European PhD Programmes in Biomedicine and Health Sciences

Editors: Zdravko Lacković and Jadranka Božikov

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PREFACE

This monograph represents proceedings of the "*European Conference on Harmonisation of PhD Programmes in Medicine and Health Sciences*" held in Zagreb, April 24-25, 2004. The monograph is a final version of the proceedings slightly different from the one that was printed prior to the Conference. This final version contains contributions that arrived during the Conference and, most importantly, it contains the Declaration on "*Harmonisation of PhD Programmes in Medicine and Health Sciences*" which was adopted unanimously at the end of the Conference. We would like to thank all the participants of the Conference for their contributions so far and for those which are going to be done after the Conference.

Editors
Zagreb, September 2004

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Introduction

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Uniting Europe and forming of the European Union has resulted in the need for harmonization of the higher education. The process has begun with the meeting of Rectors in 1988 at the University in Bologna, one of the oldest universities in Europe, who have reached a mutual understanding regarding the European higher education with the document called the Magna Charta. Universitatum. The next year, a ministerial conference was called at which the Bologna Declaration was brought, which aims at harmonizing the European higher education and should provide certain basic principles of the EU, such as free movement of people, goods and services, as well as free movement of students and teachers. In this sense, the ministers have agreed on harmonizing comparable degrees and implementation of the diploma supplement as well as on introducing the European Credit Transfer System (ECTS) as a measure for workload, which is needed for achieving certain educational input. The Bologna Declaration was signed by more and more European countries no matter whether they were an integral part of the EU or not. (Details about "Bologna process" can be found together with materials of most recent Berlin conference 2003 on following web address http:// www. bologna-berlin2003.de.). Croatia has also signed it and we are expecting to achieve great changes in our education system, which are well underway at the moment.

The usual scheme of higher education in the way which "Bologna process" is perceived

Type of Study	**Duration**	**Title**
Undergraduate Study	3-4 years	Bachelor
Graduate Study	+ 1-2 years (total 5-6 years total)	Master
Postgraduate Study	+2-3 years (total 7-9 years)	PhD

Specificity of medicine

Type of Study	Duration	**Title**
Undergraduate Study Graduate Study	Probably not applicable 5-7 years	Not applicable MD
Postgraduate Studes PhD program Specialisation	 +3 years (total 8-11 years) + 4-6 years (total 9-11 years)	 PhD Specialist

The scheme of comparable university degrees: Bachelor of Arts (BA), Master and PhD are presented in the above table. By finishing undergraduate study the duration of which is usually 3 to 4 years one achieves BA, and with the additional 2-3 years, one is awarded the degree of Master of Arts or Master of Sciences (MA/MS), and with another 2-3 years one obtains their PhD, traditionally called Doctor of Sciences (Dr. Sc.) Medical studies and public health have certain specific characteristics which makes them difficult to adjust to the general scheme of university degrees. Firstly, the study of medicine has a cumulative character and no matter of the fact that we have tried to implement the horizontal and vertical integration of lectures, one can not attend surgery courses until one has already passed the anatomy course

For this reason we do not have a successful example of the division within Bachelor and Master degree in medicine. In most European countries the study of medicine lasts 5-6 years, with the internship of 1-2 years. By finishing a medical faculty, one acquires the title of MD, which corresponds to Master's Degree in other academic fields of education. PhD Study in medicine can be found in most European countries in 2 forms: one is specialization lasting 4 or more years, the other is producing one's PhD thesis which is in many European countries represented by an intermediate degree called Magisterium of Science and for which one needs to produce a scientific thesis. Since it can be obtained after a 5-6 year of the study of medicine, it should not be regarded as the degree called MS in the higher education of Europe (in our scheme). In adapting to the Bologna process, the harmonization resulted in abolishing the above degree, while the degree which one acquires by specialization has not yet been recognized in the general scheme. Should such intermediate degrees be abolished represents a delicate issue, esp. in the case of public health. Namely, postgraduate studies, which end with an intermediate degree, are generally enrolled by doctors, sociologists and lawyers because of the need for interdisciplinary experts. In countries which have not adapted their educational system to the Bologna process, such postgraduate courses are enrolled by Bachelors of Art as well as Medical Doctors which are equivalent to Master's Degrees. Should such cases be still regarded as postgraduate studies and should we try to make them more adequate by specialization in medicine or should they become Master studies, so that for some this will mean the end of their studies, while other will achieve their second Master's Degree. The problems of PhD studies were discussed in Cordova in 2002, but we have no knowledge that the problems of medicine have been fully stressed and receive the separate place in the discussion.

PhD programs in medicine in Europe can reflect the fact that one can know very little about them, which is to say that it is difficult too obtain data on them. In one of the following texts, two PhD students from Croatia and the Czech Republic have analyzed the Internet pages of 88 European universities and have found a small number of those to be sufficiently informative. If one analyzes PhD studies in Europe by analyzing web pages or polls we have made prior to the Conference, we can see that the programs are those that consist of scientific research,

There are three modalities: the countries where PhD program in the field of medicine does not exist. Germany is probably the best known example where PhD thesis are replaced by habilitation; the programs of other countries are being dominated by research or are consisting only of research; the third are dominated by different forms of advanced learning, e.g. where one has to have one's scientific papers published to the programs where certain forms of advanced learning dominate and where successful scientific research is not of such great importance. That this is the case we can see in the PhD theses which are published in small numbers are not much read either. Elements of such PhD

programs could be traced in the past in Croatia as well as in other countries of the former Yugoslavia. PhD studies consisted of the above intermediate degrees and were followed by the bulk of lessons composed of several hundred hours and would usually end with producing a Master of Science Thesis. After that, scientific research would continue and end with PhD thesis.

In the extensive development of science at certain universities in the former Yugoslavia, and Zagreb is no exception, a significant number of doctors who have obtained their PhD medicine and public health have been promoted while publishing not one single scientific research paper. In many countries, there is an issue concerning whether the PHD is the beginning of scientific career or its crown. In some countries, e.g. Hungary, there are PhD programs parallel to serious criteria as well as Doctor of Science (D.Sc.) which is a crown in one's academic career, and is discussed publicly in the Hungarian Academy of Science and Art. If internationally recognized research should be the basis, how is one to organize good PhD programs in countries with a "small scientific community" (and a small scientific output). Probably no country in Europe can meet the highest standards in all fields of current medical research on its own. Following formally Bologna requirements, is there a danger to create a very diversified output? Is there a proper solution to these problems? Is it possible to reach a consensus on what exactly a PhD program should be, or perhaps even to offer certain recommendations for basic organizational and scientific requirements?

The solution to some of the above mentioned problems could be achieved by creating a regional i.e. international network(s) which would enable an increased fluctuation of students and academic staff, the exchange of new achievements and a wider range of subjects. Along with an improvement of quality, the aim of international co-operation is the broadening of contents, in order to be as close as possible to the dissertation topic of each individual attendant of the doctoral study. Therefore, this kind of network(s) represents an indispensable way of cooperation. Is it possible to reach a consensus about that?

Along with the difficulties of adapting to the Bologna Process and different awareness that we all have of the PhD program and of its organization, one can probably not achieve much at a two-day conference, but it is possible for the first in one place time to discuss the differences regarding our PhD programs as well as to see if we can reach consensus on certain basic issues. The Medical School in Zagreb would like to further its PhD studies and for this reason has felt a need to discuss the issue with others. We have already discussed it in 2003 in Prague, at the AMSE Annual Conference and saw that others were also troubled by the same issues. With more than 50 participants from 26 Universities coming from 15 European countries, the University of Zagreb Medical Faculty has the honor of tackling the beginning of the discussion on European PhD programs in medicine and public health.

A Survey of PhD programs in European medicine and health sciences: a compilation of answers to a questionnaire

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INTRODUCTION

A survey of the Internet pages of medical schools in Europe, given in the next paper and partly in the Introduction, showed that in the field of medicine and health sciences, PhD studies exist in all possible forms. In Europe there are universities without PhD programs in Medicine. There are universities with American type of joint MD-PhD programs. There are universities where PhD programs consist mostly of advanced learning; there are universities where PhD programs consist of research only. To the best of our knowledge, there is no single monograph, paper published in available journal or web pages where those different programs could be found. In fact, quite time-consuming Internet surfing is needed in order to obtain a limited number of information. Therefore we have performed a survey using a written Questionnaire of PhD programs at different universities, which were filled out in all cases by our highly qualified colleagues. Here we report the results of the survey.

MATERIAL AND METHODS

The Questionnaire was designed containing 13 questions aimed at first to establish the existence of PhD programs at a particular university. If there was a PhD program, the major aims were to identify how it was organized, what are the conditions for the enrollment, what are the prerequisites for obtaining the final PhD thesis, and finally, to assess some basic information on the thesis and its presentation.

Table 1. Questionnaire

QUESTIONNAIRE

1. **University/ Medical School/ School of Public Health/ Institutions**
   .....
   ..
   .....
2. **Person in charge of the PhD Program at your institution (contact person for the conference, e-mail address)**
   .....
3. **Is the PhD program at your medical school organized:**
   a) as research under the guidance of a supervisor of the PhD thesis only or
   b) as a combination of research for the thesis and organized courses?
4. **If your answer to the previous question was b, :**
   a) Is the study divided into fields (disciplines)?
   b) Are the students allowed to choose courses regardless of disciplines?
   c) How many hours of teaching (per year, per program of study)……
5. **Duration of the study: ..... years.**
6. **Is there an intermediate degree (Master of Science) before or during attaining the PhD?**
   a) Yes (Name of degree): .....)
   b) No
7. **Conditions for enrollment into the PhD study:**
   a) MD degree Yes/No
   b) Other degrees Yes/No (which?.....)
   c) average grades……
   d) supervisor .....
   e) other .....
8. **Duration of undergraduate study**: .....
9. **Prerequisits for obtaining the PhD thesis:**
   a) number of accumulated credits: .....,
   b) number of published papers (give us a details):
   .....,
   c) other: .....
10. **Appearance of the PhD thesis (IF YOU ARE COMING TO THE CONFERENCE WE WILL APPRECIATE VERY MUCH TO HAVE ONE COPY OF PhD THESIS FROM YOUR INSITUTION):**
    a) It contains published papers.
    b) It doesn't contain published papers.
11. **Is the PhD Thesis presented (defended) publicly**……
12. **Who are the members of PhD Thesis evaluating body**
    a) Professors from your Institutions only……..……..
    b) Professors from other Institutions within your country…..……..…..
    c) Professors from abroad……...……
    d) ……....

13. **Is the attainment of the PhD degree a prerequisite for academic advancement (i.e. attaining a status of associate professor or other)?**
    a) Yes
    b) No

Table 2 gives the list of countries and universities from which we have completed the Questionnaire. In addition, the Table 2 provides the names of the persons in charge of the PhD program and in parentheses are given names of the persons who have filled out the Questionnaire, if they are not the ones in charge of the PhD program. The Questionnaires were first distributed on the occasion of the Annual Conference of AMSE in Prague in 2003, and the Questionnaire was a part of the Registration Form for the Conference in Zagreb. Up to now it was filled out by 33 universities from 19 European countries. While analyzing the Questionnaire, we observed some of its lacks and possible misunderstandings, e.g. on the question No.3, some universities answered that their PhD program consists only of research (answer a); however, some of those universities have intermediate degree (Master of Science) with plenty of advanced learning before preparing PhD thesis. If such circumstances were known to us, we have corrected it (Mostar, Rijeka).

Table 2. An overview of received responses (in alphabetic order by country name)

Country	**University / School**	**Person in charge of PhD program (contact person for the Conference who gave information)**	**Received***	
			questionnaire	manuscript
Belgium	University of Antwerpen Faculty of Medicine	(Prof. Z. Berneman)	✔*	
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Bulgaria	Higher Medical Institute of Pleven	Prof. Maria Simeonova, MD, PhD Head of Medical Genetics Department	✔	
Croatia	J.J. Strossmayer University Osijek, Medical School	Assist. Prof. Ante Tvrdeić Vice Dean	✔	
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Italy	University of Pavia Faculty of Medicine and Surgery	Prof. Alberto Calligaro, Deputy Dean	✔	✔
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Serbia and Montenegro	University of Kragujevac	Prof. Slobodan Janković, Vice Dean for Research	✔	✔
	University of Niš School of Medicine	Prof. Stevan Ilić, Dean (Dr. Goran Nikolić, Vice Dean)	✔	
	University of Novi Sad Fculty of Medicine	Prof. Nevena Sečen, MD, PhD, Vice Dean for foreign communication and foreign students	✔	
Slovakia	Comenius University Jessenius Faculty of Medicine	Prof. Javorka Kamil Vice Dean for PhD Study	✔	✔
	P.J. Šafarik University Košice	(Prof. Andrej Jenča, MD, PhD)	✔ *	
Slovenia	University of Ljubljana Faculty of Medicine	Prof. Lovro Stanovnik	✔	
Spain	University of Navarra Medical School	Prof. Alfonso Ibarrola	✔	
	Universitat Rovira i Virgili,Tarragona	(Francese Vidal, Veronica Piera)	✔ *	
Switzerland	University of Bern Medical Faculty	Dr. Marlene Wolf	✔	

* Questionnaires were distributed and completed at the Annual Conference of AMSE in Prague in 2003

Table 3. Organization of PhD programs and higher education in general. Results of survey by Questionnaire (Questions 3-4)

University / School	Program	3) How is organized		4) Disciplines?		
		a) as a research only	b) as a combination	a) Divided in disciplines?	b) Courses regardless disc.	c) hrs per program
University of Antwerpen Faculty of Medicine		✔				
Université Catholique de Louvian, Brussels			✔	✔	✔	
University of Mostar Medical School			✔		✔	
University of Tuzla, Medical School		✔		N/A		
Higher Medical Institute of Pleven		✔		N/A		
J.J. Strossmayer University Osijek, Medical School			✔		✔	360
University of Rijeka, Medical School	Biomedicine Clinical Immunology		✔	✔	✔	
University of Split, Medical School			✔	✔	✔	180
University of Zagreb, Medical School	5 thematic programs		✔	✔	✔	360
Charles University in Prague, First Faculty of Medicine			✔	✔	✔	60 per year
University of Helsinki, Faculty of Medicine and HBGS			✔	✔		400 or 800
University of Münster Medical Faculty			✔			
University of Bielefeld, School of Public Health			✔	✔		240
Pécs University Medical School			✔	✔	✔	180
University of Szeged, Faculty of General Medicine	Experimental and Clinical Neuroscience Program integrated in Clinical Medical PhD		✔	✔	✔ partialy	
University of Dublin, Trinity College	Health Policy & Management	✔		N/A		
University of Pavia Faculty of Medicine and Surgery		✔ mainly			✔	
Sts. Cyril and Methodius University Skopje, Medical School		✔		N/A		

Norwegian University of Science and Technology (NTNU), Faculty of Medicine	5 thematic PhD programs		✔	✔	✔	300
University of Oslo, Faculty of Medicine			✔		✔	
Jageiellonian University Medical School	all participants must follow the same courses		✔	No	No	205+360
Poznan University of Medical Sciences			✔			240-480
Medical Centre of Postgraduate Education Warsaw	postgraduate and continuing professional education/training in all biomedical specialities		✔	✔		
Iuliu Hatieganu University of Medicine and Pharmacy, Cluj-Napoca			✔ for int	✔	✔	120-160
University of Kragujevac		✔		N/A		
University of Niš, School of Medicine		✔		N/A		
University of Novi Sad, Fculty of Medicine		✔		N/A		
Comenius University, Jessenius Faculty of Medicine			✔			
P.J. Šafarik University Košice		✔		N/A		
University of Ljubljana, Faculty of Medicine			✔	✔		200
University of Navarra, Medical School			✔	✔	✔	200
Universitat Rovira i Virgili,Tarragona			✔			
University of Bern, Medical Faculty			✔	✔	✔	

RESULTS AND DISCUSSION

Table 3 provides the results on answers to the question No. 3 and 4.

3. **Is the PhD program at your medical school organized:**
   a) as research under the guidance of a supervisor of the PhD thesis only or
   b) as a combination of research for the thesis and organized courses?
4. **If your answer to the previous question was b, :**
   a) Is the study divided into fields (disciplines)?
   b) Are the students allowed to choose courses regardless of disciplines?
   c) How many hours of teaching (per year, per program of study)

From the table we can see that several universities like Antwerpen, Tuzla, Pleven, Dublin, Pavia, Kragujevac, Niš, Novi Sad and Košice have a PhD program which consists only of research. However, it is possible that in some of those universities, for example from Serbia and Montenegro, advanced learning is part of intermediate programs. Obviously, most of the universities have a combination of advanced learning and research. In most surveyed universities, the programs are divided into disciplines, but at the same time in most of them, students can choose courses regarding of disciplines. The amount of advanced learning varies very much several times between different universities.

Table 4 shows the answers to questions 5, 6, 7 and 8. We can see that PhD program in most surveyed countries lasts three years. In most of the countries there is an intermediate degree, which in the countries of former Yugoslavia, Poland and possibly in the Czech Republic is called Master of Science.
Conditions for enrollment into PhD program, MDs and other related degrees exist in most universities. Only in few countries of the Former Yugoslavia, high grades in graduate study are conditions for enrollment into the program. The existence and probably recommendation of a supervisor are required in most of the surveyed countries.

Table 5 shows answers to questions 9 to 13 and addresses the issues how PhD thesis is obtained, presented, evaluated and published. Only 14 examined universities have some form of a credit system out of 33 universities. However, it is not clear what kind of credits and systems is used where the number of acquired credits ranges from 20 to 360. Prerequisite for obtaining PhD thesis for most of the universities are scientific papers published by applicants. The number of required papers ranges from 1 to 5. In some countries it is specified that the papers must be published in journals indexed in CC. Some universities have additionally expressed the condition that the applicant should be the first author, and some of them have expressed the requirement that the paper should be published in a journal with the defined impact factor. At 15 universities, the published PhD thesis contains published papers and at the same number of universities PhD thesis is presented publicly. In most universities, members of PhD thesis evaluation bodies come not only from those universities, but also from other institutions within the country. At 11 universities, the members of PhD evaluation bodies come occasionally or often from abroad.
Except the Trinity College, Dublin and the University of Bern, in all other universities PhD thesis is prerequisite for academic advancement.

