to the tendency of mentors to be loyal to their protégées, letters of recommendation had very little influence on the job acquisition process in the USA and Great Britain (11). On the other hand, they were found to be the best predictors of residence's performance in certain medical specialties (12). As a pre-assessment method, however, they were never assessed as a sole or determining criterion.

Education during Medical School

Medical education most often stands for a transfer of scientific knowledge and skills aimed at the specifics goals and competencies, and ultimately toward providing treatment. Such a process is perhaps better deemed as "training" than true "education" (13), and is found in many of today's medical schools' programs (14). True education would have to go beyond the skills, competencies and knowledge required by a certified profession, and educate reason, develop character, values and virtues, and enable realization and fulfillment of students destiny (15). This however leads to the question of what should be assessed and how. The assessment of students' knowledge occurs throughout their study, yet the assessment of their traits, empathy, behavior, and professionalism does not, or rather is "included" in the former. In the end, though, this leaves students and their future employers without a precise description (mark) of the students' traits. Among the reasons for this is the problem of objectivity of such measurements, and the belief in the long-term development of personality. And so true education most often forms the *hidden curriculum,* the underlying ideals behind the training processes (16). Should it though, is the question that the medical schools must answer openly.

Students' critical thinking skills are in certain countries assessed as a prerequisite for medical schools through verbal reason-

ing tests that are taken alongside knowledge-based tests. These tests most commonly measure comprehension and reasoning based on a written text whose area of topic is outside the presumed person's familiarity. After the initial testing, development of critical thinking is pushed aside by over-packed curriculums and necessities of following protocols. Equated with clinical reasoning and scenario-based problem solving, its development often suffers in its narrowness of subject (17). It is too often strictly separated from the artistic, speculative, and their inquiry methods, and can lead to emotional detachment of students (18). Despite the positive influence that primary schools have on critical thinking development (19), and proven positive correlation of verbal reasoning tests with communications skills assessed by medical state exams (20); the development of critical thinking during medical education, and the influence of the medical school on the same, has still not been researched. In the last two decades, however, medical education has begun to consider and accept the humanistic perspective, self-awareness and reflection, emphasized by the field of medical humanities, as necessary for the development of critical thinking and ultimately success in medicine (21, 22). As physicians are more and more dependent on others in their work; and are often members of larger teams and constantly interact with recipients of their services, more and more emphasis is put on the development of their capacity to evaluate and self-reflect on their own emotional needs. Including on any suggestions, remarks and reprimands they receive from their colleges, patients and students, and on being able to provide the same to others.

The increase of knowledge and skills which the medical schools are trying to pass on, along with the rigorous methods of their evaluation, has strained the students' abilities, and shifted their focus toward tasks (course) oriented education, and made them unable to differentiate between the essential (basic) knowledge and skills, and the advanced ones. This leaves students of today's modern programs, in times of their graduation, increasingly aware of their own inadequacies to prescribe basic medications and conduct small procedures despite being able to name and describe hundreds of rare diseases (23). With so many specialties and subspecialties in modern medicine, the core skills are being readdressed (24), and medical schools need to answer openly whether their programs educate a complete physician (general practitioner), or whether they are just a step in the process that will necessitate and obligate further formal education and training.

The Problem of Measuring Achievements

At the end of medical school, a grade point average, personality assessment, student's publications, and/or practical skills should be able to demonstrate the student's knowledge and competencies, and therefore serve as predictors of that student's further practice, training and individual work (7). Subsequently, an objective measurement should exist to describe the achievements physicians hold when appraised by those requiring their credentials, and to predict their possible higher or lower achievements in the future. But with so many possible indicators of achievement (Figure 1), their influence and association with one another, as well as their relation to the training/education received during medical school is still unknown. With such high reported correlations between the pre-enrolment assessment, be it knowledge-based or personality-based, and the later similar assessments of those already deemed to be the best, a serious question can be raised on the developmental credibility and success of medical education institutions.

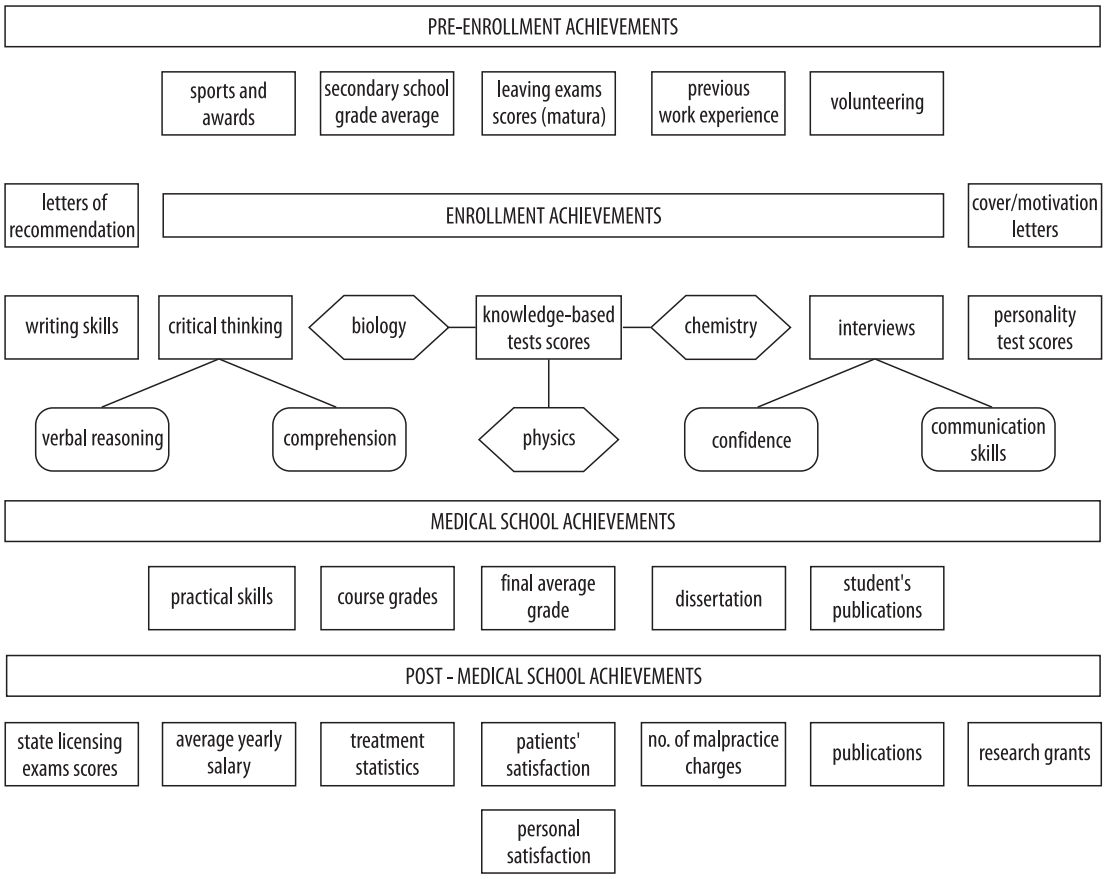

Figure 1 Achievements in medicine. Pre-enrollment achievements, achievements in medical school and post-medical school achievements have been mentioned in the literature but not together and interconnected. This scheme is a compilation of the elements of the three phases of achievements in medicine. However, many of them are not measured, and some of them cannot be measured; almost none can be objectively compared for different environments.

Today, medical schools and universities are often ranked based only on their faculty members' scientific achievements and success (25). Yet, students' indicators along with other faculty indicators cannot be ignored if objective rankings are to be made (Figure 2).

Schools, on their web-pages and in their promotional packages, often list their grant holders, innovators, Noble-prize winners and alumni as their own successes, irrespective of whether those who achieved those prizes were actually educated at their school, or are/were there only employed. Irrespective in other words, of what educational impact they had on that person in question, and on the success he or she achieved. As the quality of both the student enrolled in a certain medical school, and the school's itself, are dependent on multiple factors (Figure 3), a true comparison between students/physicians of different states, between their achievements, and subsequently between medical schools, must fail due the social, political and cultural differences and environments in which they operate.

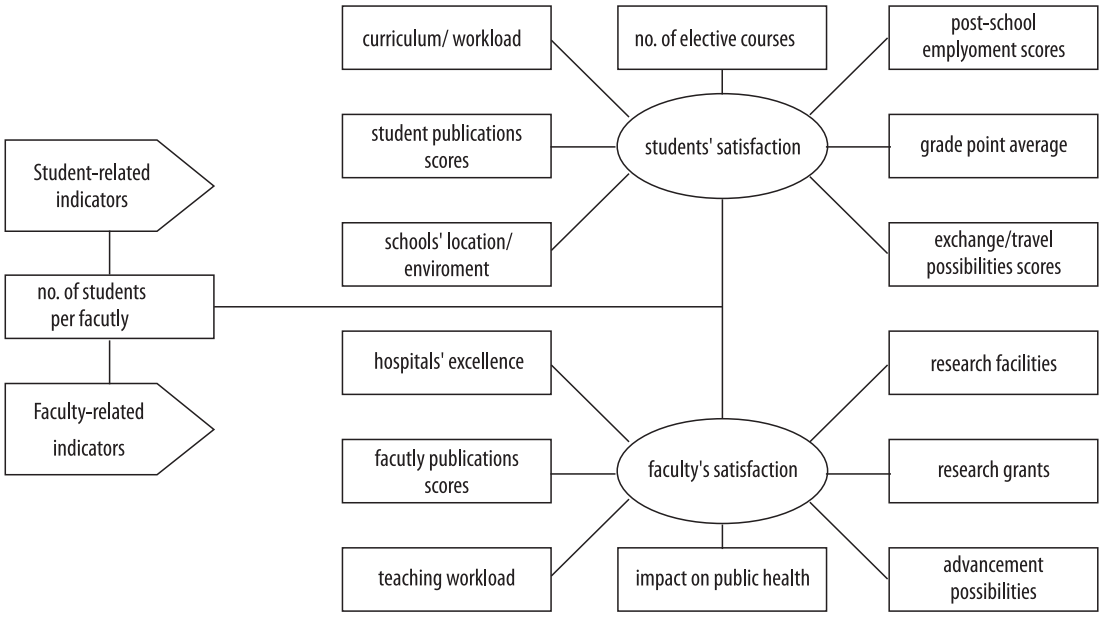

Figure 2 Indicators of medical schools' rankings (achievements). These indicators can be narrowed down to students' and faculty's satisfaction, albeit none of them can directly be measured or be associated with students' and faculty's satisfaction. Cultural, economic and other differences of different environments make reliable comparisons impossible.

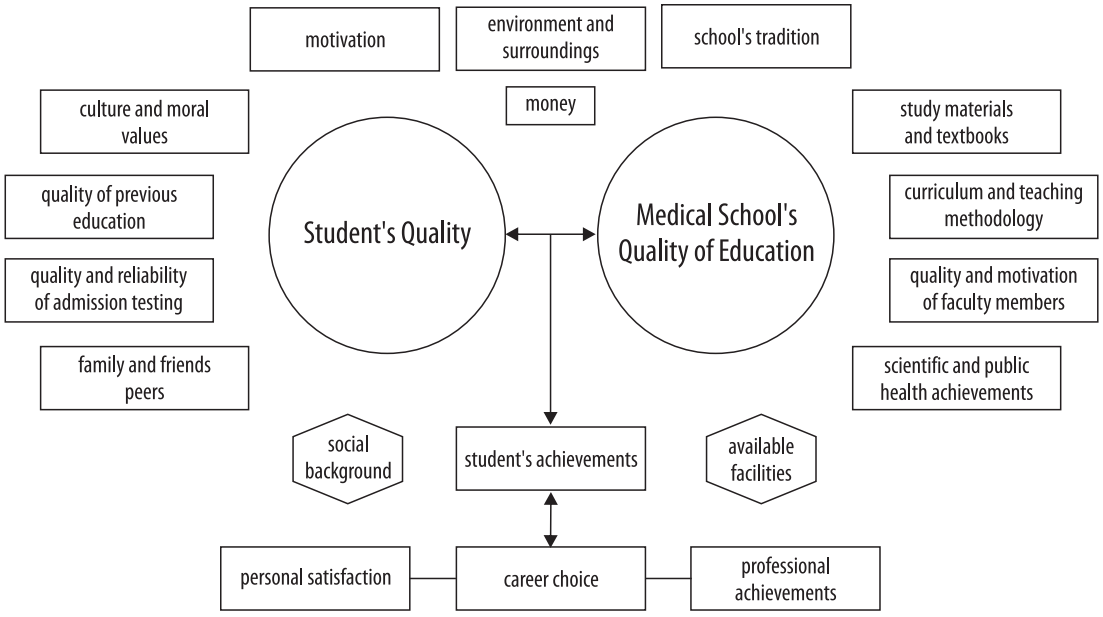

Figure 3 Summary of factors related to student's and medical school's quality. Analysis of listed factors reveals that reliable comparisons are impossible on both institutional and indvidual levels.

Discussion and Conclusion

The path to medical success is paved with uncertainty. The influence of motivation and personality traits on the success of knowledge-based pre-assessment tests and on the long term medical achievements is still unknown. As is the question of who should measure physicians' achievements, and where should they be listed. Schools must ask themselves whether the cheaper to conduct knowledge-based tests should be used as their sole method for the enrollment of students, despite their possible weakness of excluding a number of top achievers (6). And how does any sole method thus used, fulfill the notion of equity and justice on which it is allegedly based. It is also time to consider, how public needs meet individual success, and which role should the medical schools play and endorse to achieve their recognisability beyond the student satisfaction and the scientific output. Furthermore, the perceived quality of medical professionals as a substantial indicator of health care quality is being brought into question when no clear measurements exist to support it.

Every evaluation implies comparison, and comparisons of medical schools' or physicians' achievements are firmly tied to the characteristics of their environment. Without considering these factors, the true value and influence of medical schools on their graduates and physicians will never be objective or even fair, except, perhaps, if limited to an area or at most a state.

We believe that when medical schools pass the bad education threshold and enter quality education, they need to focus on individual mentoring of students and fostering of a culture in which reflection and self-reflection are imperative, and in this way leave an educational and developmental mark on their students that goes beyond that of a grade point average. Mentoring was proven to shape and incite professional and personal development, and to grant greater insight into students' competencies, personality traits, learning habits and carrier plans (26). However, it requires a facilitating environment of the whole institution (27), ideally includes every enrolled student paired with an equally competent mentor, and relies on a personal face-to-face contact. This can lead to an increase of expenses per student for the universities, but still we believe it must be attempted if the students are the true goal of an institution. Personal friendships among students aside, the influence, gratitude and acknowledgment of mentorship during ones education should be among the top achievements listed by any school and university.

Critical thinking of students should be strengthened and broadened by including medical humanities courses within the core curriculum, and paralleling them with science methodology courses. Broadening the topics and availability of student electives may also serve this purpose, but should not be the only method, as it will not include the majority of students. Through structuring and developing of strong alumni activities and projects, medical schools need to devise measurements of their own graduates' achievements beyond the today's prevalent knowledge-based testing, and be included in the process of designing international rankings of the same. Without these, a true success of an educational institution cannot be demonstrated, and will further force the focus of institutions toward rankings that fail to show their worth.

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The new curriculum for family medicine at the University of Split, School of Medicine

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According to the new curriculum at the University of Split School of Medicine for the 2010/2011 academic year, the Department of Family Medicine based its teaching on its own expert and research work. The adequacy of the communication with the patient, his or her family and the social environment, as well as the concept of evidence-based medicine (EBM) have been defined as the foundation of expert and research work in family medicine. In accordance with this strategy, the members of the Department are involved in conducting journal clubs, Cochrane systematic reviews, research into the health of families where the father is absent working abroad (there are many such families with emigrant fathers in the region), and some are working on developing student letters to patients as an instrument for encouraging communication and empathy. The proportion of theoretical classes was reduced to provide more time for practice-based classes for students. The Work Diary was also introduced, as well as the student letter to the patient, practice of clinical skills and objective, structured, clinical examination (OSCE). The assessment of students is performed in four parts: the grade given by the student's practice supervisor, the grade for student letters to patients, the OSCE exam grade and the written exam grade. Students achieved, on average, very high grades. The Department is also involved in the course on clinical and social skills to first and second year students, taking on the task of introducing students to patients and their surroundings.

Key words: Family medicine, Classes, Students, Supervisors.

Introduction

Since 1974, School of Medicine at the University of Split (Split, Croatia), has been a branch of University of Zagreb School of Medicine (Zagreb, Croatia); in 1997 it became an independent school of the University of Split (1). It admits 75 students of medicine, 30 of dental medicine, and, since 2011, 25 students in an English language program. Jointly with the School of Chemistry and Technology it also admits 25 students in the pharmacy program (2). It has around 100 full or part time teachers, who published 169 research articles in most prestigious international peer-reviewed journals in 2010 (http://neuron.mefst.hr/docs/znanost/ured%20za%20znanost/Znanstvena%20produkcija_graf_2000-2010.pdf).

School's Department of Family Medicine encompasses around 50 family medicine

physicians who work in the city of Split, in Split surroundings and on Adriatic islands in the Split-Dalmatian County. Two problems have traditionally burdened the Department: the lack of systematic research in the field and the fact that the organization of Croatian health care system does not allow permanent engagement of family physicians as teachers. They cannot be formally employed even a small part of time, so their engagement in teaching process is paid per hour with a symbolic sum of money. This further diminishes their motivation for research, and often also for teaching.

According to the new curriculum of the Faculty of Medicine, adopted in February 2010, and started with the 2010/2011 academic year in October 2010, classes and examinations are standardized according to Bologna standards, ie, after the Provisions of Directive 2005/36/EC of the European Parliament and the European Council on recognition of professional qualifications from 7 September 2005. The program was drafted using the recommendations of Mission of experts for assessment of the situation in five regulated professions in the health sector in the Republic of Croatia conducted from 7 to 10 July 2008 for the new study program in Medicine, and with the provisions of the Regulated Professions and Recognition of Foreign Professional Qualifications Act passed by the Croatian Parliament in 2009 (Official Gazette no. 124/09). The program was amended according to the European Commission reviews received by the School together with the letter from Minister of Health and Social care of the Republic of Croatia from 24 January 2011 (class: 910-08/06-01/3, reg. no. 534-07-2-2/3-11-16) (2).

Special emphasis is given to students' clinical skills through an increase of the time they spend in a direct clinical work with patients (1, 2), and 60-70%, of the final grade is earned during classes/semester and 30-40% during the exam itself. In this way, students are encouraged to give their best during classes. By completing each stage, the student collects points and takes the exam, when all of the points are tallied and the final grade determined (Figure 1).

Department of Family Medicine saw the curriculum reform as a great chance to reform, modernize and improve its organization and work, which received rather enthusiastic encouragement and support by the School's management. The physicians in the field (Split-Dalmatia County) were interviewed on their wish to contribute to students' family medicine clinical practice and

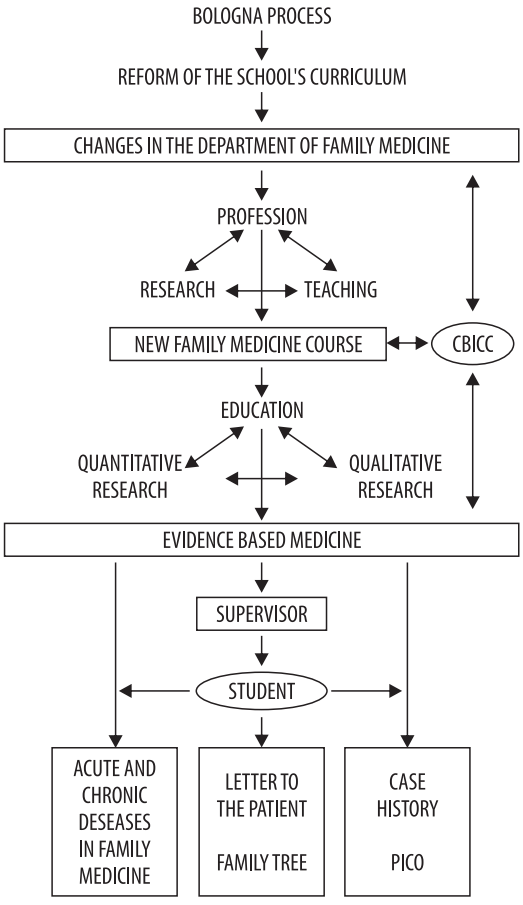

Figure 1 Development of the curriculum for family medicine at the Medical School in Split in 2010. Derived from the work and research of members of the Department, and founded on Bologna principles. CIBCC – Croatian Branch of Italian Cochrane Centre.

those who responded positively were adopted as members of the Department. Communication and the meetings of the members of the Department were intensified, all members interested to become engaged in research (and take the track to achieve the PhD degree, which is in Croatia a prerequisite for professorship) were offered research themes and supervisors. Formal teaching was shortened and field work extended, and curriculum reformed in a number of its aspects (Table 1). This article summarizes those changes, which, together with our encouraging first results, warrant our belief that the new curriculum is worth describing, especially with respect to hard time that education in family medicine has passed in Croatia practically from its very beginnings.

Expertise and research as a foundation and strategy for teaching

Strategically speaking, our new curriculum integrates research and teaching, so that each affects the other and they follow the newest expert trends in family medicine. Two major educational aims were to improve student-patient communication and introduce evidence-based medicine (EBM) concept not only in the curriculum, but also in our family medicine practice. The insistence on student-patient communication we based on the introduction of student's letter to the patient as an instrument of teaching (exercise) and examination and, after the encouragement from the School's management, engagement of our teachers in the new course

Table 1. Basics of family medicine course content at the School of Medicine in Split

Competencies acquired
Distinguishing the particularities of health issues in ambulatory care. Ability of making clinical decisions. Recognition of concrete relationships patient-family-family physician. Clinical skills performed on the level of family medicine physician. Basic skills of acquiring evidence-based medicine information. Home treatment and monitoring of patients, prescribing medications, keeping records, cooperation with consultants, team work and community work, legislation and funding.
Contents
Characteristics of family medicine practice, family physician's tasks and scope of work, organization, financing and operation of the family medicine in Europe. Characteristics of health problems in the family medicine. Medical records. Cooperation with consultants, referral procedures for specialist examinations. Specific characteristics of the clinical procedures for family physicians. Administration of drugs in the family medicine practice. Communication in family medicine. Family and health. Home visits and home treatment, home care. Particularities of care for patients in the family medicine. Evidence-based medicine. Levels of evidence in medicine. Legally prescribed and optimal space of family medicine clinics. Equipment in the family medicine. Medical bag. Organization of work, scheduling and receiving patients. Teamwork in the family medicine. Managing the family medicine clinic as a business unit. Administrative and legal obligations of family physicians. Assessment of working ability. Health educational and prevention activities as an integral part of the family physician's work. Prescribing medication. Home visits. Writing one letter per week to a selected patient. Practical work in the School clinic, where students work under the supervision of a physician but as independently as possible*. Examination, diagnosis, differential diagnosis and tests are written informally in relation to the patient in a form of a seminar evaluated by the teachers.
Forms of teaching
Lectures (20 hours), seminars (60 hours), field work (with rotations of urban, rural and island offices 100 hours)
Method of knowledge assessment and examination
The final grade is obtained by scoring parts of the exam. Parts of the exam are: field work log, a letter to the patient about his illness and the written and practical part – objective structured clinical exam (OSCE).

*Planned when the School's office (under construction) is put in function.

Clinical and Social Skills, posed in the first two study years of the School's curriculum. It turned out the School entrusted family medicine to be the first to introduce students to patients, as early as in the first study year.

Our plan to give significant emphasis to EBM was founded on the fact that School of Medicine in Split nourishes a rather active Croatian Branch of the Italian Cochrane Centre (3), which was successful in adequate education of several young and enthusiastic teachers. In this respect, we firstly formed a group of teachers, family physicians and interns who volunteered to master the basics of EBM. Together they have regular meetings, analyze articles related to the family medicine field of expertise and prepare clinical questions about problems from everyday practice and short evidence-based summaries. Some teachers in the Department perform research as part of the Cochrane collaboration, as well as for the World Health Organization. They are members of three international groups working on the following systematic reviews: "Celecoxibs in osteoarthritis treatment", "Probiotics in fibromyalgia treatment" and "Effects of different duration of postnatal hospital stay on the healthy survival of neonates during the first year of life born through uncomplicated vaginal delivery or Caesarean section".