Table 4. Duration of PhD and graduate programs, conditions for enrolment in PhD program, MSc degree as a prerequisite or an intermediate stage. Results of survey by Questionnaire (Questions 5-8)

University / School	**5) Duration (in years)***	**6) Intermediate degree?**		**7) Conditions for enrolment**					**8) Duration of undergraduate study (yrs)****
		a) yes (name of degree)	b) no	a) MD	b) other degrees	c) average grades	d) supervisor	e) other (which)	
University of Antwerpen Faculty of Medicine			✔	✔	✔				7
Université Catholique de Louvian, Brussels	4	✔ DEA		✔	✔				7
University of Mostar Medical School		✔ MSc		✔	✔	✔ 3.5	✔	✔	6
University of Tuzla, Medical School		✔ MSc		✔	✔				6
Higher Medical Institute of Pleven	3		✔	✔			✔	✔	6
J.J. Strossmayer University Osijek, Medical School	3	✔ MSc		✔	✔	✔ 3.5	✔	✔	6

University of Rijeka, Medical School	3	✔ MSc		✔	✔	✔ 3.5	✔		6 (4-5)
University of Split, Medical School	3		✔	✔		✔ 4.0			6
University of Zagreb, Medical School	3	it was till now	✔	✔	✔	✔ 3.5	✔	✔	6 (4-5)
Charles University in Prague, First Faculty of Medicine	3	✔ MSc		✔	✔		✔	✔	6
University of Helsinki, Faculty of Medicine and HBGS	4	✔		✔	✔		✔		6-7 (5)
University of Münster Medical Faculty	1-3	✔					✔		6
University of Bielefeld, School of Public Health	3	✔ MPH, MSc		✔	✔	✔	✔	✔	4
Péecs University Medical School	3		✔	✔	✔	✔	✔		5–6
University of Szeged, Faculty of General Medicine	3	✔		✔	✔				6 (5)
University of Dublin, Trinity College	3		✔	✔	✔		✔		
University of Pavia Faculty of Medicine and Surgery	3		✔	✔	✔		✔		5–6
Sts. Cyril and Methodius University Skopje, Medical School		✔ MSc		✔					6
Norwegian University of Science and Technology (NTNU), Faculty of Medicine	3	✔		✔	✔	✔	✔	✔	5–6
University of Oslo, Faculty of Medicine	3			✔	✔		✔	✔	6
Jageiellonian University Medical School		✔ MSc		✔	✔	✔	✔	✔	5–6
Poznan University of Medical Sciences	4		✔	✔					5–6
Medical Centre of Postgraduate Education Warsaw	4		✔	✔	✔				6
Iuliu Hatieganu University of Medicine and Pharmacy, Cluj-Napoca	4 int 6 ext			✔	✔				4–6
University of Kragujevac	3	✔ MSc		✔	✔	✔	✔	✔	6
University of Niš, School of Medicine	3	✔ MSc		✔	✔		✔	✔	6
University of Novi Sad, Faculty of Medicine	5	✔ MSc		✔					6
Comenius University, Jessenius Faculty of Medicine	3-4 int 5 ext		✔	✔	✔			✔	6 (5)
P.J. Šafarik University Košice	3-4			✔					
University of Ljubljana, Faculty of Medicine	4	✔ MSc		✔	✔	✔	✔		6 (4-5)
University of Navarra, Medical School	2-3		✔	✔	✔		✔		6
Universitat Rovira i Virgili,Tarragona	3-4	✔		✔	✔				6
University of Bern, Medical Faculty	3		✔	✔			✔		

* int – internal or full time students; ext – external or part time students

** Duration of study is 6-7 years for medical doctors, shorter for other graduates

Table 5. Conditions for PhD thesis obtaining, evaluation body, presentation and publishing requirements. Results of survey by Questionnaire (Questions 9-13)

University / School	9) Prerequisites for obtaining the PhD thesis?			10) Appearance of PhD thesis		11) Is the PhD thesis presented publicly?	12) Who are the members of PhD thesis evaluation body?			13) Is the phD degree prerequisite for academic advancement?	
	a) no of accumulated credits	b) no of published papers	c) other	a) it contains poublished papers	b) it doesn't contain pub. papers		a) from institution only	b) other inst. within country	c) from abroad	a) Yes	b) No
University of Antwerpen, Faculty of Medicine		✔ 2 published papers		✔						✔	
Université Catholique de Louvian, Brussels Faculte de Medicine	not defined	✔ 4 published papers			✔ optional					✔	
University of Mostar Medical School		✔ 1 paper published in indexed journal						✔	✔	✔	
University of Tuzla, Medical School		✔ 3 papers published in indexed journals			✔			✔	✔	✔	
Higher Medical Institute of Pleven		✔ published papers are necessary but their number is not specified	✔		✔			✔		✔	
J.J. Strossmayer University Osijek, Medical School	180 ECTS	✔ 30 credits out of published papers altogether, student must be first author of 1 CC in particular	✔		✔			✔		✔	
University of Rijeka, Medical School	180 ECTS	✔ at least 1 in CC (after PhD)		✔		✔		✔		✔	
University of Split, Medical School		✔ 1 CC			✔			✔		✔	
University of Zagreb, Medical School	180 ECTS	✔ 3-4 papers published in peer reviewed journals or books, out of them at least one in CC journal as a first author, cumulative impact factor of all papers at least 1.2			✔	✔	✔	✔		✔	
Charles University in Prague, First Faculty of Medicine	2 courses and state exam	✔						✔	✔ in some cases	✔	
University of Helsinki, Faculty of Medicine and HBGS	20 or 40	✔ generally 4-5 (alternatively but rarely monograph dissertation)	✔	✔				✔	✔ often	✔	
University of Münster Medical Faculty	72 credits		✔		✔					✔	
University of Bielefeld, School of Public Health					✔	✔		✔		✔	
Pécs University Medical School	180 credits	✔ 2-3 papers published in int. journals			✔	✔		✔		✔	
University of Szeged,		✔ at least 3 original papers		✔		✔		✔		✔	

Faculty of General Medicine		cummulative impact factor in field of Neuroscience around 4.5-5									
University of Dublin, Trinity College								✔			✔
University of Pavia Faculty of Medicine and Surgery			✔	✔		✔		✔	✔	✔	
Jageiellonian University Medical School			✔		✔			✔	✔ occass-ionaly	✔	
Poznan University of Medical Sciences			✔		✔			✔		✔	
Medical Centre of Postgraduate Education Warsaw		✔ 3 papers			✔			✔		✔	
Iuliu Hatieganu University of Medicine and Pharmacy, Cluj-Napoca		✔ at least 2 papers in field of research in outstanding national (international) journals different titles depending on publications	✔ sev. titles	✔		✔		✔		✔	
Sts. Cyril and Methodius University Skopje, Medical School		✔ 4 as an author and 2 as a co-author	✔ MSc	✔		✔	✔			✔	
Norwegian University of Science and Technology (NTNU), Faculty of Medicine	180 credits	✔ 3-5 articles published in international peer reviewed journals, first authorship of at least half of them	✔ publ. trial lectur e	✔		✔		✔	✔	✔	
University of Oslo, Faculty of Medicine	not defined	✔ 3-5 articles published in international peer reviewed journals, first authorship of at least two of them	min 30 credit s traini ng	✔		✔		✔	✔	✔	
University of Kragujevac, Medical Faculty		✔ one paper published in medical journal, the candidate being the first author			✔			✔		✔	
University of Niš, School of Medicine		✔ min. 2 papers in an international journal (SCI list)			✔	✔		✔	poss-ibly	✔	
University of Novi Sad, Fculty of Medicine		✔ MSc+5 papers published int. journals on topic of PhD		✔		✔	✔			✔	
Comenius University, Jessenius Faculty of Medicine	150	✔ 1-3 papers published in peer reviewed journals (depending on a sci. filed), min. 1 as the first author	✔ exam	✔		✔		✔	✔	✔	
P.J. Šafarik University Košice	✔			✔						✔	
University of Ljubljana, Faculty of Medicine	90	✔ at least 1 paper published in a journal indexed in SCI		✔			✔	✔	✔	✔	
University of Navarra, Medical School	32	✔ not compulsory		✔ if poss.		✔		✔	✔	✔	
Universitat Rovira i Virgili,Tarragona	✔		✔			✔				✔	
University of Bern, Medical Faculty	✔	✔ at least 1 published paper candidate being the first author		✔		✔	✔				✔ not yet

CONCLUSION

Since 21 out of 33 questionnaires were filled out by the universities from the "countries in transition", the pleasant surprise of the survey presented is the fact that all those universities are imposing high criteria for obtaining PhD thesis, which currently requires from the candidate to have his/her scientific papers published before presenting his/her scientific thesis. In these countries, if it is already not being done so, there is only one step towards the thesis that will contain those papers as an integral part of PhD thesis.

Among the countries surveyed, there is not one of them that has already introduced the ECT System which would really reflect the workload required for the study and research. However, it is obvious that some universities are going toward this direction. However, while it should not be so difficult to measure the workload required for advanced learning, it is quite difficult to design a credit system which would accurately measure the workload required to publish a scientific paper. We all know that for some scientific papers, if we are lucky and a part of a good team, we are able to design them in a few months or even weeks time. On other hand, we have probably all have experienced to have been working on some of them for years and years. There is obviously a paradox here. We are all able to recognize good science and a good scientist. However, the tendency to put it into numbers – any kind of numbers – places us in front of obstacles we are still not aware how to deal with.

In conclusion, from the results of the survey presented here, it is clear that all surveyed countries are organizing their PhD program in medicine with high ambitions. Since PhD degree is prerequisite for academic career in most of the surveyed countries, we are obviously all aware that by designing PhD programs from advanced learning to the independent research of the applicants, we are designing the program for leaders of our European medicine in the times to come.

An Overview of European PhD Programs as Available on the Internet

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Introduction

The current political, economic, and scientific trends in Europe resulted in the need to reform the European higher education by connecting European universities, making their curricula compatible, and setting common objectives. The promotion of convergence in a sense of comparability and transparency of all higher education programs in European countries was the goal of a series of conferences which were held during last years: Lisbon 1997, Sorbonne Declaration 1997, and Bologna 1998 and 1999. Beside these general reforms, the aims of medical education were stated in 3 key documents: *Physician for the 21st Century*, *Tomorrow's Doctors*, and *Blueprint 1994*: *Training of Doctors in the Netherlands*. The above mentioned documents were dealing mainly with a reform and problems of undergraduate studies. There are not many documents focused on the medical PhD studies. However, the harmonization of PhD programs is equally important to facilitate the free mobility of postgraduate students, teachers, and scientists. In order to get an overview of the current state of medical PhD programs in Europe, as well as to exchange ideas and discuss the problems regarding the issue, the Zagreb University School of Medicine has decided to organize *the European Conference on Harmonization of PhD programs in Biomedicine and Health Sciences* which is to take place in Zagreb from 24 to 25 April 2004. The main objective of the Conference is to bring together in one place the representatives of European medical schools participating in PhD programs in medicine and public health, who will report us on their experience and the experience of their countries, as well as try to propose the best way to PhD program harmonization. Parallel to organizing the conference, we tried to assess the availability of different doctoral study programs on the Internet.
In the survey we have analyzed the web pages of 88 university medical schools in 28 European countries in order to assess the quality of the web pages.

Material and Methods

We searched the web pages of 88 medical schools from 28 European countries. 30 medical school Ph.D. study plans in English, German, French, Croatian, Czech, Serbian, Slovenian, Slovak and Polish language were analyzed. The data was gathered in April 2004.
The data collected related to the duration of study, admission criteria, the study organization and requirements for finishing the study. The searched web pages (No = 88) were divided into 3 groups:

- the web pages with description of doctoral program in language we do not understand and/or the web pages with no information on the PhD study;
- the web pages without a detailed description of doctoral programs (only remarking the existence of such program);

- the web pages with detailed information on PhD program.

The results of the analysis of the PhD programs were put into the tables. Among the analyzed PhD programs, we selected 10 examples to the detailed description. The criteria for their selection were mainly the sufficient and transparent information about the structure of PhD study, i.e. the duration of study, admission criteria, the study organization and requirements for the defense of PhD thesis, available on the web pages of medical schools. The PhD programs of medical schools in one country were often very similar. Therefore, we selected only one PhD program per country to prevent the duplicity of information.

Results

Table 1. Division of web pages into 3 groups

	Number	**Percentage (%)**
Group 1: the web pages with description of doctoral program in language we do not understand and/or the web pages without any information on the Ph.D. study	58	65.9
Group 2: the web pages without detailed description of doctoral programs	14	15.9
Group 3: the web pages with detailed information	16	18.2
Total	88	100.0

Table 2. List of some Web pages of PhD studies at European medical schools

Barcelona, Spain	http://www.ub.es/div3/3cicle/doctorate/doctorate.htm
Karolinska Institutet, Sweden	http://www.ub.es/div3/3cicle/doctorate/doctorate.htm
Nis, Serbia and Montenegro	http://www.medfak.ni.ac.yu/doktorske_disertacije.htm (only in Serbian)
Louvain, Belgium	http://www.md.ucl.ac.be/fac/public/commissions/doctorat_med/intro2.htm
Copenhagen, Denmark	http://www.sund.ku.dk/Engelsk/defaultstud.htm
Barcelona, Spain	http://www.blues.uab.es/escola_doctorat/oferta/cat/arbre-programes.html
Leiden, Netherlands	http://www.leiden.edu/index.php3?m=&c=232&session=#PhD
Ljubljana, Slovenia	http://www.mf.uni-lj.si/mf/studij/index.html
Zagreb, Croatia	http://www.bio.mef.hr
Hradec Králové, Czech Republic	http://www.lfhk.cuni.cz/PGS/Dokument/ANGStudZkusRad.doc

Prague, Czech Republic	http://www.lf3.cuni.cz/ (only in Czech)
Plzen, Czech Republic	http://www.lfp.cuni.cz/HomePg_cz.html (only in Czech)
Biomedicine, Prague, Czech Republic	http://www.kav.cas.cz/pdsb/Text/RAD.html (only in Czech)
Brno, Czech Republic	http://www.med.muni.cz/to.cs/studium/pgs/studrad.html (only in Czech)
Olomouc, Czech Republic	http://www.upol.cz/UP_En/
Tartu, Estonia	http://www.ut.ee/livelink_files/1374177.htm http://www.ut.ee/livelink_files/1361030.htm
Turku, Finland	http://www.utu.fi/med/tdk/english.html
Oulu, Finland	http://www.medicine.oulu.fi/english/postgraduate_education.html
Riga, Latvia	http://www.lu.lv/eng/studies/doctoral.html
Wroclaw, Poland	http://www.am.wroc.pl/kurspod/doktor.html (only in Polish)
Bratislava, Slovakia	http://www.fmed.uniba.sk/www/enindex.html
Košice, Slovakia	http://www.upjs.sk/zakony/vyhlas.htm (only in Slovak)
Newcastle upon Tyne, UK	http://www.ncl.ac.uk/postgraduate/research/
Aberdeen, UK	http://www.abdn.ac.uk/prospectus/pgrad/2004/

Description of Selected PhD Programs

Faculty of Medicine in Hradec Králové
Charles University in Prague
Czech Republic

Postgraduate studies are conducted in two possible study forms: full-time (residential study) and combined (part-time) study. The maximum duration of study in the doctoral study program is 8 years, and in the full-time study the maximum duration is 3 years.
Admission to the postgraduate study program is only open to a student who has fulfilled study in the master's program. A student has to pass the entrance exam. The purpose of the oral exam is to verify qualification of an applicant for scientific work in the appropriate scientific field. Discussion of the aim of the doctoral study and clarification of the topic of the dissertation thesis is part of the entrance exam and oral interview.
Study in the doctoral study program is supervised and assessed by the Subject Co-ordinating Board (SCB). Study is accomplished according to an individual study plan under the direction of the supervisor and as a rule with a participation of a consultant. The supervisor and consultant for the given student are appointed and dismissed by the Dean after nomination by the SCB.
The individual doctoral study plan includes:

- the list of subjects of study for which the student passes examinations in the course of the first and second years of study; instruction of these subjects takes place in the form of courses, lectures, seminars and individual consultations,
- a time schedule of the courses, examinations and expert and scientific activities,
- the topic of the dissertation thesis with its objectives and main methodology, including a proposed solution to the problem made by the appropriate department of study,
- the extent of necessary knowledge for the doctoral examination,
- the plan of study stays in the Czech Republic and/or abroad.

The individual program of the student has two parts, which may overlap in time:

- part of study accomplished by the state doctoral examination,
- part directed at the development of the dissertation thesis accompanied by its defence.

The study is divided into:

- general study, directed at the extension of general basic knowledge in the given doctoral program, study of special disciplines adjacent to the appropriate study program, or study of the English language,
- specialized study, directed at the solution of a specific scientific task of the dissertation thesis.

The study is duly completed by the state doctoral examination and a defence of the dissertation thesis. In the State Doctoral Examination (SDE) the student is to prove deep scientific and theoretical knowledge in the chosen field of doctoral study, including knowledge of scientific work methods, readiness to learn new scientific information, evaluate it and use it in a creative way. The course of the state doctoral exam and declaration of its results are open to the public. The SDE is held in front of an examination committee. The committee consists of at least 7 members. The members of the committee are usually the student's supervisor and at least two specialists who are not members of the academic community of the Faculty.
Before the defence of the thesis, each student has to publish at least 2 original scientific works in journals reviewed by editors. He/she must be the primary author of one of them. The extent and form of the dissertation thesis are given by the SCB according to the requirements of the appropriate scientific study field. The dissertation thesis should give evidence of ability in independent creative scientific work but should also introduce new scientific knowledge. As a dissertation thesis, a student can also submit a compilation of published scientific works with his/her commentaries, if such a compilation proves ability in creative scientific work. The dissertation thesis is submitted in the Czech, Slovak or English language. The defence of the thesis is public and is held in front of a thesis defence committee. The committee has 7 members at least, two or more of whom must be experts from outside the Faculty.

Faculty of Medical Sciences
University of Newcastle upon Tyne
United Kingdom

The traditional PhD is built around a supervised thesis on a substantial piece of work, which has to show evidence of originality and contain material worthy of publication and it involves an element of research training through taught modules and/or courses.
Admission to the postgraduate study program is only open to a student who is a graduate of University or other approved degree-awarding body or holds other qualifications

approved by the dean of postgraduate studies. An applicant may be approved for admission as a candidate for the degree of Doctor of Philosophy by a postgraduate admissions selector. A postgraduate admissions selector must be satisfied not only as to the suitability of the applicant, but also as to the availability to the applicant of appropriate supervision and suitable facilities once the applicant is admitted as a candidate. The following categories of study are available: full-time and part-time study. A minimum period of advanced study and research shall normally be not less than three years (maximum 4 years) in full-time study and than five years (maximum 6 years) in part-time study, respectively.
A candidate for the degree of Doctor of Philosophy must engage in advanced study and research under the direction of a teacher in the University. He/she shall:

- attend the University as frequently and at such intervals as the candidate's supervisor shall require;
- attend and complete the requirements of, and satisfy the examiners in any assessments for, any taught programme deemed to be part of the programme of study for the degree of Doctor of Philosophy;
- produce appropriate written work as required by the candidate's supervisor including at least one substantial piece of written work during the first year of registration;

Before being awarded the degree of Doctor of Philosophy, a student must:

- satisfy the entrance requirements for the degree;
- register for and make satisfactory progress in the relevant programme of study;
- satisfy the examiners in the assessments specified.

The results of a candidate's advanced study and research must be embodied in a thesis. A candidate's thesis must be written in English. In exceptional cases, subject to the presentation by the candidate of a case justifying such a concession, the appropriate dean of postgraduate studies may allow the candidate to submit a thesis written in a modern language other than English. A candidate's thesis shall be examined by examiners. There shall ordinarily be one external examiner and one internal examiner appointed for each candidate. The examination shall consist of a review and assessment of the candidate's thesis by the examiners and of an oral examination on the content of the thesis and subjects related thereto. The supervisor shall not be present during the oral examination. A candidate may also be encouraged to give a presentation of the work embodied in the thesis in the form of a public lecture or seminar.
Medical University of Warsaw
Poland

Admission to the postgraduate study program is only open to a student who has fulfilled study in the master's program. A student has to pass the entrance exam which is held front of an examination committee.
The maximum duration of study in the doctoral study program is 4 years. Study is accomplished under the direction of the supervisor. A doctorate student is involved in research activities and conferences. Lectures and seminars are obligatory during doctorate studies. Minimum required is 240 hours of seminars and courses per study. A doctoral student is obliged to teach or support teaching (hours is 80 hours a year) and to pass obligatory examinations (e.g. modern foreign language).

Ph.D is granted to the graduates who have passed required exams, including doctorate examination, and written and publicly defended the dissertation.

Faculty of Medicine
University of Latvia
Latvia

The goal of the Doctoral Studies Unit at the University of Latvia (UL) is to ensure the implementation of UL Doctoral Studies programme and the acquisition of doctoral qualifications.
The Doctoral degree is available:
after full-time studies in a Doctoral Studies program (3 years, 144 credit points) when the applicant, with or without prior research experience, covers certain theoretical courses, acquires practical skills and independently works out a research project in UL faculties or institutes;
after part-time studies in a Doctoral Studies program (4 years, 144 credit points) when the applicant, with or without prior research experience, usually working in a higher educational establishment or research institution on permanent basis, covers certain theoretical courses, acquires practical skills and independently works out a research project in UL faculties or institutes;
to an applicant who has independently worked out a promotion project, but before its presentation in UL Promotion Council has passed exams established by the branch promotion council and Branch Doctoral Studies Council (hereinafter doctoral studies council) and has met other required obligations, or can prove by documents that they have been met elsewhere.
Rights to get enrolled in the UL Doctoral Studies program are granted to citizens of the Republic of Latvia, individuals who have the right to the alien's passport issued by the Republic of Latvia, individuals who have obtained the permission for permanent residence, foreigners who are admitted pursuant to the requirements of the Law on Higher Educational Establishments and who have the required academic education.
The doctoral student together with the scientific advisor works out the individual study program which is adopted in the doctoral studies council. Under the individual program of the doctoral student doctoral studies council organizes promotion examinations. The examination board consists of 3-5 branch experts, at least one member of doctoral studies council, other leading experts of the sub-branch, scientific advisor.
Doctoral Studies are funded by subsidies from the state budget or by grants allocated by the Research Council of Latvia or other institutions or else from individual resources or resources of legal entities.

Faculty of Medicine
University of Tartu
Estonia

The doctoral programme is the third level of academic study, the purpose of which is provision to the doctoral student of competence and skills of an independent professional in the chosen speciality.
Applicants for a doctorate degree are required to hold a Master's degree or have an equivalent level of education. A doctoral student is appointed supervisor. The task of the supervisor is advising the doctoral student in preparing the study plan and in the

formulation of the topic of the doctoral thesis. The volume of the doctoral programme is 160 credits – 40 credits for courses, 120 credits for thesis.
The doctoral programme terminates with the defence of the doctoral thesis. The doctorate thesis is an independent study which presents an original solution to a significant problem in the respective field of research. A doctorate thesis is constituted by (1) an independent study published in the series of University theses (*dissertationes*), or (2) a series of publications supplied with a summary survey including references to publications, or (3) other published monograph. If the thesis is not in Estonian, it has to include an Estonian summary with a maximum length of 22 pages; if the thesis is in Estonian, it has to include a summary in a foreign language. The defence of a doctorate thesis presume the publication of a minimum of three research articles in leading international publications of the specialty including (1) journals indexed in citation indexes (*Science Citation Index*); (2) journals abstracted in major databases and abstract journals of the specialty (e.g. *Medline*) the list of which is approved by the Rector on proposal of the faculty council; (3) monographs or collections of articles published by reputable international publishing houses (e.g. *Academic Press, Springer Verlag,* etc.); (4) publications frequently cited in leading academic publications of the specialty which are academically at current international level.
The defence of a thesis takes place at the meeting of the council as a public academic discussion. The council consist of six members who hold a Master's or doctorate degree obtained in the Republic of Estonia, or an equivalent degree obtained abroad. For every thesis defended the membership of the council may be extended by a maximum of three extra members who are experts in the respective field of research, and competent to make decisions on issues concerning the thesis.

Faculty of Medicine
University of Turku
Finland

Admission to studies leading to the degree of Doctor of Philosophy is open to persons who have obtained a Master’s degree at a university in Finland or a comparable degree from a university in another country.
Student has to provide a study plan for the theoretical training of the doctorate and dissertation plan. The research for dissertation is supervised by a team of three people, one of them is supervisor. Student is awarded 40 credits for the theoretical training which consists of two components:

- postgraduate studies and research seminars in the major subject (20 – 25 credit units);
- studies in disciplines relating to the field of research (15 – 20 credit units).

The study is completed by a defence of the dissertation thesis. A doctoral dissertation should be a scientific presentation based on independent research carried out on a topic related to the candidate’s own filed of science. It may be previously unpublished research (a monograph) or a dissertation composed of a series of scientific publications relating to the same subject matter and a comprehensive summary of the entire research project. Over half of the publications included in the dissertation must have been published or approved for publication in a scientific journal. The dissertation must be written in Finnish, Swedish, and English or, with the consent of the Faculty, in some other language. The dissertation is published in the University’s own series *Annales Universitatis Turkuensis*, in some other scientific series, through a commercial publisher, or as a separate volume that the candidate can publish at his own dost. The defense of the dissertation is public.

Medical School
University of Bari
Italy

A Doctorate is a regular post-graduate full-time University course, during which the Student is mainly engaged in individual scientific research work, carried out under the supervision of teachers of the relevant Department. It is concluded with a final examination in which the candidate defends his/her scientific "Thesis" and is eventually awarded the academic title of "Dottore di Ricerca" (similar to PhD).
Usually Doctorates are instituted yearly (by the Ministry of Education) at Bari Medical Faculty for all the main re-search fields in biological and clinical sciences. The study course lasts three or four years according to the field chosen. There is a fixed number of admissions per year, generally from two to four places for each doctorate course. Italian doctorate students have regular University student status, thus being fully eligible for all ECTS and ERASMUS programmes. Italian Doctorate Students receive a grant from the Italian State and the grant is increased by 50% during periods of study abroad. For doctorate courses, language requirements are much less stringent, as laboratory work and seminar-discussions are carried out in very small groups and international languages, such as French or English, may be used.

Medical School
University of Vienna
Austria

Applicants for a doctorate degree are required to graduate at Medical school or School of Dentistry, at the University in Austria or abroad.
Duration of the doctoral study is at least 4 semesters. Study ends with defending of thesis and passed Rigorosum. After finishing the student are awarded a title Doktor/in der Medizinischen Wissenschaft (Dr. scient. med.)
Study organisation:

- Interdisciplinary program
- Courses are held by lecturers from different institutes and clinics. Candidates are obliged to participate in the teaching.
- Courses:
    1. General
        a) 2 semesters of courses related to the topic of the research
        b) 4 semesters of Journal clubs («Critical paper review»)
    2. Elected
        a) 4 semesters of seminars related to the scientific methods and topic of candidate's research.

Participation at the seminars and journal clubs is obliged. In each semester students get 30 credit points (120 credit points during the whole study). Students are allowed to spend a part of the study at some other University either in Austria, or in some other country.

School of Medicine
Copenhagen University
Denmark

The at the University of Copenhagen has been authorised to grant the PhD degree. The degree is awarded to individuals who have completed the research degree, including a thesis, which has been publicly defended before a committee. In this respect it is a requirement for individuals in medicine and odontology to receive the PhD degree, that their research has contributed to the advancement of the research on a level corresponding to international standards.

Admission to the PhD study is on the condition that applicants have a postgraduate degree in health sciences or a closely related subject area, other comparable degrees or if they have in other ways acquired the necessary academic background. The purpose of the PhD study is to develop the ability to acknowledge, present and solve scientific problems in the most general terms.

The extent of the PhD study should correspond to approximately 3 years of study, with each individual's study period including:

- a supervised scientific research project
- a course period corresponding to 6 months of study
- a presentation period
- co-operation with other researchers
- composition of a publicly defended dissertation.

As termination of the study, a PhD thesis on the research project must be submitted. The PhD thesis must be submitted in 5 copies to the PhD Secretariat, no later than on the date indicated on the registration certificate or a possibly new date appointed by the PhD study committee.

Together with the thesis, the main supervisor must hand in a documented description of the study period in 1 copy. The main supervisor can propose at least 5 examiners, of who two must be employed at the Faculty. The others must not be employed or in other ways be affiliated with The University of Copenhagen. Furthermore there must be an appendix to the thesis, which contains:

- a declaration that the thesis has not been the basis of an academic degree, and how the thesis differs from possible earlier evaluated work

- a declaration from co-authors, in case published articles with several authors are a part of the thesis.

School of Medicine
Zagreb University, Croatia

The PhD program «Biomedicine and Health Sciences» is intended for physicians and other professionals in the fields of biomedicine and public health who are engaged in research and/or for those aiming at a scientific and academic career and whose aim is to attain the academic degree of PhD i.e. Doctor of Science. The objective of the program is to provide knowledge and practical skills, stimulate critical thinking and create a framework for successful and responsible conduct in research in line with the highest scientific and ethical standards in biomedical and health studies.

During the part of the study which is constituted of organized teaching, the doctoral students become acquainted with research methods and choose a number of courses dealing with challenging problems from various areas of biomedicine and health sciences corresponding to their own scientific interests. Active involvement in scientific research and evaluation of the published works are obligatory parts of the study and an integral part of the ECTS system as a prerequisite for the presentation of the PhD thesis. After completing the doctoral courses, the evaluation of the thesis and its public discussion, the students are awarded the degree of PhD in the field of biomedicine and public health.
Admission criteria:

- A completed undergraduate study at the faculty of medicine or kindred fields.
- A supervisor and an accepted research topic or a recommendation of a potential supervisor.
- Average grades at least 3.51 in the grading system 1 to 5 or at least 7.51 on the 5 to 10 scale.
- Basic knowledge of English up to the level which enables communication and reading of professional literature
- Basic computer literacy Windows, web, e-mail.

The duration of the PhD program as both structured teaching and practicals is three academic years (six semesters). Students have the obligation of attending all courses and passing all exams 6 years after enrolment into the PhD program at the latest. The student has to accumulate a total of 180 ECTS credits (which is, generally, distributed as 60 ECTS credits per academic year). The PhD thesis itself has to be publicly discussed within 10 years of the application of the PhD thesis subject.
The candidate is entitled to register the PhD thesis topic if he meets the following conditions:

- one paper published in a CC journal with the impact factor 0,4 authored by the candidate. If the first author is the supervisor, the candidate can act as co-author
- papers published in CC journals with a cumulative impact factor of at least 1,2. In this case, the candidate has to be the first author in at least one of these papers.

Discussion

Currently the whole Europe is undergoing extensive reforms in higher education, aiming at elimination of the remaining obstacles to the free mobility of students, teachers, and scientists. One path towards that goal is curriculum coordination and mutual accreditation. In order to reach it, medical schools should share their experience and increase the level of communication. There are a lot of ways how to improve communication. Presently, one of the mostly used ways to obtain information is the Internet. Therefore, informative web pages with transparent structure of PhD programs should be the bases for communication improvement.
Our study showed that about 66 % of medical schools' web pages either provide the information on PhD programs only in their native language or no information on doctoral study at all. These results show that in order to achieve the goals, i.e. free mobility of doctorands, medical schools need to improve the quality of their web pages.
According to our results, the information gathered only through the Internet are not sufficient. Therefore, the need for meetings of doctoral studies leaders is obvious. Hopefully, the European Conference on Harmonization of PhD programs in Biomedicine and Health Sciences in Zagreb should improve the communication and give better overview on PhD studies at European medical schools.

Trends in PhD Programmes in the Context of the Bologna Process and Their Meaning for Medicine/Health Sciences

Dr. Guy Haug
Expert on the European Higher Education Area
Bruxelles, Belgium

It is important to bear in mind the reason why we have the Bologna Process, as well as that there are two sides to the Process. This is what makes it genuinely different from anything else we have had prior to the Bologna Process, by which I mean the mobility programs in particular. One objective is to foster internal coherence and compatibility within the European area. But this is not an aim in itself and this often tends to be forgotten. The real political aim that lies behind, the reasons why we are doing this, the reasons why the ministers have signed the Bologna Declaration – (it was written on behalf of universities and the ministers have signed it) lie at a deeper level. Why did they sign it? Not because they wanted to achieve internal coherence and compatibility. They signed it because they had underlying reasons to do so. What did they want to achieve, or to be more precise, what does the whole process want to achieve? Better mobility, and for that it is clear that what is needed is better recognition of degrees. I am stressing this also as a member of the academic community: it is a real shame that after so many years of intense co-operation at the EU and at the broader European level it is still so difficult for students to get their European degrees recognized; we all in the academic community have therefore the responsibility to make this more user-friendly for our students. The second aim is to achieve efficiency. The wordings in the discussion I have heard so far had something to do with the duration of studies, university dropout rates and the like. One reason why we have the Bologna Process is because during the stage of intense co-operation and mobility we have learned how to swap students, but Ministers have also learned something: they have learned that some firm beliefs and practices in their country were simply not true; for example in certain countries they have been told that it is simply not possible to breed an professional engineer in less than eight or nine years, and they have discovered that some other countries do it in five years. They have also been told that it is quite common to have only 40% of university students graduating and 60% of them failing, but this is not the only possibility or choice we have: the university that fails the highest proportion of its students is not necessarily the best university; rather, the best university is, more probably, the university that leads the highest proportion of its students to success.

Efficiency lies also behind the Bologna Process, as well as employability, not only on the local but on the European labour market, at least within the EU. This may actually be the main reason why we have the Bologna Declaration. I was really centrally involved in the early stages of the whole process, and I therefore tend to believe that we would not have had the Bologna Process if there were not now a single European labour market. One of the reasons why countries wondered whether their system was actually competitive within the European area is because graduates from various countries in Europe now compete on that single market, even though it is not completely free of obstacles. The fact that it took all professional engineers in, say, Germany seven or eight years to graduate, this was not really a problem because they were mainly employed in Germany and because, similarly, only Germans were basically employed in Germany so there was no distortion in competition. Now there is indeed a problem, because all these graduates from various systems have started to compete on one, much more open, single market and companies in Germany hire graduates from various different countries.

There is also another side to the Bologna Process, the newest one, namely the aim to promote external attractiveness. And there was not much hint to this aspect in the discussion today until now. External attractiveness matters, even though every country in Europe, probably like every country in the world, has been thinking for decades that they have the best universities, the best academic staff, and the best students. We have now come to realize in Europe that, after a decade of emphasizing internal mobility and exchange within Europe, we may have missed another train that was running on a different track and we have not watched during the 15 years of intense intra-European co-operation. Over these years we have lost the privilege - because it was really a privilege - to be the number one destination of students and researchers from the rest of the world. We used to be that until about the end of the 80's, or early 90's, when we have lost that privileged position to the USA, and the gap still continue to grow. Hence, another reason why we have the Bologna Declaration is because we need to foster the attractiveness of Europe with respect to the rest of the world. And here, not forgetting that I am talking to scientists, we need in particular to stop the erosion in research and technology. There are three factors at work here, which have already had an impact on a number of systems in Europe. One is the disaffection of young people for science and technology, the second one is demography (there was a report in the media yesterday about the impact of demographic downturn on education and science in Germany). The third one is brain drain. Maybe it is not yet fully realized, but the brain drain from Europe to the USA in the field of science and technology is actually accelerating. It has not been curbed yet. This is quite a common concern. But what is the link between this and Bologna? It is that if we ourselves cannot read our system first, our students in Europe will not be able to take advantage of the diversity of our systems and, secondly, students and scientists from the rest of the world will definitely not be in a better position to understand our higher education. There is also, of course, in the external process of the Bologna, the perceived need to promote the European difference in the world, in terms of culture, languages, our approach to society, to science and so on.

Table 1. The Context: The Bologna Process

- **Aims: internal coherence/compatibility**
  - mobility
  - efficiency
  - employability in EU
- **Aims: external attractiveness**
  - stop erosion in R&T (disaffection, demography, brain drain)
  - promote European influence

For all these reasons I think it is important to know, if you really want to grasp the Bologna Process, what comes with it, what its real purpose is and why it has taken the forms it has taken. It is very important to keep these aspects in mind.

Let's look now at what we want to achieve. Mainly, a compatible structure of degrees. Bologna does not refer to the terms undergraduate, graduate or postgraduate programs which were used here in a rather confusing way this morning. Its aim is to have a compatible system of degrees and this can only be found in a generic way – which is very

much in line with the kind of transparency of learning outcomes mentioned earlier on by Professor Charles Normand. I have on my transparencies the words Bachelor, Master and PhD, but in reality it will not necessarily use these terms. It will actually consist of a 1st, a 2nd and a 3rd level of degrees. The 3rd degree might actually in most countries be called doctoral or some other closely related name. But what is more important, what we need now (and there was a reference to it a little earlier today) is a European framework of reference for all qualifications awarded in Europe. This is something which Ministers asked for in 1998 in the Sorbonne Declaration, again in 1999 in the Bologna Declaration and in 2001 in Prague and once more in 2003 in Berlin. Where are we standing on this? Right now, nowhere! There is still no blueprint of a European qualification framework, but I am confident we are about to get one pretty soon, even if it may come from a different source that the Bologna follow-up. In addition to a coherent system of degrees, Bologna wants to promote the use of ECTS credits and the Diploma Supplement. This has already been mentioned quite a number of times today. I do not believe, Madam [Professor Jadwiga Mirecka], that there is a risk of ECTS credits being awarded just for the attendance of a course. Credits should only be given once students successfully pass their examinations. It is also expected that ECTS becomes a very powerful tool for flexibility and, consequently, for reducing dropout and failure rates. There is definitely the intention to use ECTS also in order to extend it into continuing education, in order to actually allow people to complete their degrees in a different way, coming from different backgrounds. Another major strand of the Bologna agenda is the issue of quality assurance/accreditation. There will be no transfer of credits, no recognition and hence no real mobility if we are not able to build up quality assurance tools. Quality is something that cannot be decreed by universities. Nor is it possible to just trust the sincere beliefs of people in each institution who think they are very, very good. And sometimes they are, but they need to demonstrate this through appropriate quality assurance tools. This is perhaps the fastest moving track in the Bologna Process right now.

Table 2. The Context: The Bologna Process

- **Bologna reforms: compatible structure of degrees**
  - (B-M-D, Eur. Qualif. Framework)
  - ECTS credits + Diploma Supplement
  - QA / accreditation
  - European dimension (e.g. Joint degrees)
  - removal of obstacles to mobility

The next aspect addressed by Bologna is the European dimension of curricula, in particular since the Prague communiqué of Ministers put an emphasis on joint degrees; I will come back to this because it may also be interesting for doctoral studies. And finally Bologna wants to continue the only topic on the agenda that has existed long before the Declaration was signed, i.e. the removal of obstacles to mobility. This is not something new, but it is still a formidable task to be achieved.

Where are we on all this after the ministerial meeting in Berlin of last September? I have a rather optimistic reading of the Berlin communiqué. I first believe that Berlin's significance is that despite all difficulties and delays the Bologna agenda of change will indeed happen. If there are still people in this room who think that it is possible to ignore it

and to continue business as usual, I personally think, with all due respect, that they are wrong. The Bologna process will be achieved. Maybe not 100% and maybe not fully in 2010, but we will get there - more than we have expected in certain areas and less in others - but by and large it will happen. A particularly clear signal is that Ministers in Berlin signed a document by which they formally declare their intention to speed up the movement, in particular by setting priorities that need to be achieved already in 2005 - which is not very far from today. By 2005, all countries should at least have started introducing the three-level degree structure, and they should have quality assurance mechanisms in place, or at least have begun introducing them. We are talking about a total of 40 countries – all 25 EU members and 15 other, non-member countries. All this makes the Bologna Process one of very few really pan-European movements we have seen in recent history.

One other aspect which seems to me absolutely fundamental, and which could was actually foreseeable but never crystallized in a ministerial declaration before, is that future progress will depend not only on the efforts of the various countries, but hinges actually much more on cross-border efforts within the various disciplines or professional areas s. Future progress is much more likely to happen when, say in medicine, you decide among yourselves on European-wide features and then say *this is what we want in Europe in our discipline*. Of course progress also happens because this or that country passes a new law on higher education to make it more compatible with other countries in Europe. We need such new laws, but the main impetus in the Process is now no longer coming from the countries, but from the disciplines themselves. If you look at the way in which national legislation changes, it is like dominos: if you are able to convince one country, this puts increased pressure on neighbouring countries, which, in turn, adds more pressure on others and so on. Hence, my opinion is that more substantial progress will come from disciplinary lines, and there we have a very useful project called ***Tuning.*** *Tuning* tries to identify in given disciplinary areas what curricula in various countries all have in common, i.e. what is really essential learning in that discipline. This brings about change in curricula in a very subtle, nothing-is-compulsory way. But it is happening already right now. All this means, I believe, and after Berlin it is clearer than ever before, that we will stay in this process of change until at least 2010. Because there is an agreement on the goals and we all agree broadly on where we want to go. The reforms converge toward these goals, but the pace at which these reforms happen, and the stages which are needed in between are uncoordinated between the various countries; thus, certain countries continue sleeping for a long time and then, suddenly, wake up and begin moving very fast. A good example of this would be Spain. Spain has done very little regarding the Bologna Process until 2002. From that time onward, it has established legal possibilities and a powerful accreditation agency that carries out a review of the whole higher education system. Spain is now moving firmly ahead. Other countries were forerunners, like Germany for example, which was ready to implement some of the Bologna principles even before the Bologna Declaration was first signed, but has failed to generalize the reform process in the meantime. Austria, on the other hand, started later but has now generalized it. For all these reasons I think that the transition is going to be difficult or even chaotic in some countries and things will not be easy to deal with on a daily basis.

But maybe the most fundamental new element in the Process, which few people seem to have noticed in Europe, is that the Bologna agenda overlaps, or is even absolutely equivalent to the education and training agenda of the European Union in its Lisbon strategy. The reality now is that we have two parallel movements. One is intergovernmental: the Bologna agenda, which concerns only higher education. The other one is the EU's agenda to reach the new strategic goal it set itself in Lisbon in 2000. You

have already heard this: in 2000 the EU announced its intention to become the leading knowledge-based economy and society in the world by 2010, and at the same time recognized that this was only possible if we change, quite deeply, our social and educational systems in the EU. This has given impetus to a process which is similar to the Bologna Process, but covers the whole spectrum of education and training. I will give you some more detail on it later.

And concerning the last reform strand of the Bologna Process, where are we with its external aspects? If you take a close look at the main changes at European level which have happened over the last two years, you will see that of the two dimensions, the one moving faster is the external dimension. Within two years the EU created four new European programs for university exchange and co-operation between the EU and certain external countries: *Alban* (with Latin America), *Asia-Link* (which covers nearly the whole of Asia), *Tempus Meda* (for the Mediterranean Region) and more recently Erasmus Mundus, which belongs to a new generation of programs: it is the first one which is not geographically limited, while all others are intended for co-operation with a certain region of the world; Erasmus Mundus is a program for co-operation between the EU and the rest of the world and it is very open. The new *Marie Curie* programme for the mobility of researchers, which someone already mentioned, has also been restructured in the same way and now covers intra-EU mobility as well as mobility from and to the rest of the world.

The final aspect I want to mention with respect to the Bologna process is that it benefits now from a lot of support coming from the EU's Lisbon strategy. Again, we have these two processes (Bologna and Lisbon) and they are different in many respects, but because their agenda overlap, at least when it comes to higher education, there is now fresh support coming from the EU's Lisbon strategy, which requires the kind of change and reforms that Bologna has already been promoting. What are the goals of the Lisbon strategy in the area of education and training? First, to raise the quality and relevance of education and training in the EU; second - and this is a remarkable phrasing - *to create enough compatibility to allow citizens to benefit from the diversity of educational systems*. This is something which, I think, opens new horizons. Prior to this, official speeches would praise diversity irrespective of its actual consequences for citizens. With this new formulation, diversity is acknowledged as intrinsically good and suitable, but only if it is not used against us; *we do not want diversity to exclude, or to deny the recognition of qualifications acquired in another part of Europe; what we need is to organize diversity a little bit in order to make it a real asset of Europe, i.e.* to create enough compatibility in order to allow citizens to actually choose from that diversity what best suits them, instead of being excluded as has long been the tradition in the past. So I think this is a very important statement by the Ministers of the EU. And there is another important official goal in the Lisbon agenda of the European Union: to become the preferred destination of students, scholars and researchers of the rest of the world. I am not certain if it is really attainable by 2010, but there are now a number of very good initiatives going in this direction, which was stressed before as part of the Bologna agenda. Few people until now have realized that there was this strong convergence between the Bologna Process and the Lisbon Process. This may well be because during its first years - the Lisbon strategy started in 2002 - much emphasis was placed on school education, but the Lisbon strategy covers all of education and training and in recent reports there has been a growing emphasis placed by the Commission and also by the Council of Ministers on the fact that it was absolutely impossible to create *A Europe of Knowledge* without paying much more attention to higher education and research. Thus, higher education is now also becoming prominent in the Lisbon strategy. In particular, the overlap between the Bologna agenda and the Lisbon

agenda is conspicuous on one key aspect of both agendas, i.e. the need to develop a European qualifications framework. I already mentioned that ministers asked for this several times within the framework of the Bologna Process. Now the first priority of the Lisbon strategy and of the EU is to create a European qualification framework of reference, encompassing higher education, lifelong learning and professional education. Of course, it will have to be delivered, but I think that we will get there soon, especially since the political backing and the resources behind it will be greater than ever before. And also because it has now become a commitment taken by the EU - not only by the Council but also by the Commission - to deliver it. The Commission has announced that it wanted to have a blueprint for the European qualification framework ready not later than next year. So I am quite optimistic on this. Another area where the EU push goes in the same direction as Bologna concerns the interface with the rest of the world, as can be seen in particular through the adoption of the new program *Erasmus Mundus*.