Special attention is devoted to improve students' communication with the patient and his family, as well as with colleagues (Figure 2). Members of the Department have discussed this important issue on local

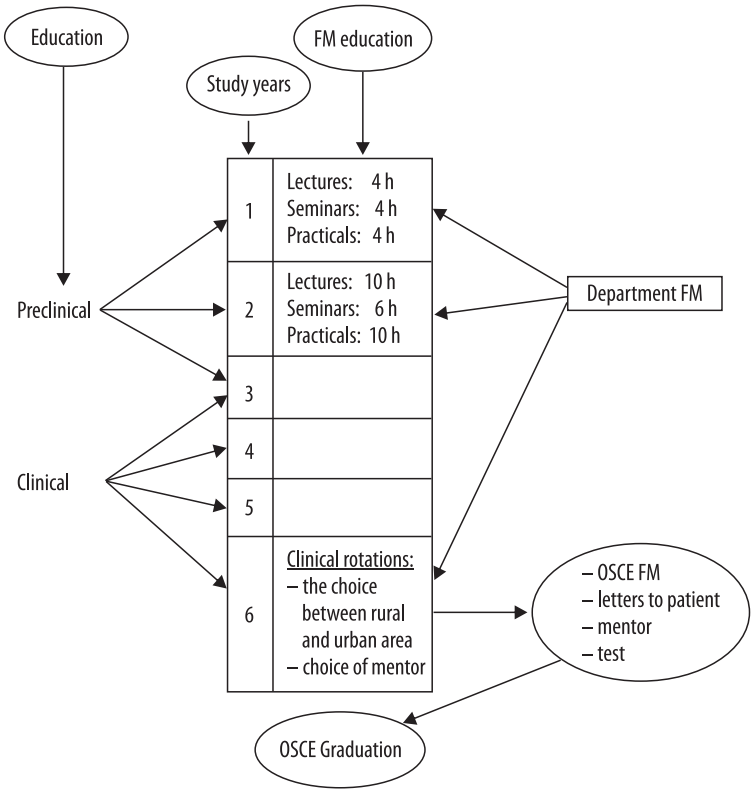

Figure 2 Position of education in family medicine within the curriculum of the Medical School in Split. In the first and second study years, family medicine helps introduce students to patients, medical settings and basics of communication with patients and colleagues. FM – family medicine; OSCE – objective structured clinical examination.

TV and in the local newspapers. One group performs qualitative research about student letters to patients as an instrument for developing communication and empathy. Joint research is being planned with the Department of Family Medicine in Ljubljana, about health indicator differences between Slovenian and Croatian families.

A study about migrant families, "Influence of long-term absence of the family father due to economic emigration on physical, psychological and social health of family members at home country" is being conceived with a German partner. The study will be performed in Croatia and Germany, and the teachers from our Department will collaborate with German family physicians.

The members of the Department have been offered several doctoral theses: about the effects of fathers' absence due to work abroad on the health of family members, about the quality of health care in primary health care, and the specificities of health care on islands. There are three doctoral theses in progress, one of which is about to be completed. Recently we took part in writing and submitting a multilateral NATO project proposal.

Teaching in family medicine consists of lectures, seminars and family medicine-based practical classes. The Department's new policy is that the classes are not and should not be a repetition of previous study years and classes already taken. The students should have already absorbed the knowledge and skills; we believe that family medicine needs to teach students what "only we know and do", i.e. those skills and topics that they have not heard before, such as the organization of primary health care, multi-morbidity, preventive medicine, care of the elderly, managing patients with addictions, the care of terminal patients and home visits (4).

Lectures

The number of lectures has been significantly reduced compared to the previous academic years, in order to shorten the theoretical and lengthen the practical classes. We have also determined that, in teaching family medicine, "problem-based" seminars are much more useful to students than "ex cathedra" lectures. Lectures topics include family medicine as a medical discipline, organization of family medicine in Croatia and abroad, systems and documentation, importance of family medicine, family medicine in Europe, and male and female health (Table 1).

Seminars

We try to encourage students to take an active role in conducting the seminars by encouraging them to prepare in advance. We begin the seminar with a short introduction, upon which the discussion about practical cases is commenced, with the seminar leader acting as a moderator. Discussion on the presented patient is followed by looking for EBM answers on questions the discussion opened on patient's treatment and prognosis. Seminars cover the following topics: the febrile patient, communication skills, elderly health care in general medicine, protection of infants and small children, women's' health, managing addiction, treating cardiovascular risk factors, arterial hypertension, treatment of the most common gastrointestinal diseases, treatment of depressive patients, managing psychosomatic patients, protection of mental health, diabetes in general practice, urgent interventions in family medicine, illnesses of the thyroid gland, approach to patients with locomotor system problems, managing dizziness and headache, rheumatic diseases, pharmacotherapy, interactions, side effects, acute respiratory infections, chronic respiratory illnesses, and uropoietic system diseases (Table 2).

Practicals

Students undergo their practical classes in two groups, one in the city (in 13 practic-

Table 2 Key features of the new courses at the School of Medicine in Split – Clinical and Social Skills I (first study year) and II (second study year)*

Content of Clinical and Social Skills 1:
1.1 Clinical skills (consists of 6 modules, 5 hours each): 1.1.1 Basic procedures in emergency situations (simulators and models), 1.1.2 Basic procedures in emergency situations (computer programs), 1.1.3 Safe hospital environment, equipment and transport of patients, 1.1.4 Hygiene and preventative measures in hospital environment, 1.1.5 Basic principle of care for the patient, 1.1.6 Medications (preparation and application).
1.2 Procedural skills (consist of 5 modules on anatomical/pathological specimens, 2 hours each): 1.2.1 Skin suturing, 1.2.2 Intra-muscular, intra-dermal and subcutaneous injections, 1.2.3 Urethral catheterization, 1.2.4 Intra-articular injections, 1.2.5 Lumbar puncture.
1.3 Social skills (consists of 5 modules, 4 hours each): 1.3.1 The healthy family, 1.3.2 Basics of communication skills, 1.3.3 Basics of consulting skills, 1.3.4 Basics of counseling skills, 1.3.5 Dealing with difficult and demanding patients.
Examination related to the modules is done as objective structured clinical examination (OSCE) and contributes by 80% to the subject final grade.
1.4 Practical application and monitoring of clinical and social skills where every student spends 25 hours in the *hospital/ primary care environment* (equivalent of 4 working days). Each student has a set of questionnaires, relating to the performance of both clinical and social skills, observed amongst medical staff as well as the interaction between medical staff and patients. These questionnaires and short essays are assessed and contribute by 20% to the subject final grade.
Content of Clinical and social skills 2:
1.1 Clinical skills (consists of 6 modules, 5 hours each): 1.1.1 Procedures in emergency situations: advanced module (simulators and models), 1.1.2 Procedures in emergency situations: advanced module (computer programs), 1.1.3 Medical documentation (organization, keeping, access), 1.1.4 Advanced clinical skills related to cardiovascular system, 1.1.5 Advanced clinical skills related to respiratory system, 1.1.6 Advanced clinical skills related to gastrointestinal system.
1.2. Procedural skills (consist of 5 modules on anatomical/pathological specimens, 2 hours each): 1.2.1 Arterial puncture and access, 1.2.2 Gastric intubation, 1.2.3 Abdominal puncture and drainage, 1.2.4 Thoracic puncture and drainage, 1.2.5 Airway establishment procedures.
1.3. Social skills (consists of 5 modules, 4 hours each): 1.3.1 Basics of team work management, 1.3.2 Basics of conflict resolution, 1.3.3 Basics of volunteering work, 1.3.4 Basics of special need care, 1.3.5 Basics of palliative care.
Examination related to the modules is done as OSCE and contributes by 80% to the subject final grade.
1.4 Practical application and monitoring of clinical and social skills where every student spends 25 hours in the *social and special care institutions* (e.g., developmental disability centers, institutions for aged). Each student has a set of questionnaires, relating to the performance of advanced communication and social skills, observed amongst staff as well as the interaction between staff and patients/clients. These questionnaires and short essays are assessed and contribute by 20% to the subject final grade.

*Both subjects include 85 hours of structured theoretical and practical teaching/instructions each, and they are divided into three parts: Clinical and procedural skills: 40 hours; Social skills: 20 hours; Practical application and monitoring of clinical and social skills: 25 hours. Developed by Professors Vladimir J. Šimunović, Ivica Grković and Matko Marušić.

Figure 3 Family practices, in which the students perform their internships in the field, are located in Split, along the coast, in the hinterlands of Split (Dalmatinska Zagora), and the islands of Brač, Hvar, Vis and Korčula.

es in Split) or suburbs (5 practices around Split), and the other in rural locations including the Dalmatian islands (3 at Brač, 2 at Hvar, 3 at Vis and 1 at Korčula), the coast (Orebić and Kuna at the Pelješac peninsula), and in the Dalmatian Hinterland (Muć, Šestanovac, Imotski, Runovići) (Figure 3). It is these practical classes that students appreciate the most and consider the most valuable part of their education. In the new curriculum, we recognized the importance of students spending time in family medicine practices, and have accordingly adjusted content and duration of students' stay there. Along with daily work with patients, under supervisor supervision (5, 6), we have included students in research and taught them the advantages of using evidence-based medicine in family medicine (7, 8).

Course examination

The actual grading is divided into four parts: the grade from the practice supervisor, the grade for "student letters to patients", the objective standardized clinical examination (OSCE) grade, and the written exam grade – written test with 60 multiple-choice questions (Figure 2). Each part brings the student a certain number of points out of a maximum of 100. The total number of points determined the final grade, as follows: 55-65 points = sufficient, 66-75 points = fair, 76-85 points = very good, and 86 or more points = excellent. Exam points are scored for the following elements:

a. Grade from the practice supervisor, 0-20 points;

b. Two "letters to examined patient", each of which brings 0 to 10 points, to a maximum of 20;
c. Objective standardized clinical exam (OSCE), 0-30 points;
d. Written test / exam, up to 30 points (60 questions).

Students showed great motivation and diligence during all parts of the assessment, and scored on average very high grades.

Specifities of the new curriculum

A daily record of work was introduced as a "Student diary", which allowed better tracking of student work during practical classes (Figure 4). It is the obligation of each student to record into the Diary everything that he or she did in the practice that day. During the first few days, the student works exclusively under supervisor supervision, while afterwards the independent work is encouraged. During one cycle of practical classes, the student completely takes all the skills necessary to conduct his or her own consultations. The diary is also helpful in tracking class attendance rates.

An obligation for students is also writing a letter to two of their patients about the patient's illness in a format that patients can understand, taking into account the patients' education, age, profession and social status, in order to practice communication skills. The student "sends" the letter to the patient whom he had examined and tries to explain everything about his condition in it.

STUDENT'S WORK DIARY

Date: _____

TIME	PATIENT'S INITIALS	AGE	PATIENT'S REASON FOR ATTENDANCE	TOPICS DISCUSSED WITH MENTOR	STUDENT'S OWN CONSULTATIONS (UNDER MENTORSUPERVISION)	PARTICIPATION IN OTHER ACTIVITIES	STUDENT'S COMMENTS
08:00-8:30							
08:30-9:00							
09:00-09:30							
09:30-10:00							
10:00-10:30							
10:30-11:00							
11:00-11:30							
11:30-12:00							
12:00-12:30							
12:30-13:00							
13:00-13:30							

Signature of student: Signature of mentor:

Figure 4 The students enter physical examinations and procedures they have performed during their time in the family practice into the Work Diary. The diary serves as a reminder for exam preparation, as well as controlling the attendance rate.

That way, the letters become a useful indicator of how the student is doing in the work with patients. We used two forms of such letters: "free-style" and "structured" (written in four paragraphs: history of illness, current symptoms and maladies, links between current state and the history of illness, and advice for the patient). In writing letters, the student needs to show adequacy and clarity in the description of the condition, knowledge, adequacy of the recommendation to the patient, empathy towards the patient and neatness and correct usage of language.

During classes, we teach students how to use evidence-based medicine in solving clinical problems and thus improve health care. We show them how to shape the patient's problem as a clinical question (PICO – patient; intervention; comparison; outcome), search the literature in for the best possible evidence and use it to solve the problem. This educational effort follows the paradigm that clinical practice based on evidence should be part of daily work for family medicine doctors in providing health care to the patient (10).

OSCE is a standard way of the assessment in family medicine (10, 11). The goal of OSCE exam is to objectively assess the competence of students in communication, clinical exam skills, skills in performing clinical procedures and clinical decision-making in a limited time-span (12, 13). Such an exam, as part of pre-graduate assessment, has never been implemented at our Medical School. Organizing an OSCE exam requires significant effort, material and a large number of organizers. At least 15-20 members of the Department took part in preparing and executing our OSCE.

During practical classes, we tried to have each student spend at least one day in touring the terrain with a district nurse, both in urban and rural environments. This way, the students had a much better look at the patients' residence and ways of life, and noted the value of district nurse's work as a family medicine team member who cares about old, poorly mobile or disabled patients.

Clinical and social skills 1 and 2

The Department of family medicine will, as of the academic year 2011/2012, takes part in conducting classes in "Clinical and social skills 1 and 2". Within the scope of these classes, Departmental staff will get involved in teaching the basics of communication skills (how to establish communication, listening skills, empathy, types of communication, how to hold a therapeutic talk), while 2nd year students will be taught advanced communication skills with patients and their families as part of "Clinical and social skills 2". There, the student implements the learned communication skills in reality, gets to know the complicated relations within a family, and determines the health problems of each particular family (see figure 2 and table 2). An early meeting of students with the patient, at the beginning of their studies, contributes to learning communication skills and a better understanding of the patient, and serves as an additional motivation for successful studying (14, 15).

Student exchange

The Department is also involved in student exchange with other medical schools. An exchange has been arranged with the Faculty of Medicine of Ljubljana (Slovenia), and Faculty of Medicine of Linkoping (Sweden). During the 2011 summer holidays, three students participated in the work of Ljubljana's Department of Family Medicine. They collected and sorted data for qualitative research about Slovenian families. One student is currently on an exchange visit to McGill University in Canada.

Discussion

During the 2010/2011 academic year, teaching and assessment of family medicine was reorganized according to Bologna principles, and new contents were added (2). The value of practical work in supervisor practices is the basic code of every change. Similarly to the strategy of engaging students to contribute in some areas of our research, the professional, educational part of their work is based on a "partnership" concept, where the students are treated as young physicians. We try to encourage and empower them to work with the patients "instead of the doctor", and also "instead of the nurse" with, naturally, appropriate control and assistance. We believe that, besides introducing the first-year students to work with patients, the function of family medicine is also to complete students' competences of the independent work in health care. The practical work for students in family medicine course should include as little as possible presence of their teachers. Scientific work is encouraged at the Department. These activities were a part of the curriculum reform, which came just at the right time as part of the process of Croatia joining EU – we aimed at standardizing the curriculum to European criteria and thus achieving better results in teaching and increased students' satisfaction (16).

It is obvious that being a family physician who also participates in teaching bears enormous responsibility, and to participate in science as well is an even bigger respon-

SUPERVISOR'S EVALUATION FORM

Grade from the supervisor includes:
routine maintenance of the Work Diary (per day and per hour),
punctuality and frequency of attendance,
interest in working with patients and diligence,
relationship with patients (communication and empathy),
knowledge and application to learning.
The mark awarded can range from 0 to 4, for a maximum of 20 points.

Student_____

Supervisor _____

Practice based teaching from_____to_____

EVALUATION CRITERIA	*POINTS*
Routine maintenance of Work Diary	
Punctuality and frequency of attendance	
Interest in working with patients and diligence	
Relationship with patients (communication and empathy)	
Knowledge and application to learning	
Total points	

Figure 5 The supervisor rates students according to 5 criteria: routine maintenance of the Work Diary, punctuality and frequency of attendance, interest in working with patients, relationship with patients, knowledge and learning. The mark awarded can range from 1 to 4, for a maximum of 20 points.

sibility, but also a challenge and pleasure. Our field of expertise, with its wide scope of work and wide range of data collection, has almost unlimited potential for research. By conducting research, we acquire new skills, broaden our knowledge and then transfer this knowledge to students. This way, we encourage students to join our research work, so that they can gain critical assessment skills early in their professional career. We developed a "synergetic action" model for the Department: expertise encourages science, science affects teaching, and teaching improves the whole field (Figure 1). This way, all members of the Department have found satisfaction and got involved, and have gained faith in their strengths and possibilities. The advantage of the Department of Family Medicine is a large variance in the terrains that our supervisors cover: village – city, islands – coast – hinterlands (Figure 3). This allows us to perform practical teaching in the environments in which young graduate doctors are actually going to work. The role of the supervisor is immeasurably valuable here (17, 18, 19). The practice supervisors grade students according to the following criteria: routine maintenance of the Work Diary, attendance rate, interest in working with patients, relations with patients (communication and empathy), knowledge and learning (Figure 5).

By employing a larger number of family physicians to lead the practical classes, we are trying to achieve the "gold standard" of only one student per supervisor, which will significantly improve the quality of classes. Better education of current and newly involved supervisors has encouraged us to organize workshops for them. We are also planning to introduce teaching materials in digital format.

In short, the encouragement of research led to introducing a new kind of teaching at the Department. Research and expert work increase class quality, better teaching is a boon to further professional development, which opens up room for new research. We believe that a university teacher must also be a scientist in order to become a better teacher.

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Teaching communication at the Medical School in Ljubljana

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Early clinical exposure helps medical students to develop appropriate attitudes towards their learning and future medical practice and give them an opportunity for improving communication skills. New curriculum at the Medical faculty of Ljubljana introduced early clinical exposure (ECE) for the first year medical students through the subject "Communication". We present the aims and the content of the curriculum "Communication" and present our experience, students' feedback, dilemmas and ideas for the future development of the curriculum. Decision for the introduction of this subject is based on the result of survey about the key competences of doctors, review of the literature and empirical recognition of the fact that previous programme lacked the necessary knowledge and experience for good interpersonal communication. The main goals of our teaching are in improving communication skills and understanding and assuming that good doctor-patients relationship is crucial for the successful treatment. The curriculum consists of theoretical part (lectures from medical psychology) and practical part (communication in a small group using prepared vignettes, interview with nursing home residents and observation of general practitioners' work during their 1-day practice attachment). Students evaluated the curriculum as very valuable at the beginning of their learning. The practical part of the programme, in which they had contact with patients and experienced the role of a physician, better, was highly appreciated. ECE help medical students improve their communication skills, they interact with more confidence in interaction with patients and develop appropriate personal attitudes for their future professional carrier.

Key words: Curriculum changes, Early clinical exposure, Communication, Experience, Dilemmas.

Introduction

More than thirty years ago, the first medical faculties in Europe introduced early patient contact in their curricula (1). Taking into account positive experiences, many faculties of medicine now include programmes using early clinical exposure to introduce medical students to important topic in medicine (2 - 9).

Early clinical exposure (ECE) was justified with the fact that the patient care is becoming more and more complex, but on the other hand it is clear that modern medical technology is not a replacement for profes-

sional patient-doctor relationship. ECE is an opportunity for improving communication skills which are helpful in establishing a good doctor-patient relationship and understanding the patient as a human being.

Early experience influenced students in several ways:

- Influence their attitudes: motivate students for the study of preclinical subjects, make students more confident to meet and interview patients, help build self-awareness, including the ability to recognise and respond to feelings of uncertainty and inadequacy, helped students develop empathic response to ill patients, becoming more mature and acclimatizing to professional settings and identifying with doctor's role model (10).
- Improve the understanding of subject matter: Early experience made students more confident in their knowledge, taught them things that could not be taught from the books and made medical science more comprehensible. It also helps learn about ethical dimensions of patient care (10).
- Improve clinical skills: Early experience improved students' ability to relate to patients and communicate empathy. It helped them to understand the doctor-patient relationship and the importance of listening to patients, carers and other professionals. Students valued exploring social and psychological determinants of health and disease through contact with real patients.

Teaching enthusiastic young students can also motivate and reward teachers and patients. They confirmed that contact with enthusiastic students means for general practitioners important gain in self-esteem.

Before the changes of curriculum at Ljubljana Medical faculty in Academic year 2009/2010 the students had their first contact with patients though the subject (eng. "internistic propaedeutic") in the third year, in which students learn mainly about clinical examination. The teaching of medical psychology in the second year (and in the third year only for the students who select the subject as an option) did not offer the basic knowledge of psychological and interpersonal relationship, which are important for relationship and communication between doctor and patient. Medical students started with learning communication in the last year of their study at Medical faculty through the subject "family medicine".

Decision for the introduction of this subject is based on data from the literature, result of our own research which found out that Ljubljana Medical Faculty does not prepare students adequately for providing motivation and guidance to their patients, feeling empathy and managing team work and communication (11), and the empirical recognition of the fact that previous programme lacked the necessary knowledge and experience for good interpersonal communication.

New curriculum at the Medical faculty of Ljubljana according to Bologna declaration introduced early clinical exposure for the first year medical students through the subject "Communication".

The aim of the article is to present the subject "Communication" at Ljubljana Medical faculty and discuss about our first experiences with teaching.

Methods

Aims of the curriculum

With ECE we want to achieve several aims: provide students with the basic knowledge on medical psychology teach them how to communicate with healthy people and patients, present them the rules for communication within a small group and help them to understand that good doctor-patients relationship is crucial for the successful treatment.

Structure of the curriculum and teaching methods

Curriculum has theoretical and practical part (Figure 1).

Theoretical part

Medical psychology means contribution of psychology to health improvement, disease prevention, recognition of risk factors and improvement of health care systems and influence of the public opinion regarding health. We teach the basics of medical psychology through the lectures. Students get the basic knowledge on communication and the models of communication which are used in health care through the lectures.

Practical part

Communication is the act of conveying a massage to another person, and it is an essential skill for establishing physician-patient relationship and effective functioning among health care professionals. There are different methods of teaching communication skills like: watching teachers, who

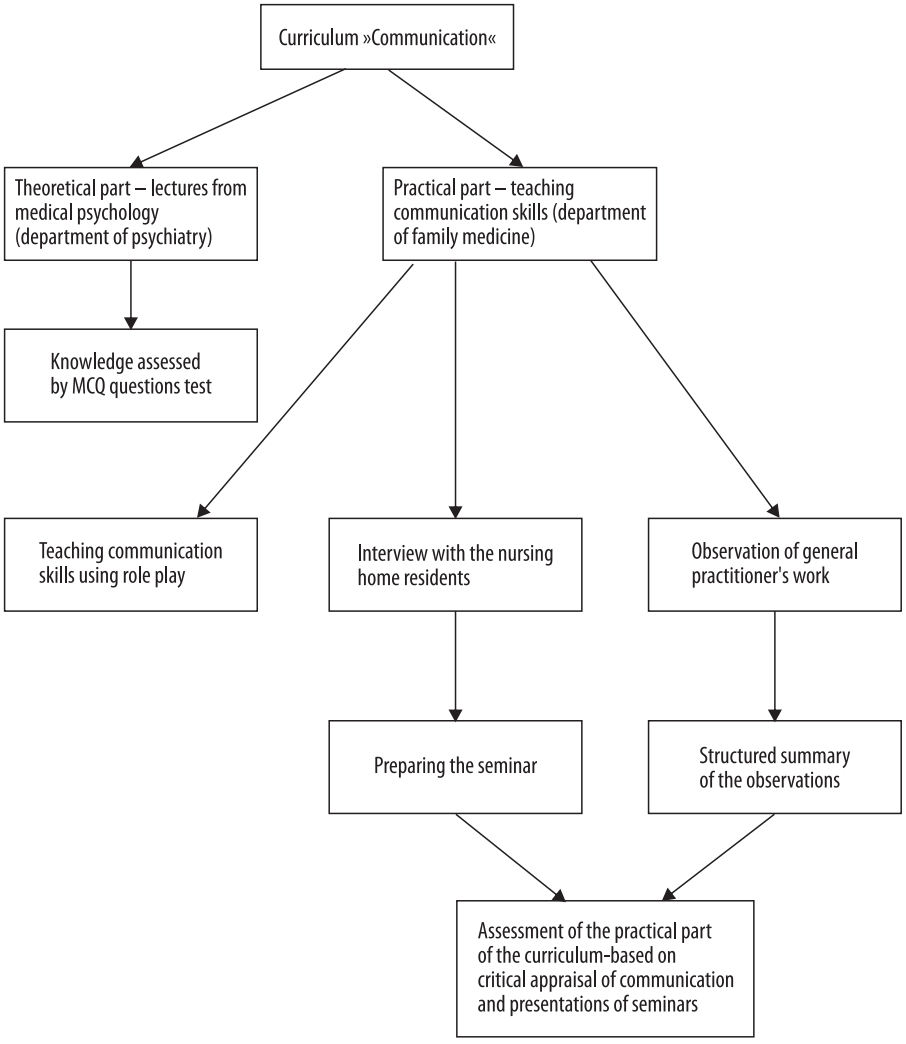

Figure 1 Structure of the curriculum

are considered to be a role model for their learners, watching videotapes, role play, group work, standardised or simulated patients and real patients (12). We are using some of these methods in practical part of our curricula:

Teaching communication skills using role play

Practical exercises in small groups of 12 to 15 students are preparation for the field work. We used role play as a teaching method for learning communication (Role play). After the theoretical presentation of the role play and rules for giving feedback, the teacher demonstrates the method. In the next step, the students in groups of three perform role play using the prepared scenario. Two of the students are actors in the role play, and the third one is an observer. When the role play is finished, the actors and observer give feedback. Teacher has to led the discussion, taking into account also comments and suggestions of other students and summarise the main findings. Three role plays are played. Each of the students has an opportunity to be involved in a role-play as a physician, patient or as an observer. The scenarios for the role-plays were prepared the way that students don't need medical knowledge and could be emphatic with the problem (for example: drinking problems).

Interview with the nursing home residents

Nursing homes are institutions of social care and mainly offer institutional care for the elderly who are incapable of living at home due to old age, illness or other reasons. Visiting a nursing home enables students to communicate with elderly people (the average age of nursing home residents is more than 80 years) with chronic diseases, who present a model of their future patients.

Before the visit in a nursing home students became familiar with the characteristics of elderly nursing home residents and get all the necessary instructions for interviewing a nursing home resident and preparation of the seminar. Students visit a nursing home resident in pairs. One student interviews the resident, using the method of semi structured interview, the second one is an observer. When they are finished with the first interview, they go to the second resident and change their roles (the observer becomes the interviewer). An observer should observe non-verbal and verbal communication and when the interview is finished, should give oral and written feedback to the student performing an interview.