Table 3. The Context: The Bologna Process

- **Where are we?**
  - speed up of change: BMD, QA by 2005
  - 40 countries (25 EU)
  - progress along disciplinary lines: TUNING
  - chaotic transition until 2010?
  - overlap with Education/Training agenda of EU's Lisbon strategy
  - emphasis on external dimension (ERASMUS Mundus, Marie Curie, etc)

Table 4. The Context: The Bologna Process

- **Support from EU's Lisbon strategy: «Education & Training 2010»**
  - raise quality and relevance of all E&T
  - create «enough compatibility» to allow citizens to benefit from diversity
  - become preferred destination for students, scholars, researchers of rest of world
  - new focus on HEd: EQF,Erasmus Mundus

Let me now come to two other aspects of the Bologna Process regarding the importance of doctoral or PhD studies. One is that it was clearly the intention from the beginning to include all levels of higher education. Maybe you will remember, especially those of you who participated in the early stages of the process, that the Sorbonne Declaration of 1998 was nicknamed the 3-5-8; 3 for the 1st; 5 for the 2nd and 8 for the 3rd or doctoral degree. So it is clear that the intention was to cover all levels of higher education, but in reality, the stress in the first few years of the Process was indeed focussed mainly on defining what is a Bachelor's and what is a Master's degree. This becomes obvious if you consider that we have reached an agreement at the European level regarding the Bachelor's degree, which is to be no less than 180 and no more than 240 ECTS credits, and a similar agreement on the format of Master's degree, but we have nothing of the kind for the doctoral degree. In the same way, the Tuning Project, which aims to identify the core

competencies and contents of Bachelor and Master courses within various disciplines or professional areas, has hardly even touched the doctoral level. The same for quality assurance, where we now have many national agencies and most of them focus on Bachelor and Master programs; very few pay specific attention to the doctoral level. Nonetheless, as I said, PhD studies have been included in the overall Bologna project right from the beginning and one piece of evidence for this is that the Trends II survey of 2001, when analysing the major reform patterns in the Process, also looked at the doctoral level. And what trends were identified at that time? There were three, which I think can also illustrate the debate about PhD studies in health sciences. Firstly, there is a trend in the direction of the single-level degree; there was a discussion about this in the countries, mainly in Central Europe, which had two levels of doctorates, a first one followed by an other doctoral title usually coming from the academy; the trend is clearly away from this, and goes in the direction of only one, single-level doctoral degrees. Secondly, there exists a trend which brings doctoral degrees under the jurisdiction of universities in those countries in central and eastern Europe where doctoral degrees tended to be organized at academies of sciences and not at universities; there is a very clear trend for the doctoral degree to become, or rather to become again a university degree. Thirdly, there is a trend in the direction of doctoral schools, and Professor Seitz already made a reference to this during this Conference; there is indeed a Europe-wide trend towards the setting-up of doctoral schools, instead of leaving PhD candidates just in the hands of Professor X here or Professor Y there; doctoral schools make it possible to pool resources and this leads to two interesting features in particular: one is that doctoral schools are much more interdisciplinary, a key change which was also mentioned today by the Professor from Pavia, Italy; the other is that these doctoral schools tend to become really European and international, they are not restricted to local human resources. This is certainly a recipe for excellence. Another trend that has been identified goes in the direction of awarding so-called European doctorates. We need to recall that the EU is not allowed to award any degrees, so any doctor degree called «European» is in reality a national doctor degree wit some kind of European dimension; Yet, there are indeed efforts to develop joint doctoral courses; in line with this there is also a trend toward the what the French call the «*co-tutelle de thèse»;* this originally French initiative means that for one thesis you have at least two supervisors, one of them belonging to a foreign institution. All these trends in doctoral studies were quite clear already in 2001. And finally, there is an ongoing trend in the direction of what one may call the Ph.D.-type of doctorate, i.e. a trend away from doctoral degrees based exclusively on research and in the direction of doctoral studies that also include certain courses or seminars of organized learning; I think this trend has also been confirmed today for the health sciences.

Table 5. The Bologna Process and Doctoral/PhD Studies

- **Doctoral level included from 1998**
  - but stress on BaMa (format,TUNING,QA)
  - 2001 survey of trends, also for doctorates single-level degree, at universities doctoral schools (interdisc, European) co-tutelle, joint, «European» doctorate PhD type: research with courses

The importance of doctoral studies within the Bologna Process was reconfirmed, and received fresh impetus from the Berlin ministerial meeting in September 2003. Berlin

says, and I believe this is a victory of the academic community, that the doctoral degree in Europe should be seen as the 3rd level of higher education – a situation that did not exist everywhere in Europe in the past. In the Bologna Process we now have 3 levels everywhere: the 1st level or Bachelor's degree, the 2nd level or the Master's degree and the 3rd level called either Doctoral or PhD degree. Berlin has emphasized in particular the importance of doctoral studies because they serve as a bridge between the European Higher Education Area and the European Research Area, which has also received fresh impetus as part of the EU's Lisbon strategy. All of you are probably aware that there is a commitment that by 2010 European countries should spend 3% of their GDP on research and innovation. In addition, the complementarity between the European Higher Education Area (The Bologna Process) and the European Research Area, with the support of a much stronger 6th Framework Programme for R&D, has now been recognized. And Berlin also stresses that the attractiveness of European universities will depend on what they are able to offer at the postgraduate and doctoral levels. Currently we are in the run-up to the next ministerial meeting in Bergen in 2005, just a year from now, and there are a number of activities in progress that are relevant to doctoral studies. In particular, there is for the first time a taskforce dealing specifically with doctoral studies; it is part of the official Bologna follow-up process, and will organise a seminar in Salzburg, Austria in the early months of 2005. There is also a survey on doctoral studies in Europe that is currently being conducted by the EUA. It basically deals with how PhDs are organized in all Bologna countries and I am convinced it will confirm the trends observed two years ago. All these projects are EU funded. One should add to this another important point, already mentioned before: in preparation for Bergen, there is now a push coming from the European Commission in favour of a European Qualification Framework, not as part of its involvement in the Bologna Process, but as part of its responsibility regarding the Lisbon Process. Within this context, the European Community is now in a position to launch calls for proposals to set up accreditation schemes in specific professional areas or disciplines; such accreditation schemes may concern e.g. engineering qualifications and they may not be substantially different from what you have in mind in the area of health studies. All this means that your efforts should be able to benefit soon from a much broader information base, thanks to the various relevant studies in progress as part of the preparatory work for Bergen.

Table 6. The Bologna Process and Doctoral/PhD Studies

- **Fresh impetus from Berlin, 2003**
  - third level of Bologna frame (link EHEA-ERA, attractiveness)
  - preparation of Bergen 2005:
    Seminar doctoral studies,Salzburg, 2005
    EUA survey of doct.studies (EU funded)
    push from EU Lisbon strategy
  - hence: more info by May 2005 (Bergen)

Now we have come to the most difficult part of my presentation – the case of medical studies and how specific they may be in this process. What I am about to say now are very modest observations of one who is not a specialist in the field. My first impression is that the participation of medical studies in the entire Bologna Process has been relatively

marginal when compared to the participation of some other fields or disciplines; my impression may actually be true. When the criteria for the Bachelor's and Master's degree were in the process of being defined, no special attention was given to the fact that medical studies lasted longer and were organized differently. *Tuning*, which is a flagship project, has not paid special attention to medical studies either. We are now increasingly dealing with quality assurance and accreditation agencies in many disciplines, but very little in medical or health sciences. Overall, it is probably fair to say that relatively little attention has been paid to what is specific in medical studies in the Bologna Process; nor has there been not much push from the medical sector for the Bologna Process to take account of these specific aspects. I have already mentioned that the deadline for the call for proposals for sectoral accreditation schemes was only a few days ago, but we have not received any proposal from the medical schools regarding quality assurance, accreditation and so on. On the other hand, medical studies have received prominent attention in professional recognition schemes. In the 1980s, there were certain specific directives for the professional recognition of degrees in a number of professions; I need not mention them here, as you are probably all aware of them; there is now a proposal for a new generic Directive for the cross-recognition of professional qualifications in the EU, about which we seem to have different expectations between me and Professor Leibbrandt. I was impressed to see that this draft Directive, which the Commission put on the table in 2002, lay dormant for two years and was revived just a few weeks ago: the European Parliament discussed it and, according to my sources, approved it in most of its principles, even though it also required a number of changes to be introduced. Professor Leibbrandt just indicated to me that the medical profession may not be very satisfied with some of the content of this new directive. We will see in which direction things will be moving. I think that today the really important message is rather that whatever you do with your project about PhD studies in health sciences, you need to pay very careful attention to what happens with the Directive. You may have looked at the Draft Constitution of the EU. I think that there is only one profession which is specifically mentioned in it: the medical and pharmaceutical profession. The Draft says that EU framework laws shall make it easier for persons to take up and pursue their activities elsewhere in the EU and mentions «medical and allied» and pharmaceutical professions; the wording used is the same as in the old Directive on the recognition of professional qualifications, but this time the proposal is to have as part of the Constitution of the EU.

Table 7. The Case of Medical Studies: How Special ?

- **Marginal participation in Bologna**
  - BaMa format, TUNING, QA pay little attention to Med. studies specific aspects (no proposal for accreditation standards)
- **Prominent in prof. recognition schemes**
  - specific directives
  - new generic directive for regul.prof.
  - even in draft EU Constitution

Now again, a few guesses: they should be seen as modest hints to what might happen next. I believe that medical studies will be more fully included in the Bologna Process in the future. It was a maybe unfortunate that in the early stages the involvement of medical

studies was not as strong as it should have been, but this is likely to change and medical studies should find their way more fully into the Bologna Process. PhD studies also will become a greater priority in the European higher education area as well as in the Lisbon strategy. What about harmonization? I tend to be very much on the same line as Professor Charles Normand and a few other people who spoke here today: we need something providing generic guidance without imposing any particular model; this is probably the only way into the future; but there are a number of concrete questions that need to be clarified, such as what is acceptable evidence that PhD students are indeed able to carry out independent, or original research; or how many ECTS points might be required. There is a discussion whether ECTS should apply or not to doctoral studies. Personally, even as one of the promoters of ECTS, I am not 100% convinced that ECTS needs to be generalised in doctoral studies. Those who see an advantage in it, in particular with a view to lifelong learning, may be inspired to use ECTS credits for, perhaps, the taught part of a PhD. But how many ECTS credits is a doctoral thesis worth? How many credits should be awarded for an article published in an internationally recognized journal? I do not know the answer and feel this is and might well remain an open question. Do we need a single or common PhD format for the European Higher Education Area? Personally I do not believe that we need a rigid standard across disciplines and countries, there has to be some flexibility. The question should be turned around, i.e. we should not first define a common descriptor to which everyone would then have to comply, but rather the descriptor should be defined in such a way that it can accommodate everything that is good and leaves room for innovation and progress. A PhD in history and a PhD in literature will certainly not be defined in the same way and contain the same format as a PhD in medicine for example. What seems to me to be of importance is that we have enough compatibility, that the degree of compatibility is sufficient to allow the degree of trust and confidence that makes cross-recognition possible.

Table 8. Future Directions: A Few Hints and Theses

- **Medical studies will be more fully included in Bologna**
- **PhD studies will receive ever greater priority in ERA and Lisbon strategy**
- **What degree of harmonisation?**
  - ECTS points?
  - single PhD format? Not across disciplines; only «enough compatibility»

Let me now conclude by saying that you have a unique opportunity for the universities represented here to set a compatible, yet flexible pattern of PhDs in medical and health studies. It is a unique opportunity because the challenge has three dimensions and you may indeed be able to win on all three. First, you need to define the compatible yet not uniform format or pattern of PhDs, i.e. you need to reach an agreement about minimal or «normal» criteria with regard to format, quality and so on. Second, you need to create more joint, or so-called «European» PhDs with co-*tutelle de thèse*, while also disseminating doctoral schools and the co-operation between universities regarding doctoral studies. Third, you should promote the attractiveness of our universities to students and researchers in medical and health sciences. I was very impressed by the figures quoted by the two PhD students this morning (Alena Kavalirova and Tina Dušek), but I was not surprised: the same difficulty to find adequate information on what universities really have to propose also

goes for other disciplines, and medical sciences are not an exception; most European universities have not done a big enough effort to make themselves attractive to students, neither to their own students nor to students from other European countries. Yet, attractiveness and research are going to be the key for the future.

Table 9. Future Directions: A Few Hints and Theses

- **A unique opportunity for universities:**
  - set a compatible, yet flexible pattern for PhDs in medical / health studies
- **Three dimensions to the challenge:**
  - compatible (not uniform) format
  - joint, European PhD, *cotutelle*, doct. schools
  - attractiveness to students, researchers

I am deeply convinced that if you as a leading group seize the opportunity to pave the way, Ministers will be happy to endorse a good European agreement. I have worked a lot with engineering education institutions, who missed the first train (i.e. the first series of specific directives for professional recognition) and now run the risk of also missing the second train (that of the Bologna Process) because until now they have not been able to agree on what/who is a professional engineer. Were they able to do so, I trust Ministers would have been pleased to sign off, because it would also take away the problem from their agenda. I believe that here you have the possibility to create reasonable rules for yourselves for the future. The legal framework would of course not adjust immediately and not at the same pace everywhere, but I trust that the legal framework would ultimately adapt to an agreement. The EU might be in a position to help more than it was the case before the Lisbon strategy. Therefore my very modest suggestion would be: keep and promote the project because it is worth it; make it as visible as possible (this is something which often tends to be forgotten in the academic community where the deep belief is that if something is intrinsically good, everyone will recognize it and see how good it is; in reality, things are not like this); and allow time for the progress to happen: this is not going to be achieved very quickly and from the discussions we had this morning it is clear that you will need a lot more background studies to find out about the hard facts – how things are organized, the relationship between Master's degrees and PhDs in various countries and how all this is packaged together -; hence, it would be wise to allow time and to work in stages.

Table 10. Future Directions: A Few Hints and Theses

- **Ministers are likely to endorse**
- **Legal frame is likely to follow**
- **EU is likely to help**
- **Keep/promote project, build-up visibility, allow time and stages**

The Role of University of Zagreb in Developing Joint Doctoral Programmes

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Doctoral programmes usually denote third cycle studies comprising original research and normally leading to academic (doctoral) degree. Doctoral programmes are essential to the development of both the European Higher Education Area and European Research Area, providing a key link between these two processes.

The need for more structured doctoral studies in Europe has been highlighted repeatedly in the past years. Thus the Directors for Higher Education and the Presidents of Rectors' Conferences of the EU countries, at their annual meeting in Cordoba in 2002, adopted recommendations that stressed the relevance of doctoral studies to the Bologna Process (1). They also stated somewhat optimistically that the Bologna process had already contributed to a large extent to eliminating the divergences in the provision of doctoral studies around Europe with regard to structure, content, formal aspects and orientation. Participants called for the setting-up of structured doctoral studies, including provisions for quality assessment, and for making employability a criterion also in the design of doctoral studies. They stressed the need for joint European programmes at doctoral level, for mobility support to doctoral students and for the creation of a European doctorate label. The recommendations concluded by pointing to the central role of doctoral studies and the training of young researchers in the creation of a European Higher Education Area and, more generally, of a European Knowledge Area. In that context one should mention EURODOC, an association of doctoral students and young researchers from various European countries. EURODOC was founded in Spain in 2002 and aims at providing a discussion platform to doctoral students and representing their interests at institutional, national and European levels. It would seem advisable to involve EURODOC in further discussions on how to develop postgraduate and in particular doctoral studies in the European Higher Education Area (2,3).

It is becoming more and more acknowledged that the European tradition which still exists in many disciplines (i.e. leaving doctoral students largely to their own devices and providing them only with more or less intensive individual tutoring and supervision) is for many reasons not suited any more to the needs of modern societies. More to the point, it hampers the realisation of the European Higher Education Area (and, one might add, of the European Research Area). Doctoral programmes, where they exist, and in particular joint degree programmes at doctoral level, can be among the most attractive features of the European Higher Education Area. While higher education institutions in some countries have begun to set up doctoral studies, others still consider the traditional model of strictly

individual tutoring to be sufficient . Europe is today divided exactly into halves with regard to the two basic types of organising the doctoral phase: 18 ministries replied that in their countries most doctoral students received only individual tutoring and supervision, while 17 ministries indicated that taught courses were normally offered in addition to tutoring (3).

Joint programmes and joint degrees

In Prague Communiqué (2001) Ministers called upon the higher education sector to increase the development of modules, courses and curricula at all levels with ”European” content, orientation or organisation in order to further strengthen the important European dimensions of higher education and graduate employability. As a logical step came partnerships offered by institutions from different countries leading to more joint curricula and recognized joint degree (3).

Also some important events and publications appeared analysing the current status of joint curricula and degrees. While in most Bologna countries, higher education institutions appear to have at least to some extent established joint curricula and even joint degrees with foreign partner institutions, this often seems to take place solely at the individual initiative of particular institutions. Ministries were therefore often not in a position to provide reliable data on the state of affairs and legislation in many countries does not refer to joint degrees or even excludes them. Bilateral cooperation is more common than multilateral, even within networks that are designed for multilateral cooperation. Joint curricula, developed by two or more higher education institutions in different countries would be the first step toward joint degrees and do not normally present legal problems. However, awarding joint degrees and their recognition at national level still poses legal problems in a majority of countries. The Steering Committee for Higher Education and Research of the Council of Europe therefore discussed this issue in October 2002 and adopted a set of recommendations. In these, the Lisbon Recognition Convention Committee is encouraged to consider adopting a subsidiary text to the Convention on the Recognition of Joint Degrees, and governments are asked to review national legislation to remove obstacles to joint programmes and qualifications. As for the disciplines, joint degrees exist in every field of study and are most common in economics/ business and engineering, followed by law and management. There seems to be quite a lot of cooperation underway at the level of doctoral studies, especially in the form of jointly supervised theses, leading either to one degree (with specific mention of the binational character of the research) or to two separate degrees. Joint degrees are most common at Master level and exist in more or less all Socrates countries (4-6).

Proposed definition for joint degrees

On the basis of Rauhvargers’ study and the recommendations of the two seminars held in

Stockholm (May 2002) and Mantova (April 2003), and in the absence of an officially agreed

European definition, it is at least possible to establish a working definition for joint degrees. They should have all or at least some of the following characteristics:

• The programmes are developed or approved jointly by several institutions.

• Students from each participating institutions study parts of the programme at other institutions.

• The students’ stays at the participating institutions are of comparable length.

• Periods of study and exams passed at the partner institution(s) are recognised fully and automatically.

• Teaching staff of each participating institution should also teach at the other institutions, set up the curriculum jointly and form joint commissions for admission and examinations.

• After completion of the full programme, the student should either obtain the national degrees of each participating institution or a degree awarded jointly by them (5, 7-8)

The development of doctoral programmes in Europe leading to a recognised joint degree is necessarily associated with promotion of joint programmes offered by institutions from various countries. Cooperation between higher education institutions of different countries in specific disciplines has already resulted in joint study programmes which are characterised by a common assumption of responsibility by the participating institutions as regards:

1.the definition of objectives of the programme; 2. the design of the curriculum; 3. the organisation of the studies; 4. the type of qualification awarded (7).

Association of European Higher Education Area and European Research Area

As stated in the Berlin communiquée, European Higher Education Area and European Research Area are two pillars of the knowledge based society. Conscious of the need to promote closer links between the European Higher Education Area and European Research Area in Europe of Knowledge, and of the importance of research as an integral part of higher education across Europe, in Berlin Communiquée European Ministers emphasise the importance of research and research training and the promotion of interdisciplinarity in maintaining and improving the quality of higher education and in enhancing the competitiveness of European higher education more generally. Ministers call for increased mobility at the doctoral and postdoctoral levels and encourage the institutions concerned to increase their co-operation in doctoral studies and the training of young researchers. Ministers will make the necessary effort to make European higher education institutions an even more attractive and efficient partner. Therefore Ministers ask higher education institutions to increase the role and relevance of research to technological, social and cultural evolution and to the needs of society. Ministers understand that there are obstacles inhibiting the achievement of these goals and these cannot be resolved by higher education institutions alone. It requires strong support, including financial, and appropriate decisions from national governments and European bodies. Finally, Ministers state that networks at doctoral level should be given support to stimulate the development of excellence and to become one of the hallmarks of the European Higher Education Area (9)

Perspectives of University of Zagreb in joint projects

University of Zagreb has long tradition in European, particularly regional contacts that are very frequent and well established. They are mostly based on joint research programmes, organisation of joint scientific meetings, joint publications. We also have a long tradition in postgraduate study programmes that were offered to students from other universities in Croatia and other countries. Today we think in terms of organising a network of doctoral programmes which would primarily involve interested centres from Central and South Eastern Europe as well as from other countries (10).