Students should follow the exact protocol for interviewing the resident. The necessary data that should be gathered are: reasons for admitting in nursing home, typical day of the nursing home resident, physical problems, psychical problems, medication, functional status and relations to relatives, staff and other residents (13). Time for semi structured interview is limited to one hour.

Preparation of the seminar

The aim of the seminar is to facilitate critical appraisal and analysis of gathering data. Students have to prepare the seminar according to the instructions (13). Seminar has to have the following subtitles:

- Presentation of gathering data,
- Analysis of the collected data: presentation of the main problems and potential solutions,
- Analysis of communication of the colleague,
- Critical appraisal: gains, feelings or fears related to the visit in nursing home

Observation of general practitioner's work

Students observe general practitioner's work during their 1-day practice attachment. The

aim of the attachment is observation of physician's work, particularly communication between patient and general practitioner, but also communication within the team. Student should document the observation into prepared form (13) and discuss about the findings with the tutor. Based on the observation, student should prepare a short structured summary of the observations, including the following items (13):

- Who are the patients?
- What are their main problems?
- Is the same problem equally important for patient and physician?
- How did you assess physician's communication?
- What happened during the communication that should not have happened?

Presentations of seminars

At the final seminar students in small groups (12-15 students) present their seminars. Each of the students should rapport about his/her experiences with communication in nursing home and in the office. Student briefly explains the feelings during the interview, explains the communication skills (verbal and non-verbal) that were effective and identify aspects of the interview that should be done differently if they could repeat the interview. It is important that student expresses critical appraisal to her/his own communication skills and is capable to extract the main message out of the gathered data.

At the end of the presentation student should describe the reasons for fulfilling his/her expectations and expectations of the nursing home resident. In the second part of the presentation student should present the analysis of the communication of the colleague in a way to expose aspect of the interview that worked well and later on identify the aspects that could be improved. In the last part of the seminar students discuss with the teacher about their experiences from the office visit. The teacher leads the discussion in a way that stimulates comparison between communication led by the student in nursing home and communication led by general practitioners in the office.

Assessment

The assessment is integrated so that the final mark from 5 (insufficient) to 10 (excellent) consists of the mark of theoretical part (MCQ questions test) and practical part, which is based on the assessment of the seminars. Criteria for evaluation were prepared in advance. Students have to pass theoretical (60% of points on the MCQ test) and practical part of the exam. Each part contributes 50% to the final mark.

Study literature

As a study for theoretical part of the subject (medical psychology), there are recommended readings and handouts from the lectures. For the practical part, there is a manual for exercises and seminars for students (13) and manual for teachers and tutors in the offices (14). The manual for teachers and tutors help to homogenise the teaching and assessment process.

Quality assurance

We permanently follow the quality of our teaching. During the curriculum we appreciated student's oral feedback, which is of outmost importance for future improvement of the curriculum. At the end of the curriculum we ask students to fulfil evaluation forms. Evaluation form evaluates the overall curriculum and particular parts of the curriculum using Likert scale (1 – bad to 5 – excellent). In the last part of the evaluation form, a student may write comments, recommendations and praises regarding the content, quality and organization of curriculum.

Organisation of the curriculum and the faculty

Curriculum is mandatory for all students of medicine and dental medicine (approximately 300 students) in the first semester at Medical faculty in Ljubljana. It is assessed with 4 ECTS credits.

Organization and teaching of the curriculum "Communication" is a result of cooperation between Department of psychiatry and Department of family medicine. There are also many external collaborators with the contract with Medical faculty helping us in the teaching process:

- Nursing home staff employed in the nursing homes in a neighbourhood of the Medical faculty,
- Primary care physicians (most of them are tutors).

Results

Students' feedback

Students collected all the necessary data without problems, although they were nervous before they started with the interview. They found their communication skills sufficient to lead the interview also in more difficult situations, like talking about sensitive topics (e.g. relationship with the family and friends) or in situations in which communication could become difficult (to talkative patent, silent patient, complicated patients).

Students appreciated the possibility for early patient contact and assessed it as of outmost importance for their personal and professional development. They found that a good relationship is important part of a treatment. They were enthusiastic about establishing empathic relationship to the elderly people. They were surprised that elderly people, who were in many times seriously ill and disabled, were so positive in their mind and they would like to share their life experiences with young people.

After the visit to an elderly person, students recognise them as more positive. They appreciated their life energy and vitality (15-17). Students recognised that the main added value of the nursing home visit was the possibility for transmission of wisdom from the elderly to young.

One of our students wrote in her seminar: "Although the elderly people have many of problems, they are able to enjoy in every day. They enjoy in small things, like reading books, fulfilling the crossword puzzle or meeting and talking with the grandchildren." They said that the only thing which is important to remember is that "the small things" keep us alive.

One-day attachment in primary care was extraordinary experience for most of the students: they had an opportunity for the first time to wear white coat and had a feeling of belonging to the profession. They found physician's work as very heterogeneous and physician's responsibilities to the patients and society as the integral part of the profession. They became aware that communication skills may help improve future physicians' interaction with patients and families. Students also recognise that the way of communication should be adapted to a particular patient to enable effective and compassionate care.

Many of the students reported that experiences from one-day attachment (including all the responsibilities and dilemmas) are additional confirmation for the correctness of their decision to become a physician and improve motivation for the further study.

Teachers' experiences

Our experiences with teaching ECE are positive. We found our first year students as very enthusiastic, our teachers were keen on working very hard and patients were aware that teaching communication should be based on communication between the student and the patient.

The organisation of the curriculum was feasible. We organised all the teaching activities in spite of high number of students and a lot of practical work taking place in different locations (nursing homes, offices) and short time (three months). Teaching of ECE was acceptable for patients involved in the teaching process. Most of the patients found ECE as important and participated in the teaching process. Based on the students' feedback and our own assessment of the fulfilling of education aims, we recognised curriculum of ECE as educationally effective: students greatly appreciate their extensive contact with patients and reported about improvement of their communication skills and empathy. In the study Joekes and co-authors found that inclusion of "professional development" teaching improve communication skills of the students in the early years of their medical course and they may benefit from further opportunities to practice basic communication skills on one to one basis with patients (18).

Tutors in the office were greeting the idea that students recognise their future profession early in the educational process at Medical faculty. One of the tutors wrote: "I was positively surprised regarding the students' enthusiasm, communication skills and bonton. I didn't expect that a first year student could be so agile, friendly and with such a discrete relationship to patients and staff. I would like to have more of students like that young colleague in my office."

There were some problems with the assessment of practical part of our subject. In spite that the assessment based on structured evaluation of seminars and reports from the office using cheque-list was prepared by our own. We were not sure that with this method we appropriately assessed communication skills.

There are different methods of assessment of communication skills (direct observation by an external observer, video or audio-taped interview rated by an independent observer, OSCE examination, patient's rating of the students performance) (19), but there were more experiences with using these methods for medical students in clinical years (20).

There are some ideas from the literature for the assessment communication skills among first year medical students like: an OSCE (21), students assess their own communication skills based on the view of their own videos (22), videotaped interview assessed by faculty using evaluation tool and patients using patient satisfaction tool (23).

Discussion

Evaluation of teaching

After two years of our teaching, we could realise that our subject was well accepted and assessed as valuable. Students appreciated the opportunity for learning interpersonal and communication skills throughout practical part of the curriculum. Most of the practical part of the curriculum took place in settings in which students could have direct contact with patients (nursing home, physician's office), that could bring to more successful teaching. (24, 25, 26) ECE was found to be important in developing establishing a good doctor-patient relationship and understanding the patient as a human being (4, 8, 25, 27). We believe that our students were aware that good interpersonal relationship which could be established by appropriate communication skills, are of the same importance than the clinical knowledge. Our subject could be an introduction in learning communication skills in clinical years.

Dilemmas regarding ECE

There are some dilemmas we discussed about before starting the curriculum and during our teaching process.

The first dilemma was about the personal maturity of 19 years old students. Personal

maturity should be the limiting factor, because participating in the curriculum requires understanding and acceptance of moral and ethical norms of our profession. They confirmed that ECE enabled students to acquire professional norms and behaviour and accept responsibilities toward the patient and address the patient's needs easier. ECE also helps students in developing their own professional identity (6, 10, 27). We discuss about ethical norms and values with students during first part of our curriculum. We were sure that students before entering clinical settings understand the basic ethical principles, especially the principle of confidentiality.

The second dilemma was that students may have the problems with establishing relationship and performing an interview with completely unknown old person. In the research of Hojat and co-authors they found that the level of empathy could be even higher in the first than in the third year (28).

The third dilemma was that the students don't know enough about the particular group of elderly people in nursing homes, their way of life and their attitudes. They found that students were not aware of process of aging and that they have sometimes negative perception regarding elderly people. On the other hand they found that with the teaching process taking place in small groups we could change negative stereotypes toward elderly people to more positive (29, 30).

Students had a seminar about the characteristics of elderly people, focusing on elderly nursing home residents. We also demonstrate the visit in a nursing home using the method of role play: teacher was a nursing home resident and student played his/her own role. We believed that our students were sufficiently prepared and had positive attitudes toward elderly people and without fear of performing interview.

Conclusions

The subject "Communication", which means the introduction of ECE to the programme in Ljubljana Medical Faculty, was accepted by the students and teachers and fulfilled the aims. ECE helps medical students to develop appropriate attitudes towards their learning and future medical practice; it is an opportunity for improving communication skills and is helpful in establishing a good doctor-patient relationship and understanding the patient as a human being. It could be helpful in establishing compassionate and responsible physicians – values that are beside the clinical knowledge expected by the patients. Students of the early years of their medical course may benefit from further opportunities to practice basic communication skills on one to one basis with patients.

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Erasmus exchange in the field of family medicine in Slovenia

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Objective. The purpose of this paper is to analyze the Erasmus exchange of students at the University of Ljubljana, Department of family medicine in the period from 2005 to 2010. The beginnings of an Erasmus exchange in the field of family medicine in Europe are described. Ljubljana Medical School has currently 60 bilateral agreements with universities or medical faculties in the EU and EFTA countries. **Materials and methods**. We collected data of all students who come from the foreign faculties to the Department of family medicine and those from Slovenia who went to study abroad. In addition to basic descriptive statistics, we used the elements of qualitative analysis, where we reviewed the reports of the Slovenian Erasmus students, who went on exchange in the field of family medicine. **Results.** Department of family medicine cooperated with 14 foreign medical schools since 2005. 42 Slovenian students went on academic exchange in the field of family medicine. 21 foreign students came to Department of family medicine in Ljubljana. Female students were more frequent in exchange compared with male students. The largest proportion of students went abroad in 2009. Most foreign students visited Department of Family medicine in Ljubljana in 2011. Reports of students show that they learned a lot. Students were able to compare the organization of health care in a foreign country and Slovenian health care system. **Conclusion.** Erasmus exchange has proven to be an important addition to the existing educational system. Students are acquainted with the progress of health care in Europe in this way. They are able to compare the benefits and disadvantages of foreign health care systems with home health care organization.

Key words: Undergraduate education, Erasmus exchange, Student, Family medicine.

Introduction

Family medicine in Europe has a growing influence; this could be seen in the area of education as well. Most medical schools in Europe restructured curriculum few decades ago (1). The reform had to happen, because health system (medical education included) should follow the health needs of the population. Only by the way of reforms the health system can better address health issues in the community. Since family practitioners are front line clinicians, they were included in health sector reforms. Family

practitioners work in the community where their patients live and provide for them individual care over longer periods of time. As a consequence, family medicine as a clinical field has been integrated in most medical schools, with family physicians making a unique contribution to the teaching (2).

Integral part of family physician contribution to medical curriculum is a practice attachment, giving the opportunity for students to experience clinical reality in family medicine setting. European Academy of Teachers in General Practice / Family Medicine (EURACT) had important role in reforms in medical education (3). Based on these experiences, a European student exchange has been developed in 1992 under the EU Erasmus program (2).

The main objective of the Erasmus student exchange is organization of student exchange under study periods, which means that students can complete part of their regular academic study or practice in one of the institutions of the Member States of the European Union (EU) and the European Free Trade Association (EFTA). Medical Faculty of University of Ljubljana is included in the network of European medical faculties ECTS-MA (4) since 2008. It currently has 60 bilateral agreements with universities or medical faculties in the EU and EFTA countries. If a student wishes to pursue academic requirements at institutions with which the Faculty has signed contracts, the latter can further be concluded. The contracts specify the number of students and duration (number of months) abroad. Based on these contracts each year a tender is undertaken in which terms and method of selection of candidates specified. Selected students from going abroad, together with the faculty program coordinators and program coordinators at the partner institutions shall draw up a study plan, obtain the agreement of the heads of institutes and chairs of objects that they intend to perform abroad. The study period is a time-limited and lasts for studying at a partner institution for at least three months to twelve months (4).

The subgroup of coordinators, professors and teachers in the field of Family medicine was established in 2004, founded by professor Chris van Weel. University of Nijmegen was the first that came to exchange of students in the field of family medicine. The first students from Nijmegen were engaged in learning activities at the Universities of Southampton and Ghent (2). Department of Family medicine of the University of Ljubljana started to participate in this group in 2005.

The purpose of this paper is to analyze the Erasmus exchange of students at the University of Ljubljana, Department of family medicine in the period from 2005 to 2010.

Methods

In the analysis of student exchange program we used parameters of descriptive statistics. We collected data on students of the Faculty of Medicine of Ljubljana who went to study in foreign universities. We also analyzed data on students who come from foreign universities to study at the Medical Faculty of Ljubljana. We analyzed data from the beginning of the Erasmus exchange, which is from 2005 onwards. The analysis did not include students who came to Ljubljana in summer practice, and those Slovenian students who went abroad to do the summer practice in their holiday period. We also reviewed reports, which were written by the exchange students in the period 2009/2010 (5).

Results

Department of Family Medicine cooperated with 14 foreign medical schools since 2005. They are as follows: Imperial college of London, Radboud University Nijmegen, Medical University of Vienna, University

Strasbourg, Ludwig Maxmilians Universität München, Faculty of Medicine and Health Sciences, Ghent University, Prvi Medicinski Fakulteti Karlove Univerze v Pragi, Medicinske fakultete Univerze Masaryk, Brno, University Pais Vasco Santiago de compostella Spain, Masaryk University Latvia, Medical University of Warsaw, Univeristy Madrid, University Johannes Gutenberg Mainz, Sahlgrenska Academy at the University of Gothenburg.

Overall, 42 students went to study abroad: 13 male and 29 female students. 21 foreign students (16 female students and 5 male students) came to study family medicine at the Department of Family medicine in Ljubljana. The overview of the Erasmus exchange is shown in Table 1.

Table 1 Out coming and incoming Erasmus students at the Department of family medicine, University of Ljubljana

Year	Out-coming students	Incoming students
2005	2	1
2006	3	1
2007	9	2
2008	4	6
2009	13	4
2010	7	0
2011	4	7
Total	42	21

The largest proportion of students went abroad in 2009. Most foreign students visited Department of Family medicine in Ljubljana in 2011. Most of Slovenian students in the field of family medicine went on exchange to Imperial College of London (13 students), followed by the Radboud University Nijmegen (7 students), and Sahlgrenska Academy at the University of Gothenburg in third place. Of the foreign students who come to study at the Department of Family Medicine of Ljubljana, the largest proportion was the Dutch students (9 students). Female students were more frequent in exchange compared with male students.

Below we present two examples of student exchanges. The first example clearly describes how the clinical exchange took place, in another case; it is described how a student study carried out a survey in the so-called "research elective" (5).

"I performed exercises in family medicine at separate locations with different doctors. I started in a suburb called Illkirch-Graffenstaden. This place is bordering rural areas of Alsace, which was opposite to the place in the center of Strasbourg, where the second clinic was located. The work was divided into morning and afternoon from Monday to Friday and sometimes on Saturday. It was comprised of both ambulatory work and home visits. General practitioners tend to have a clinic next to each other in groups of two or three, which allows them to consult each other and make the most economical organization of the work schedule so someone is always present even on Saturdays. Health care system is organized somewhat differently than in Slovenia, because patients pay for the examination then get their money refunded in a few days of 90-s per cent. This applies only to the Alsace-Lorraine, which is legally and culturally a bit separated from the rest of France. Elsewhere in France the figure of reimbursement is lower, ranging around 70%. Regarding casuistic of diseases there is not essential difference compared with Slovenian situation. The range of diseases is really wide, i.e. infectious diseases, dermatological and orthopedic complaints, neurological disorders, psychiatric diseases, prevention and vaccination. My mentor was taking care of drug addicts in addition. The age of patients varied from childhood to old age. Elderly patients were visited at their homes. Most of them had problems with movement, but some were in the terminal stage of disease and needed palliative care treatment. I

was included in the whole process of care, from taking a history through the status and the therapy. My mentor guided me and we discussed about everything" (VS, male student).

"On the call of the Erasmus program I first heard about the possibility of pursuing an Erasmus study at Imperial College of London. My work was in the majority of research in nature and was held at the e-Health Unit, which operates on the Department of Primary Care and Public Health at Charing Cross. My mentor chose the field of computer-assisted detection for taking history of domestic violence for my research project. Much research is done in this field and most of it shows that patients are more honest when they talk about sensitive information (drinking alcohol, sexual history, family violence) if the »computer« asks them compared with the consultation at the doctor's office. Mentor was a good supporter in research work; he helped me with advices and encouragement. There were several young researchers who have worked for systematic literature reviews Cochran database (Cochrane Review systematic) at the Department. Every Wednesday I attended a lecture at the department. Once a week I went to the clinic dr. Bootona Paul, professor of general medicine at Imperial. I learnt a lot about the organization of general practice in England and about working stiles of GP's. I also attended several open lectures, which were organized at the Faculty of Medicine and the exercises in communication skills, which were held for students at the Department of Primary Care and Public Health. I took advantage of free time for socializing with students who come from different parts of the world". (MS, female student).

Reports of students show that they learned a lot. Students were able to compare the organization of health care in a foreign country and Slovenian health care system. Reports show students that are abroad acquainted with the introduction of innovations in family medicine, such as the implementation of e-health platform. We also know that family medicine in some countries carry out procedures like proctologic interventions, dermatoskopic examinations and many other procedures.

Discussion

The Ljubljana medical school introduced the program of family medicine more than 15 years ago. The program is conducted in seven weeks blocks, where work with tutors in place is combined with structured teaching at the department (6). The department of family medicine joined to international Erasmus exchange programme in 2005. To date, there has been no analysis of how many students went on exchange abroad, and how many of them came to study in Slovenia, so this article provides the first overview of the exchange in a period of seven years.

We estimate that 14 medical schools with which Department of family medicine cooperates is a big and important issue. It is also important to work with faculties from across Europe, allowing teachers to know the faculty organization and content of the other faculties, and compare the content of the family medicine field on the home university. The total number of exchanges is valued as large and important, because we know that for every foreign student a tutor has to organize individual classes and to conduct the training in English. This certainly presents for a tutor additional work and burden.

In addition to basic knowledge and skills that students receive at home faculty Erasmus exchange program gives opportunity to learn about organization of primary care in a foreign country and to make a comparison of two different health systems. They value the financing of primary health care at home and abroad. They compare the treat-

ment options of patients in the foreign and domestic environments. They learn to identify where are the strengths and weaknesses of the primary health care. Since we didn't find the other possible analysis and comparison of student exchange, we will continue with collecting data and prepare additional research in the future. Living and studying medicine in a new environment exposes students to new clinical methods and thinking as well as equipping them with invaluable linguistic and interpersonal skills. Setting up such an exchange requires initiative and perseverance, but the rewards are immense and life-long (7).

Conclusion

The results of our study indicate that student exchange represents an important added value to the existing educational system. Department of family medicine in Ljubljana has been successfully cooperating with many foreign universities. A large number of students, who decided to study abroad, from the year 2005 onwards, show that we fulfilled the mission of student exchange and that this way of organization of teaching is useful and interesting.

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Students' letters to patients as a part of education in family medicine

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Family medicine fosters holistic approach to patient-centered practice. Current medical curriculum in Croatia does not have well-structured courses or tools to prepare medicals students for successful communication with the patient and for building lasting and beneficial doctor-patient relationship. We explored the value of students' practice in writing letters to patients about their illness as a way of building personal and compassionate relationship with patients. Sixth year students at the School of Medicine in Split wrote letters to the patients from consultations under the supervision of the supervisor in a family medicine practice. Structured teaching of communication with the patient brings family medicine back to what has actually always been its main part – communication and doctor-patient relationship. Our future aim is to develop students' letters to patients as a new tool in the family medicine course examination. Moreover, we will investigate how they can be used in everyday practice of family medicine.

Key words: Letter to the patient, Family practice, Communication, Doctor patient relationship.

Introduction

Word comes first and then cure!
Hippocrates

At present, medical profession seems to be more concerned about form and technology than about individual interaction with a patient as a human being: "To be intellectually free, sometimes we have to write the diagnosis, medical history, state facts and figures, and then we have time for the patient. First, we must satisfy the system. Let's do the paperwork, then we can be doctors" (1). On the other hand, family medicine fosters holistic, bio-psycho-social approach to patient-centered practice. It seeks to identify the patient's priorities and concerns, and includes patients

(to the extent they wish) to make decisions regarding their health problems (2).

Physician-patient relationship

The key to the health care system is the relationship between the patient and the physician in the doctor's office or by the hospital bed, where we deal with the patient, not just his or her illness (1,3). The belief that the relationship between doctor and patient determine the behavior of the whole system has changed the understanding of the system as something external and imposed (1, 4).

There are four basic levels of relationship in the doctor-patient relationship (1). The first level involves doctor as a mechanic who repairs some damage (illness, broken bones, etc) and the patient who passively undergoes such repair. The second level corresponds to that between the teacher and the student, where the patient follows the recommended care plan and changes his or her behavior. At the third level, physician is like a coach whose actions change the patient's attitude toward health or illness. Finally, the forth level involves active collaboration between the patient and the physician, where they both become enriched through joint work.

Both patients and physicians agree that their current relations are generally of the first or second level. They may aim to reach the third or fourth level, but this requires creation of specific circumstances, as well as learning and adaptation on both sides – their goal is "to light a fire, not to fill a barrel" (1). Using their own knowledge and experiences, the physician and the patients should develop a partnership in which the physician helps the patients to become aware of what they actually want with their health, and to develop their own systems of caring for it. Health and personal responsibility are closely linked; with greater responsibility for own health, it is easier to accept new and higher quality knowledge (1, 5).

Communication

The basic elements of medical training are communication skills and evidence-based medicine. However, experience tells us that we are not very successful in the acquisition and application of communication skills. There are more and more patients who do not understand our advice and who do not know how to look for further information regarding their health (2, 3).

There is no distinctive professional style of communication as a product of medical education in Croatia. Communication skills are taught as a part of different courses during the curriculum, but the teaching is not well-structured in family medicine course in the sixth year, when students attend rounds in family medicine offices. The consequence of this is that our professional communication very much depends on our personalities rather than on the skills we learned during medical school and later professional training (2, 6).

Physicians' personal letters to the patient

The lack of structured tools for promoting empathy and communication in family medicine teaching prompted us to explore the practice of writing letters to patients about their illness. There are many examples of written communication between physicians/health professionals and patients. For example, the Firefly Project (7) has a large archive of letters written by medical students and community teenagers to patients with life-threatening illness. The patients greatly appreciated this experience, as one of them wrote: "At a time when a sudden illness has made me sensitive to those who did not understand my story, I was encouraged by doctors who have worked hard to save me. I

felt the impulse to give all of myself. Writing You allowed me to reconnect with parts of myself that I thought were lost forever, and for that I thank you." (7).

Letters to families of patients were also used as a strategy in nursing education, and reported benefits for students, faculty and patients (8).

Finally, the project of the National Health Service (NHS) in Great Britain investigated the usefulness of letters to the patient after specialist consultation (9). Letters were very well accepted by patients, especially those addressed personally, rather than those written to a family physician. Likewise, it was necessary to write simple, structured and understandable letter tailored to the patient and his or her needs (9).

Students' letters to patients in teaching family medicine at the Medical school in Split

In the Croatian health care system, discharge letter a patient receives when released from the hospital is the only written communication for him or her and is actually intended for the primary care physician – family doctor. The letter is formally written and in very professional language, with the focus on all the procedures and findings related to the patient. The letter lacks any personal message, as it is common on other health care systems, where it begins with "Dear colleague..." (9).

Based on the experience from previous studies of letters as communication channel between health care and patients (7-9), we used letter writing to teach communication skills to medical students attending family medicine course in the sixth year of their curriculum. During their practical work in family medicine offices, we asked them to write letters to selected patients whom they had examined during practice.

The goal of student writing letters to the patient was to: 1) develop a new instrument for the evaluation of the examination in family medicine; 2) explore how such an instrument (tool) can be used in everyday practice; 3) develop an internal dialogue in a family medicine office to better understand the patient's care and concerns, needs and priorities at the time of disease; and 4) develop students' communication skills in relation to the patient. Finally, we thought that the patients would have the greatest benefit as they would receive a document that would help them to understand their illness and benefit from a very personal interaction with and support by a medical professional.