We see the role of university in establishing network of joint research activities with joint programmes and degrees. Within this perspective, previous cooperative initiatives should be brought in the network including parts of the running doctoral study programmes at

the university. Since there is supposedly insufficient number of students interested in selected study programmes in each country in the region, regional organisation will enlarge critical mass of students in order to establish joint structured doctoral programmes. This will increase the quality of studies, because best experts can be engaged for particular subjects. That will enhance student mobility and cooperation in research, the amount of research part in the doctoral programme will grow. This should also lead to improvement of legislation, promotion of joint doctoral degrees.

We already have programmes with French universities («cotutelle programme») and we intend to organise joint doctoral programmes with Austrian and German universities, particularly in fields like neuroscience, journalism, public administration, urban studies. Within UNICA universities we will participate in the network of joint degree programmes, which is being established through the so called «Bologna laboratory», a group of coordinators from member universities.

University of Zagreb also intends to participate in European joint programmes on a larger scale. Recently, European University Association has started the major European project on doctoral programmes and addressed needs of research training in a transforming knowledge society, wishing primarily to improve the quality of doctoral programmes. Two major aims of the project are: to identify essential conditions for successful doctoral programmes in Europe and to promote cooperation in the development of doctoral programmes at European level. University of Zagreb has applied to this European doctoral programme project with the theme «Language communication and cognitive neuroscience».

We think that participation of our university in joint doctoral programmes on regional and European level could significantly add to the faster development of both education and research area in Croatia and neighbouring countries.

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PhD program: Biomedicine and Health Sciences at University of Zagreb Medical School

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1. INTRODUCTION

Prearrangements for doctoral studies at the Medical School of the University of Zagreb were started in 1996. The program then went underway in the academic year 1997/98 as a master's degree study but was intended from the start to lead to PhD. In accordance with statutory regulations it was planned that the third year would be completed with a PhD. The Program of Study has been renamed three times, i.e. it was first only Master's degree in Biomedicine and after the doctoral program was approved, it was given a joint name: *1. Master's Study: Medical Sciences* and 2. *Doctoral Study: Medical Sciences*. After Croatia has officially joined the Bologna process promoting greater harmonization among Europe's diverse systems of higher education, the study program has seen a third change of name in the academic year 2002/2003, and is now called *Doctoral Study in Biomedicine and Health Sciences.* Currently, there are 224 students who registered for this Program (83 of them in the third year). Parallel to change of name, there have been new courses added to the Program of Study (148 courses and 39 guided tutorials in 2004/2005). The *Scientific Work and Higher Education Act* passed in July 2003, repeals master's degree and incorporates some provisions anticipated by our program, which was the first in Croatia to introduce the ECTS (*European Credit Transfer System).*

In compliance with the Bologna Declaration and tradition of medical and health science postgraduate studies in Croatia, the main goals of this PhD program are as follows.

In countries like Croatia, where a PhD degree is a prerogative for a scholarly or academic career; the PhD studies have to offer a possibility to obtain a PhD degree in all fields of medicine. With regards to that, this Program of Study can be considered as not fully developed and can hardly be «finalized» without establishing connections and links to other similar programs of study at home and abroad. Croatia has undertaken the first steps towards that goal: (a) A joint declaration on cooperation between all medical schools in Croatia has been signed. (b) There is an agreement signed with the "Ruđer Bošković" Institute with accent on molecular medicine, so that the Institute is in part nominator of this PhD program proposal. (c) There is an Agreement signed with the School of Natural Sciences and Mathematics, University of Zagreb, which shall lead to a prolific cooperation.

PhD program is to be comprised of (1) organized teaching ("advanced learning") (about 125 lessons each year), differing from undergraduate studies and (2) scientific research (binary system).

Postgraduate studies are to provide students with the understanding of research process and its methods, and enable them for independent critical use of scientific literature in a respective field. This kind of teaching can be offered only by teachers who are themselves approved scientists. This is why all the courses offered in this program of study have been anonymously double-checked i.e. have been revised by two competent and independent scientists at home or abroad. Our past experience has shown that some 70 to 80 p.c. of the proposed courses have been approved and if requested, revised and amended.

Scientific research is the major part of every PhD program in developed countries. The successfulness of the scientific research in biomedicine and health sciences is proved by scientific papers, which is a must for a successful completion of the PhD program.

The number of potential tutors in the PhD program principally gives every registered applicant an opportunity of professional tutorship and guidance through the scientific research. There is however a restriction to that, since the program funds are limited, but we do very much hope that it is only a temporary drawback.

All activities within the program of study ranging from classes to scientific research are assessed based on ECTS.

Based on the idea of lifelong learning and professional development, the aim of the program is to acknowledge all other forms of postgraduate learning and scholarly achievement through ECTS.

This program is not targeted at high enrollment numbers i.e. high quota of registered students (and thus, rising of School's revenue) but towards quality of study. This PhD program is meant first and foremost for those who are really interested in scientific research. Due to that and due to the limited «capacity» in the first year, when students studying scientific research methods perform some practical work themselves or have to attend numerous practicals, not all those interested in applying were able to register. We had to have «numerus clausus» (restricted admittance quota). In contrast to that, we had an average registration quota of 7.4 students in the second and third year of the program per course in the academic year 2002/2003. Reciprocally to the increased number of courses in 2004/2005, the average quota of registered students per subject shall be 5 or less and getting lesser. But our PhD lecturers hold classes even for a single student. We can ask ourselves if a country as small as Croatia really needs more than one scientist every year or every second year for that matter, holding a PhD in some narrow field in medicine or health sciences?

Now let us descibe haw PhD prorgam looks like at University of Zagreb Medical School

2. ADMISSION REQUIREMENTS

A. Admission requirements for students regularly enrolling into the first year of study:

A completed undergraduate study at the faculty of medicine or kindred fields. Courses in the area of public health can be enrolled into by attendants dealing in fields relevant for health sciences. Some of the courses can be chosen by attendants of other postgraduate studies. The prerequisites for attendance are defined by the course co-coordinator and/or the vice-dean for postgraduate studies. Generally speaking, only attendants who have graduated from medical faculties or some other studies in the field of biomedicine and

health sciences can choose clinical courses in internal medicine. Clinical courses in surgery can be chosen primarily by attendants who have graduated in medicine or dental medicine.

A supervisor and an accepted research topic or a recommendation of a potential supervisor.

Average grades at least 3.51 in the grading system 1 to 5 or at least 7.51 on the 5 to 10 scale.

- Basic knowledge of English up to the level which enables communication and reading of professional literature
- Basic computer literacy Windows, web, e-mail).

B. Admission requirements for students enrolling into the "differential" year after completing the postgraduate professional study or after having completed the first year of another scientific postgraduate study. This group comprises students who have accumulated more than 50% of the necessary ECTS credits in courses of continuing medical education.

Completed attendance of the first year of the postgraduate professional study (known as scientific before 1997) or some other scientific study.

- Basic communication skills in English
- Basic computer literacy

C. Candidates who have not completed a medical or kindred faculty may enroll into the PhD program after submitting the supervisor's letter of recommendation and argumentation. A committee constituting of three members is set up in order to determine the differential subjects the applicant has to pass (if any) in order to enroll into the PhD program. The above mentioned prerequisites regarding the average grades, computer literacy and English language apply.
Fluency in English language and computer literacy are assessed by means of a test organized by the Zagreb Medical School. In case computer skills are needed for a specific course, the Medical School organizes special training for candidates who express their interest. The evaluation of the performed tasks i.e. the choice of candidates who fulfill (or don't) the requirements is done by the Supervising committee of the Doctoral study. Consequently, the Faculty Board decides on the enrollment.

3. DESCRIPTION OF THE COURSES BASED ON THE CREDIT GROUPS

The Study comprises three content groups, i.e. three (ECTS) credit groups:

FIRST CREDIT GROUP: METHODOLOGICAL COURSES are normally taken during the first two years. Each student is obliged to choose 40 credits out of this group (about 125 teaching hours). The aim of these courses is to introduce the student to the basic principles of scientific research in general and with the procedures and methods in certain research areas. Although through these courses the students can't really get acquainted with the numerous and very diverse methods and procedures, they will enable them to acquire knowledge in laboratories and other centers and will work with individuals dealing in specific areas who will be at their disposal in the future, in case they will need those methods and procedures. An additional aim of these courses is to relieve the students of the fear frequently arising when faced with new methods and procedures and to help them

realize that they will be capable of coping with them when the need for them appears. These courses should not include more than 30% of structured teaching, whereas 70% has to be covered by demonstrations and exercises. The courses are generally organized as integrated and include both pre-clinical and clinical (or public health-related) ways of solving certain problems, since in the field of scientific methodology, the borders between these areas are disappearing.

GUIDED TUTORIALS i.e. short methodological courses are aimed at acquainting students with specific research methods, procedures of gathering or analyzing data they will make use of when compiling their PhD or Master's thesis. The focus is on practical work, so that the attendants can later on apply the knowledge they've gained. The duration of the guided tutorials is one day (generally 7 hours of teaching, out of which a maximum of 2 hours may be dedicated to the theoretical presentation of the problem). As a rule, the attendants use the material they have gathered themselves. The enrollment conditions and necessary knowledge are determined by the tutorial coordinator.

SECOND CREDIT GROUP: FIELD RELATED COURSES whose aim is to introduce the students to the scientific discoveries and problems arising in some restricted areas of research within the areas of biomedicine and public health. Apart from broadening the student's knowledge, the aim of these subjects is to enable the student to follow with understanding the most recent scientific writings on this area of research.

The invitation for registration of field related courses is permanently open and all lecturers at the Medical school of the University of Zagreb are invited to register courses from their area of research. Other experts from Croatia or abroad who fulfill the legal requirements can register their courses as well. All course proposals have to undergo an anonymous scientific review.

THIRD CREDIT GROUP : SCIENTIFIC ACTIVITY. Each candidate has to collect at least 20 ECTS credits per year from this group. Therefore, a total of 60 ECTS credits has to be collected in order to complete the PhD study.

In the PhD study a minimum of 60 credits is required (3x20 in case they were evenly distributed over the 3 years of study), out of which at least 40 from subgroup 1a (original papers with a maximum of 6 co-authors, indexed by the international bibliographic databases and citations in a ISI citation index (excluding self-cites) . Out of these 40 credits, at least 20 credits have to be based on papers published in journals covered by Current Contents or on citations in a ISI citation index (excluding self-cites) citations in journals covered by an ISI citation index. The applicant has to be the first author of at least one CC paper related by its topic to his doctoral thesis. The cumulative impact factor of all the journals in which the papers have been published must equal to at least 1.2. A maximum of 10 out of 20 remaining credit units can be replaced by credits from the third group (passive credits).

MAJOR CHANGES IN THE NEXT ACADEMIC YEAR

Major changes wich are to take place in the next academic year are related to the number of credits obtained by advanced learning and those obtained by reasearch activities. Reseach activities

are going to be valued more (the current number of credits multiplied by 2) while learning activity is going to be less valued (number of credits divided by 2). Therefore from the

next academic year, students will obtain 1/3 of the credits by advanced learning and 2/3 of the creditis by the results of their scientific work.

This academic year we finally started taking polls among students in order to obtain less arbitrary cretit values regarding certain parts of our PhD program.

Group 1

Group 1	Number of authors	Published in a CC covered journal		Published in a journal covered by other international bibliographic database		Citations in a ISI citation index (excluding self-cites)
		first author	co-author	first author	co-author	first author co-author
Subgroup 1a	1-2	30	20	15	13	1
	3-6	20	15	13	8	
Subgroup 1b	7-12	12	8	8	5	
	>12	8	2	5	1	

Group 2

Number of authors	Article in a reviewed journal, book or conference proceedings		Published abstract of a paper presented at an international scientific meeting		Published abstract of a paper presented at in a national scientific meeting	
	first author	co-author	first author	co-author	first author	co-author
1-2	10	6	6	4	3	3
3-6	8	5	5	3	3	2
7-12	5	3	3	2	2	1
>12	3	1	2	1	1	0

Group 3 – Passive credits

Subgroup 3 – Passive credits	Credits
Research experience at a university or a scientific institute of at least one year, corroborated by the coordinator (The efficiency is expressed by means of active ECTS credits)	4
Attendance at	
an international scientific meeting in the past three years	2
national scientific meeting in the past three years	1
first category continuing medical education courses	0.1 credits per hour
credited lectures in the past three years	0.5

Public Health Education: Approaching Integrated Public Health Knowledge

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Summary

de Leeuw (1) proposed eight structure models of schools of public health, based on research in Europe and the United States (Table 1). Andrija Štampar School of Public Health is a unique teaching public health institution in a way that it does not fit into any of the eight structure models proposed by de Leeuw. A part of Zagreb Medical School, but the institution of its own, it comprises six departments: Medical Statistics, Epidemiology and Medical Informatics; Social Medicine and Organization of Health Care; Medical Sociology and Health Economics; Environmental and Occupational Health; Family Medicine; and Microbiology and Virology. The departments are multidisciplinary and interdisciplinary, with a variety of staff resources, and are actively involved in undergraduate and postgraduate education (this is the main difference when compared with the otherwise similar US model). The uniqueness of our model is therefore not only organizational, but we also have the rare opportunity to provide education in public health at three levels: undergraduate, Master (MPH) level, and the postgraduate (PhD) program. The 1st level (undergraduate) enables integration of public health and medical education. The 2nd level (MPH) provides a more specific public health education, providing skills and knowledge needed for future health managers, health policy decision makers, and public health professionals. The 3rd level (PhD) incorporates scientific research, providing a constant link between science and practice, and quality public health education at all levels.

The School is therefore the integrating link of all three levels of public health education, ensuring a constant connection between education, science, and practice. In the spirit of the Bologna process (2), we are trying to establish a system that allows mobility of students and teachers, usage of ECTS system, and promotion of European co-operation in quality assurance.

1st Level: Undergraduate Education

At Andrija Štampar School of Public Health, we strongly believe that public health education of future physicians should start during undergraduate medical education, as this sensitizes them for all aspects of public health throughout the process of transition of identity from non-physician to physician (3,4). Majority of European countries start with education in public health at the postgraduate level. We believe that this produces a very long and expensive process of education of already-formed classical biomedical specialists.

Harvard Medical International recognized the uniqueness and historical importance of Andrija Štampar School of Public Health, and supported the efforts for the curriculum change, which would lead to greater public health influence in undergraduate medical education. The result was the introduction of new public health subjects and an increase in

the number of hours of public health education within the new undergraduate curriculum that is being developed at Zagreb Medical School (Table 2).

Table 1. Structure models of schools of public health as proposed by de Leeuw (1)

Type	Structure model
1	Department of hygiene or of social medicine within a medical university (was predominant in the former communist countries)
2	Departments of public health, community medicine, or public health medicine as a part of a school of medicine within a university
3	Public health training programs based at non-medical schools (such as social sciences or engineering)
4	Multi-school programs, offering public health specializations for a variety of professionals and disciplines
5	Institution is entirely under the authority and management of the national (or regional in some countries) health authorities
6	ministry of health designates multi-school programs within a university, which constitute the national school of public health (a more formal link between the national health authority and the higher education sector)
7	Stand-alone research institute with a public heath capacity, offering occasional, and often market-oriented specialist public health courses
8	An independent research-and-training institution within the university system (the equivalent of the accredited school of public health in the United States)

2nd Level: Masters (MPH)

It is now recognized that many disciplines are needed to understand the links between the basic, underlying and proximal determinants of health and provide the evidence base for health policy making; researchers must use appropriate methods to answer appropriate questions to better inform policy formation (5). The public health sciences are the foundation of public health practice and include much more than epidemiology and biostatistics – the two sciences usually described as the fundamental public health sciences. A fully rounded postgraduate training program should include opportunities to study the full range of quantitative and qualitative sciences.

At Andrija Štampar School of Public Health, we aim at changing the postgraduate curricula to enable graduates to meet the current challenges of the practice in the 21st century (6). The School is trying to recognize significant changes in students' expectations, employers' demands, and the needs of community to be served. Also, in light of that recognition, to recommend areas of competence that should be covered by the postgraduate curricula. At the moment, nine MPH programs are held at Andrija Štampar School of Public Health: *Public Health, Epidemiology, Leadership and Management of Health Services, Medical Informatics, Family Medicine, School Medicine, Occupational Health, Gerontology,* and *Medical Microbiology and Parasitology*.

The School has recently started major developments in the structure of its postgraduate curriculum as a part of the Project of the Quality Development of Public Health Teaching Programs in Central and Eastern Europe (7). The other initiative aimed at creating changes in postgraduate curriculum is the project created with the support of the Council of Europe and its Social Cohesion initiative as the part of the Stability Pact for SEE. This project

aims at development of two new MPH programs: *Health, Human Rights and Ethic*" and *Environmental and Occupational Health*. The MPH programs will be two-year part-time programs in concordance with the European Credit Transfer System (ECTS). They will be organized in modular structure and will offer a variety of subjects with a special emphasis on issues relevant for the countries in transition. This project has been financed by the Council of Europe Bank of Development and is a part of the loan that besides reconstruction of Andrija Štampar School of Public Health aims at curriculum development. The project has also been supported by the World Health Organization and the SEE Public Health Network.

Table 2. Proportion of public health courses in Zagreb Medical School old and new curriculum

	Old curriculum	New curriculum
Number of class hours (all courses)	4.590	5.638
Number of hours of public health courses	590	698
Proportion of public health courses	0.129	0.124

3rd Level: PhD program in Biomedicine and Health Sciences

While the MPH curricula primarily consist of taught courses and are not focused on research, the PhD studies in *Biomedicine and Health Sciences* available from the Zagreb Medical School offer taught courses combined with research activities, ending with a doctoral dissertation which provides the student completing the studies with a PhD title. These studies have recently been redefined in order to better fit the guidelines provided by the Bologna process. Hence, PhD students now have the opportunity to choose among several modules, whereas before these changes the curriculum was the same for all students, except for a limited offer of elective courses. Also, the courses are scored according to the ECTS system, enabling better comparability of programs and ultimately student mobility. Entry requirements enable students who are not medical graduates but have bachelor's degrees in other relevant sciences to also enter the PhD program. Further, graduates from all faculties can engage in attending particular courses of their interest. At the moment, the decision on requirements they need to fulfill in order to attend the course and attain credits is entirely on the course coordinator.
In the following section, we will take the example of health care management education to describe the basic characteristics of both types of postgraduate studies offered by the Zagreb Medical School and Andrija Štampar School of Public Health, and also address some key issues to which solutions are topics open for debate.

Linking MPH and PhD programs in Public Health Education

Since Croatia joined the Bologna process at the European Summit in Prague in 2001, we began redesigning the undergraduate and postgraduate curriculum in line with the guidelines provided by the Declaration and documents following from it, joining in efforts of others towards convergence of education systems and qualifications. Our main goals in this process were modularization, introduction of the ECTS scoring system, and meeting the European standards of education quality.

The MPH program *Leadership and Management of Health Services,* aimed at implementing the program of multidisciplinary education for key health personnel in leadership and management of health system, its subsystems, institutions, and staff, underwent modularization and now offers four modules: Clinical Management, Resources Management, Public Health Programs Management, and Management in Nursing (which does not provide an MPH degree). We are also preparing two other modules, focusing on Quality Assurance and Pharmaceutical Policy-Making. The curricula of these modules are connected by compulsory units, but have distinct characteristics outlined by the specific subject of the module (Table 3). Not only medical doctors, but also bachelors of other relevant academic fields (biosciences, economics, or social sciences) are encouraged to engage into this 1-year part-time MPH program. We must emphasize that this is also true only for the MPH program in Public Health. Other MPH programs offered at Andrija Štampar School of Public Health are intended solely for medical doctors. The program was developed and is being implemented with contributions from domestic and foreign collaborative institutions, such as the Zagreb Faculty of Economics, London School of Economics, London School of Hygiene and Tropical Medicine, Harvard Business School, etc.

On the other hand, the PhD module *Evidence-Based Health System Management* is designed to prepare graduates for the highest levels of leadership in public health related careers. The curriculum was developed to meet the highest criteria of education quality (Table 4), as we are also relying on these students to be the incumbents of public health teaching in the future, continuing the long tradition of extensive public health education in undergraduate medical and postgraduate studies at Zagreb Medical School. In concordance with the career opportunities that they provide, these studies last longer (three years, part-time) and require research activities and defending of a doctoral dissertation. This is also reflected in the number of ECTS scores appointed to these studies, which is 111.24, elective courses not included (compared with those appointed to MPH studies: 66.00 for Clinical Management, 56.55 for Resources Management, 52.80 for Public Health Programs Management, and 61.10 for Management in Nursing; elective courses included).

As undergraduate medical studies, which are six years in duration and provide students with the profession of a medical doctor, became the equivalent of an MPH degree, the question was raised of justifiability of MPH degrees as a form of postgraduate education for medical doctors (the Master of Science degree was terminated by The Act on Scientific Activity and Higher Education, adopted in mid-July 2003). However, in the domain of public health education, Masters are a vital part of postgraduate education, providing operative professionals who are necessary for functioning of the health care system. We therefore believe that those medical doctors who complete the public health MPH studies should simply acquire a secondary Masters title, especially since it is only in the last couple of decades that public health became a primary career for many physicians. Still, this issue is to be solved on the international level, as well as that of those professionals who enter postgraduate PhD studies at medical schools without a medical degree (thus not having the Masters level). It seems that the best solution for those students would be to ensure that the curriculum is built in such a way that it would permit for acquiring additional credits, sufficient for compensating the difference.