After the examination of a patient with a suitable medical history, the student was advised by the supervisor (family medicine physician in the office) to compose a personal letter to the patient. The students were asked to write in simple, understandable language about the following elements:

1. Basic information on age, gender, social and educational status of the patient and the diagnosis;
2. Description of symptoms and reasons for the visit to the office;
3. Relevant sections of the medical history, which are, in the opinion of the student, important for the present condition of the patient;
4. Integration of the illness history and current problem of the patient; and
5. Recommendations for treatment and lifestyle, with explanations (what students think is important for the patient in this state and how he or she should behave concerning health).

The following excerpts from two student letters illustrate students' ability to combine knowledge and empathy.

Student's letter to a female patient aged 76, retired, suffering from arterial hypertension:

Dear Mrs. L,

…

Thank you for your time and your appreciation of our assignment to write a letter to the patient. I am writing this letter to briefly explain your illness and give you advice/recommendations on how to better control it and live with it, so it would not be leaving consequences to your health. Your illness, or better to say – condition, is called primary arterial hypertension.

…

Your heart pumps blood into the blood vessels that can narrow or expand, depending on the needs of the organism. The blood in the vessels needs to be under some pressure in order to flow through your body. If the pressure is within normal limits of 140/90 mmHg, it is not harming the blood vessels. When the pressure rises above this limit and if this condition lasts for years, it damages the heart and the blood vessels. The downside of all this is that there are no significant signs that make you see or feel that something was wrong. Nevertheless, the disease is present and somewhat damages the body, so is often called the "'silent killer" because it can eventually cause life-threatening conditions like heart attack or stroke.

…

I have seen during our meeting at the office that you are a warm, caring and positive person, and these are the qualities that will surely help you cope with life's everyday adversities. Stress is responsible for many conditions and diseases and thus plays an important role in your hypertension. Deal with it in a way that suits you best. Do not let it take control of your life. Spend your time with people you like, talk about topics that interest you, think positive and take every obstacle as an opportunity for growth. Your life is in your hands and if you do not care for yourself other will not be able to do it instead of you. You have the power to make your life better, stronger and healthier.

Please accept my cordial greetings, in the hope that this letter will help you understand your disease and find the best way to live with it. I wish you all the best in life.

Sincerely Yours....

Letter to a female patient aged 56, accountant by profession, suffering from a duodenal ulcer:

…

Now I will briefly present the basic features of your illness.

The main symptom of an ulcer in the duodenum is the pain and discomfort in the stomach. The pain is caused by hungriness and the pain usually disappears after eating. The characteristic of these patients is to be hungry at night because it leads to the onset of symptoms. The appearance of black stools or vomiting blood indicates the occurrence of disease complications when medical help should be sought immediately. Ninety percent of the patients with ulcer also have the infection with a bacterium called Helicobacter pylori, which contributes to disease development and therefore should be removed from the body.

Several types of drugs are used in the treatment of duodenal ulcer. These drugs can relieve the symptoms, speed the healing of the ulcer and prevent recurrence of the disease. Other drugs can reduce stomach acid and protect the mucous membranes. The therapy is essential to carry out the treatment of the infection with Helicobacter pylori.

Since we confirmed the existence of these bacteria in Your stomach, I advise you to take an appropriate therapy.

This therapy consists of a combination of three drugs. One of them reduces the se-

cretion of stomach acid, which adversely affects the development of the disease, and the other two drugs are antibiotics that act on the bacterium Helicobacter pylori. The therapy lasts 14 days and has 85-95% success. After therapy, it is necessary to make a test that will confirm whether or not the bacteria were removed. The test is performed 5-6 weeks after the end of therapy. Then we will, in consultation with you, decide on further actions.

I hope that I had, at least in part, clarified doubts regarding your medical condition. If you are still unclear about the disease, I am available to answer your questions and suggestions.

The following excerpts from two letters illustrate how the empathy between the doctor and the patient helps the patient to feel secure and have trust in the treatment process.

Letter to a male patient aged 72, carter by profession, retired, married, with two daughters and a son, and two grandchildren; suffering from moderate depression and essential hypertension:

Dear Mr. F,

…

I remember how you told me that, after the consultation in our office, you were not much better and were still waiting for the situation to be improved. Now I am writing to you to give you some advice but you have to understand one thing: the best person to help you is you yourself.

Do you remember when we talked and you were glad that you received attention and care? Do you remember how you laughed when you met me and my colleague while you were picking up granddaughter from kindergarten? We all need attention and we all need to feel needed, even for a few moments in the day. You know it for sure, because while you were working you had that feeling. What you do not understand now is that you are needed even now, but in a different way. You have a family that loves you and needs your advice, your son needs your appreciation for the work that you gave him, and your wife needs your support.

…

I'm sure you still have dreams that you wanted to accomplish, like your wife too.

…

Remember that you will be better only when you decide it by yourself. Please, turn towards everyday things that make you happy as much as possible.

Sincerely Yours....

Letter to a female patient aged 71, retired, with primary school education; suffering from moderate depression, gastritis, liver cirrhosis, elevated arterial pressure, cardiac arrhythmias and lumbosacral syndrome.

…

The problem that brought you to the office this time was the blood in your urine. You have already had mild bladder infection, and you felt some kind of similar problems last few months. The first thing to be done is to test the urine, and when we have results we should then know more about it. You told me that you were afraid because you didn't feel pain when you found the blood in your urine, because you had been told that "if there is pain, it is not serious problem". Obviously this would mean cancer. Please do not listen and believe such statements because they are not true and no such rule exists. Of course none of us is immune to malignant disease, and each of us can get it, but they are, fortunately, not frequent. Inflammation is much more frequent – you have experienced it, and seem to be prone to them.

Do not be afraid of anything in advance and try not to imagine the worst possibilities, because if it is so, no one would, for example, walk down the street because of the fear to be accidentally hit by a car, although the chances of it are small.
You received, in a short time, many bad news about your health and it is not easy to deal with this without suffering. I understand that you have sense of loneliness because the members of your family live their own lives and are preoccupied with their problems. However, please, try to find motivations for joy in your life. It does not have to be anything big and you don't need, while you recover from the shocks that you have experienced, to burden yourself with high expectations. Take your time to slowly get over the news and continue to live. However, in the morning when you wake up, try to remember at least one small positive thing that will keep the day: spending time with your grandkids, if you enjoy a walk on a beautiful day, favorite shows, flowers that you buy yourself or whatever makes you happy. Your problems are not big and you can work to resolve them.
The value of your life is great and a lot can affect another person's life. You were my first patient with whom I had a full consultation of my own, and I will never forget you. Did you, when you woke up on Thursday morning, think that you would be someone's first in his live – in your case my first patient? You are a strong and special person, so please try not to think only about negative things in life when you do a lot of positive things even when there is no hope. I wish you lot of happiness and good health,
Sincerely Yours....

Students were also able to deliver useful and professionally founded recommendations to patients.

Letter to a male patient aged 52, economist by profession, suffering from diabetes.

....
I will point out one possible complication of diabetes – diabetic foot, because you yourself can do much to prevent its occurrence. Check your feet daily for cuts, blisters, sores, infections or unusual markings. When you do that, use a mirror if you cannot raise your foot.
Cut your nails straight. Wash your feet every day, and dry them carefully, especially the area between the toes. Avoid using lotions in that area. Change socks every day.
Buy shoes late in the afternoon. Then the feet are more swollen. This will prevent that you wear tight, uncomfortable shoes.
…

Students' letters were evaluated as a part of their family medicine course examination. The evaluation addressed five aspects of the letters: 1) appropriateness and clarity of the description of the illness/condition; 2) knowledge about the illness/condition; 3) quality and usefulness of the recommendations; 4) courtesy and empathy demonstrated in the letter and 5) skill of verbal expression. The rating was performed by three family physicians – supervisors in the practice in family medicine offices, blinded to the identity of the students.

Comment

We were very satisfied with the results of our experiment in family practice. Students got high marks on their exam and we had a chance to re-examine our skills in communicating with the patient and the knowledge about specific problems students wrote about. We learned that when the patients spent more time in consultation with the

student and his or her supervisor and when they receive students' letters afterwards, they felt better prepared to understand and accept their illness or condition. We also learned that courtesy and empathy were equally important to the patient as the competence in dealing with objective symptom, physical examination and diagnostic accuracy.

The first reactions from patients were very positive. Some of them were afraid that the letters would bring bad news, and sometimes they complained that the letters contained too many technical terms which confused them. Many comments were optimistic and personal:

"I periodically go back to read the letter again, and it helps me."

"I'm so glad they wrote it because I'm interested to learn how to help myself."

"I understood everything in the letter and now I know about my disease better than before."

"I found the letter very comforting and reassuring."

"This approach to the patient is very important. Thank you."

Perhaps in future the patients will have their history at the tip of their fingers on a keyboard or some e-application (10, 11). For the time being, we believe that simple, personal letters are valuable prescriptions for the satisfaction of patients and doctors in their joint work for health.

How is it really to be a doctor? What gives meaning to his work?

The art of medicine consists not only of how to comply with the rules of profession. What a man does in medical practice, and yet beyond what is strictly medical, that personal, human, it makes sense of that work and makes man in it irreplaceable.

"Doctor and the Soul"
Viktor E. Frankl

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Possibilities of family medicine in medical education

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Family medicine is a discipline that has only recently joined the academic arena. Because of this, the academic contribution of this discipline to universities has not been clarified yet. On the other hand, the medical schools suffer from well-known challenges, that have been largely known in the discussions about the crisis of academic medicine. The article explores the possibilities of mutual cooperation between family medicine and the universities. In order to profit from the qualities of academic medicine and family medicine, a partnership between the two needs to be established. It should be built on acceptance of differences and adaptation of family medicine to the rules of the academia, which should be done without sacrificing its principles. The author describes three potential scenarios how family medicine can be introduced in the undergraduate curriculum: a) as a subject at the end of the curriculum, b) as collaboration in early patient contact and teaching clinical skills and c) as part of the integrated curriculum.The author concludes that both family medicine and the medical school have a lot to benefit from mutual cooparation. This requires compromises that are not always easy.

Key words: Education/graduate, Family medicine, Curriculum.

Introduction

It is well known that medical schools suffer from challenges, that have been clearly articulated as the crisis of academic medicine (1, 2). The universities are being challenged for not being able to respond to the challenges of the modern world (3), that they do not relate to the problems of the modern world and that they are not interesting for the brightest and the best (4).

It has largely been argued that the introduction of family medicine at the medical curricula can help in solving some of these challenges (5). This argument was often a driving force behind the implementation of academic family medicine, which has only recently joined the academic arena. This has been largely recognised as a success of a discipline that has for a long time been denied its academic dimension (6). The process was pronounced in the second half of the twentieth century, when a number of departments of family medicine were established throughout the developed world (7).

One of the main contributions of family medicine is in the innovative methods of education that family medicine can offer. Among them one-to-one teaching in paractice is the hallmark of family medicine teaching (8-10). Other methods are also introduced: role playing, small group teaching, etc (11).

Family medicine also has a potential of bringing new concepts that are often not recognised or poorly implemented (prevention (12), multimorbidity, community orientation, family, organisation of practice) (9, 12-14). All these subjects are essential for the modernisation of curricula at medical schools (15). The new concepts in medical education should be introduced not only in education, but also in research priorities of an university (16).

But the practicalities of this implementation are often less successful. We now often encounter new departments of family medicine that although they are part of the academic structure, do not contribute to solving of this problem. Sometimes, family medicine has also become a part of the same problem of sterile academic medicine, because the introduction of family medicine was not done in a way that would take advantege of its potential of innovative approaches to the academia (17).

Some of this is due to the fact that the academic contribution of this discipline to universities has not been clarified yet. The aim of this paper is to look at the potential soultions to this issue.

Options for partnership

In order to improve the situation, a partnership needs to be established that would ensure higher quality of teaching and research. The partnership between the two should be based on acceptance of common problems and charactersitics. The univeristies should accept family medicine as an equal partner and the family medicine should accept the standards that are valid within the medical schools.

Family medicine has a lot to offer to the medical schools (18). Due to the high workload, it has access to a lot of clinical cases that can be useful in teaching basic clinical skills. Because a lot of doctors work in primary care, it is potentially a resource of future teachers. It can also offer a different perspective of the world and a different approach to solving problems in clinical medicine. The problems of family medicine are sometimes related to a lack of academic tradition. Doctors in family medicine are often overworked and often do not see the need to work academically. These limitations need to be taken into consideration when looking at the options how it can be introduced into the curriculum. There are three principal options how family medicine can contribute to the undergraduate curriculum of a medical school.

Option 1: Integration and application

This is usually the first option when family medicine is being introduced to the medical school. The aim of this approach is to use family medicine as a subject where students can practise their clinical skills before finishing their careers as students. The second aim of this approach is to use the family medicine environment for the integration and implementation of knowledge from previous years during the study. It usually takes a form of a subject at the end of the study, when family medicine is considered a part of a residency, providing the students with much needed application of the clinical knowledge and application in practice. Family medicine is generally seen as a discipline that offers future doctors the much needed oportunity to work independently with patients (19). In fomer Yugoslavia, family medicine was introduced in that way in all

medical schools when the programmes were extended from five to six years. Not all medical schools have implemented this change, however.

Option 2: Cooperation

Introducing successfully family medicine at the undergraduate level usually results in a need for collaboration of family medicine with other departments, where family medicine can contribute to topics like the early patient contact and sometimes propedeutics. This usually happens after family medicine has already been introduced and other departments see the potential of family medicine not only in practice and integration at the end of the study, but also in contribution to their subjects (mainly clinical). Family medicine can be helpful in many ways. One of the possibilities is to help in providing a teaching environment for teaching basic clinical skills (propedeutics), which is becoming increasingly difficult to do in a highly specialised hospital environment. Teaching basic clinical skills is increasingly done in primary care, where students can encounter a lot of patients in a relatively short period of time. The other possibility is to add family medicine experience to clinical subjects so that students can learn about common diseases and how they are presented in primary care. Family medicine can also be used successfully during early patient exposure in earlier years of the study (20). This kind of collaboration is a more difficult one, because it requires more negotiations with other disciplines that are usually well established within the medical school.

Option 3: Integration

The full potential of family medicine is usually expressed in an integrated curriculum where family medicine can contribute to virtually every subject at the undergraduate level (21). With this option, family medicine can contribute to most of the subjects during the curriculum. The curriculum itself is integrated and the classical subjacts (e.g. surgery, internal medicine) are usually replaced by different topics that reflect integration of knowledge (22). This modern approach to curriculum design is getting increasingly recognised as a better option to the traditional one. It, however, takes a certain degree of maturity of the medical school to embrace this approach. However, the introduction of an integrated curriculum is a big challenge for the medical school and is not always easily achievable (23).

Challenges

This stepwise approach how medical schools can contribute from the implementation of family medicine in its curriculum was experienced by several departments and medical schools. As every change, it is usually combined with a set of difficulties that need to be overcome.

Challenges to the university

The difficulties origine from both sides. The university needs to adapt its curricula in order to use the potential of family medicine. This means that it often needs to accomodate to a different style of practice based teachers than they were used to. Family medicine has a different paradigm of medicine (24), which is sometimes in conflict with traditional concepts that prevail in most medical schools nowadays.

Classically, family medicine works with practice-based teachers that have a special position in the curiculum and do not fit entirely the standards for teachers that are readily accepted by the medical schools (25, 26). Their position needs to be recognised. They need to be subjected to reaccreditation

regarding their academic standards, which is different from prevailing reaccreditition for doctors. They need to be properly reimbursed or acknowledged.

Challenges to family medicine

On the other hand, family medicine has to overcome some of its internal barriers. As a first step, family medicine needs to accept the university rules, which are often rigid and difficult to understand to a practising physician (27, 28). But it is generally better to follow the rules of the other departments than try to bend them. Even if one is successful in achieving a different standard, this success is usually considered to be linked to the »second level« of academic quality.

Accepting academic standard also means that family medicine departments should contribute to the work of the university and accept commitment to excellence and be in constant contact with practising physicians. Tensions with professional organisations of family medicine may arise and are not infrequent, but cooperation between the univerity department and the professional organisation is of vital importance for the success of both parties. The next challenge is the burden posed on the medical teachers by the additional task of teaching and practising (29). If family doctors are self-employed, this problem is often very difficult.

Family medicine must also retain its specificities. All too frequently, the new departments of family medicine become too much like all the other departments in the attempt of being equal. When family medicine is considered as an academic discipline, this requires following the same strict standards of academic excellence, but this also requires from the family medicine academics to educate and research the difficult and sometimes poorly understood problems that are inherent to family medicine and not to follow the easy path of the well established disciplines that have already proven themselves. This decision is by no means easy, but it is the only logical if one wants to maintain family medicine as the dicipline equal to others (30).

Conclusion

Maintaining specificities and adaptiation to the challenges is the rule and the norm. This is not easy, but is essential if one wants to keep the academia alive and family medicine and academic medicine flourishing (2).

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Education in family medicine at the University of Mostar School of Medicine

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Department of Family medicine has been formed in academic year 2002/2003, few years later after the foundation of the School of Medicine University of Mostar. The formal members of department are professor and assistants who lecture and lead seminars. In addition, physicians in rural practices contribute to teaching of family medicine. Clinical teaching of family medicine at Mostar School of Medicine is organized in the summer semester of sixth year of the study. It lasts six weeks and contains lectures, seminars and practices. Every student has right and obligation to evaluate educational process at the end of the course in a form of questionnaire and essay. Family medicine continuously receives high marks by students, especially practices. Evaluation of teaching by students is good way of giving feedback about teaching. We believe that student opinion can revise and improve teaching practice. Our good experience and good marks may prompt the changing our educational curriculum to include family medicine at each study year of medical program.

Key words: Family medicine, Mostar, Education.

Introduction

School of Medicine at University of Mostar has been established in 1997 as the „youngest child" of University of Mostar. About 40 students are admitted each year (1). The study lasts six years, like in the most European countries (2). Due to lack of teaching staff, in the first years of work external and foreign professors participated in the teaching, mostly from Croatia, but also from Germany and Canada. At present the specificity of Mostar School is young teaching staff who has graduated there and cooperation with medical schools in Croatia (1).

Department of Family medicine has been formed few years later after the foundation of the school, at the beginning of sixth year of the study. The first head of Department was Dr Geoffrey Hodgetts from Queen's University of Kingston (Canada) who spent 10 years in Bosnia and Herzegovina during the „Balkan primary health care project" (3, 4). From 2007 to 2011 Department was led by Dr Mirjana Rumboldt from School of Medicine University of Split (5). Both of them supported the academic progress of local teachers and left their mark in functioning of the modern department.

At the Department of Family Medicine professor lecture, while assistants lead seminars (1). All department members also have practices in family medicine settings. There are several practices in the Health center Mostar which belong to the Teaching center of School of Medicine University of Mostar.

In addition to the formal members of the department, six physicians in rural practices contribute to teaching of family medicine. Some of them are located more than 50 kilometers from the nearest hospital. These mentors are specialists of family medicine with at least five years of work in practice. They are well educated in teaching and mentoring. They all have certificates of at least one of the courses organized for mentors in family medicine such as Course for educators organized by School's staff, some of European Academy of Family Physician (EURACT) courses (Leonardo, Assessment, Bled and Dubrovnik course) and Teaching Improvement Project System in organization of Queen's University of Kingston (2, 6, 7). Every of the listed courses lasts at least 12 hours and guarantees basic knowledge in teaching, mentor-student communication and evaluation.

The family medicine curriculum

Clinical teaching of family medicine at Mostar School of Medicine is organized in the summer semester of sixth year of the study. It lasts six weeks, or 180 hours. The seminars and lectures have 60 hours, while the remaining of 120 hours students spend in the practice setting. Lectures and seminars contain the most common topics in family medicine and some topics which are not covered in other subjects, like communication skills, family violence, communicating bad news and talking with patients about sexual dysfunction. Lectures are interactive with a number of cases from the practice of family medicine. Seminars are lead by assistant professors. Students prepare cases from the practice of family medicine and present them to other colleagues.

Practical training lasts four weeks and takes place in practice of family medicine in the City of Mostar and remote rural practices. One mentor works with maximally three students and each student works in rural and urban practice.

In the first week of practical training, student meets team members who introduce her or him to the organization of teamwork and medical documentation. In this period of practical work, student observes the work of the mentor, trains to fill in various medical forms, prescriptions and referrals, and makes home visits with mentor or nurse. In the second and third week of the practice, the student performs parts of the clinical examination, simple diagnostic and therapeutic procedures such as ECG, flushing the ear, and taking blood samples. At the last week, student carries out a full clinical consultation under the supervision of the mentor.

Each group of students spends two days of training in Educational center of Health center Mostar, where they practice on the models. The students have opportunity to train different clinical skills such as ear, gynecological, prostate and breast examination, administration of intravenous injections and simple wound management and suturing.

Evaluation of the curriculum

Students have the right and obligation to evaluate the subject and teachers at the end of the course. They complete the questionnaire which has been designed at the School's level. Evaluation has been performed after the education block and before the exam. The rating of teachers includes the accuracy, interest, linking practical and theoretical knowledge, encouraging discussion, proper attitude towards the students and

Table 1 Evaluation of educational process of family medicine at School of Medicine University of Mostar by students

Form of teaching	Students' average marks in academic years (mean ± SD)			
	2007/08	2008/09	2009/10	2010/11
Lectures	3.71±1.27	4.92±0.28	4.62±0.56	4.49±0.75
Seminars	3.71±1.27	4.77±0.44	4.72±0.45	4.27±0.96
Practices	4.13±0.87	5.00±0.00	4.72±0.45	4.45±0.71
Subject in general	3.62±1.21	4.82±0.80	4.79±0.50	4.38±0.87

teacher ratings in general, while the score of the subject includes evaluation of lectures, seminars, practice and subject in general (1).

Table 1 shows the evaluation process of family medicine at School of Medicine University of Mostar marked by students. Through years 2007 to 2011 the students highly evaluated the course, with practical work scoring the highest marks. The students evaluate lectures, seminars, practical training and subject in general. Evaluation is marked as: 1=bad, 2=sufficient, 3=good, 4=very good, 5=excellent.

Students also have an opportunity to evaluate the course in the form of an essay. They express their opinions and suggestions of the teaching process. Most objections concern the literature because of the lack of suitable textbook. Therefore, publishing a textbook is the priority of Department. Students mostly praise practical training, where they for the first time independently carry out the real patient under the supervision of mentor. Here is one of students' remarks as citation:*" It was one of the best organized clinical subjects. I think that family medicine is the first subject where we have done clinical practice and have solved clinical problems in real clinical setting by ourselves. Finally, I have understood important role of family medicine in primary health care system. The best price goes to the mentors in a rural practice. I have only one negative remark – readings. We really need good textbook in family medicine."*

It is known that an ineffective clinical teacher has a negative attitude toward residents, is inaccessible, and lacks skills in providing feedback, while the effective clinical teacher has skills in two-way communication, creates an educational environment that facilitates learning, and provides constructive feedback to residents (7). We believe that student opinions can revise and improve teaching practice and that continuing education of educators, especially for educators in general practice setting, is a good way to improve teaching techniques of mentors (8, 9).

Numerous studies indicate that general practice is well placed to become a major setting for medical student education (10, 11). Evidence for the positive role of general practitioners and general practice in medical education is growing, including the benefits of prevocational training in general practice (12, 13).

Our good experience and good marks may prompt the changing our School's educational curriculum to include family medicine at each year of medical studies. Also, our experience can be a useful source of information for similar studies and teaching reforms elsewhere.

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Introduction and preparation of an objective structured clinical examination in family medicine for undergraduate students at the University of Split

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Objective. To describe the implementation of the first Objective Structured Clinical Examination (OSCE) conducted at the University of Split School of Medicine. **Methodology.** Twenty-one clinical skills relevant to general practice were selected and described in a Handbook for students. Assessment sheets were created. After performing an inventory of available resources, teaching models were purchased and practical classes arranged. A Centre for Clinical Competencies was established, where the first OSCE at the University of Split School of Medicine was conducted in March 2011. **Results.** Attendance by students to the practical classes and the OSCE was 100%. Positive feedback was received by students, who requested extra lessons in clinical skills training. Despite not setting a minimal pass rate, the average OSCE score was 27 out of 30 points. **Conclusion.** Organization of clinical skills training and assessment was demanding, requiring many hours of preparation and numerous staff involvement but was ultimately very rewarding. Both practical classes and the OSCE were very well received by students, who seemed to be empowered by this experience.

Key words: Medical education, Clinical skills, Assessment, Objective structured clinical examination.

Background

The objective structured clinical examination (OSCE) was first described by Harden in 1975 as, 'a timed examination in which medical students interact with a series of simulated patients in stations that may involve history-taking, physical examination, counseling or patient management' (1). This novel form of examination was introduced with the aim of avoiding many of the disadvantages of the traditional clinical examination (2); lack of impartiality and inadequate access to patients in any given moment being the most important among them.

There are a number of advantages in the OSCE approach. First, in the traditional clinical examination there are several variables: (i) the student; (ii) the patient and (iii) the

examiner. In the structured clinical examination there are only two variables: the patient and the examiner. These are more controlled and hence a more objective assessment of the student's clinical competence is possible. Second, the complexity of the OSCE is easier to determine, therefore it is possible to more clearly define what skills, attitudes, problem-solving abilities, and factual knowledge are to be assessed. Third, the examination is more easily repeatable than the traditional clinical exam and standards from year to year may be more easily compared (1). Finally, the marking strategy for the examination may be decided by the examiners in advance, it is unique for all stations and for all examiners, making it as objective as it can be.

The main disadvantage is that more laborious preparation is required. As with many educational advances the benefits are achieved in part by more effort. This effort, however, takes place before the examination, and on the day of the examination the examiner's time is used more efficiently. The cost of conducting the examination is another important issue (3). Another possible disadvantage of this approach may be the feeling that the student's knowledge and skills are being put into compartments and that he/she is being discouraged from looking at the patient as a whole. Finally, if patients are to be involved during the examination, they must be selected carefully to minimize disturbance and discomfort for the patient.

A number of authors have described the conceptualization and measurement of clinical competence through the use of OSCEs. They define this form of competence as a psychological construct that includes aspects of cognitive, affective, psychomotor skills such as critical thinking and problem-solving, and the incorporation of knowledge, values, beliefs, and attitudes. The OSCE has been found to be a reliable form of assessment in undergraduate, postgraduate and in nursing education (4-10).

Additionally, OSCEs have been shown to be feasible and have good reliability and validity (11, 12) and their use has become widespread for performance-based assessment, particularly in undergraduate examinations. At the University of Split School of Medicine, OSCE was integrated as an important component of our new paradigm of clinical skills teaching, both in medical and nursing education (13-16).

The University of Split School of Medicine, one of four medical faculties in Croatia, was established in 1997 (17) and is located in the industrial and cultural centre of Southern Croatia - Split. The School's Department of Family Medicine currently has 35 staff members: one is a full-time research fellow and the rest are employed part-time in various roles. Family medicine is, like all other subjects, organized in teaching blocks and during this period (January to March) all staff members are involved in teaching sixth year medical students.

The first OSCE to be held at the University of Split School of Medicine was organized by the Department of Family Medicine for sixth year medical students as part of their final assessment.

In this article we describe the practical steps required to successfully implement an OSCE, based on our experience.

Methods

Participants

Fifty-four medical students enrolled into their sixth year of studies for the academic year 2010/2011.

Preparation

The first task was to compile a list of clinical skills that satisfied the following criteria: (i) important for general practice; (ii) can be tested in laboratory settings; (iii) executable within 5 minutes and (iv) can be demonstrated without oral questioning by the

examiner/observer. Discussions at Departmental meetings resulted in a list of 21 clinical skills (Table 1).

A working group undertook the responsibility of preparing the written materials and organizing practical classes in order to prepare the students for this new form of assessment. Each clinical skill was described in detail, based on the latest available guidelines. Once completed and reviewed by all departmental members, these instructions, supported by illustrations and references, were posted, in the form of a Handbook, on the Department's web site, to facilitate student access.

Next, appropriate scoring forms were devised for each of the clinical skills (Table 2).

For each skill, a clearly specified task (e.g. measure arterial blood pressure using a sphygmomanometer) was set, and divided into a sequence of six logical steps. Each step carried one point, earning the student a total of 6 points per skill, if executed correctly. These scoring forms served as criteria for the observers/assessors during the OSCE. For each clinical skill, summary assessment sheets were used to enter whether the students ″performed/did not perform″ an individual step (Table 3).

Some educational institutions add a third assessment option expressed as ″partially executed″ (18). In our opinion, this just complicates the final score unnecessarily. A minimal passing rate for the OSCE was not set; instead, the total number of points obtained contributed to the student's final grade in family medicine.

Here it should be underlined that there is no gold standard for scoring and marking OSCEs. Each method has its advantages and disadvantages. However, it is vital that the

Table 1 List of eligible clinical skills

No.	Clinical Skill
1.	Arterial blood pressure measurement
2.	Setting up an IV infusion set
3. – 6.	Intramuscular /intravenous/subcutaneous/ intradermal drug administration
7.	Transurethral catheterization (male and female)
8.	Breast examination
9.	Examination for meningeal signs
10.	Palpation of peripheral arteries
11.	Immobilization
12.	Intubation
13.	Managing anaphylactic shock
14.	Digitorectal examination
15.	Recording an ECG
16.	Removal of sutures
17.	Administration of oxygen therapy
18.	Execution of Heimlich's manoeuvre
19.	Insertion of oropharyngeal mouthpiece
20.	Basic life support
21.	Sterile gloving

Table 2 Scoring form for blood pressure measurement

Step	Description	Performed	Not performed
1	Patient appropriately prepared for blood pressure measurement.		
2	Appropriate cuff selected (length, width) and placed correctly on arm (2-3 cm above cubital fossa). Arm positioned at the level of the heart.		
3	Radial artery palpated and level of disappearance of pulse determined.		
4	Stethoscope correctly placed over brachial artery.		
5	Cuff inflated and gradually deflated at a rate of 1-2 mm/s.		
6	Procedure repeated twice. Average value of arterial blood pressure recorded.		

Table 3 Sample summary assessment form for an individual station (clinical skill)

Station A: Measuring blood pressure							
Student No.	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Total points
1							
2							
3							
4							
5							
6							
7							
8							
9							
10...							

marking process used is feasible and transparent, and produces defensible outcomes. The ultimate aim of any method used for OSCE scoring and marking is to ensure a consistent and equitable assessment of students' OSCE performances, which uniformly rewards them for demonstrating advanced clinical practice competence.

Once the written material was completed, we set out to find/purchase the models and materials required for the practical classes and OSCE. An inventory of all the available equipment was made and a list of necessary materials forwarded to faculty management. This list was based upon individual lists of necessary equipment compiled for each clinical skill. Once the required equipment had been assembled, staff members met and timed the execution of all 21 clinical skills in order to check that they could be performed within five minutes.

Clinical skills classes

To enable the students to learn the selected clinical skills, five 2- hour practical classes were incorporated into the students' timetable, envisaging approximately 10 students per group. Immediately prior to each class, the models had to be transferred from the storeroom to the allocated classroom, set-up and returned afterwards, which proved to be quite cumbersome. Instructions for each clinical skill were placed beside the model and students were advised to practice in pairs, taking turns reading the instructions and performing the clinical skill. The students were supervised by a clinical skills instructor, familiar with all the models and accompanying written material. The use of dispensable materials (suturing material, lubricant, needles, gloves…) was noted and new supplies obtained. Students were surveyed for their opinion of the new classes.

During the teaching period it became obvious that a room allocated for practicing clinical skills was necessary, where models could be permanently displayed and available for use by all students. With the support of the faculty management, a facility with four rooms and large lobby was identified, renovated and equipped with clinical teaching materials, resulting in establishment of the faculty's Centre for Clinical Competencies- a permanent facility designed for ongoing utilization in teaching and practicing clinical skills and for conducting examinations. We believe that this was a crucial step in setting up OSCEs as a standard form of assessment at the University of Split School of Medicine.

The objective structured clinical examintation

The logistics of conducting the OSCE were complex. In order to minimize student waiting time, increase staff commitment and prevent the leakage of information, we had to anticipate a number of important factors, including the number of students attending the examination, the availability of classrooms and the availability of staff. Since it was our first attempt at organizing an OSCE, it was decided that only 5 clinical skills would be tested. The final choice was made by the head of the department immediately prior to the exam.

An exam timetable was drawn up based on 5, five minute clinical skills demonstrations or 'stations', including a one minute interval for students to get from one station to another and for observers to set up their station (Table 4).

Two OSCE teams were formed – one for the a.m. shift and the second for the p.m. shift. Each of the teams was composed of an invigilator, chaperone, timer/bell-ringer, observer for each clinical skill and a circulating person. Each team met once to familiarize themselves with the exam procedure and was provided with written material, including information sheets, scoring forms, a list of students, and exam assessment sheets. The exam assessment sheet enabled quick and easy documentation of each student's performance.

Table 4 Section of OSCE timetable

Time	Stations				
	A	B	C	D	E
10:00-10:06	1				
10:06-10:12	2	1			
10:12-10:18	3	2	1		
10:18-10:24	4	3	2	1	
10:24-10:30	5	4	3	2	1
10:30-10:36	6	5	4	3	2
10:36-10:42	7	6	5	4	3
10:42-10:48	8	7	6	5	4
10:48-10:54	9	8	7	6	5
10:54-11:00...	10	9	8	7	6

On March 1st the first OSCE at the University of Split School of Medicine was conducted. Students were gathered in a lecture theatre where, after handing in their mobile phones and receiving instructions, they were accompanied in groups of five to the examination area. With each announcement of the timer/bell-ringer students rotated through the five stations which consisted of the following clinical skills: hand washing, gloving, intramuscular drug administration, palpation of peripheral pulses of the lower extremities and blood pressure measurement. On completion of the examination, students were asked for their impressions, after which they gathered their belongings and were escorted out of the building.

Results and Discussion

Attendance by students to practical classes was 100%. Feedback from students was very positive and included comments such as ″I feel like a real doctor now″, ″I wish there were more of these classes″, ″ why hasn't this been done before?″ and ″it's great being able to practice these skills without worrying about the patient″. As a result of students' expressed need, two additional 2-hour practical classes were organized. An obvious increase in student self-confidence and competence in performing clinical skills was noted by the instructors.

All final year medical students attended the OSCE- fifty-four in total. After completing the OSCE, verbal comments from students were very positive, including ″It was fun″, ″That was much better than I expected″ and ″I feel a lot more secure in my clinical competencies now″. Students averaged 27 out of a total of 30 points for the five clinical skills assessed.

There were several limitations to our approach in conducting the OSCE in family medicine. First, the last students on the alphabetical list had to wait several hours before being examined. Based on this experience, we plan to divide the students into two groups in the future to keep waiting time to a minimum. Second, the allocated time interval for our stations was too long; 3 minutes would have sufficed, with one minute for change of stations. Third, one station (i.m. injection) lasted considerably longer than two other stations (hand washing and gloving) located in the same room, resulting in students overhearing other student's responses. Finally, there was some minor discrepancy in assessment techniques between observers in the a.m. and p.m. shift, necessitating standardization of some results.

Conclusion

The provision of time and a place for students to practice clinical skills taught during their undergraduate training should be standard practice in all medical schools, whilst at the same time not endangering the health of patients. These acquired competencies can be objectively assessed using the OSCE model. This was organized, for the first time at the University of Split School of Medicine, in March 2011 by the Department of Family Medicine for final year medical students. Both practical classes and the OSCE were very well received by students, who seemed to be empowered by this experience. Organization of practical classes and the OSCE was demanding requiring many hours of preparation and numerous staff involvement but was ultimately very rewarding. OSCEs are an objective and standardized method of assessment.

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How to improve teaching in family medicine

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The family physician has a specific task and responsibility as the first contact physician. Therefore his/her education needs to be highly specific, oriented towards independent work in real time and evidence-based medical principles. The most important role in educating a family physician belongs to physician practitioners, individuals who work in clinics and need (as much as possible) to transfer knowledge, skills and experiences from their own specific conditions and a wide variety of work methods. Therefore the experience and suggestions of teachers in practical training are considered to be the most significant contribution to improving the quality of teaching. The most important suggestions pertain to reducing the size of seminar groups, including family medicine courses in the fourth and fifth year of studies, and increasing the possibilities for students to do independent work, with supervision by their mentors. For good preparation of future physicians for independent work it is necessary for family medicine departments to be able to organize practical training and seminars in as many courses as possible, with as many classes as possible. A good professional basis in terms of selected teachers and practical training teachers is required to make this possible.

Key words: Family medicine, Education, Teaching.

Introduction

The education of family medicine physicians (FMPs), due to their specific role, position and work methods, requires a quite different form of education than is the case for pre-clinical or clinical physicians (1). Given the role of FMPs as first contact physicians, the gatekeepers to the health care system, those who are entrusted with the task of solving up to 80% of all the health problems in the population (2, 3), specific education must be oriented toward realistic and practical work with patients. FMPs must learn how to function independently and make decisions, but they must also be able to communicate and cooperate with their fellow consultants, specialists, the family and other members of the community (4, 5).

The experience of family physicians as teachers

Teaching in family medicine in Osijek began in 1980, when the Medical Studies Department of the Faculty of Medicine of the University in Zagreb was formed. According to the syllabus at the time, the family medicine course was part of the 5th (final) year

of the studies, with a relatively small number of lectures and seminars, and especially few practical training classes (15 lectures, 30 seminars, 20 practical classes). During the Homeland War in 1991, the Medical Studies Department was relocated back to the parent faculty at the University in Zagreb (6, 7, 8). In spite of that, primary health care in Slavonia and Baranja continued to operate adequately and efficiently. As part of the organization of the Osijek Health Centre (Dom zdravlja Osijek) and the Department of Family Medicine (9, 10) the 1992/1993 academic year began with regular classes in Osijek, still as part of the Medical Studies Department of the Faculty of Medicine of Zagreb University. In 1995 the Faculty of Medicine was founded at the J. J. Strossmayer University, and at that time education in family medicine improved significantly, in terms of quantity (25 lectures, 35 seminars and 50 practical classes) and quality (there were 10 new assistants and 2 lecturers involved in the teaching). The new syllabus of 2003 introduced an even more significant increase in the number of lectures (25 lectures, 55 seminars, 100 practical classes), and on the basis of the latest syllabus (for 2011) the Department of Family Medicine offers 65 hours of practical training (Table 1).

In the last 15 years, family medicine has undergone several thorough reforms and changes, primarily in terms of legislation and organization. In 1997 the majority of physicians were given the status of tenants, which significantly diminished the ability of the Health Centre to coordinate these teams professionally. The payment system, which was mostly based on a „head count" (payment per patient) enabled some of the doctors to realize significant income by accumulating a large number of patients, to the detriment of the quality of the medical service provided. Due to these changes, in teaching

Table 1 Courses held by teachers at the Department of Family Medicine of the Faculty of Medicine in Osijek

Course	Status	Practical classes (hours)	Seminars (hours)	Lectures (hours)	Total (hours)
Family medicine, school medicine and medical sociology	Regular	100 + 65 in the skills laboratory	55	25	245
Economics of health and organization of health care	Regular	10	20	15	45
Inter-sector cooperation	Elective	10	10	5	25
How to apply the Hippocratic Oath	Elective	-	25	-	25
Physicians as employers	Elective	10	10	5	25
Medicine and the Health Law	Regular	2	15	8	25
Occupational medicine	Regular	10	5	5	20
Introduction to the work of a family medicine clinic	Regular	18	7	-	25
Program of prevention measures and early detection of some of the most frequent cancer sites	Elective	8	10	7	25
Promotion of health and primary health care	Elective	15	15	30	60
Management in health care	Elective	8	10	7	25
Social and health legislation	Elective	8	10	7	25
Total		264	192	114	570

students it was necessary to show them the large number of specificities and possibilities which they could expect in their practice. They need to be able to function independently as: physicians as employees of the Health Centre, physicians as tenants, physicians in an urban area, physicians in a rural area, physicians in a group practice, teachers providing practical training for students, as assistants and supporting the teaching/education of medical students. All the above demonstrates the major organizational and executive problems involved in running the courses. The Medical Faculty in Osijek has given the Department of Family Medicine a large number of teaching hours. A great deal of support for the lectures has been given by all family medicine physicians, through guiding students in their exercises and work in their clinics. In all the surveys undertaken students have reported that it was only during the course in family medicine that they were given the possibility of working independently and making decisions (with the guidance of their mentors) (11).

The position of family physicians in Slavonia, Croatia

I (Sanda Pribić) have worked as a family physician for 17 years, 7 of which as a family medicine specialist. In the meantime I have completed two postgraduate studies and a PhD, defended my doctoral thesis and started my scientific and teaching career. The clinic in which I work is a town clinic, and a polyvalent one. I care for 1780 patients of all age groups. Half of the patients are elderly, so in our work at the clinic we have organized groups for chronic patients, for patients suffering from diabetes, hypertension and a group for obese patients. Working with a group of patients requires an interactive exchange of knowledge and experience, and it significantly simplifies routine work at the clinic. House calls and treatment at the patients' homes is a regular part of the practice, and it is also how I see the role of the family physician in the life of the patients and their families.

The teaching organized by the Department of Family Medicine at the Faculty of Medicine in Osijek is organized with the aim of preparing the students in their last year of studies, as they are soon to be independent physicians, for independent work and decision-making. Therefore the Department of Family Medicine has been given the privilege and responsibility to organize the courses presented in Table 1.

In the preparation and realization of all courses we specifically aim to: detect the current issues and deal with them practically and scientifically, detect local, specific issues, involve local co-workers who are renowned experts in their field, encourage practical training teachers, as excellent practitioners, to selflessly share their knowledge and skills, to enable the students to recognize and independently solve the assigned problem cases regarding the health and illness of individuals, the family and the community. Clinical skills and solving real problems become the focus of the students' interests.

Experiences of family physicians as teachers

In spite of my experience, practical work and continuous participation in teaching, I still encounter problems and obstacles in organizing the education of future family medicine physicians. On the "Family Medicine" course the students in their last year of studies come unprepared for practical work and with great lack of communication skills. The overall concept of studying and learning at the Faculty of Medicine is oriented towards acquiring facts and theoretical knowledge. It is extremely rare for students to become involved in more serious work during their practical training. The

exams are designed either as endless written questions with learned answers, or as tests of one's knowledge in oral exams. Hardly anyone requires the students to show problem-solving skills and apply principles of evidence based medicine (12, 13, 14, 15). In their last year of studies the students begin to feel like our future colleagues, and look in panic for possibilities to learn more about the practical work which they will soon be engaged in. Therefore practical training in family medicine clinics is most often the first and last chance for future physicians to learn to think and act in real time. A special problem and shortcoming of the studies relates to communication skills. Communication with patients, with colleagues and the community is an important element in work in family medicine. From taking a medical history to the moment when a patient or family needs to be given some important news or information, very subtle communications skills are required. Our experiences have yielded numerous suggestions which may improve the system of teaching family medicine (Table 2).

Suggestions for improving teaching

Family medicine physicians, practitioners, as teachers of practical training can significantly contribute to the organization of lessons, and to that end, suggest significant improvements (Table 2). Some of the

Table 2 Suggestions for improving teaching

Suggestions	Explanation
Minimize the number of lectures.	Lectures are normally rated as "boring" and they do not provide enough possibilities for independent work.
Organize seminars in smaller groups.	Seminar groups of 20 students are inefficient. Groups need to reduced to 4 – 6 students.
Problem solving assignments.	The theoretical knowledge has already been acquired. It is necessary to learn to solve real problems and tasks.
Organize small groups of students (2-4) who would, in real time and space, design a concept of diagnostics, treatment and rehabilitation for certain conditions or illnesses.	2 – 4 students in the family medicine clinic can actively participate in its work. After the adjustment period they would be given the opportunity to work independently.
Encourage round tables and panel discussions.	Exchange of experiences and information between students who have taken part in practical training in clinics in different places and different conditions.
Significantly increase the number of hours of practical training.	By repeated possibilities for practical work one can reach the level of independent decision-making.
Use a system of elective courses to increase interest in family medicine issues	Insufficient number of classes and inadequate program of regular courses need to be replaced by targeted elective courses.
Integrate some elements of family medicine teaching in the 4th, 5th and 6th years of studies.	Family medicine as a practical discipline must be taught at least in the 4th, 5th and 6th years of studies.
Encourage students' involvement in scientific research.	In family medicine it is not only possible, but also necessary and valuable, to be involved in scientific research.
Define the role and subject matter which the work of mentors and teachers of practical training.	They are the most important teachers, because they transfer knowledge, experiences and skills on a personal level.
Insist on adequate evaluation of the work of all participants in teaching.	This involves financial, professional and moral stimulation.
Continuously educate teachers, mentors and teachers of practical training.	This is a necessity.

suggested improvements might be applied instantly because they do not require any significant organizational or financial alterations. All teachers of practical training claim that there is a need to continuously educate teachers, mentors and teachers of practical training (16).

By obstinately insisting on improvements, inter-departmental cooperation and promotion of our own values, we can assert ourselves as teachers who are ready to ensure that the end product of the studies – the medical doctor – is a physician ready to respond to the demands and needs of the patients.

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The role of the European Academy of Teachers in General Practice and Family Medicine in family medicine education in Europe – the experience of the University of Maribor

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Primary health care is important item of political agendas since Alma Ata conference in 1978. West Balkans share common history in development of primary care since 1920' when Andrija Stampar introduced social and community based primary care concepts. The first known specialist training in general practice in the world started in former Yugoslavia in the early 1960'. Since then, much has been done in the field of general practice and family medicine and this is reflected in The European Academy of Teachers in General Practice and Family Medicine (EURACT), which is a network organisation within World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians Region Europe (WONCA Europe). Its aim is to foster and maintain high standards of care in European general practice by promoting general practice as a discipline by learning and teaching. EURACT developed several documents and teachers' courses which can serve the development of family medicine curricula in new established departments of medical schools. This is also the case at Maribor Medical School, where learning outcomes and teaching methods are in concordance with EURACT teaching agenda, but also some innovative approaches are used, such as art and e-learning environment as teaching methods.

Key words: Family practice, Education, Europe, Slovenia.

Introduction

Primary health care is high on the agenda of all WHO countries in the world since Alma Ata conference in 1978 (1). We could say that we are again facing the same dilemmas as our colleagues were facing in the early 1920', when in nearly identical circumstances prominent public health experts claimed the importance of equity, accessibility and affordability of preventive and curative medical interventions to the benefit of the whole populations, not only those, who were able to pay for it.

Short history of family medicine in Europe and former Yugoslavia

Andrija Stampar, World Health Organisation expert, was one of the leading minds in that time and had left the legacy in the form of integrated primary care institutions and the first known specialist training in gen-

eral practice in the world, which started in former Yugoslavia in the early 1960' (2, 3). With the rare exceptions (4) primary care as the basis of health care service delivery still remains only a popular phrase in politicians' public speeches and dialogues. One of the key persons in today public health care discussions was Barbara Starfield, who succeeded to provide studies on importance of primary care and family practice (FP) (5). She claimed that an orientation to primary care reduced socio-demographic and socioeconomic inequities in access to health services and in population health. FP has to deliver evidence based care and has to serve its patients as the first contact with health care services, its population as the comprehensive service from promotion of health to palliation of the incurable diseases and its nation as the most rational use of the available resources. FP has its unique task profile, which cannot be assumed as a simple addition of the task profiles of other disciplines taught in Medical Schools (6-8). European Union Directive demands from that member states must introduce specialty training in family medicine of minimum 3 years duration (9, 10). An important contribution to this is traditional social dimension of health care systems in the countries established from Former Yugoslavia (3, 11).

Development of EURACT

General practice/family medicine is probably the only medical discipline, which spends so much time on defining its field, boundaries, competences and task profile (12, 13). Partly, this can be ascribed to the fact that once upon a time there was only one medicine existed – general medicine, which cared for the patients in a holistic, comprehensive, community oriented and ethically correct way. By extraction of many specialist braches, the discipline floated on the surface of the second part of 20th century's events. The European Academy of Teachers in General Practice and Family Medicine (EURACT) is a network organisation within World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians Region Europe (WONCA Europe) WONCA Region Europe – ESGP/FM and was launched in March, 1992 to support teachers in FP to provide the best care for the populations. The establishment of the European Academy of Teachers in General Practice can be traced back to the formation of the first Leeuwenhorst Group in 1974. This group acted as a workshop for developing new ideas on the teaching of general practice, and is remembered for defining the role of the general practitioner and this definition remains valid today. Its successor was the New Leeuwenhorst Group, which was formed in 1982 and was concerned with the further development of general practice as a discipline by teaching and learning. The overall aim of the EURACT is to foster and maintain high standards of care in European general practice by promoting general practice as a discipline by learning and teaching (14-16). EURACT has developed a definition of general practice (17), which was adopted by WONCA, and already served as a basis for the development of educational and research agenda (18-20).

Basic medical education

In Medical Schools at university level, family medicine is taught in almost all European countries with the established Departments, and sometimes also in the Medical Schools without department of general practice. The curricula are sometimes organised only as residency programmes in general practice following basic medical education, but mainly as a separate subject during the main medical curricula. The absence of some form of teaching about general practice in

basic medical education (BME) is in Europe merely an exception to the rule. According to the definitions of the profession, family medicine has a lot to offer to the common knowledge and skill base of Medical Schools' students (21). The students can learn important concepts, which they can use in their future medical careers, i.e. communication skills, primary care approach, community orientation, working in the community settings, etc., and can not be taught during other curricula. They can learn the provision of health care directly from the primary care practices, communities, visiting nurses and other primary care providers.

Specialist training

Specialist (vocational) training for general practice has become a rule in the majority of European countries (22). Several options are in place on how to provide "in service training" for those already working in general practice and how to retrain physicians from other specialities to practice as family doctors. Developed countries are taking the lead in designing the curricula which should reflect the needs of their populations (23). A special task force group in EURACT is working on Performance Agenda based on European Definition and Educational Agenda. Canada (24), USA and Denmark have some advances in this field, which will be incorporated into the final EURACT document.

Other important areas are selection of candidates for trainees and selection of trainers and training practices. Also in this field, EURACT acts proactively in providing guidance to governments and other responsible bodies (19, 25).

Continuing medical education

Continuing medical education was traditionally regarded as a key feature in quality assurance. There is a wide variation in recertification, continuing medical education (CME) and continuing professional development among the European countries (26). Recently, there was a shift from large CME activities towards small group learning, individual learning plans and use of modern technologies, which enables more personalised approach to learning. In the universities the selection of teaching methods and the pedagogic (i.e. teaching) competences of the teachers are often neglected, emphasising mainly research achievements of the candidates. Traditionally, the curricula depend on classroom lectures and direct observation of practice based activities instead on the advanced methods, which take into the account students' learning cycle. However, family medicine departments are on the lead in teaching and using modern methods (21). In order to prove themselves they also use and spread new methods among the rest of the faculty, therefore improving the whole teaching process in Medical Schools (27).