Table 3. Curriculum of the MPH program *Leadership and Management of Health Services*

	Course	ECTS
Compulsory units for all modules	Organization and Change Management	8.4
	Health Economics and Financing	3.3
	Health Insurance and Health Services Management	2.1
	Clinical Data Systems Management	4.8
	Foundations of Financing and Accounting	4.8
	Pharmaceutical Policy and Health Market	2.1
	Health Policy and Health Systems	4.2
Clinical Management	Evidence-Based Medicine	11.1
	Specialist Diagnostics and Treatment Management	4.8
	Clinical Management	8.1
Resources Management	Resource Management and Case Building	5.7
	Human Resources Management	8.25
	Risk Management	6.3
Public Health Programs Management	European Public Health	5.4
	Management of Public Health Programs	4.5
	Epidemiology and Health Indicators	3.6
	Health Promotion: Approaches and Methods	3.0
Management in Nursing	Managing Customer Care	8.25
	Managing Personal Resources	8.25
	Scientific Work in Nursing	6.3
Elective Courses (first three modules only)	Statistics and Epidemiology in Healthcare Quality Management	1.65
	Primary Health Care and Family Medicine	1.65
	Emergency Medicine and Acute Care Service: Management Skills	1.65
	Bioethics and Human Rights	1.65
	Stress Management	1.65
	Conflict Management	1.65
	Research and Innovation Management	1.65
	Human Capital and Investment for Health	1.65
	Health Behavior and Health Communication	1.65
	Health Management and New Technologies	1.65
	Pharmaceutical Policy and Management	1.65

Table 4. Curriculum of PhD studies, module *Evidence-Based Health System Management*

Courses		ECTS
Obligatory	Research and Evaluation Methods of Health Interventions	9.90
	Organization and Implementation of Health Care Management	9.90
	Organization and Management of Change	8.78
	Economics of Health Policy and Financing	7.26
	Health Insurance and Health Services Management	6.62
	European Public Health	13.20

	Information Systems Management and Clinical Data Systems	10.56
	Statistical and Epidemiological Basis for Managing Health Care Quality	4.18
	Resource Management and Case Building	9.24
	Management of Special Diagnostic and Therapeutic Procedures	5.28
	Quality Management in Health Care	7.92
	Mental Health Service Management	5.28
	Ethical Issues in Clinical Settings and Research	5.25
	Information Based Hospital Management	7.87
Elective	Evidence Based Medicine	5.28
	Naturalistic Inquiry	6.65
	The Efficiency of the Hospital Health Care – Comparative Study	1.98
	Environmental Health and Epidemiology Research Methodology	5.94

Perhaps another intriguing question is whether those medical doctors who chose careers in public health and perhaps focus on management, policymaking, or pharmacoeconomics could and should also undergo a medical specialization in public health. In Croatia, they are strongly motivated to do so, as this is at the moment a requirement for academic advancement.

There seems to be an overall consensus among most European countries that actions need to be undertaken which would lead, in accordance with the Bologna Declaration and documents arising from it, toward comparability of degrees and mobility of students, ultimately adding to competitiveness and respectability of the European higher education system. We believe that the key paths to achieving these goals lie in designing a common framework of reference of easily readable and comparable degrees. We hope that we contributed to efforts in that direction.

Conclusions

In order to effectively tackle the major global health challenges, the practice of public health must change. Many authors argued that programs are required that respond to poverty – the basic cause of much of the global burden of disease, prevent the emerging NCD epidemics, and address the issues of global environmental change, natural and man-made disasters, and sustainable health development. The justification is that health is both an end in itself – a 'human right' (8) – as well as a prerequisite for human development.

Public health as currently practiced is not in a position to respond effectively to these challenges largely because the capacity of the public health workforce has not kept pace with the changing challenges. The neglect of the public health infrastructure has compounded the problems. In most developed countries, public health has become narrow in focus and to a large extent, driven by the research agenda of academic epidemiologists and biomedical scientists (9). Its focus has often been on what can easily be measured, such as cholesterol or blood pressure, rather than on the immensely more complex issues of the broader social forces that also influence health, directly or indirectly, such as economic transition or globalization. The schism between research and health policy has widened and the focus of health reforms on clinical services has further marginalized public health (10). The combination of increased attention to bioterrorism and slowing economic growth, with their inevitable squeeze on public health research in favor of biomedical research has further reduced public health capacity.

We hope that our changes will create physicians who understand the role of public health (1st level), operative public health professionals skilled to encounter demanding needs of their future profession (2nd level) and scientists (3rd level) ready to link research back to the every-day operational practice and provide quality public health education at all levels.

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Master Programs in Public Health – Dilemmas and Challenges

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A need for scientific approach in public health

Effective and efficient organization and problem solution require scientific approach, research and complex knowledge of the public health professionals. This specific knowledge and research experience of the medical and other professionals working in public health is not possible to obtain during undergraduate and graduate education. Even, if society and academic administration would agree to include such teaching modules in the curriculum of the medical and other universities, it would not be rational and efficient. This would be more rational to organize such education on postgraduate level. Postgraduate education on PhD level is appropriate for those public health professionals who will the most of their workload spent in research and scientific project. But for the most of public health practitioners it will be not appropriate, it will take too much time in their professional development. They should be oriented toward practice.

Multidisciplinarity of public health

Public health practice requires several disciplines to be involved in solving the public health problems: physicians, nurses, engineers, economists, social scientist, social workers and others. To understand better each other and to be prepared for the joint work in the community part of their education and professional development should be in the multidisciplinary environment. This approach was recognized in Europe in the last 20 years as one of the criteria of good practice (EMPE – European Multiprofessional Educational Network is one example).

Master program as an obligatory unit of professional development of public health as a medical discipline (specialty)

European standard requires 3-4 years of the specialty training after graduation for medical doctors to be able to work in public health practice. During their professional development one part of training should be planned and organized. This is the practice in the most of European countries. Public health professionals prefer type of education in their development in which they can combine academic link. For some of them decision for further research career will come later. Master program of one or two years satisfy their expectations.

Current state in public health training and research in SEE countries

Preparing the Conference «Public Health Training and Research Collaboration in South Eastern Europe (PH-SEE)» in Dubrovnik 2001, the coordinating group recognized the need of the current state description in Public health training in SEE countries and exchange of past and present experiences as a prerequisite for future mutual collaboration. To stimulate similar presentations, a country questionnaire was developed and sent in

advance. The key questions were specifically related to the present state in each country on:

- Public health postgraduate study/course (type and organization)
- Verification (accreditation) of public health postgraduate study/course
- Vocational (medical) specialities in public health and preventive medicine
- Resposibility for the financing of the public health postgraduate study and vocational training.

Representatives from nine universities gave a short review of the current state (Kovacic-Zagreb; Premik-Ljubljana; Donev-Skopje; Kristoforovic-Novi Sad; Masic, Smajkic, and Hrabac-Sarajevo; Krasniqi-Prishtina; Burazeri-Tirana; Ovcharov-Sofia; Laaser-Bielefeld). In summary, presentations and discussion pointed out to few important considerations as follows:

- There are many similarities in public health training within SEE countries, but some specificities developed over the past years;
- There is a lack of multiprofessional training in public health - postgraduate study usually a part of medical specialization (vocational training) in almost all SEE countries (Zagreb and Bielefeld as exceptions);
- Postgraduate study is usually paid by participants themselves or by employers;
- Postgraduate studies are organized by different institutions, usually belonging to a medical school or university. Four schools of public health (Prishtina, Skopje, Ljubljana and Sofia) are in the process of establishment of the school of public health.

Master programs – long tradition in ASSPH

Andrija Štampar School of Public Health has a long tradition in education of public health professionals, both as part of medical specialisation and training for research. This training started in 1948 with public health, school medicine, epidemiology and continued with other professions (family medicine, medical informatics, environmental health, gerontology, management, microbiology, sport medicine, social pediatrics, and others). Courses in public health, gerontology, informatics, school hygiene were multidisciplinary. Other courses were for medical doctors only, as a part of medical training.

OSI/ASPHER project to support capacity building in public health

The Open Society Institute through ASPHER finances the reconstruction of master program education in public health and related areas in the ASSPH. The project is designed to organize teaching in modular system, to suport education of teachers in educational skills and knowledge and to end with the accreditation of all programs involved. Until now it is finished the process of identification of needs and demands in education of different professionals, set-up and anlyzed the list of competecies, and identified the comon teaching modules.

Questions and dilemmas:

- Do we need organised and planned training after graduation for public health professional for one or two years;
- Do we need PhD programe for public health practitioners;

- Do we recognise multiprofessional education in a form of master programe as need in the professional development in the public health;
- What is the situation in different regions in Europe.

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Mutual recognition of diplomas in the European Union

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Key words: Mutual recognition of diplomas in Europe
Harmonisation of quality of training in Europe
Quality of medical practice

Treaty of Rome:
In 1957 France, Italy, Germany and the BENELUX countries signed the Treaty of Rome. In this treaty the participating countries agreed to establish a common market with free exchange of merchandise, capital, people and services. In article 57, which specifically mentions the medical professions, the mutual recognition of diplomas is announced. The Medical Directive, which actually is an implementation order, was issued only in 1975, but since that time legal mutual recognition of diplomas between the countries of the European Union and associated countries (Norway, Iceland, Liechtenstein and Switzerland) is a fact. The Directive (present designation 1993/16/EC with amendments) only relates to citizens of one of these countries and to diplomas that have been obtained in these countries. In all other cases national regulations of the host country prevail.

The Medical Directive is one of several sectoral directives, valid for specific professions. In many other cases the general directives apply. In the general system exchange of diplomas is regulated with quality control by the host country.

The Medical Directive:
The Medical Directive falls within the remit of the Directorate Internal Market. This signifies that the primary objective of the Directive is the free exchange of people and services. However, mutual recognition of diplomas also implies harmonization of the quality of training. This was the reason that already in 1958 the national associations of medical specialists founded the Union Européenne des Médecins Spécialistes (UEMS), an umbrella organisation of the national associations, structured with sections for the separate specialties. The UEMS together with its Specialist Sections has been formulating recommendations for the European Commission in the field of quality of medical specialist practice ever since. These recommendations are channelled by way of the statutory Advisory Committee on Medical Training (ACMT) of the EU Directorate Internal Market. This committee consists of delegates of the profession, the universities and the Ministries of Health of the EU member states.

Right from the start the European Commission and the medical profession have had different views on the Medical Directive. The Commission views the Directive as a tool for free exchange, the medical profession wanted to use the Directive as a tool in quality policy. This relates to paragraph 3 of article 57 of the Treaty of Rome, which postulates that the gradual raising of limitations of exchange will be dependent on coordination of the requirements for exercise of the professions in the separate member states.

In the Directive this can be found back in the minimum duration of training. These minimum durations have been determined in 1975, partly following the professional recommendations. These minima are low; nevertheless on national level these requirements are not being met in all instances. It should be noted that member states are free to require longer training duration on national level.

In 2001 the European Union Directorate Internal Market proposed changes and simplification of the system of the Sectoral Directives. The system of Advisory Committees has been unwieldy and mostly ineffective in the past. However, no contribution to quality of training and practice was made in the proposal of the Commission. The proposal has subsequently been blocked by the European Parliament for the time being (2004).

The professional advisory process:
Throughout the years the UEMS has advocated updating of these minimum training durations. Together with the Specialist Sections the UEMS issued in 1996 a report with the professional recommendations on this issue. These were taken over to a considerable extent in the 4th Report and Recommendations of the European Union Advisory Committee on Medical Training (ACMT) in 1996 (the Salvatore report) and also in the draft 5th Report and Recommendations in 2001 (the Twomey report).

Unfortunately the recommendations of the ACMT are not being implemented in the Directive. This is being blocked by the Council of Ministers (Internal Market, the ministers of economic affairs). The Council of Ministers takes decisions on the basis of consensus. Due to economic considerations it appears not to be possible to reach consensus. The European Commission is not concerned; it takes the view that the medical profession is well enough organised to implement quality policy on European level on its own. The ACMT has been suspended in fact by withdrawal of the budget of the committee.

A new development is the increasing weight of the Committee of Senior Officials Public Health (CSOPH). This is also a statutory Committee of the Directorate Internal Market with participation by delegates of the national Ministries of Health. The profession is not represented in this committee. The CSOPH has obtained the qualification to update the lists of national recognition of specialties in the Directive. This is much quicker and more effective than the procedure with approval by the Council of Ministers. However, updating of training durations and adding new specialties remains the remit of the Council of Ministers (Internal Market).

European Court of Justice:
Another new development is the growing influence of the European Court of Justice in Luxembourg. Colleagues have complained before the ECJ because of refusal of recognition of their diplomas by host countries in the EU in the case of migration. The ECJ takes the position that the Treaty of Rome prevails and that the implementation orders, the Directives, have to be interpreted in a broad sense. This has led to favourable verdicts of the ECJ for colleagues with training not completely within the European Union and for colleagues with diplomas in specialties not recognized in each of the EU member states.

Remarkably soon this has led to an update of the Medical Directive with the amendment 2001/19/EC. In this amendment member states are required in these cases to evaluate training and diploma and to take a motivated decision. This decision can be challenged in Court. The European Court of Justice has the last word. In view of the present position of the ECJ in these matters it can be expected that recognition of diplomas by migrating citizens of the EU will become easier. Future verdicts of the ECJ will clarify this issue.

Directorate Health and Consumer Protection:
Rather new also is the European Union Directorate of Health and Consumer Protection (SANCO). This Directorate is increasingly involved in public health matters in the European Union. Its tasks has been defined (Health Strategy Plan 2000) as follows:
- Improving health information and knowledge
- Responding rapidly to health threats
- Addressing health determinants

The remit of this Directorate is Public Health. It does not consider quality of training and health care to be within its domain. The European Commission adheres to the principle of subsidiarity, which makes quality of training and health care a national responsibility. So this Directorate is not involved in the Medical Directives at all.

References:
Further information and also links to the text of the Recommendations and the European Directives is available on the website of the UEMS:
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The European Dimension of Continuing Medical Education

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Key words:
Quality of Education and Practice
Freedom of movement in continuing education of European doctors
Exchange of recognition of Continuing Education credits between the European countries
EACCME®, European Accreditation Council for Continuing Medical Education

Introduction:
Recognition of medical diplomas between the member states of the European Union on mutual basis is regulated by European law (European Directive 1993/16/EC and its amendments). Continuing Medical Education (CME) is not covered by European Law. In the latest proposal for an update of the "Doctors Directive" COM(2002)119 is merely stated in article 22, § 3 "Continuous training shall ensure, in accordance with the procedures specific each country, that persons who have completed their studies are able to keep abreast of medical progress".

Mandatory CME:
The shift to mandatory CME in many European countries means that the right to practice will increasingly be subject to relicensing, coupled to meeting CME requirements. Yet free movement of services and people are enshrined in the Treaty of Rome, in which the medical profession is specifically mentioned in art. 47,§3.

European system to maintain free exchange:
Given the reluctance of the European Commission to regulate CME and relicensing, and on the other hand the obvious need to safeguard the freedom of establishment, the UEMS (European Union of Medical Specialists, the representative organisation of medical specialists in Europe) has established the EACCME® (European Accreditation Council for Continuing Medical Education) with the following objectives:
- Safeguarding the quality of CME on European level,
- Facilitating the exchange of CME credits between the European Countries.
- Facilitating accessibility to quality-CME by doctors throughout Europe.

The system of the EACCME:
The EACCME is based upon consensus of the bodies responsible for CME in the member states of the European Union. These bodies are professional bodies, in some countries acting through internal consensus, in other countries with legal provisions acting on behalf of the Ministry of Health. Accession countries have been invited to participate and the majority of

them have already done so. The EACCME was established in 1999 by the UEMS and became operational in 2000.

Agreement:
The agreement between the responsible bodies has been that:
The EACCME acts as a clearing-house for CME credits in Europe. It awards European Accreditation to CME activities when two conditions are met:

1. Quality assessment by a professional body other than the organiser itself has led to a favourable conclusion. A common set of quality requirements has been established.
2. The national body designated as the responsible body in the country where the activity takes place has given its approval.
   This requirement is a mirror image of the European Directive regulating the mutual recognition of medical diplomas. This Directive prescribes recognition of diplomas obtained in any member state; in the case of the EACCME CME regulating bodies oblige themselves to recognise the national approval in other participating countries.

Benefits:
- For doctors: Facilitation of access to quality CME activities outside their own country with the guarantee that their credits will be recognised by their national regulating body,
- For organisers of CME activities: once EACCME accreditation has been obtained, access to their activities for doctors from other countries is facilitated,
- For countries: International organisations will be encouraged to organise CME activities in the countries participating in the system. This makes international quality CME more accessible to their own doctors and on the other hand benefits the economy of the country concerned.

Developments:

The activities of the EACCME picked up during the years 2002/2003 substantially. Mandatory CME is increasing in the European countries due to national legislation or professional regulations and doctors are needing CME credits more and more in order to be able to continue practising.

Presently the EACCME accredits only single live CME activities. Points of discussion are provider accreditation, accreditation of distance-learning programmes and accreditation of CPD (Continuing Professional Development). A Working Group is addressing these issues, but no decisions have been taken on this issues yet.

The EACCME and the AMA (American Medical Association) are recognising each others credits since 2000. Negotiations to extend this arrangement were conducted in 2002 and an agreement to extend this arrangement till 2006 was reached and approved by the AMA Council of Education in June 2002 and by the UEMS Management Council in October 2002.

Concerning the quality issue of CME, contacts with the AMA and the ACCME (the American Accreditation Council for CME) have been laid. The ultimate goal is to establish a joint set of quality requirements for CME as an extension of the present set of UEMS quality requirements (UEMS document D 9908).

References:

More information is available on the websites of the UEMS and EACCME
Avenue de la Couronne 20, 1050 Brussels
www.uems.be www.uems.net , EACCME: www.eaccme.be

March 2004

Obtaining a PhD degree in Medicine at the University of Helsinki, Finland - setting the Nordic standards

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Within the Medical Faculty at the University of Helsinki, Finland, the PhD degree is a general term that includes Doctorship in medical, dental or biological sciences. Although the PhD work can, and often is, started during graduate studies, the PhD degree can be officially acquired only after you are a Licentiate in Medicine or Dentistry, or a Master of Sciences. The PhD degrees will be provided by the Medical Faculty after finishing a minimum amount of studies (20 or 40 credits) and conducting a given amount of scientific research work, publishing it and defending a thesis in public. The aim is to penetrate deeply into a research area, be able to independently conduct research, produce new data and critically apply scientific methods, skills and thinking for solving problems. In addition, you need to acquire sufficient general knowledge about the history, development, methodological approaches and theory of science that you will be able to follow progress and critically assess the reliability of new information.

PhD programs

The Medical Faculty at the University of Helsinki produces approximately 100 PhD theses per year. Of these, in up to 20-30% the work has been carried out within graduate schools, and in around 70% the students have a medical background. The proportion of women has been steadily increasing being now already around 60%. An important factor is that considerable parts of the Faculty and University budgets are based on the number of PhDs produced each year. This has not, fortunately, led to a compromise with the scientific quality of the PhD work. The aim is to maintain high scientific standards.

As one means to maintain high standards The Ministry of Education in Finland has, since 1995, set up 28 graduate schools to provide more formal training for a PhD degree. The graduate schools are governmentally supported and competitive in that only a proportion of proposals for graduate schools have been accepted. The major current graduate schools, related to the Helsinki University Medical Faculty, are listed in Table 1.

The enrollment into the graduate schools is also competitive. Each year 10 first year medical students (out of 120) are selected to the Research Track at the Medical Faculty of the University of Helsinki (MD/PhD Program). These students will carry out research work and receive salary (from the Ministry of Education) during their summer holidays and for 2 years after graduation into an MD degree, during which time they are expected to finish their PhD work. During the first 2 years of their basic medical studies they have to rotate in 3-4 different laboratories or research groups and make a selection where to perform the actual PhD work. The rotation is meant to provide the students a broad

background in experimental techniques and experience from different research environments.

Table 1. Examples of Biomedical Graduate Schools in Finland
(for a full list see http://www.biocenter.helsinki.fi/finbionet/)

General (broad discipline)
Research Track at The Medical Faculty, University of Helsinki
Helsinki Biomedical Graduate School (http://www.hbgs.helsinki.fi/)
Topic-oriented (nation-wide)
Doctoral Program in Public Health (http://www.kttl.helsinki.fi/dpph/)
Finnish Graduate School of Neuroscience (http://www.helsinki.fi/fgsn/)
Biomaterials and Tissue Technology Graduate School
Clinical Drug Trials Graduate School
The National Graduate School for Musculoskeletal Diseases (http://tules.utu.fi/)
Nationwide Clinical Sciences Graduate School (http://vktk.helsinki.fi/)
Graduate School in Computational Biology, Bioinformatics and Biometry (http://www.cs.helsinki.fi/combi/)
Related Bioscience Graduate Schools (medics are a small minority)
Helsinki Graduate School in Biotechnology and Molecular Biology (http://www.biocenter.helsinki.fi/biotechgs/)
Viikki Graduate School in Biosciences (http://www.biocenter.helsinki.fi/viikkigs/)

The Helsinki Biomedical Graduate School (HBGS, http://www.hbgs.helsinki.fi/) is an umbrella organization for PhD students in biomedicine (it includes also the MD/PhD Program). Each year some students are, after heavy competition, selected to the HBGS, where they will receive salary for 4 years, during which time they are expected to finish their PhD work. Some studnts are formally enrolled to the school but get funding from their own research groups (so called "matching positions"). The spectrum of topics in HBGS is wide but, because of the generally stronger competitiveness of the field, molecular biology-oriented research has received the majority of the students.