Besides exchange of the experiences, reports (22, 25) ideas, educational materials, EURACT produces documents (17-19, 23), and different level of courses for novice, proficient and expert teachers to fill this gap (28). Similarly, international course on assessment in medicine is aiming at the educators at undergraduate and postgraduate level and wants to deliver basic knowledge and skills in modern assessment methods. EURACT – "Bled" course teaching the teachers, which started in Slovenia in 1992, holds a special place amongst EURACT courses. Each year we deal with a new theme important for general practice, for example community orientation, communication skills, patient empowerment, medical error, medical ethics, quality assurance, practice management, etc. (29).

Teaching family medicine at Maribor University in Slovenia

Curriculum

At the Maribor University, undergraduate study of medicine lasts for six years. Family medicine is taught in the fourth and sixth year of study (seventh and 11th semester). Main themes, included in the curriculum of both semesters correspond to key features of family medicine (Box 1).

Box 1. Main themes in the curriculum of both semesters in Maribor Medical School.

- Use of clinical knowledge in early clinical exposure
- Doctor-patient communication and relationship
- Community orientation
- Practice management

Learning outcomes

During family medicine programme (both in fourth and sixth year of study), students are expected to gain knowledge, skills and attitudes (Table 1), which are in concordance with EURACT teaching agenda (18).

Teaching methods

The curriculum of family medicine consists of lectures, seminars, and exercises. While lectures and seminars are well-defined methods and allow little modifications, appropriate teaching methods as defined in EURACT educational agenda (18) are employed during exercises. Teaching methods are in correlation with learning outcomes (Table 1).

Lectures

Lectures take place only in the fourth year of study. Because they are regarded as having low educational value (30), but are an obligatory part of family medicine curriculum due to Maribor Medical School's rules, other teaching methods are applied during lectures. These are discussions, buzz-groups, and reflections. Also, lectures are interactive and based on real clinical cases. These methods give additional educational value (31) to lectures and enable students to participate actively.

Seminars

Students in both study years must write an essay and present it orally in front of their colleagues and teacher, which is followed by a discussion, lead by a teacher. Forth-year students choose a theme (usually a common medical problem or disease) and write about it from an angle of primary care approach. The structure of such essay is in form of a review article. Sixth-year students choose a real patient case during clinical work in family medicine practice. They are encouraged to choose patients with common medical problems or diseases as well. The structure of such essay is in a form of a case report, a part of which is also a clinical question, posed by students themselves. They should answer it on the basis of evidence-based medicine (32). Other teaching methods, employed in seminars, are literature search, reading, and writing.

Exercises

Exercises consist of learning about family and family dynamics, learning about primary care approach, learning about communication, learning about house visits, solving problems in virtual practice, ordering laboratory tests, ordering physical therapy, skills training on models, working in clinical practice under tutor's supervision, and field work. During exercises we use following teaching methods: clinical work in clinical practice under supervision, interactive learning, observation, reflection, role playing, project work, skills training, and study visit.

Table 1 Learning outcomes, teaching methods, and assessment methods in Family Medicine curriculum at the Maribor University, Slovenia

Learning outcomes	Teaching methods	Assessment methods
Knowledge – Be familiar with primary care approach in management of patients' health care problems – Know the importance of doctor-patient relationship in family medicine – Be able to define comprehensive and holistic approach to patients – Be able to define person-centred care – Be able to define primary care approach in diagnosing and treating patients – Know the importance of community orientation – Know the importance of continuity of care – Know the importance of communication in management of patients – Be familiar with team work and members of family doctor's team	Lecture, essays, oral presentation, discussion, clinical work, literature search, reading, study visit, project work, video, educational movies	MCQ*, MEQ**, essays, oral method
Skills – Use clinical knowledge in early clinical exposure – Use empathy – Communicate with patients – Run a consultation – Keep patient records – Work safely and improve quality – Perform a home visit – Use primary care approach in diagnosing and treating patients – Work in a team.	Role playing, clinical work, observation, reading, skills training	OSCE***, role playing
Attitudes – Understand the families in health and disease – Understand the importance of continuity of doctor-patient relationship in primary care – Understand the importance of communication skills – Understand the importance of comprehensive and holistic approach – Understand the importance of person-centred care – Understand the importance of community orientation – Value the importance of multiprofessional care	Lecture, essays, oral presentation, discussion, role playing, clinical work, observation, project work, video, educational movies	MCQ, MEQ, essays, oral method, role playing

Abbreviations: *MCQ – multiple choice questions; **MEQ – modified essay questions ; ***OSCE – objective structured clinical exam.

Assessment methods

Assessment methods correspond to learning outcomes and teaching methods employed (Table 1). We use both formative and summative assessment (33).

During family medicine programme in the fourth year of study, students are formatively assessed by teachers during several course units: written and oral presentation of an essay, written and oral presentation of

chosen family, communication assessment (video clip of role playing), solving problems in virtual practice, and skills assessment (MEQ analysis, work in clinical practice settings, clinical skills, field work project report, report about an educational movie). Each course unit is then summatively assessed by teachers on a 6-point Likert scale (0 – unsatisfactory, 5 – excellent). Final mark (summative assessment) is calculated from all course units' scores.

During family medicine programme in the sixth year of study, students are formatively assessed by teachers during several course units: written and oral presentation of a case study (essay), assessment of working in clinical practise settings, assessment of working in nursing home, and assessment of knowledge about health legislation. Each course unit is then summatively assessed by teacher on a 6-point Likert scale (0 – unsatisfactory, 5 – excellent). At the end of the family medicine course in the sixth year of study, students must pass a written exam, which consists of 50 MCQ questions. Final mark (summative assessment) is calculated from all course units' scores and score from a written exam.

Teaching materials (sources)

Family medicine education on Maribor University is based on three textbooks (34-36), written by teachers at the Department of Family Medicine. Each year, we also publish new editions of instructions for teachers (37), instructions for students (38) and instructions for essays' writing (39).

Other teaching materials (articles, examples of books, forums, e-modules) can be found at e-learning environment Moodle (40) and at the Department of Family Medicine Maribor's web page (41). These pages are regularly updated.

Educational research

Teachers at the Department of Family Medicine in Maribor are also interested in educational research, mainly from the field of new teaching methods. One of such methods, successfully implemented in the teaching process, is using movies in medical education. Movies present developed scenarios and are a form of controlled environment, which enables reproducible, focused and independent student learning. Through art, students are able to understand patients in their whole context (42).

The controlled environment of movies successfully enables students to explore their values, beliefs, and attitudes towards features of professionalism without feeling that their personal integrity had been threatened (27).

Conclusion

The development of family medicine as part of primary care approach in West Balkans has a long tradition. European academy of teachers, a WONCA Europe network organisation developed several documents and teachers' courses which can serve the development of family medicine curricula in new established departments of medical schools which is also a case at Maribor Medical School. Here, learning outcomes and teaching methods are in concordance with EURACT teaching agenda. Also, some innovative approaches are used, i.e. using art in teaching holistic approach to patients and using e-learning environment for students' project and communication.

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Teaching evidence based medicine in family medicine

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The concept of evidence based medicine (EBM) as the integration of clinical expertise, patient values and the best evidence was introduced by David Sackett in the 1980's. Scientific literature in medicine is often marked by expansion, acummulation and quick expiration. Reading all important articles to keep in touch with relevant information is impossible. Finding the best evidence that answers a clinical question in general practice (GP) in a short time is not easy. Five useful steps are described –represented by the acronym "5A+E": *assess, ask, acquire, appraise, apply and evaluate*.The habit of conducting an evidence search "on the spot" is proposed. Although students of medicine at University of Split School of Medicine are taught EBM from the first day of their study and in all courses, their experience of evidence-searching and critical appraisal of the evidence, in real time with real patient is inadequate. Teaching the final-year students the practical use of EBM in a GP's office is different and can have an important role in their professional development. It can positively impact on quality of their future work in family practice (or some other medical specialty) by acquiring this habit of constant evidence-checking to ensure that best practice becomes a mechanism for life-long learning. **Conclusion.** EBM is a foundation stone of every branch of medicine and important part of Family Medicine as scientific and professional discipline. To have an EB answer resulting from GP's everyday work is becoming a part of everyday practice

Key words: Evidence based medicine, Critical appraisal, Family medicine.

Shift of paradigm: from "eminence" to "evidence based medicine"

The term "Evidence Based Medicine" (EBM) has been coined by a group of clinicians and epidemiologists from McMaster University in Ontario, Canada (1). Originating from their Critical Appraisal series published in 1981 (2) the EBM model was adopted in 1992 in the Journal of American Medical Association (JAMA) (3). According to David Sackett, evidence based medicine is defined as the "conscious, indisputable and critical use of the best actual evidence for decision making in care for a patient" (1, 4). This applies to the use of evidence in practice, in diagnostics and cure as well as in prevention and prognosis of disease. Decision making in medicine should be based on "the best evidence" resulting from research

with the least likelihood of the many types of bias. This should start with systematic reviews of randomized controlled trials; if not available then look for individual randomized controlled trials. evidence of high quality that "can be trusted". They are based on large scale projects which gave consistent results so repeating the same ones would give similar results. Not so long ago the choice of treatments was mainly based on "established practice", "authorities' opinions" and experiences ("eminence based medicine") but that classical paradigm is nowadys replaced by EBM, with search and use of the best evidence reulting from research. Although use of the established practice is undoubtedly easier, more simple and comfortable for a doctor who is in constant search for fresh evidence, scientific progress in medicine is marked by expansion, cummulation and quick expiration, especially in propulsive fields such as neuroscience, genetics and cell and molecular biology (5-7). A medical humorist Oscar London in his book "Kill as few patients as possible" (published in 1987) has thus calculated that a general practitioner (GP) should read one review every 30 minutes in each day and night to stay in touch with information! That is impossible so we need selection in order to narrow the choice of articles which are required for a GP to optimise best- practice. A useful and simple way of finding the best evidences is to use the "5 easy steps" (acronym 5A+E) approach. The first step is to ASK and is followed by next steps: ASK, ACQUIRE; APPRAISE, APPLY and ASSESS. The clinical question is defined according to PICO principle (Patient, Intervention, Comparison and Outcome). We first have to define whom is information required for (age, gender, race), intervention type we are interested in (diagnostic test, medication, surgical procedure, advice), other possible types of intervention and their outcome (8). Second step is the choice of data basis [Cochrane library of reviews, Medline (OVID, Pubmed)] with stress on type of study and the power of study. The third step covers the critical appraisal of answered questions: are the results of study valid, what is their nature and can they be used in the care of our individual patient. In the fourth step, the GP discusses and provides patient with the evidence on the important harms and benefits of the intevention. In the process the GP accepts the patient as a "partner in care" thus taking into consideration the personal choice, wishes, needs and qualities of patient as a whole person in his biopsychosocial, family and working surrounding. Strengthening the active role of patient in this proces in an important task of GP since the definite decision is made not by the doctor or family but by a patient himself. Patient decision aids are available on the Internet to help patients in their decision making with their GPs. Finally the doctor should evaluate how successfully these four steps have been fulfilled, are there any changes needed and what is there to do to make care for a patient better.

Is it possible to use and teach EBM in Croatian family medicine setting?

EBM includes three components: the best evidence, individual expertise and patient's choice / personal values. One can ask if it is possible to use and teach EBM in everyday work of preoccupied GP and if the answer is yes, under which preconditions? After the Project of the primary health care computerisation is conducted, all GP offices in the Republic of Croatia were informatically equiped (computers, approach to Internet) and electronic medical records were introduced as well. Technical preconditions exist in the office of each GP in Croatia so it is much easier to find information sources and search for the answer to a required question in real time, when it appears. There is a mul-

titude of information but it is important to choose a suitable information source which best "covers" GP's needs and requirements in everyday care for patient. The source can be approached right after history taking and clinical checkup of patient, when the question is defined or it can be postponed until after the patient leaves the office with the aim to collect the information in time for the next visit. The GP rarely has the time to take a look at all original studies (primary publications) since that takes too much time. Summarized conclusions of relevant studies are much more suitable and take much less time to answer the question that has just appeared in GP's practice. With improving the habit of an evidence search "on the spot" and with more practical experience, the search takes less time In order to make information selection even more easier and more adjusted to the needs of general practice there's been adopted the idea of "simplified and concentrated EBM for Family Medicine", with acronim POEM (Patient Oriented Evidence That Matters) and more recently PEARLS (Practical Evidence About Real Life Situations) (9, 10). Among the most used POEMs are the ones of American Family Physician, British Medical Journal and Journal of Family Practice where groups of experts search and appraise bibliography on frequent clinical issues which are then summarized into short structured form of answers. PEARLS published by Cochrane Primary Health Field are created for primary care practitioners to help them decide in individual cases.. POEMs and PEARLS are published monthly and can be seen on web and are also sent daily on doctors' e-mail adresses upon request. They both focus on what is important from the GP's perspective as well as from patient's perspective: symptoms, morbidity, life quality, mortality. POEMS cover most common clinical problems but not all questions are analyzed (11-13).

Perspectives

Although students of medicine at University of Split School of Medicine are taught EBM from the first day of their study and in all courses, their experience of evidence searching and critical appraisal of the evidence, in real time with real patient in front of them is not large. Experiencing the partnership and holistic approach towards patient and continuous care is what they often meet for the first time in a GP's office. That is the reason why teaching the last year students the practical use of EBM in GP's office is different and can have an important role in their professional development. It can have a positive impact on quality of their further work in family practice [or some other medical specialty] as well as acquiring the habit of constant information-checking to ensure best practice and make this a lifelong learning behaviour (14-17). Sometimes for students working in family medicine during the course is the first chance to work independently "using their own hands". Then they can practice communication skills with patient as a whole person, get to know their stories, gain experience and take full responsibility. They have a chance to answer the question "What have I learned?", which is then followed by reflection and a long-term recall. The practice has shown that knowledge of the last year students is based on clinical experience of working in the hospital. Patients on which they were learning and acquiring skills are often unrepresentative of patients in the community: they often have complex problems or rare diseases and conditions not looked after in family medicine. They tend to focus on the condition and pay less attention the whole of their person. What they are introduced to in family medicine is a different approach: a GP gives continuous care for defined population through time, observes a

person holistically, in biopsychosocial context, knowing the family and working background, taking into consideration personal values and specifities of patient as a partner in care (18, 19). Diseased people coming to GP are "unselected", often coming even for "small diseases" and self-limiting conditions. Specific elements of a GP's work is also a larger number of "smaller" contacts with patients, active listening, individual intervention, preventive work, long term following of patients with chronic diseases, advising and home care. All of these specific elements students of family medicine are in most cases introduced only in the final year of studying. This is an ideal time in their personal development to show them how to use EBM in family medicine and to nurture their interes in primary care. Students rate this experience very highly and accept the chance for learning how to give the best evidence to the patient who is a person with his own priorities, attitudes, preferences, family relationships, quality and dinamics of life and who is not just another "case" of aortic stenosis or depression. We can say that EBM is a foundation stone of every branch of medicine and an especially important part of family medicine as a scientific and professional discipline. Founding journal clubs for GPs who are mentors of the last year medical students could be the way to introduce and teach EBM and to spread it more widely (20). To have an EB answer on the questions raised from GP's everyday work is becoming an inevitable part of everyday practice. It is an important frame for decision making but always beginning and ending with our patient as the focus of care.

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Practical training in family medicine in the Dalmatian hinterland: first-hand experience of four physicians

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Four physicians working in private family medicine offices in Dalmatian Hinterland described their first hand experience of teaching sixth-year medical students. They supervised students during the 2010/2011 academic year, in an area that is economically undeveloped, rural, and where a number of people live in extended families. Although hesitant at first, the patients came to like the interaction with students, and later even yearned to provide students with as much information as possible. They also liked the letters that students had to write to them about their illness, because they could take them home and look for information without needing to see the doctor. The students showed diverse attitudes to different types of work in family medicine offices, mostly depending on their plans for future career. In general, they either complained or hesitated to perform duties that they did not fully master during earlier education, especially working with children. They needed several days to adapt to direct contact with the patients, and were more relaxed and cooperative when working in pairs than alone. The physicians themselves felt that they profited both from the novelty in the everyday routine and from the exchange of their experiences with the students. They liked their young colleagues and admitted they could not objectively review their own work, knowledge and skills.

Key words: Rural family medicine, Student practice, Mentoring in family medicine, Patient communication.

Introduction

We were given the opportunity to participate in practical training of sixth year medical students, during their family medicine course of the integrated undergraduate and graduate medical program at the School of Medicine in Split, in 2011 (1). The course is positioned at the end of the study program; it encompasses11 hours of lectures, 42 hours of seminars, and 147 hours of practical work in family medicine offices in the city of Split, Split surroundings, and some of Adriatic islands for each student. The goal of the practice is to apply students' knowledge, skills and attitudes acquired in the previous phases of the study in a concrete clinical setting, with the duties of the family medicine physician. This was the first such experience for the three of us, while one had some previous experience. Family medicine practice in the

Dalmatian Hinterland is somewhat specific when compared to the family practice in cities, coastal villages or islands. Dalmatian Hinterland is a part of south Croatia that is relatively large but sparsely populated. The population differs both economically and educationally from the rest of the country. It is still very rural and physicians care for both the pediatric and the adult patients. The changes affect the Hinterland at a slower pace compared to the more developed parts of the country. People also express their life philosophy in a different way, including their medical problems. Families in this area traditionally care for grandparents, and grandparents care for grandchildren and homes while parents work. It is mostly men have the jobs and they usually work far away from their homes and villages. In such a setting women take care of the field work, of the house, children and grandparents. This all results in a different relationship between the doctors and patients and their families (3).

Here we summarize our experiences and observations of working as supervisors of medical students.

What did the students gain from the family medicine practice in a rural area?

Encountering family practice at the Dalmatian Hinterland was a completely new experience for our students. The physician-patient communication is closer and less formal. Even when we, as practitioners, came to this area first, we were advised by our older and wiser colleagues: "If you address them as You, they will answer as We." Similarly, an anecdote was passed on to all of us about an old man, who, a few days before he died, said to his physician: "Thank you for your care, but I have eaten my bread, my child!"

Intimacy and closeness between the physicians and the patients are common, because the patients do not talk only about their health problems, but also talk about other life issues and comment on various events, be it economical issues, politics or sports. In the Hinterland family physicians share important events with their patients, raise children together and share everyday lives. They are "ours" and we are "theirs", day or night, in the office, or on the streets (3). And so it is common when one of us goes to the shop to be asked: "Zorka, please, can I ask you about my disease". However, the students were confused by this practice, and many asked: "Don't they call you Mrs. Doctor?!" At the beginning of their practice with us, when a patient would leave the office, students would often comment: "What a character this man is!" It was then necessary to explain to all of the students that although we know most of our patients outside the practice, it is we ourselves who have to be professional and not endanger the deepest intimacy of our patients.

We also noticed a certain discomfort and uncertainty in the communication between the students and small children. It was necessary to insist that students examine a child, as the students were too often looking for ways and excuses of not do so. Some did accept the challenge and examined children, but with great apprehension and insecurity. We believe the reason behind this is that they did not expect to take care of small children, as children are usually covered by primary pediatric offices in larger cities. Perhaps they were also reluctant to work with children because they were a bit afraid of their skills and knowledge. They complained that it was difficult to get sensible answers from children, that their answers were unreliable, and that it was often difficult to establish the desired cooperation during the check-up. This made us think that family physicians and primary care pediatricians should provide a more coordinated pediatrics teaching.

All of the students were also given the opportunity to tour the area with their su-

pervisors in order to gain insight into the socio-economic conditions of patients. Surprisingly, they did not show a great passion for field work – something that is expected from physicians whose job is to provide health care for all. We do not know the reasons for this reluctance; perhaps it is related to the current system of education, where formal knowledge predominates over practical and field work. This problem definitely requires attention and different educational approach.

Since the distance from the nearest hospital is about 30 km or more, we are more likely to perform minor surgeries and procedures (suturing minor wounds, removing foreign bodies from the eye, placing a urinary catheter) than our colleagues in city offices. The possibility to refresh their skills made some students happy, while others again retreated in the background. We observed that this largely depended on the students´ interests in their future careers. Those who saw themselves as future surgeons enjoyed these opportunities, while others needed to be specifically encouraged and stimulated. Some had the opportunity to accompany a patient with a heart attack to the closest hospital, and observe how their supervisors coped in emergencies. They learned that we, even after years of experience, have our professional dilemmas and very often need to discuss them with colleagues. Overall, all students who did try to perform the tasks were later proud and happy. Those who were reluctantly engaged in practical work for various reasons later complained of missed opportunities (Table 1).

What did the supervisors gain from the work with students?

Working with students was certainly refreshing in our line of work. Young people always bring cheerfulness, encouragement, even when they are not too keen to perfect their skills. Wishing to excel in our teaching assignments and to show students some useful skills for the future, we had to change our routine practice to some extent (Table 1). We went more thoroughly through patients' physical exams and history taking for the sake of our students, although we were very familiar with the medical histories of our patients. We insisted on proper and full physical examination each visit, even if we had seen the patient just a few days before the students arrived. The Drug Register was always there on the table to help students, although they often realized that it could not always help them as some of the patients would come and ask for "small white pills". We also had the Therapeutic Manual to look up the generic names of drugs, the group they belong to, their main characteristics, and how and when to use them. We discussed all the other materials we had at our hands, from the treatment guidelines to the leaflets about new medications brought in by the representatives of different pharmaceutical companies.

Working with students opened the possibility of interactive learning between us (4), where knowledge and experience of a supervisor was exchanged with the students' fresh knowledge from the latest textbooks and lectures. Most of this matter related to changes in the therapeutic approach: we were happy to show that we kept up to date with new diagnostic technologies, and the students were happy to help with the computer systems in our offices (Table 1).

We had the impression that the students were truly interested in the practice. However, when it comes to the diaries the students had to keep during the practical classes, we are of mixed opinion. The diaries were part of examination in family medicine, and required from the students to fill in his or her patients, with diagnoses for the entire practice. Two of us believe that the diaries brought about a higher responsibility to the students, while two believe it hinders

Table 1 Summary of teaching experience of four family medicine physicians from a Southern Croatian rural area

Subjects	Benefits	Setbacks	Problems
Physicians	– Teaching practice – Refreshment of routine – Opportunity to review professional issues – Strengthening of ties with the University – Better communication among family medicine physicians – Increase of respect among patients towards physicians	– Takes longer to see patients – Patient confidentiality issues – Need for additional organizational efforts related to education (diary, letters, OSCE, test questions, etc.)	– No formal/systematic preparation for teaching – Lack of tradition and lack of insistence on objective evaluation – Short time for analysis and evaluation of students' work – Matching actual patient and students' needs
Students	– Rural environment/specific population – Full patient care – Direct and individual supervisor-student relationship – Practicing independently – Opportunity to do minor surgery	– Travel and housing arrangements, with insufficient financing – Time and effort commitment with respect to travel and accommodation	– Communication with patients – Communication with children – Lack of interest in home visits – Lack of interest in family medicine as a career

the students, as it makes them focus on the diary instead on the everyday work (Table 1). We all believe that the diary writing and student engagement depended on the personality of each one of us, the burden of ordinary activities during working hours, and on our own previous experiences with being students (4).

What did the patients gain from the students?

Since this was the first year that students had practical classes in most of our offices, the patients were initially confused. Some even to the extent that they expressed fear and uncertainty, and were reluctant to come back to the office for few weeks. Perhaps this was a sudden change for them – they did not have "my doctor" (3) to whom they had to say something very important and confidential at that particular time. However, most of them quickly accepted the students, showed extreme benevolence and understanding that this was an important part of learning for the future work of the students. In the end they all wanted to help by readily responding to students' inquiries and wishing them all the best in their own future practices. Perhaps preparing the patients should be done in advance, with thorough information on how the practice is important for education of young physicians.

We were particularly impressed with the letters that students had to write to the selected patients. This letters had to contain information about the patient's diseases and ways to improve their health. The practice of writing letters to the patients was introduced as a part of teaching and examination in the family medicine course in the 2010/11 academic year. During history taking of patients whom they later had to write letters to, some students rather awkwardly approached the patients, leaving some of the patients with the impression that they may have disclosed too much sensitive information. We quickly dispersed their anxiety and explained further the purpose of many questions during the interview. When the patients received their letters, they were thrilled. Here we present some of their typical comments:

- "I have always wanted that someone explains everything to me in this way!"

- "Every now and then, I go back to the letter and read it, and it helps me in my disease."

Such comments made some of us think to take on this practice ourselves and write a letter to our patients from time to time, so that they can recall the advice given even without the direct contact with the doctor. In selecting the patients for students, the supervisors again had a different approach. We usually suggested patients with regard to either their peculiarities or the problems they had. Some of the students chose patients on their own, mainly according to the diagnoses they found interesting or for the simplicity of the case. This turned out to be a great lesson for the students, as simple diagnoses were deceptive, and not often easy to manage and resolve in real-life patients.