Recently, a national network of graduate schools in biosciences and health sciences (FinBioNet - Finnish Graduate School Network in Life Sciences, http://www.biocenter.helsinki.fi/finbionet/) has been created. This network is coordinated by the University of Helsinki and financially supported by the Academy of Finland. Its purpose is to promote researc training cooperation and to coordinate research courses. Until now the graduate schools have developed independently of the "Bologna Process" and the criteria for PhD degrees have been set up locally.

Requirements for a PhD degree

Conducting an MD/PhD work at the University of Helsinki usually lasts 4-6 years. It is supposed to include the equivalent of 3-4 years of full-time active research. The mean age of students defending their theses is 37 years, which still is considered as all too high. As a curiosity, however, within the framework of academic liberty it is also possible to defend your thesis even after retirement. Thus, there are no time or age limits *per se*, except those placed by funding at the graduate schools. Foreigners and those with a M.Sc. degree from another Faculty can do their research work and subsequently publish a thesis at the Medical Faculty of the University of Helsinki if they get a permission from the respective professor and from their former Faculty.

The PhD studies and degree are composed of a combination of theoretical and practical studies and the actual research. The research will be carried out under the guidance of one or, at the most, two supervisors, of which at least one needs to have the degree of "docent" (lecturer). The thesis work needs to be registered at the time when the structure of the thesis is emerging (often first papers submitted or accepted for publication). The registration includes a plan for studies and a research plan. These will be evaluated by the Medical Faculty Committee for Postgraduate Scientific Studies for appropriateness and scientific quality (Table 2). This is a very important step for the overall quality control of the thesis work. For the applicants this is useful, because they, together with their supervisors, have to critically assess the significance of their work and evaluate how realistic it is to carry it out within the estimated time frame. The Committee may also give some useful advice. In the HBGS graduate school, each student has a follow-up team (supervisor + two independent experts), which gets together once a year to review progress of the thesis work.

Table 2. Activities of the Committee for Postgraduate Scientific Studies

(Medical Faculty, University of Helsinki)*

1. Registration of PhD study and research plans
2. Evaluation of statements from the reviewers
3. Permissions to print PhD theses (imprimatur)
4. Approval and organization of postgraduate courses
5. Discussion of general principles related to PhD studies

*All subject to acceptance by the Medical Faculty. The Committee includes 12 senior researchers or professors of the Faculty.

For the theoretical studies 20 study credits are needed. Five credits come from general subjects like courses on scientific methods, animal experimentation (obligatory for students performing animal experiments), ethics of clinical research, epidemiology, statistics, bioinformatics, scientific writing and publishing. The remaining 15 credits should be acquired from subjects more specifically related to the thesis work. This includes e.g. scientific congresses. For nonmedics (M.Sc.) 40 credits are required. These are not subcategorized but should include related literature worth 5-10 credits. The fullfilment of studies will be examined by a Faculty officer before a PhD degree is given.

Contents and appearance of a PhD thesis

The PhD thesis is usually composed of 4-5 scientific publications on a uniform theme plus a joint summary (usually in English) that reviews the literature, sums up the results and critically discusses the conclusions and possible limitations of the studies. The publications and summary are printed together as one book, and nowadays often in electronic form (for examples, please see http://ethesis.helsinki.fi/). As an alternative, there is a possibility to print the thesis work as a monograph without separate individual publications. This option can be taken under certain circumstances, for example when reporting results from a large series of analyses in Public Health, Insurance Medicine or Psychiatry. It is not a recommended option, because the extent of work may not be in balance with that of 4-5 separate publications, and the results may not reach the international forum.

The original articles in a PhD thesis need to be published in international peer-reviewed journals. If the quality of the papers is exceptionally high (impact factor >10) or the paper reports results from extensive studies the number of original publications can be less than

4-5. The thesis work is evaluated as a single entity, where both quality and quantity matter. Of the individual papers one can be still in a "submitted" form. The thesis cannot contain more than 50% of papers that have been (or will be) used in somebody else's thesis. It is important that the thesis represents a single entity where the PhD student has an independent and crucial role in planning, performing and discussing the work. In publications this is usually reflected by the fact that the student is the first author. The student needs to clarify his/her role in each original publication in a separate written statement. If someone else is the first author a written joint permission from him/her and the supervisor is needed. This approach is important in preventing any possible conflicts on who is entitled to use the data and the papers in dissertations. It is also part of the training to become an independent scientist and on how to collaborate with others on a fair basis.

Evaluation of PhD dissertation

The culmination point is to defend the thesis publicly in front of an audience. Prior to this point the thesis has been evaluated by two (sometimes 3) independent reviewers, who have carefully gone through the summary part of the thesis and any unpublished papers. They give their comments, suggestions for corrections and finally recommendations whether the work is appropriate and sufficient to be printed as a PhD thesis. Their written statements are evaluated by the Committee for Postgraduate Studies, and final imprimatur (permission to print the thesis) is given by the Medical Faculty. The evaluation by the Committee and official reviewers is *de facto* the most critical stage of the process.

The dissertation will finally be evaluated by an Opponent in a public event, where relatives, friends, colleagues and any interested individuals are welcome to follow the proceedings and participate in the judgment. Dressed in tail-coats, dark suits or black dresses the Candidate and the Opponent discuss and argue the thesis according to the best academic traditions. At the end the Opponent gives a final statement on whether the thesis, and its defense, are acceptable for a PhD degree or not. It has never happened that the thesis fails at this stage. Therefore, the dissertation day ends with a formal Dinner in the honour of the Opponent and a hilarious party later on. For the new PhD the degree will be a prerequisite for further academic positions and helps in the clinical career in the future, especially if working at a University Hospital. As an individual the PhD has (hopefully) learned critical thinking, problem solving and ways to search and create new information.

The Helsinki Biomedical Graduate School (HBGS)

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Helsinki Biomedical Graduate School (HBGS) is affiliated with the University of Helsinki. Research topics are related to a wide spectrum of questions related to biomedical sciences. Students enrolled in the Molecular Cell Biology, Molecular Medicine, and Functional Genomics programs take part in a 4-year Ph.D. Program, which normally leads to a thesis defense at the Medical Faculty of the University of Helsinki. These students have either Master of Science or Medical Doctor degree backround.

The student searches the thesis project by contacting to research groups. The group leader or other senior researcher in the group acts as a supervisor for the thesis project. Thesis typically consists of articles published in peer-reviewed journals and in which the student has a significant contribution. The rest of the curriculum is based on various types of courses. Graduate schools together with reaserch groups organize a wide variety of practical training courses, seminar series, and scientific symposia for the students. Students can decide by themselves which courses they want to participate. Credits required for PhD degree depends on the backround education – 20 credits for Medical doctors and 40 credits for those with Master of Science backround. The appearance of the PhD dissertation consists of the review to the literature followed by 3-5 articles published in peer-reviewed journals. Finally, in the public examination candidate will respond to the comments which the opponent has made. It is quite common to have a foreign expert as an opponent.

The graduate school provides a framework for the graduate studies, the actual Doctor of Philosophy (Ph.D.) or Doctor of Medical Sciences (D.M.Sc.) degrees will be granted by the faculties at the University. PhD degree is usually attained in the beginning of scientific career and it is prerequisite for academic career. The goal of this research training is to provide basic information that is needed to proceed succefully as a researcher.

PhD program in Medicine and Health Sciences at the University of Pavia: present status and perspectives

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The PhD degree in the Italian universities was introduced for the first time in 1980. The regulations were then modified by the Ministry for Research and University in 1989, 1998 and 1999 for a better definition of general criteria and idoneation requisites for the institution of PhD courses in the different Universities.

At the University of Pavia, specific regulations were introduced in 2001 for the discipline of activation of PhD, for the admission and the activity of PhD students, and for Phd graduation.

A specific academic organ, the Evaluation Nucleus, was also charged of the job to evaluate the congruousness of the annual proposals of PhD programs to the general and specific principles for the activation of the annual cycles.

A Rectoral Commission was also constituted in order to evaluate more specifically the single PhD proposals in order to present the congruous PhD programs to the Academic Senate for the approval, comprehensive of the economic cost, to the board of directors.

In this way the Rector, verified the coherence of PhD Courses with formative programs, the availability of human and financial resources required for activation, can institute PhD Courses.

The Rectoral Commission is constituted by 13 members, one for each of the scientific-disciplinary areas defined by the University Ministry existing at the University of Pavia:

1. Mathematics and Informatics Sciences;
2. Physical sciences;
3. Chemical sciences;
4. Earth Sciences;
5. Biological sciences;
6. Medical sciences;
7. Civil and Architectural Engineering;
8. Industrial and Information Engineering;
9. Antiquity, philologic-literary and historical-artistic Sciences;
10. Historic, philosophic, pedagogic and psychologic Sciences;
11. Law Sciences;
12. Economical and Statistical Sciences;
13. Political and social Sciences.

Altogether, in the current year 38 PhD Courses are activated at the Pavia University.

In the Medical Sciences area, 5 PhD Courses are active:

1. Experimentral Surgery and Microsurgery;
2. Pharmacological sciences;
3. Internal Medicine and Medical Therapy;
4. Pathology and Genetics;

5. Public Health and Education.

Inside some PhD Courses, specific curricula are activated:

- in the Pharmacological sciences PhD, we find 2 curricula:
  1. a curriculum of Basic Pharmacology and Molecular Pharmacology
  2. a curriculum of Pharmacology and Pharmacoepidemiology;
- in the Pathology and Genetics PhD, we find 3 curricula:
  1. Human Pathology
  2. Genetics
  3. Experimental Pathology
- in the Public Health and Education, the wider and more differentiated PhD, we find 7 curricula:
  1. Education Sciences
  2. Epidemiologic-Statistic-Medical Sciences
  3. Nutritional and Dietetic Sciences
  4. Psychiatric and Behavioural Sciences
  5. Hygiene and Preventive Medicine
  6. Forensic Medicine
  7. Occupational Medicine.

As we can see, many fields of interest are covered in the PhD Courses of the Medical sciences Area; others closely related to Medicine and Health are included in PhD Courses of different areas, as in the Pharmaceutical Chemistry and Technology and in the Biological Sciences areas.

In the latter we find 6 PhD Courses: Biochemistry, Cell Biology, Experimental Echology and Geobotany, Biomolecular Sciences and Biotechnology, Genetical and Biomolecular Sciences, Physiological Sciences and Neurosciences.

In the latter, Physiological Sciences and Neurosciences PhD, 3 curricula of bio-medical pertinency are activated:

1. Human Physiology
2. Cell Biochemistry and Physiology
3. Neurosciences.

Moreover, inside each of them, different training lines are offered to PhD students.

For the curriculum of Neurosciences, for example, we have 3 training lines:

1. Developmental psychiatry
2. Developmental neurology
3. Physiopathology and clinics of sensory-motory integration.

With this wide PhD offer, the graduated students can find specific opportunities in agreement with their interest and capabilities.

At present, in the University of Pavia a wide discussion is running in order to optimize human resources for a best effectiveness of the PhD students training.

Where discussion is going?

The perspective for the next months is to define a reorganization plan based on the institution at the University of Pavia of Doctorate Schools, each coordinating several PhD Courses. In particular a Doctorate School of Bio-medical and Health disciplines will be activated.

The guidelines we are working on as objectives are:

- to coordinate in a more effective way some educational activities of different PhD programs;
- to create new high-quality activities and opportunities for advanced research,
- to improve mobility of students in qualified laboratories and Health structures, coordinating initiatives of different PhD Courses,
- to improve a more general view of bio-medical culture and health problems promoting interdisciplinarity
- maintaining the specificity of each PhD program, to open a window creating a tighter link between basic science and health science.

PhD students of the Bio-medical and Health Doctorate School will attend regular Courses and Excellence Courses for integration and supplementation of their specific PhD programs. All these activities will be monitored in order to guarantee the improvement of the quality of the educational and research activities.

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JEP 17044 for Kosovo
2003-2006

DAAD-Stability Pact and University of Hamburg – Engagement in South-East-Europe: Education of Medical Students and Life-Long-learning of Medical Doctors

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The efforts of the University of Hamburg – supported by DAAD, DAAD Stability Pact, German Rectors' conference (HRK) and EU – aim at improving medical education on all levels of a medical doctor's development.
Short-range aim is to establish a South-East-Europe-wide level, long-range aim is to approach to an EU-wide level of medical education and medical care standard.
All efforts started with the help of DAAD Stability Pact and German Rectors' conference (HRK).
DAAD Stability Pact – Initiative will end in December 2005 !
Tempus cards for South-East-Europe is going to end in 2006 ! EU is already thinking about a follow up program.

Regulations of financing via DAAD Stability Pact for a realistic proposal

- Very detailed report about activities of the last year.
- Detailled financial report with all invoices (even taxi) and with the names of all supported persons, all participants in the workshops etc.
- Application for new money with a description of the current situation in education and medicine.
  Precondition: University of Hamburg receives project ideas and information about urgent needs from the region itself! – This takes 1 month time!
- Decision making: Anonymous references, funding only 30-40 % of proposal according to quality (by the way: medicine is the largest project).
- Foreign Office in Germany will decide – having the political situation in mind – about support of the whole region, then they will give the money to DAAD Stability Pact. – Whole procedure takes 4-5 months!!
- In 2004 DAAD will reduce the funds again. DAAD counts on the principle of co-financing which means that the actors in South-East-Europe will find independently and self-determined new sources of financing, e.g. sponsoring, medical associations.

Activities of the University of Hamburg in South-East-Europe

1. University Partnerships between Hamburg and Zagreb (since 1969!!) and Hamburg and Belgrade since 1980.
2. EU-Project on Research Hamburg – Rudjer Boskovič Institute 1989 – 1994.
3. Partner in Inter University Centre in Dubrovnik.
4. Curriculum Reform Process in whole South-East-Europe.
5. Curriculum Reform - financed via Tempus projects – in Skopje, Prishtina, Podgorica (applied).
6. Supervision of the medical licensing process in Kosovo (EC - founded).
7. Establishment of medical networks in South-East-Europe.
8. Courses for Continuous Medical Education in South-East-Europe.
9. Numerous Summer and Winter Schools in the Region.

Supported by DAAD Stability Pact, German Rectors' conference (HRK), EU and several sponsors like VW-Foundation, Industry, most valuable contributions esp. from the Medical Faculty and the Rudjer Boskovič Zagreb Institute the University of Hamburg succeeded to spend more than 1.5 Mio Euro in 1996-2003.

Curriculum Projects in South-East-Europe Hamburg is partner in:

- Curriculum Reform in Kosovo - Tempus Project 2003-2006 – including new curriculum following the Nottingham Curriculum, teacher training especially in the use of e-learning in their lectures, teaching equipment and e-learning modules.
- Curriculum Reform in Macedonia - Tempus Project 2002-2005
- Curriculum Reform in Sarajevo - Tempus Project 2001-2004
- Curriculum Reform conferences in 2000/2002/2003 – meeting of all teaching deans and curriculum reform coordinators of Medical Faculties in South-East-Europe.
- Curriculum Reform Office in Zagreb as a collecting and coordination centre for all reform efforts in the region. For one year Zagreb was the heart of the Curriculum efforts in the whole region, collected all data, provided all with a newsletter.

How to continue with Curriculum Reform Conferences and Curriculum Reform Office?

By agreement of all cooperating Medical Faculties in the region this office is planned to fluctuate from one centre in South-East-Europe to another.

Hamburg has already applied for money, but at the moment there is no centre in South-East-Europe probably willing to do this job and to cooperate with the whole region!

So at this point Hamburg wonders how to go on since Hamburg does not tend to press the Medical Faculties in South-East-Europe to cooperate in their reform efforts.

In February 2004 Hamburg made a last effort and asked all medical Faculties who joined the Conferences for their readiness to participate in a Tempus Project (Tempus/Sokrates-program) to go on with the joint Curriculum Reform Process.

Hamburg asked more than 20 Medical Faculties in South-East-Europe but only 7 where interested in a cooperation. For this program we needed at least 10 participants form the

region. So Hamburg was not able to apply for money for Curriculum Reform in Medicine in South-East-Europe!

Hamburg will take a new approach in September 2004 for a new application – if demanded in the region!

Medical Networks in South-East-Europe

One important way to improve medical knowledge, communication and cooperation in the region and to further educate all medical doctors is to build medical networks.

Aims of these networks are:

- Regularly educational meetings in selected fields of Medicine.
  Educational meetings financed by DAAD Stability-Pact, Germany Rectors' Conference and Sponsors 2001-2003: 40 workshops and intensive courses
- Communication about special diagnostic cases.
- Exchange of doctors for training reasons
  Exchange of doctors within South-East-Europe 2001-2003: 40 doctors
  Exchange of doctors from South-East-Europe to Hamburg 2001-2003: 38 doctors
- Joint scientific projects 1998-2003: 7 projects

Medical Networks in South-East-Europe

Networks established and equipped by DAAD Stability-Pact, Germany Rectors' Conference and University of Hamburg :

- Molecular Biology and Human Genetics
- Gastroenterology
- Pathology / Oncology
- Traumatised Children

  With the aim to support this network with an educational network for child and adolescent psychiatry and psychology Hamburg applied in 2003 for a 3-years Tempus project together with nearly all Psychiatry Departments in South-East-Europe and more than 40 international experts and international organisations.

Sustainable Efforts in the Medical Education and Development in South-East-Europe

Hamburg initiated a **Round Table Discussion in Berlin in December 2003**. Invited guests came from the financiers which are German Foreign Office, DAAD Stability-Pact, Germany Rectors' Conference and from selected project partners in South-East-Europe and from the few German Medical Faculties who are still engaged in South-East-Europe.

Results of the Round Table Discussion - Future Activities

- Joint discussion process about how to introduce Bologna – South-East-European and Central European Medical Faculties in discussion and dialogue.
- Each South-East-Europe – Medical Faculty will work out a science development plan.
- Introduction of a National Board of Medical Faculties in each country in order to
  - introduce the Bologna Declaration in Medicine in South-East-Europe, introduce a regional credit transfer system;
  - develop regional centres of excellence and a national Master Plan in Medical Science and Education;

- introduce common post-diploma courses on certain topics.

- Start of a small Post-Diploma-Course for the region with the help of German Accademic Exchange Service (DAAD), German Rectors' Conference (HRK), German Research Foundation (DFG).

Results of the Round Table Discussion – Aims for 2004

a. Medical Education

- Establishment of a Medical Association of Medical Schools in South-East-Europe (Zagreb leading?).
- Start of discussion process in each country about Medical Master Plan and centres of excellence (Zagreb as example?).

b. Curriculum Reform / Bologna

- Curriculum Reform Office will continue to accompany the Curriculum Process in South-East-Europe Medical Faculties as an information pool.
- Joint workshops of Medical Faculties from South-East-Europe and Central Europe on the topics "Introduction of the Bologna-Process".

c. Electronic infrastructure

- Start of talks how to implement e-learning in some Medical Faculties in South-East-Europe and how to use synergetic effects.
- Trying to raise the problem of communication infrastructure within the Ministries in SEEurope and to discuss solutions.

Problems - Outlook

It is worth thinking about a **2nd Dubrovnic Pledge Conference** to agree on sustainable steps on the Ministers' level – including this time esp. teaching of Medical Doctors, Nurses, Pharmacists and Continuous Medical Education.

At the end of the year 2004 it would be very useful to meet again on working level and to discuss the activities and results of the year 2004 and the steps for 2005.

At the moment we face the problem that

- there is no common agreed concept of how to continue with joint efforts in medical education in South-East-Europe;
- funds for South-East-Europe are decreasing;
- political atmosphere in South-East-Europe becomes colder again and makes cooperation between South-East-Europe-Regions much more difficult ⇒ Prizren, Mitrovica, Nish, Belgrade, Novis Sad.
- international engagement becomes more difficult especially in Serbia, Kosovo and Macedonia ⇒ money runs into military engagement (KFOR, SFOR);
- communication between South-East-Europe and German Medical Faculties is getting more and more difficult on behalf of different reasons which makes cooperation to develop medical education in South-East-Europe not as hopeful as expected.

Master of Public Health Programme at Bielefeld School of Public Health, Germany

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The two-year Master of Public Health (MPH) course (comprising 120 ECTS) is an on-campus part-time course and starts every autumn with a group of 60 students on average. The main language of instruction is German, but special courses offered for the European Master of Public Health (EMPH) programme are held in English. The MPH at Bielefeld School of Public Health (BSPH) focuses on the ability of students to responsibly deal with projects and problems concerning the promotion and improvement of health as well as prevention of disease, premature death, and disease-related disability. In order to give students the necessary skills and vision, the BSPH offers a set of basic public health courses, followed by specialized elective courses which students can choose according to their professional goals and interests in the field of public health.