Evaluation of students' work

At the end of the practice, we had to evaluate the students' work. Some of us had their doubts about this task (Table 1). It should be emphasized that the total score for colleagues and students was very positive: the students attended practical classes regularly, they showed interest and became true members of the team, and at certain moments displayed exceptional sensitivity to patients and their fates (The compassion and their interest in medical practice were more evident if they previously had similar experiences in their family or among friends.). The rating addressed 5 components of the student's work: regularity of attendance, regularity of keeping the diary, interest in work, relationship with patients, knowledge and learning; with each having a maximum number 4 points. A rating structured as this caused dilemmas for us. First, we tried to assess our own contribution during their stay in the practice. Some of thought we could have and should have given more, and so we decided to be "less strict". In assessing, the positive overall impression of the group of students biased us in grading the students individually.

Sometimes we were expecting a little more initiative on the students' part. There were also those that were late with their assigned tasks, but we found it hard to lower their point's cause of this. We were gentle in evaluating all of the parts, and the regularity of attendance was hundred percent, for the students had no place to go in such a small village. We chose to look for good characteristics and reward them. We believe this will have a greater impact on the students, than would punishment the errors or rating the skills and knowledge they were supposed to acquire before our course. However, the question remains on how to achieve greater objectivity in future work and should we be the ones evaluating at all. Perhaps if next time we told the young colleagues immediately what we expect from them, i.e. what segment of work we consider particularly important, could help us avoid empathy and subjectivity. In addition, we think that assessing could make each individual student perceive what he or she is good at and where to put more effort in order to be a better doctor. The grading also gives certain seriousness to practical classes. We do understand that the students wish to experience certain leisure in the practical classes and the field trips, despite it being the very beginning of their independent work.

Comments and suggestions

There were five male and one female student in the outpatient clinic in Muć, in two groups, three in one and two in the other. There were three students in Šestanovac, Runovići and Imotski. We think that the number of students was too high for Muć. Two or three students develop completely different dynamics during work than a single one. When paired, students mutu-

ally complemented each other in taking the patients' history and examining them. This dynamics may be useful and encouraging, although it prevents individual work of the student with a patient. Larger groups of students disturb the privacy of the patients making them unconformable and wary. Duration of the practice in an outpatient clinic may benefit from additional time, as it takes some time for students to adjust to the everyday work, and enable them to ask questions freely and. The students also change the whole routine of the clinic work and at some moments during the day, most of us felt we wished to have been alone. However, we would have then missed the time at the end of the day, when we discussed the patients and activities of the day. This kind of interaction between students and us started in the second week of their stay at the office.

We believe the usefulness of staying in a family medicine practice would be higher if the continuity of visits was ensured during more years of study, not just in the final year. In the first or the second year of their studies, such visits could just have the aim of experiencing the atmosphere of future work and would not need to be longer than two or three days. Since students' knowledge and skills increase during their studies, attending family medicine offices should increase proportionally. It could also be beneficial if the same students came to the same supervisors each year.

Most future doctors in Croatia will start their professional job in a family medicine practice and many will stay there for their whole professional life. It was therefore peculiar to discover that only one out of five students in our practices expressed the wish to work as a family physician. This is another reason to further develop field work as a part of family medicine course, as colleagues from all over the world report similar information, noting that the students' attitudes about being a family physician change after actual practice in such clinics (5,6). Working with young people, especially with our future colleagues, was challenge, satisfaction and responsibility (4, 6). It was a privilege to share and gain insight into their plans and wishes for their future. We noticed, however, that they somehow lacked motivation and enthusiasm. They also shared with us their concern that they did not perhaps show their full potential and skills (Table 1). We need to re-think education in family medicine so that the generations of doctors to come should be fully competent and qualified to deal with the challenges of future (7). Our experience suggests that the practice in rural areas such as Dalmatian Hinterland is of utmost importance for this goal.

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Cerebrovaskularne bolesti (Cerebrovascular Diseases)

Svetomir P. Ivanović (editor), Montenegrin Academy of Sciences and Arts, Podgorica, 2010, 598 pages; ISBN 978-86-7215-254-8; COBISS.CG-ID 16794896

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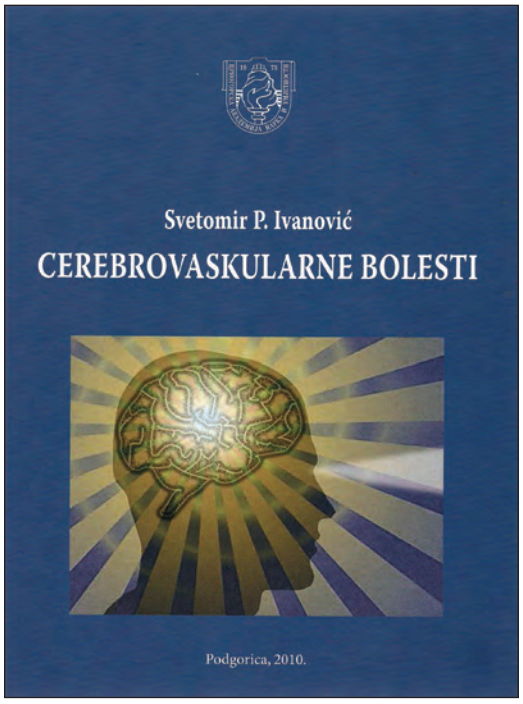

The book entitled Cerebrovascular Diseases, edited by Svetomir P. Ivanović, M.D., Ph.D., Academician of Montenegrin Academy of Sciences and Arts, Professor of Neurosurgery at the «US Medical School» in Belgrade (Serbia) is result of long lasting experience in the cerebrovascular field of this distinguished expert in the region. The book contains 32 chapters and has 36 contributors from different cerebrovascular subdisciplines from Serbia and Montenegro.

Stroke, whether of ischemic or hemorrhagic origin, is globally a major health burden. It is the second or third most common cause of death worldwide and most common cause of neurological disability in adults and second most important cause of dementia worldwide. According to WHO figures, global stroke deaths were 5.8 million in 2005 and are projected to increase to 6.5 million in 2015 and 7.8 million in 2030. Despite considerable advances, some aspects of the diagnostics and treatment of stroke remain controversial.

The main aim of the authors were to publish comprehensive basic and clinical knowledge including anatomy, physiology, pathophysiology, epidemiology, diagnostics, clinical presentations and different aspects of treatment and rehabilitation of all aspects of cerebrovascular diseases. The authors' aim has been accomplished. This textbook can serve as a very precise guide to all experts in the field of cerebrovascular disorders. Thanks to a very contemporary content, a very simple and in the same time very organized text, this book should be a basic and very helpful textbook for neurology, neurosurgery and physical medicine residents and specialists, but also for other specialists, residents and general practitioners.

International publications of authors from Bosnia and Herzegovina in Current Contents indexed publications in the second half of 2011*

Beganović A, Bašić B, Gazdić-Šantić M, Kulić M, Spužić M, Skopljak-Beganović A, Drljević A, Samek D. Occupational and patient exposure in interventional cardiology in Bosnia and Herzegovina. Radiat Prot Dosimetry. 2011 Sep;147(1-2):102-5. Epub 2011 Jul 14.

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Monitoring of professionally exposed workers in Bosnia and Herzegovina started in 1960s. Doses received by patients and professionals in interventional cardiology are high in comparison with other practices in medicine. The purpose of this study is to present personal and patient dosimetry data. Results show increase in doses of personnel in interventional cardiology. Total collective dose for four cardiology centres in Bosnia and Herzegovina increased from 15 person mSv in 2007 to 52 person mSv in 2010. This increase mainly corresponds to higher number of personnel and increase in the number of procedures. Average monthly dose has increased from 0.40 to 0.72 mSv in the same period. The results of occupational and patient doses in interventional cardiology are similar to results reported in the literature. It is of great importance for professionals working in this field to be educated in radiation protection and proper use of X-ray equipment.

Čehajić-Clancy S, Effron DA, Halperin E, Liberman V, Ross LD. Affirmation, acknowledgment of in-group responsibility, group-based guilt, and support for reparative measures. J Pers Soc Psychol. 2011 Aug;101(2):256-70.

Department of Political Science and International Relations, Sarajevo School of Science and Technology, Bistrik 7, Sarajevo, Bosnia and Herzegovina.

Three studies, 2 conducted in Israel and 1 conducted in Bosnia and Herzegovina, demonstrated that affirming a positive aspect of the self can increase one's willingness to acknowledge in-group responsibility for wrongdoing against others, express feelings of group-based guilt, and consequently provide greater support for reparation policies. By contrast, affirming one's group, although similarly boosting feelings of pride, failed to increase willingness to acknowledge and redress in-group wrongdoing. Studies 2 and 3 demonstrated the mediating role of group-based guilt. That is, increased acknowledgment of in-group responsibility for out-group victimization produced increased feelings of guilt, which in turn increased support for reparation policies to the victimized group. Theoretical and applied implications are discussed.

Delibegović S. The Use of a Single Hem-o-lok Clip in Securing the Base of the Appendix During Laparoscopic Appendectomy. J Laparoendosc Adv Surg Tech A. 2012 Jan;22(1):85-7. Epub 2011 Dec 6.

Department of Surgery, University Clinic Center Tuzla, Tuzla, Bosnia and Herzegovina.

Background: During laparoscopic appendectomy, the standard technique in securing the base of the appendix is by endoloop ligatures or a stapler. We ear-

*Data for this survey were collected from PubMed database using the keywords Bosnia and Herzegovina and 2011.

lier demonstrated the possibility of the application of a double Hem-o-lok(®) clip in securing of the base of the appendix. The application of only one plastic clip would, however, lower the cost of the laparoscopic procedure even further and shorten the surgery time. The objective of this prospective study was to evaluate the possible advantages of securing of the base of the appendix using only one Hem-o-lok clip. Patients and Methods: The 90 patients with acute appendicitis were randomly divided into three groups: In the first group, the base of the appendix was secured using one endoloop ligature, in the second group using a 45-mm stapler, and in the third group using only one nonabsorbable Hem-o-lok clip. The data collected included age, gender, surgery time, time of endoloop/stapler/clip application, hospital stay, costs associated with these, and intra- and postoperative complications. Results: There were no significant differences in hospital stay among the three groups of patients; but the average time of the operation was significantly longer in the endoloop group than in the stapler group (P=.002), whereas the endoloop and Hem-o-lok groups were not statistically different (P=.22). The time of application of the endoloop was significantly longer than for the stapler (P<.0001) and Hem-o-lok (P<.0001) groups. The time of application of the stapler was significantly shorter than that of the Hem-o-lok (P<.0001). However, the price of one endoloop is €28.85, for the stapler is €230.7, and for one Hem-o-lok clip is €2.35. Conclusion: The use of one Hem-o-lok clip is as safe as an endoloop and/or stapler; however, the time of the laparoscopic procedure using the Hem-o-lok was shorter in comparison with the use of an endoloop, with the cost of the procedure being the lowest.

Dizdarević K, Hamdan A, Omerhodžić I, Kominlija-Smajić E. Modified Lund concept versus cerebral perfusion pressure-targeted therapy: A randomised controlled study in patients with secondary brain ischaemia. Clin Neurol Neurosurg. 2012 Feb;114(2):142-8. Epub 2011 Oct 28.

Department of Neurosurgery, Clinical Center University of Sarajevo, Bolnička 25, Sarajevo, Bosnia and Herzegovina.

PURPOSE: Secondary brain ischaemia (SBI) usually develops after aneurysmal subarachnoid haemorrhage (SAH) and severe traumatic brain injury (TBI). Current approaches to managing these conditions are based either on intracranial pressure-targeted therapy (ICP-targeted) with cerebral microdialysis (CM) monitoring according to the modified Lund concept or cerebral perfusion pressure-targeted therapy (CPP-targeted). We present a prospective, randomised controlled study comparing relative effectiveness of the two management strategies. METHODS: Sixty comatose operated patients with SBI following aneurysmal SAH and severe TBI were randomised into ICP-targeted therapy with CM monitoring and CPP-targeted therapy groups. Mortality rates in both groups were calculated and tissue biochemical signs of cerebral ischaemia were analysed using CM. Measured CM data were related to outcome (Glasgow Outcome Scale [GOS] score 1, 2 and 3 for poor outcome or GOS score 4 and 5 for good outcome). RESULTS: Patients treated with ICP-targeted therapy with CM monitoring had significantly lower mortality rate as compared with those treated with CPP-targeted therapy (P=0.03). Patients monitored with CM who had poor outcome had lower mean values of glucose and higher mean values of glycerol and lactate/pyruvate ratio as compared with those who had good outcome (glucose: P=0.003; glycerol: P=0.02; lactate/pyruvate ratio: P=0.01). There was no difference in the mortality outcome between aneurysmal SAH and severe TBI in the two groups (P=0.28 for ICP-targeted therapy with CM monitoring, P=0.36 for CPP-targeted therapy). Also, there were no differences in the CM values between patients with aneurysmal SAH and severe TBI who underwent ICP-targeted therapy (glucose: P=0.23; glycerol: P=0.41; lactate/pyruvate ratio: P=0.40). CONCLUSION: The modified Lund concept, directed at bedside real-time monitoring of brain biochemistry by CM showed better results compared to CPP-targeted therapy in the treatment of comatose patients sustaining SBI after aneurysmal SAH and severe TBI.

Erić J, Stančić I, Šojić LT, Popovac AJ, Tsakos G. Validity and reliability of the Oral Impacts on Daily Performance (OIDP) scale in the elderly population of Bosnia and Herzegovina. Gerodontology. 2011 Nov 21. doi: 10.1111/j.1741-2358.2011.00584.x. [Epub ahead of print]

Department of Prosthodontics, Faculty of Medicine, University of East Sarajevo, Foča, Bosnia and Herzegovina; Clinic for Prosthetic Dentistry, Faculty of Dentistry, University of Belgrade, Belgrade, Serbia; Department of Epidemiology and Public Health, University College of London, London, UK.

Validity and reliability of the Oral Impacts on Daily Performance (OIDP) scale in the elderly population of Bosnia and Herzegovina Objectives: To adapt the Oral Impacts on Daily Performance (OIDP) index for elderly people in Bosnia and Herzegovina and test its validity, reliability and responsiveness to change. Background: Clinical measures alone may not be adequate for assessing the oral health of individuals. Subjective oral health indicators tested within a particular cultural context may not be relevant across cultures. Materials and methods: The study popula-

tion comprised 231 free-living adults aged 65 years or older. The OIDP was cross-culturally adapted from English into the Serbian language and its psychometric properties were tested. Data were collected using a clinical examination and a questionnaire containing the OIDP. Results: In terms of reliability, Cronbach's alpha coefficient was 0.82 and the intraclass correlation coefficient 0.88. The very high correlation of OIDP with self-rated oral health (r = 0.78) verified criterion validity, while construct validity was demonstrated through its significant and graded associations with other subjective health measures. OIDP change scores on a treated subsample showed moderate effect size (0.59) and were associated with perceptions of oral health change, providing evidence for its responsiveness to change. Conclusion: The Bosnian version of the OIDP showed satisfactory validity, reliability and responsiveness to change confirming its appropriateness for use among older populations in Bosnia and Herzegovina.

Gavranović H, Chauve C, Salse J, Tannier E. Mapping ancestral genomes with massive gene loss: a matrix sandwich problem. Bioinformatics. 2011 Jul 1;27(13):i257-65.

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MOTIVATION: Ancestral genomes provide a better way to understand the structural evolution of genomes than the simple comparison of extant genomes. Most ancestral genome reconstruction methods rely on universal markers, that is, homologous families of DNA segments present in exactly one exemplar in every considered species. Complex histories of genes or other markers, undergoing duplications and losses, are rarely taken into account. It follows that some ancestors are inaccessible by these methods, such as the proto-monocotyledon whose evolution involved massive gene loss following a whole genome duplication. RESULTS: We propose a mapping approach based on the combinatorial notion of 'sandwich consecutive ones matrix', which explicitly takes gene losses into account. We introduce combinatorial optimization problems related to this concept, and propose a heuristic solver and a lower bound on the optimal solution. We use these results to propose a configuration for the proto-chromosomes of the monocot ancestor, and study the accuracy of this configuration. We also use our method to reconstruct the ancestral boreoeutherian genomes, which illustrates that the framework we propose is not specific to plant paleogenomics but is adapted to reconstruct any ancestral genome from extant genomes with heterogeneous marker content.

Haverić S, Haverić A, Bajrović K, Galić B, Maksimović M. Effects of dipotassium trioxohydroxytetrafluorotriborate (K2[BO3F4OH]) on genetic material and inhibition of cell division in human cell cultures. Drug Chem Toxicol. 2011 Jul;34(3):250-4.

Institute for Genetic Engineering and Biotechnology, University of Sarajevo, Sarajevo, Bosnia and Herzegovina.

We have examined antiproliferative, cytotoxic, and genotoxic potential of a halogenated boroxine dipotassium trioxohydroxytetrafluorotriborate ($K_2[B_3O_3F_4OH]$). The impact on cell growth was evaluated by alamarBlue assay in basal cell carcinoma culture. Cytostatic, cytotoxic, and genotoxic potential were evaluated in lymphocytes culture, applying cytokinesis-block micronucleus cytome assay and chromosome aberrations analysis. Tested concentrations (0.05, 0.1, 0.2, and 0.4 mg/mL) were correlated with inhibition of cell growth in basal cell carcinoma culture and with the lymphocytes proliferation. Clastogenic activity has been confirmed, without evidences of aneugenic activity, in human lymphocytes.

Hudić I, Szekeres-Bartho J, Fatušić Z, Stray-Pedersen B, Dizdarević-Hudić L, Latifagić A, Hotić N, Kamerić L, Mandžić A. Dydrogesterone supplementation in women with threatened preterm delivery--the impact on cytokine profile, hormone profile, and progesterone-induced blocking factor. J Reprod Immunol. 2011 Dec;92(1-2):103-7. Epub 2011 Oct 26.

Clinic of Gynecology and Obstetrics, University Clinical Center Tuzla, Trnovac bb, Tuzla, Bosnia and Herzegovina.

Progesterone is indispensable in creating a suitable endometrial environment for implantation, and also for the maintenance of pregnancy. Successful pregnancy depends on an appropriate maternal immune response to the fetus. A protein called progesterone-induced blocking factor (PIBF) acts by inducing Th2-dominant cytokine production to mediate the immunological effects of progesterone. The aim of this prospective study was to compare serum concentrations of progesterone (P), estradiol (E2), anti-inflammatory (IL-10) and pro-inflammatory (IL-6, TNFα, IFNγ) cytokines, and serum PIBF concentrations in women with threatened preterm delivery who were given progesterone supplementation (study group) with those of women with threatened preterm delivery who were not given progesterone supplementation (control group). After dydrogesterone treatment of patients in the study group, serum PIBF as well as progesterone concentrations significantly increased. Women in this

group had significantly higher serum levels of IL-10 than controls. The length of gestation was significantly higher in the group of women who were given progesterone supplementation. Our data suggest that dydrogesterone treatment of women at risk of preterm delivery results in increased PIBF production and IL-10 concentrations, and lower concentrations of IFNγ.

Ibragić S, Sofić E, Suljić E, Avdagić N, Bajraktarević A, Tahirović I. Serum nitric oxide concentrations in patients with multiple sclerosis and patients with epilepsy. J Neural Transm. 2012 Jan;119(1):7-11. Epub 2011 Jul 21.

Department of Chemistry, Faculty of Science, University of Sarajevo, Zmaja od Bosne 33-35, Sarajevo, Bosnia and Herzegovina.

Nitric oxide (NO), a neurotransmitter and a free radical, has been purported to be involved in numerous neurological diseases. We investigated the serum nitric oxide concentration in 30 patients with multiple sclerosis (MS), in 30 patients with epilepsy and in 30 control subjects. The aim was also to determine whether a statistically significant difference in serum NO concentrations exists between the groups of interest. The total serum nitric oxide concentration was measured using the Griess reaction after reducing nitrates to nitrites with elemental zinc. In the group multiple sclerosis, the mean NO concentrations were X ± SEM = 31.02 ± 1.79 μmol/l, in the control group X ± SEM = 25.31 ± 1.44 μmol/l and in the group epilepsy X ± SEM = 22.51 ± 1.28 μmol/l. Student's t test showed a statistically significant difference between subjects with multiple sclerosis and the control group ($p = 0.013$), as well as between the groups multiple sclerosis and epilepsy ($p = 0.0002$). This data confirms that NO may play an important role in the pathogenesis of multiple sclerosis, whereas its role in epilepsy still remains unclear.

Jovanović P, Salkić NN, Zerem E, Ljuca F. Biochemical and ultrasound parameters may help predict the need for therapeutic endoscopic retrograde cholangiopancreatography (ERCP) in patients with a firm clinical and biochemical suspicion for choledocholithiasis. Eur J Intern Med. 2011 Dec;22(6):e110-4. Epub 2011 Mar 5.

University Clinical Center Tuzla, Department of Gastroenterology, Tuzla, Bosnia and Herzegovina.

BACKGROUND: Prediction of the need for therapeutic endoscopic retrograde cholangiopancreatography (ERCP) in patients with suspected choledocholithiasis (CDL) remains a challenging task. AIMS: We aimed to evaluate the predictive value of biochemical and ultrasound parameters and to create a corresponding model for prediction of the need for therapeutic ERCP. METHODS: 203 consecutive patients referred to our center due to a firm clinical and/or biochemical suspicion for CDL. All patients underwent ERCP. Biochemical and ultrasound variables were analyzed. RESULTS: The sample was divided into testing group (103; 50.7%) and validation group (100; 49.3%) which did not differ in their baseline characteristics. Elevated gamma glutamil transaminase (GGT), common bile duct (CBD) diameter and presence of hyperechoic structures in CBD were found to be significant predictors for presence of CBD stones on ERCP ($p<0.05$) in the testing group. We used these variables to construct a predictive model for the presence of CBD stones on ERCP. The model was tested on a second, validation group of patients using ROC analysis with the area under the ROC curve of 0.81 (%95 CI=0.75-0.86; $p<0.001$). We identified a threshold (0.86) above which, patients had a high probability (93.1%) for the need for interventional ERCP. CONCLUSION: Our predictive model may help predict the need for therapeutic ERCP in patients with a suspicion for choledocholithiasis.

Mešić E, Bock A, Major L, Vaslaki L, Berta K, Wikstrom B, Canaud B, Wojke R. Dialysate saving by automated control of flow rates: comparison between individualized online hemodiafiltration and standard hemodialysis. Hemodial Int. 2011 Oct;15(4):522-9. doi: 10.1111/j.1542-4758.2011.00577.x. Epub 2011 Jul 26.

University Clinical Centre, Tuzla, Bosnia and Herzegovina.

Cost reduction and quality improvement seem to be conflicting issues. However, online hemodiafiltration (oHDF) with new automatic functions offers a cost-efficient therapy compared to hemodialysis (HD). Seven dialysis centers conducted a randomized clinical trial with cross-over design: high-flux HD vs. postdilutional oHDF with functions coupling both dialysate and substitution flow rates to blood flow rates. During the 6 weeks of the study, all treatment parameters remained unchanged for HD and oHDF, apart from dialysate and substitution flow rate. Treatment data were recorded during each treatment, and predialytic and postdialytic concentrations of urea were recorded at the end of each study phase. The analysis involved 956 treatments of 54 patients. The mean dialysate consumption was 123.2 ± 6.4 l for HD and 113.4 ± 14.9 l for oHDF ($p < 0.0001$), the mean dialysis dose was 1.42 ± 0.23 for HD and 1.47 ± 0.26 for oHDF ($p < 0.0001$); oHDF resulted in a lower dialysate consumption (8.0% less) and a slightly increased dialysis dose (Kt/V 3.5% higher) compared to HD. oHDF with

the investigated automatic functions offers substantial savings in dialysate consumption without decreasing dialysis dose.

Mujagić S, Sarihodžić S, Huseinagić H, Karasalihović Z. Wegener's granulomatosis of the paranasal sinuses with orbital and central nervous system involvement-diagnostic imaging. Acta Neurol Belg. 2011 Sep;111(3):241-4.

Clinic of Radiology and Nuclear Medicine, University Clinical Center Tuzla, Tuzla, Bosnia and Herzegovina.

Wegener's granulomatosis (WG) is a systemic vasculitis that can affect any organic system, but primarily involves the upper and lower respiratory tracts and the kidneys. WG relatively frequently affects the nervous system (in 30-50%), usually in the form of peripheral or cranial neuropathy. Involvement of the brain is reported in a very small percentage of patients (2%-8%). Three major mechanisms have been described as the cause of central nervous system (CNS) disease in WG: contiguous invasion of granuloma from extracranial sites, remote intracranial granuloma and CNS vasculitis. CNS involvement caused by contiguous invasion of granuloma from extracranial sites is the rarest. We report the case of a 37-year-old man with WG, manifested as a pulmonary and paranasal sinuses disease, with orbital and CNS involvement, caused by contiguous invasion from the paranasal sinuses. In this report, the rich spectrum of findings achieved by computed tomography and magnetic resonance are demonstrated. The importance of computed tomography in bony destruction PNS findings, and the importance of MR imaging in evaluation of the direct intracranial spread from nasal, paranasal and orbital disease are also emphasized.

Mušanović J, Filipovska-Mušanović M, Kovačević L, Buljugić Dž, Džehverović M, Avdić J, Marjanović D. Determination of combined sibship indices »gray zone« using 15 STR loci for central Bosnian human population. Mol Biol Rep. 2011 Dec 10. [Epub ahead of print]

Medical Faculty, University of Sarajevo, Sarajevo, Bosnia and Herzegovina.

In our previous population studies of Bosnia and Herzegovina human population, we have used autosomal STR, Y-STR, and X-STR loci, as well as Y-chromosome NRY biallelic markers. All obtained results were included in Bosnian referent database. In order of future development of applied population molecular genetics researches of Bosnia and Herzegovina human population, we have examined the effectiveness of 15 STR loci system in determination of sibship by using 15 STR loci and calculating different cut-off points of combined sibship indices (CSI) and distribution of sharing alleles. From the perspective of its application, it is very difficult and complicated to establish strict CSI cut-off values for determination of the doubtless sibship. High statistically significant difference between the means of CSI values and in distribution of alleles sharing in siblings and non-siblings was noticed ($P < 0.0001$). After constructing the »gray zone«, only one false positive result was found in three CSI cut-off levels with the highest percent of determined sibship/non-sibship at the CSI = 0.067, confirming its practical benefit. Concerning the distribution of sharing alleles, it is recommended as an informative estimator for its usage within Bosnia and Herzegovina human population.

Petričević J, Punda H, Brakus SM, Vukojević K, Govorko DK, Alfirević D, Kvesić A, Saraga-Babić M. Immunolocalization of nestin, mesothelin and epithelial membrane antigen (EMA) in developing and adult serous membranes and mesotheliomas. Acta Histochem. 2011 Nov 21. [Epub ahead of print]

Department of Pathology, Cytology and Forensic Medicine, University Clinical Hospital Mostar, Bijeli brijeg bb, Mostar, Bosnia and Herzegovina; Department of Histology and Embryology, School of Medicine, University of Mostar, Bijeli brijeg bb, Mostar, Bosnia and Herzegovina.

The spatial and temporal distribution of epithelial membrane antigen (EMA), mesothelin and nestin was immunohistochemically analyzed in developing and adult human serous membranes and mesotheliomas in order to detect possible differences in the course of mesenchymal to epithelial transformation, which is associated with differentiation of mesothelial cells during normal development and tumorigenesis. Pleura and pericardium developing from the visceral mesoderm gradually transform into mesothelial cells and connective tissue. EMA appeared in mesothelium of both serous membranes during the early fetal period, whereas during further development, EMA expression was retained only in the pericardial mesothelium. It increased in both pleural mesothelium and connective tissue. Mesothelin appeared first in pericardial submesothelial cells and later in surface mesothelium, while in pleura it was immediately localized in mesothelium. In adult serous membranes, EMA and mesothelin were predominantly expressed in mesothelium. Nestin never appeared in mesothelium, but in connective tissues and myocardial cells and subsequently decreased during development, apart from in the walls of blood vessels. Mesothelial cells in the two serous membranes developed in two separate devel-

opmental pathways. We speculate that submesothelial pericardial and mesothelial pleural cells might belong to a population of stem cells. In epithelioid mesotheliomas, 13% of cells expressed nestin, 39% EMA and 7% mesothelin.

Smajlović A, Berbić S, Žerovnik E. The cross-road between the mechanisms of protein folding and aggregation; study of human stefin B and its H75W mutant. Biochem Biophys Res Commun. 2011 Nov 18;415(2):337-41. Epub 2011 Oct 18.

Department of Biochemistry, Faculty of Pharmacy, University of Tuzla, Univerzitetska 1, Tuzla, Bosnia and Herzegovina.

The role of the aromatic residue at site 75 to protein stability, the mechanism of folding and the mechanism of amyloid-fibril formation were investigated for the human stefin B variant (bearing Y at site 31) and its point mutation H75W. With an aim to reveal the conformation at the cross-road between folding and aggregation, first, the kinetics of folding and oligomer formation by human stefin B(Y31) variant were studied. It was found to fold in three kinetic phases at pH 4.8 and 10% TFE; the pH and solvent conditions that transform the protein into amyloid fibrils at longer times. The same pH leads to the formation of native-like intermediate (known from previous studies of this variant), meaning that the process of folding and amyloid-fibril formation share the same structural intermediate, which is in this case native-like and dimeric. At pH 5.8 and 7.0 stefin B folded to the native state in four kinetic phases over two intermediates. In distinction, the mutant H75W did not fold to completion, ending in intermediate states at all pH values studied: 4.8, 5.8 and 7.0. At pH 4.8 and 5.8, the mutant folded in one kinetic phase to the intermediate of the »molten globule« type, which leads to the conclusion that its mechanism of folding differs from the one of the parent stefin B at the same pH. At pH 7.0 the mutant H75W folded in three kinetic phases to a native-like intermediate, analogous to folding of stefin B at pH 4.8.

Šimić D, Topić I, Penavić JŽ. Epidemiological and clinical characteristics of malignant melanoma in area of West Herzegovina from 1997 to 2010. Coll Antropol. 2011 Sep;35 Suppl 2:137-40.

Department for Dermatology and Venerology, Mostar University Clinical Hospital, Mostar, Bosnia and Herzegovina.

Incidence rate of cutaneous malignant melanoma (MM), one of the most aggressive skin tumours, is increasing nowadays. Etiology of MM has not been fully understood. Various etiological factors are of relevance for the occurrence of the disease. The solar radiation as well as long term exposure to ultraviolet radiation has the greatest impact on development of this skin tumour. Melanoma risk factors have different associations with melanoma on body sites. This study investigates the epidemiological and clinical characteristics of MM such as age, gender, distribution of MM on the body and type of melanoma in the area of West Herzegovina, on the sample of 205 patients. It presents the occurrence of MM in the period from 1997. to 2010. Both, females and males have increased the risk of melanoma on the trunk (45.9%). Different body sites receive various amounts of sun exposure, yet melanomas occur on all parts of the body. This may represent different pathways in the etiology of melanoma based on body location. The most frequent type of MM was superficial spreading melanoma (SSM) 47.8%. According to our investigation incidence rate was 18.6% (per 1000 patients).

Tahirović H, Toromanović A. Perineal ectopic testis: a rare cause of empty scrotum. J Pediatr Endocrinol Metab. 2011;24(11-12):885.

Department for Research and Education, University Clinical Centre Tuzla, Tuzla, Bosnia and Herzegovina.

No abstract available.

Vranić S, Frković-Grazio S, Bilalović N, Gatalica Z. Angiogenesis in triple-negative adenoid cystic carcinomas of the breast. Virchows Arch. 2011 Oct;459(4):377-82. Epub 2011 Sep 4.

Department of Pathology, Clinical Center of the University of Sarajevo, Bolnička 25, Sarajevo, Bosnia and Herzegovina.

We compared microvascular density (MVD), lymph vessel density (LVD), and the expression of hypoxia pathway-associated proteins between primary triple-negative adenoid cystic carcinoma of the breast (TN-ACC) and grade-matched triple-negative breast carcinomas of no special type (TNBC). Twelve TN-ACC and 15 TNBC were investigated immunohistochemically for CD31, podoplanin (D2-40), von Hippel-Lindau protein (pVHL), and hypoxia-inducible factor-1alpha (HIF-1α) protein. All cases were lymph node negative (pN0). The study revealed a median MVD (CD31) of 34 vessels/mm(2) (mean ± SD, 41.33 ± 6.5/mm(2)) in the TN-ACC subgroup and a median of 55 microvessels (mean ± SD, 54.9 ± 6.3/mm(2)) in the TNBC subgroup. The median LVD (D2-40) was 10.5/mm(2) (mean ± SD, 11.9 ± 1.5/mm(2)) in the TN-ACC subgroup and 15.0/mm(2) (mean ± SD, 16.9 ± 2.5/mm(2)) lymph vessels in the

TNBC subgroup. The differences were not statistically significant (P = 0.93, P = 0.67, respectively). pVHL was detectable in all TN-ACCs whereas two cases of TNBC had less than 5% of the positive cells. HIF-1α protein expression was significantly higher in the tumor cell population than in adjacent normal cells in both subgroups (P = 0.009 for TNBC and P = 0.028 for TN-ACC, respectively), but there was no significant difference between the two tumor groups. Up-regulation of the hypoxia-induced signaling is seen in both TN-ACC and grade-matched TNBC. Despite its perceived low malignant potential, TN-ACC of the breast does not differ in the number of blood and lymphatic vessels in comparison with the grade-matched TNBC. The reported biologic differences between TN-ACC and TNBC do not appear to result from neoangiogenesis.

Vranić S, Gurjeva O, Frković-Grazio S, Palazzo J, Tawfik O, Gatalica Z. IMP3, a proposed novel basal phenotype marker, is commonly overexpressed in adenoid cystic carcinomas but not in apocrine carcinomas of the breast. Appl Immunohistochem Mol Morphol. 2011 Oct;19(5):413-6.

Department of Pathology, Clinical Center of the University of Sarajevo, Sarajevo, Bosnia and Herzegovina.

Insulin-like growth factor-II mRNA-binding protein 3 (IMP3) is a member of the insulin-like growth factor-II signaling pathway, and has recently been described as a biomarker of basal-like breast carcinomas. This study explored IMP3 expression in adenoid cystic carcinomas of the breast, a special type of basal-like, triple-negative (estrogen receptor/progesterone receptor/human epidermal growth factor receptor 2/neu protein negative) carcinoma and compared it with a group of apocrine carcinomas, which are an example of estrogen receptor/progesterone receptor negative, special type of breast carcinoma. Eighteen breast adenoid cystic carcinomas (16 primary and 2 corresponding metastases) and 18 apocrine carcinomas (16 invasive and 2 in situ) were evaluated for the expression of IMP3 protein using immunohistochemical method. A cut-off value for IMP3 positivity was set at 10%. Thirteen of 16 (81.3%) primary adenoid cystic carcinomas overexpressed IMP3 protein, predominantly in membranous distribution. The mean percentage of positive cells among primary adenoid cystic carcinomas was 50%. Both metastatic adenoid cystic carcinomas also strongly overexpressed IMP3 protein (70% and 80% of the tumor cells, respectively). In contrast, only 4 of 16 invasive apocrine carcinomas (25%) exhibited IMP3 positivity with significantly lower percentage of positive cells (27%, P<0.001). Two in-situ apocrine carcinomas were negative. Our results indicate that IMP3 may be an additional basal-type marker in breast carcinoma whose expression can be occasionally seen in other types of breast carcinomas such as apocrine type.

Zerem E, Imamović G, Pašić F. Comment on the article about safety of blind percutaneous liver biopsy in obese children. J Clin Gastroenterol. 2011 Aug;45(7):651.

University Clinical Center Tuzla, Tuzla, Bosnia and Herzegovina.

No abstract available.

Zerem E, Pavlović-Čalić N, Sušić A, Haračić B. Percutaneous management of pancreatic abscesses: long term results in a single center. Eur J Intern Med. 2011 Oct;22(5):e50-4. Epub 2011 Feb 26.

University Clinical Center Tuzla, Tuzla, Bosnia and Herzegovina.

BACKGROUND: Several authors consider that surgical intervention is the gold standard for treatment of pancreatic abscesses. Recently, considerable interest has been generated in the minimally invasive management of pancreatic abscess with mixed results reported in the literature. AIM: To evaluate the efficacy of percutaneous aspiration and/or drainage for patients with pancreatic abscesses. METHODS: We performed a retrospective analysis of 62 patients with 87 pancreatic abscesses treated by percutaneous management from 1989 to 2009. All patients received appropriate antibiotic therapy. Patients with pancreatic abscess <50mm in diameter were initially treated by ultrasound-guided percutaneous needle aspiration (PNA) and those with abscess ≥50mm were initially treated by ultrasound-guided percutaneous catheter drainage (PCD). Surgery was planned only when there was no clinical improvement after the initial percutaneous treatment. Primary outcome was conversion rate to surgery. RESULTS: Two patients (3.2%) received supportive treatment only and one of them died. PNA was performed in 16 patients (25.8%), and 8 of them required PCD because of recurrence of abscess. In 44 patients (70.1%), PCD was performed initially. PCD was performed twice in 6 patients and 3 times in 2 patients. There were 5 patients converted to surgery (8.1%) and one of them died. Medians (interquartile ranges) of hospital stay and catheter dwell-time were 17 (12-26) and 12 (9-21) days, respectively. There were no complications related to the procedure. CONCLUSIONS: Percutaneous aspiration and/or drainage are effective and safe for the treatment of pancreatic abscesses.

by Nerma Tanović

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Conclusion. Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not adequately supported by the data. In particular, authors should avoid making statements on economic benefits and costs unless their manuscript includes the appropriate economic data and analyses. Avoid claiming priority and alluding to work that has not been completed. State new hypotheses when warranted, but clearly label them as such.

Acknowledge. Anyone who contributed towards the study by making substantial contributions to conception, design, acquisition of data, or analysis and interpretation of data, or who was involved in

drafting the manuscript or revising it critically for important intellectual content, but who does not meet the criteria for authorship. List the source(s) of funding for the study and for the manuscript preparation in the acknowledgements section.

References. Need to be on a separate page. Small numbers of references to key original papers will often serve as well as more exhaustive lists. Avoid using abstracts as references. References to papers accepted but not yet published should be designated as "in press" or "forthcoming"; authors should obtain written permission to cite such papers as well as verification that they have been accepted for publication. If the paper has been published in electronic form on PubMed the confirmation of acceptance is not needed. Information from manuscripts submitted but not accepted should be cited in the text as "unpublished observations" with written permission from the source. Avoid citing a "personal communication" unless it provides essential information. For scientific articles, authors should obtain written permission and confirmation of accuracy from the source of a personal communication.

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The titles of journals should be abbreviated according to the style used in Index Medicus. Consult the list of Journals Indexed for MEDLINE, published annually as a separate publication by the National Library of Medicine (available from: www.nlm.nih.gov/tsd/serials/lij.html). Examples of references please see on the following pages.

Tables. Need to be submitted separate from the main text. The preferred software for tables is Microsoft Excel (save each table in a file with single worksheet). Only tables made with table tools in Microsoft Word are acceptable. For the paper version, type or print each table on a separate sheet of paper. Number tables consecutively in the order of their first citation in the text. Use Arabic numerals. Each table needs to have an explanatory title. Place the title above the table. Give each column a short or abbreviated heading. Also, visibly indicate the position of each table in the text, using its assigned numeral at the end of the sentence which is relevant to the table(s). Tables should be positioned in the text where the author feels is appropriate but the Editor reserves the right to re-organize the layout to suit the printing process. Authors need to place explanatory matter in footnotes, not in the heading. Explain in footnotes of the table all nonstandard abbreviations. For footnotes use the following symbols, in sequence: *, †, ‡, §, ||, ¶, **, ††, ‡‡. Identify statistical measures of variations, such as standard deviation and standard error of the arithmetic mean. *Be sure that each table is cited in the text.* If you use data from another published or unpublished source, obtain permission and acknowledge them fully.

Figures (illustrations: diagram, photograph, photomicrograph, radiograph, drawing, sketch, picture, outline, design, plan, map, chart, etc.). Need to be submitted separate from the main text. They need to be submitted as photographic quality digital prints or, exceptionally, as professionally drawn and photographed original illustrations. Figures should be in a digital format that will produce high quality images. Formats recommended include: JPEG, GIF, TIFF, Microsoft Word, Excel. Sending original photographs and slides is permissible when they cannot be digitized without professional help. In this case, send an explanation in the cover letter. Using Arabic numerals, number figures consecutively in the order of their first citation in the text. Also, visibly indicate the position of each figure in the text, using its assigned numeral in parentheses. Figures should be positioned in the text where the author feels is appropriate but the Editor reserves the right to re-organize the layout to suit the printing process.

Supply a legend for each figure. Titles and detailed explanations belong in the legends, however, not on the figures themselves. Figures should be made as self-explanatory as possible. Letters, numbers, and symbols on figures should therefore be clear and even throughout, and of sufficient size that when reduced for publication each item will still be legible. Photomicrographs should have internal scale markers. Symbols, arrows, or letters used in photomicrographs should contrast with the background. If photographs of people are used, either the subjects must not be identifiable or their pictures must be accompanied by written permission to use the photograph.

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Abbreviation, Acronyms and Symbols

If possible for metric units use standard abbreviations. Non-standard abbreviations should be defined when first used in the text.

Sample references

Articles in journals

Standard journal article (*List the first six authors followed by et al.*):

Halpern SD, Ubel PA, Caplan AL. Solid-organ transplantation in HIV-infected patients. N Engl J Med. 2002;347(4):284-7.

More than six authors:

Rose ME, Huerbin MB, Melick J, Marion DW, Palmer AM, Schiding JK, et al. Regulation of interstitial excitatory amino acid concentrations after cortical contusion injury. Brain Res. 2002;935(1-2):40-6.

Organization as author:

Diabetes Prevention Program Research Group. Hypertension, insulin, and proinsulin in participants with impaired glucose tolerance. Hypertension. 2002;40(5):679-86.

No author given:

21st century heart solution may have a sting in the tail. BMJ. 2002;325(7357):184.

Volume with supplement:

Geraud G, Spierings EL, Keywood C. Tolerability and safety of frovatriptan with short- and long-term use for treatment of migraine and in comparison with sumatriptan. Headache. 2002;42(Suppl 2):S93-9.

Issue with supplement:

Glauser TA. Integrating clinical trial data into clinical practice. Neurology. 2002;58(12 Suppl 7):S6-12.

Issue with no volume:

Banit DM, Kaufer H, Hartford JM. Intraoperative frozen section analysis in revision total joint arthroplasty. Clin Orthop. 2002;(401):230-8.

Letters or abstracts:

Tor M, Turker H. International approaches to the prescription of long-term oxygen therapy [letter]. Eur Respir J. 2002;20(1):242. ; Lofwall MR, Strain EC, Brooner RK, Kindbom KA, Bigelow GE. Characteristics of older methadone maintenance (MM) patients [abstract]. Drug Alcohol Depend. 2002;66 Suppl 1:S105.

Article republished with corrections:

Mansharamani M, Chilton BS. The reproductive importance of P-type ATPases. Mol Cell Endocrinol. 2002;188(1-2):22-5. Corrected and republished from: Mol Cell Endocrinol. 2001;183(1-2):123-6.

Article with published erratum:

Malinowski JM, Bolesta S. Rosiglitazone in the treatment of type 2 diabetes mellitus: a critical review. Clin Ther. 2000;22(10):1151-68; discussion 1149-50. Erratum in: Clin Ther 2001;23(2):309.

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Yu WM, Hawley TS, Hawley RG, Qu CK. Immortalization of yolk sac-derived precursor cells. Blood. 2002 Nov 15;100(10):3828-31. Epub 2002 Jul 5.

Books and other monographs

Personal author(s):

Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. Medical microbiology. 4th ed. St. Louis: Mosby; 2002.

Editor(s), compiler(s) as author:

Gilstrap LC 3rd, Cunningham FG, VanDorsten JP, editors. Operative obstetrics. 2nd ed. New York: McGraw-Hill; 2002.

Organization(s) as author:

Royal Adelaide Hospital; University of Adelaide, Department of Clinical Nursing. Compendium of nursing research and practice development, 1999-2000. Adelaide (Australia): Adelaide University; 2001.

Chapter in a book:

Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. In: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York: McGraw-Hill; 2002. p. 93-113.

Conference paper:

Christensen S, Oppacher F. An analysis of Koza's computational effort statistic for genetic programming. In: Foster JA, Lutton E, Miller J, Ryan C, Tettamanzi AG, editors. Genetic programming. EuroGP 2002: Proceedings of the 5th European Conference on Genetic Programming; 2002 Apr 3-5; Kinsdale, Ireland. Berlin: Springer; 2002. p. 182-91.

Dissertation:

Borkowski MM. Infant sleep and feeding: a telephone survey of Hispanic Americans [dissertation]. Mount Pleasant (MI): Central Michigan University; 2002.

Other published material

Newspaper article:

Tynan T. Medical improvements lower homicide rate: study sees drop in assault rate. The Washington Post. 2002 Aug 12;Sect. A:2 (col. 4).

Dictionary and similar references:

Dorland's illustrated medical dictionary. 29th ed. Philadelphia: W.B. Saunders; 2000. Filamin; p. 675.

Electronic material

CD-ROM:

Anderson SC, Poulsen KB. Anderson's electronic atlas of hematology [CD-ROM]. Philadelphia: Lippincott Williams & Wilkins; 2002.

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Chason KW, Sallustio S. Hospital preparedness for bioterrorism [videocassette]. Secaucus (NJ): Network for Continuing Medical Education; 2002.

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Abood S. Quality improvement initiative in nursing homes: the ANA acts in an advisory role. Am J Nurs [serial on the Internet]. 2002 Jun [cited 2002 Aug 12];102(6):[about 3 p.]. Available from: http://www.nursingworld.org/AJN/2002/june/Wawatch.htm

Monograph on the Internet:

Foley KM, Gelband H, editors. Improving palliative care for cancer [monograph on the Internet]. Washington: National Academy Press; 2001 [cited 2002 Jul 9]. Available from: http://www.nap.edu/books/0309074029/html/.

Homepage/Web site:

Cancer-Pain.org [homepage on the Internet]. New York: Association of Cancer Online Resources, Inc.; c2000-01 [updated 2002 May 16; cited 2002 Jul 9]. Available from: http://www.cancer-pain.org/.

Part of a homepage/Web site:

American Medical Association [homepage on the Internet]. Chicago: The Association; c1995-2002 [updated 2001 Aug 23; cited 2002 Aug 12]. AMA Office of Group Practice Liaison; [about 2 screens]. Available from: http://www.ama-assn.org/ama/pub/category/1736.html

Database on the Internet:

Who's Certified [database on the Internet]. Evanston (IL): The American Board of Medical Specialists. c2000 - [cited 2001 Mar 8]. Available from: http://www.abms.org/newsearch.asp

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PAEDIATRICS TODAY

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AIMS AND SCOPE

Journal Paediatrics Today is the first paediatrics journal in Bosnia and Herzegovina. It was established in 2005 with the aim of making new paediatric understandings and understandings of its bounding fields available to the physicians who are treating children and adolescents. The journal publishes reviewed articles from the following paediatric fields: allergology, cardiology, dermatology, endocrinology, epidemiology, gastroenterology, growth and development, haematology, immunology, infectious diseases, intensive care, medical genetics, metabolic diseases, neonatology, nephrology, neuropaediatrics, nutrition, oncology, paediatric psychology, preventive and social paediatrics, pulmology, and urology. Additionally, Paediatrics Today publishes comments on published papers, letters to the editor, book reviews, professional social report, calendar of paediatric meetings and other information from paediatrics and adolescent medicine.

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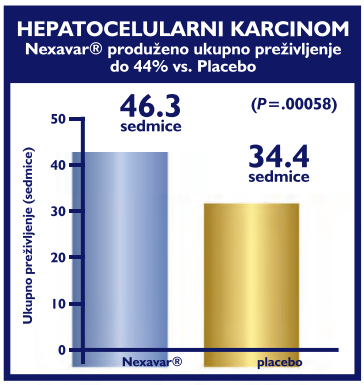
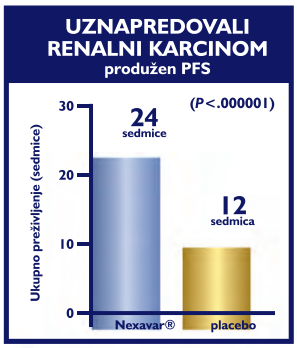
Kod hepatocelularnog i uznapredovalog renalnog karcinoma ...

Dokazana efikasnost kod dva tipa tumora





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Nexavar® (sorafenib) tablete

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INDIKACIJE: 1. Tretman pacijenata sa uznapredovalim renalnim karcinomom.
2. Za tretman hepatocelularnog karcinoma.

KONTRAINDIKACIJE: Poznata teška preosjetljivost na sorafenib ili bilo koji drugi sastojak tablete.

MJERE OPREZA: Trudnoća i dojenje; Uticaj na sposobnost vožnje i upravljanja mašinama; Dermatološki toksicitet; Hipertenzija; Krvarenja; Terapija varfarinom; Komplikacije cijeljenja rane; Kardijalna ishemija i/ili infarkt; Perforacije u gastrointestinalnom traktu; Oštećenje jetre; Lijekovi koji se metabolišu putem UGT1A1 mehanizma, docetaksel.

NEŽELJENI EFEKTI: Limfopenija, hipofosfatemija, krvarenja (uključujući gastrointestinalni i respiratorni trakt i cerebralna krvarenja); hipertenzija; dijareja; nauzea; povraćanje, osip, alopecija, sindrom šaka-stopalo, svrbež, eritem, umor, bol (uključujući usta, abdomen, bol u kostima, glavobolju i tumorsku bol); povećana amilaza; povećana lipaza.

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Više informacija o lijeku u SmPC za Nexavar® (sorafenib)

Broj i datum rješenja o odobrenju za stavljanje lijeka u promet: 11/1.02-500.3-18-8/07 od 23.02.2008.

Literatura:
1. TARGETS Clinical Trial Group. Randomized phase III trial of sorafenib (BAY 43-6006)- an oral multi-kinase inhibitor-in patients with advanced RCC. Presentation: 41st ASCO Annual Meeting; May 13-17, 2005; Orlando, Flo www.asco.org. January24, 2008.
2. Escudier B, Eisen T, Stadler WM, et al; for the TARGET Study Group. Sorafenib in advanced clear-cell renal-cell carcinoma. N Eng J Med. 2007;356(2):125-134.

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