The courses in the MPH programme are distributed evenly over the first and second academic year. During the first academic year the students are expected to obtain knowledge and skills concerning the theoretical foundations of public health problems, while during the second year students are taught practical and research- oriented courses to develop and refine their skills in various areas of public health. The final semester (second half of second academic year) focuses on the master thesis. All members of the BSPH teaching staff are actively engaged in national and international research and co-operations with local, national and international institutions. The first year courses cover:

- public health medicine
- environmental health (including biology and ecology)
- research methods and instruments
- economics
- epidemiology and statistics
- sociology
- health management
- psychology and educational science
- public health nursing/ health sciences research
- health system research

During the second year, advanced courses will cover the following subjects:

- epidemiology and statistics
- public health medicine
- public health nursing/ health sciences research
- health promotion

- health service management
- health systems development
- rehabilitation
- environmental risk assessment and risk communciation
- human ecology
- health economics
- psychosocial care
- international public health

The master thesis, written on a topic chosen by the student in close collaboration with BSPH staff, should be completed by the end of the fourth semester. Students can also obtain an additional certificate of participation in the "European Master of Public Health Programme" for which specific requirements must be met, including a study term in a European country.

Further information can be obtained from http://www.uni-bielefeld.de/gesundhw

The new Doctor of Public Health Programme at the Bielefeld School of Public Health, Germany

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The Bielefeld School of Public Health (BSPH) is the only institution of its kind in Germany. While public health training programmes are being offered by Public Health Departments of several medical schools in Germany, the Bielefeld SPH was founded as an independent university faculty which is not part of a medical school. Since its foundation in 1994, the School has grown rapidly and developed a wide-ranging research and training programme. In April 1999 it was designated "WHO Collaborating Centre", which was certified again in 2002.

With a decentralized well-coordinated structure of eight departments and two institutes, the BSPH trains undergraduate and graduate students in the theory as well as the tools and applications of public health through an interactive, interdisciplinary programme.

The eight BSPH departments thematically represent public health medicine, epidemiology, health systems research, prevention and health promotion, health economics and management, public health nursing/health services research, environment and health as well as the newly established department of demography and health. The Institute of Nursing Science and the Institute of Population and Health are completing our research network.

Since 2003, the School of Public Health at Bielefeld University offers a new doctorate programme in public health. This new degree completes the existing Bachelor of Health Communication (BHC) and Master of Public Health (MPH) programmes and was designed in accordance with the Bologna declaration. The BSPH is the only academic institution in Germany which can confer the title of Doctor of Public Health (DrPH). The new programme aims at enabling students to independently conduct population-based public health research. The DrPH, a professional and research-based degree, is granted upon the successful completion of coursework and independent, original research of a significant public health problem. The programme is designed for mid-career and senior professionals to further develop their knowledge and skills in the field of public health. As an interdisciplinary programme, the educational modules draw on the expertise of scientists from the eight BSPH departments as well as of external specialists from a wide range of associated institutions.

During the three-year programme, students are expected to develop expertise in several fields, namely a) the methodological and scientific framework of public health research and b) highly relevant areas of public health, including health policy and systems reform, gender issues, control of global health problems, health care research, health economics and environmental health. The overall course load amounts to 72 ECTS or 1.800 hours, of which about 240 hours are compulsory lectures and seminars (organised in 6 blocks in

year one, 3 blocks in year two and three). Each block focuses on a specific theoretical, methodological or thematic topic (see above), which is relevant for a given stadium of the dissertation process. In addition, students conduct independent research on their dissertation project under the guidance of their academic advisor. .

The prerequisite for enrolment is a Masters´ degree, preferably in public health, health sciences or associated fields with a grade average of 2 (good) on the German 1-5 scale. Applicants also have to submit an outline of their intended research project to be reviewed by at least one professor of the BSPH. Postgraduate students without health science degree may be admitted if the candidate and the research proposal are deemed suitable by three BSPH professors.

In order to receive the DrPH degree students are required to attend at least 80 percent of the courses. They must also write four qualifying papers and two presentations on their thesis research for discussion with fellow students and supervisors. These papers and presentations are thematically oriented towards the thesis chapters.. DrPH students are expected to complete their thesis within three years. It is recommended that the thesis is of monographic structure and should not consist of published papers.

The thesis will be evaluated by two or more professors, one of whom must be at the BSPH while the other(s) may be based in other national or international institutions. The BSPH dissertation committee may invite outside experts for evaluation.

Once the dissertation has been accepted, the candidate will give a 90-minute public presentation with discussion. The examination committee consists of three members: the two professors who have evaluated the dissertation plus another faculty member nominated by the dissertation committee. The disputation is centred on methods and content of the thesis.

Finally the successful candidate must submit several printed copies of the thesis plus an electronic file for the dissertation database of Bielefeld University library. Further publications of the thesis, either in part (as scientific papers) or as monograph, are strongly encouraged but not required.

Over the last few years, public health has undergone a remarkable development in Germany. With the introduction of this new doctoral programme, the BSPH has reacted to a growing need for trained public health experts in Germany and in Europe, who combine high academic standards with a sound knowledge of public health concepts and fields of applications. A doctoral degree is a prerequisite for an academic career in Germany. This degree makes an excellent start for academic progress in public health.

Further information can be obtained from http://www.uni-bielefeld.de/gesundhw

Impact factor, citations, PhD-studies, DSc. - in Hungary

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The impact factor (IF) is based on the Science Citation Index (SCI) published by the Institute of Scientific Information (ISI). The impact factor is defined as how many times, on an average, during the study year the articles that appear in the 2 preceding years of the index journal received citations on other (SCI-indexed) journals.

Citation rate: Only independent citations can be evaluated and are relevant. Dependent self-citated is a publication if the citated and the citator publication has common publisher. These numbers offer mainly valid information about the quality of the scientific work. Moreover, they also serve to evaluate the scientific activity of an aspirant (in other cases: Department, Institute, Clinical Department, Faculty or university) among national and international scientific publicity, and we can receive a thorough and realistic view of their scientific work. (E.g.: serious and important clinical cases published in journals with high impact-factor.) An important challenge and task of the scientists in the field of clinical neuroscience is to satisfy and fulfill the strict national sclale of values, since the best guarantee for medical activity, for the evidence-based decision-takers is if a physician is in the same time scientist and a teaching staff as well**. Following field effects have an influence on citation rates** (Seglen, P.O.(1998): Acta Orthop. Scand. 69:224-229):

1) Mean number of references per article in filed;
2) Reference obsolence relative to time-window for citation recording;
3) Field size (affects mainly citation span, i.e., maximal attainable citation rate);
4) Field dynamics (field expansion or contraction);
5) Interfield relations (e.g., basal v.s. applied);
6) Subfield microheterogeneity.

PhD-studies at the University of Szeged, Faculy of General Medicine: Condition for the handing in a PhD-dissertation is:

a) participation at a PhD-programme
b) passing the necessary examinations
c) at least three international scientific *in extenso* originalis (no review, no abstract) publications, with the cummulative impact factor of at least 4,5. In at least one of the publications, the PhD-applicant has to be first author.

DSc-title: The necessary impact factor (IF) and citation rate for the DSc-title applicants in the field of ***Clinical Neuroscience*** and ***Theoretical Neuroscience*** are:

Clinical Neurology	Impact factor: **25**	Citation rate: **100**
Theoretical Neuroscience:	Impact factor: **60**	Citation rate: **200**

The Procedure of Earning the PhD Degree: General Rules and Regulations at Pécs University Medical School, Hungary

Prof. Emil Fischer
President of PhD Program, Pécs University, Medical School

1) The pre-requisites for earning the PhD degree
   a) the postgraduate aquisition of knowledge satisfying the requirements for being allowed to take the PhD final examinations
   b) passing the PhD final examinations
   c) intermediate level of skills in English for Specific Purposes and basic level of skills in another foreign Language for Specific Purposes (see Appendix 1)
   d) reaching the minimal impact factor used to evaluate research activity (the method of calculation is described in Appendix 2)
   e) writing a PhD dissertation and defending it
   f) Rules and regulations for foreign citizens and Hungarian citizens who continuously live abroad to take their doctoral (PhD) degree at the UMSP.
      - Rules and regulations concerning the enrollment of foreigners for the doctoral (PhD) course as well as the awarding of the doctoral (PhD) degree for them must be in accordance with the Hungarian law including the relevant statutes and governmental decrees on the one hand and with those recommended, accepted and practised by the European Union, the UNESCO, the ENIC on the other. With regard to this the conditions can be summarised as follows:
      - Foreign citizens having been awarded the so called "candidate of science degree" in Hungary can apply for the PhD degree on the basis of Higher Education Act (Section 119 (2)). PhD degree can be awarded on such grounds by any university entitled to awarding this degree in the given branch of science.
      - Foreign citizens having been awarded the so called “candidate of science degree" in a country outside Hungary can apply for the PhD degree on the basis of Higher Education Act (Section 107). In such cases the expert opinion of the National Board of Equivalence, taking international agreements into account, needs also to be obtained. Decision about professional equivalence is made by the Doctoral Board of the UMSP.
      - Foreign citizens and Hungarian citizens continuously living abroad are entitled to initiating the process of being awarded the doctoral (PhD) degree as "candidates preparing on their own" on the grounds of a dissertation and publications proving research activity, provided that the Doctoral Board of the UMSP finds that the idea, the spirit or the character of research achievements presented by the applicant relate to one of the accredited Doctoral Schools of the University and also that other publications make it obvious that the applicant`s achievements in research activity can at least partially be related to his / her previous continuous activity at the UMSP.

- Foreign citizens and Hungarian citizens continuously living abroad are entitled to participate in the doctoral programme according to confirmed individual study and research schedules, under the supervision of his / her Hungarian supervisor. The professional achievement of those in either of these groups are supervised by their supervisors, the head of the institution providing the instruction and the Doctoral Board of the UMSP. Foreign citizens or Hungarian citizens continuously living abroad are to spend a certain amount of time at the UMSP doing research and fulfilling other requirements prescribed for the PhD degree . The time required for this is determined by the Doctoral Board of the UMSP but it can be no less than 1 year. In justified cases the Doctoral Board of the UMSP may grant permission for the participant to spend the required time at UMSP in installments (no more than three installments) The leader of the Doctoral School is responsible for scheduling the time to be spent at the UMSP by the foreign citizen (participant) and also for informing the Doctoral Board of the UMSP about it.
- Foreign citizens, participants admitted to Doctoral Schools staying in Hungary for longer periods of time, on the basis of certificates issued by the University, are entitled to be issued with Hungarian visa for foreigners of students` status. For foreign citizens keeping their full-time jobs as participants preparing on their own or Hugarian citizens living abroad this preferential treatment is not available.
- Foreign citizens and Hungarian citizens living continuously abroad, participants of theDoctoral School, make financial contribution to expenses arising in connection with the programme. The degree of this contribution is determined by the Doctoral Board of the UMSP, relying on the expert opinions of the programme leader in question or the Programme Committee of the Doctoral School. (For details see Appendix 4)

2) Applications for initiating the procedure of the PhD degree being awarded (hereinafter: degree awarding) can be submitted to the Doctoral Board of the UMSP within one year after fulfilling the requirements for allowing the candidate to take the PhD final examinations.

3) The PhD final examination must be attempted within one year after the acceptance of the application for the examination.

4) The PhD dissertation must be submitted to the Doctoral Board of the UMSP within two years after passing the PhD final examination. To individual request, in justified cases, the Doctoral Board of the UMSP may prolong this period with a maximum of one additional year.

5) The time of the public discussion of the PhD dissertation can only be fixed provided the requirements listed under paragraph (1) of the present Section are fulfilled. The time of defending the theses must be confirmed by the Doctoral Board of the UMSP. The preconditions for this are that the opponents` opinions must be available and also that the Doctoral Board of the UMSP must have the written replies given by the candidate to the opponents` evaluation in due time.

6) The procedure of awarding the degree must be completed within one year after the PhD dissertation is submitted.

7) The PhD degree is awarded by the Doctoral and Habilitation Board of the Integrated University taking the recommendations made by of the Doctoral Board of the UMSP provided all the conditions described in paragraph (1) of the present Section are fulfilled. This fact is entered into the registry of the University of Pécs and this is also communicated to the national registry.

8) The PhD degree is conferred on the individuals having been awarded the PhD degree by the Doctoral and Habilitation Board of the Integrated University at the degree congregation and they are also issued with a PhD diploma.

9) The degree-awarding is declared unsuccessful by the Doctoral and Habilitation Board of the Integrated University in case
   a) the public discussion of the PhD dissertation is impossible to be conducted within three years following the day of application for the degree awarding through the candidate`s own fault,
   b) the defending of the PhD dissertation is unsuccessful.

10) In case degree-awarding is declared unsuccessful a new degree awarding procedure can be initiated after two years the earliest and this can only be applied for only once.

11)For certain measures taken in the course of the PhD degree awarding procedure the candidate pays fees, individuals contributing to these measures are remunerated. A detailed account of the amounts are given in (e) - (g) points of paragraph (2) of Section 5 and in Appendix 4.

Defending the PhD dissertation

1) The PhD dissertation is the documentation of the results achieved in the research in the subject area
   a) in the form of an independent writing written for this purpose, taking up a writing space of no more than 100 pages (one page = 32 lines, 70 characters per line) including the title sheet, the contents page and references (but not including the figures and tables!)
   b) in the form of published writings and / or writings accepted for publication linked with text written for this purpose . In both cases a detailed list of the results achieved in the given subject area by the candidate must be in a separate chapter.
   c) in the interests of the high quality appearence of both the dissertation and the theses practices having been formed so far on the one hand and developed by the National Board of Accreditation on the other need to be followed. Therefore, the Secretary of the Doctoral Board of the UMSP needs to be consulted before the dissertation and the theses are prepared. Formal requirements are as follows:
      - Candidates are to prepare the theses of their dissertation before defending it. These theses need to be more or less uniform, similarly to the previous candidate`s theses.
      - The theses need to include a list of the research publications conference abstracts lying in the basis of the dissertation. The theses, also prepared in English, need to be forwarded to the Doctoral Board of the UMSP, as they constitute part of the minutes taken at the defending.
      - The dissertation needs to be prepared according to points (a) and (b) in A4 format. The title sheet needs to include the title and a note: "Doctoral (PhD)

Dissertation", the author`s name and, at the bottom of the page: Pécs University, The University Medical School of Pecs and the year of preparation. On the title sheet, in addition to the previously listed items, the names of the programme leader, sub-programme leader and the supervisor need also to appear.

- The dissertation needs also to include the list of publications and conference abstracts.

d) after having been defended one copy of the dissertation is placed in the library of the UMSP and a further copy is deposited in the departmental library of the clinic or department where the dissertation was prepared.

2) The dissertation can be fully in English, fully in Hungarian or - in the case described in point (1) (b) of the present Section partly in English and partly in Hungarian.

3) After the dissertation is submitted, within a month the Doctoral Board of the UMSP asks two individuals preferably independent of the University of Pécs staff of public employees to act as official referees (hereinafter called opponents). The opponents are supposed to forward their written evaluation in three copies to the Doctoral Board of the UMSP within three months, which forwards them back to the candidate. Written replies given by the candidate to the evaluation need to be forwarded by the candidate to the Doctoral Board of the UMSP. (S)he needs also to enclose copies of the documents that may certify the fulfillment of the requirements included in point (1) of Section 13.

4) The evaluations given by the opponents should detail the content and formal qualities and mistakes of the dissertation and should include whether the opponents accept the new scientific findings expounded in the theses as the candidate's own research findings. The evaluations given by the opponents need to include their statement whether they recommend the dissertation for public discussion. In the case of one positive and one negative answer to this question a third opponent is asked by the Doctoral Board of the UMSP. In the case of two negative answers (or if there are two negative and one positive answers) the defending of the dissertation must be regarded as unsuccessful. In the case of two positive answers (or if there are two positive and one negative answers) the time of the public discussion of the dissertation is fixed by the Doctoral Board of the UMSP for a date within three months after the delivery of the replies given to the evaluation of the opponents. The date and venue of the discussion must be announced on the notice-board of the UMSP one week before the discussion. The board of the competent Doctoral School can decide whether the discussion should be announced in the press.

5) The public discussion takes place in the presence of the Judging Committee called by the Doctoral Board of the UMSP, which consists of the chair, the two opponents and another two members. Only individuals holding a scientific degree can be members of the committee. Among the opponents and the members at least two must be independent of the publicly employed University of Pécs staff. The chair must be a professionally competent professor of the UMSP. The supervisor of the candidate cannot be member of the Committee. Neither can anyone who cannot be expected to make objective judgement in the opinion of the Doctoral Board of the UMSP. The candidate can raise a written objection to the Doctoral Board of the UMSP against the composition of the Judging Committee – only in case of prejudice or incompatibility – within 8 days after the delivery of the announcement.

6) At the beginning of the public discussion the chair rules that a quorum is present, for which the presence of at least four members of the Judging Committee, icluding at least one member who is independent of the employed University of Pécs Staff is needed. The discussion can be conducted if at least one opponent is present and the other opponent has made a written statement of accepting the replies given to his questions.

7) In the public discussion the candidate presents the essential points of his / her PhD dissertation in a free lecture lasting for 20 minutes then (s)he answers the questions of the opponents, the members of the committee and other individuals present at the discussion.

8) After the public discussion is closed the Committee withraws for closed session and - taking the opponents`s evaluations and the results of the public discussion into account - discusses and evaluates the dissertation by secretely alotting points. Both the Chair and the members of the Committe have a maximum amount of five points at their disposal each. The dissertation can be regarded as "defended" if the total number of points is at least 60% or more of the obtainable points. The qualification of successfully defended dissertation: "summa cum laude" (above 85%), "cum laude" (70-85%) and "rite" (below 70%). The result of the evaluation (number of points allotted) is publicly announced by the Chair.

9) A decision about awarding or rejecting to award the PhD degree is made by the Doctoral and Habilitation Board of the Integrated University on the basis of the opinion of the Doctoral Board of UMSP having taken into consideration the acquired points of the candidate and the reports of the complex examination comittees.

10) The PhD diploma contains the name and seal of UMSP, the name by which the owner of the diploma is to be identified, place and date of the candidate's birth, the qualification of the diploma, its field of research, the exact date and place of the PhD ceremony. It is signed by the rector and the chair of the Doctoral and Habilitation Board of the Integrated University within one month after the day of the defense.

11) The PhD diploma is issued in both Hungarian and Latin or English.

12) Those having acquired a PhD degree, graduate during a board meeting which in this case serves as a public graduation ceremony. At the graduation ceremony candidates make an oath.

13) Doctoral diplomas are issued following graduation with its date on. After the graduation the title dr (PhD) can rightfully be used by the graduates.On the candidate's request, preceding graduation, the university issues a certificate about the results of the final doctoral exam, the public discussion and the decision made by the Doctoral and Habilitation Board of the Integrated University signed by the chair.

Postgraduate studies at the School of Medicine University of Rijeka

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The postgraduate studies at the School of Medicine, University of Rijeka, were foully reformed 1995/1996. Since than, two postgraduate studies are organized, one with broadly sheared subjects in Biomedicine, and the other, with the courses specialized in Clinical Immunology. Continuous improvement in the courses quality, skills development and research work, resulted in the reform of the obligatory course 2001/2002. 2003/2004. European credit transfer system (ECTS) was applied, although a few other changes are necessary to fully organize the program in the accordance with the Bologna declaration.

The required grade average for the enrolment is 3.5, (at the 1 to 5 scale) and the graduated students of different fields in biomedicine are eligible for the enrolment, as well as those with M.D. degree and degree in dentistry. The programs are organized as a combination of the courses and the research for the thesis.

The postgraduate studies are organized trough two years lectures and experimental work for the master thesis. The Biomedicine has the obligatory first semester with four modules, with total 30 ECTS. The modules are research methodology, molecular biology, signaling and protein transport and the obligatory seminar presented before the fellow students and committee. According their research interest and the agreement with the mentor, the students are allowed to choose between the 71 elective courses and 5 electives for the dentistry graduated students. Besides, the credits can be granted for the published papers and the presentation of the master thesis proposal. In that manner the students are able to elect the courses according their research interest. At the end of the first year the best students are able to apply for the Ph.D. program and with the permission of the postgraduate committee, students can continue third year study and preparation of the PhD thesis. It is costume so far to defend the master thesis and than prepare the Ph.D. thesis under the supervision of the mentor.

The proposal of the thesis is judged by three or more university professors, expert in the field, but not mentor. For the Ph.D. thesis proposal, the professor from the other University is always included. The thesis is defended publicly. Faculty members are giving the approval, after the same or the other expert committee gave the positive opinion. The additional request is to publish a paper in the CC indexed publication on the same subject as the thesis. Ph.D. degree is the prerequisite for the academic career.

According the new low, School of Medicine is organizing the new postgraduate doctoral study. The main goal is to educate research group leaders and university teachers, able to work in research, developmental project and public or private institution with demands for highly educated employees. The study will be organize for the part-time and full-time students through 3 or 5 years and work load of 60 and 35- 40 ECTS per year, respectively. The students have to work in research group at the other Croatian or foreign institution at least for the 6 months (30 credits). The activities involving the research at the thesis will be granted with 90 credits. In that respect students will develop research and academic

skills, learn more about teamwork and different levels of communications. Up to now, those abilities were depending only on candidate talent and mentor's motivation. The postgraduate studies were organized through courses and examinations testing book knowledge in the field. With ongoing reform we are hopping to change the present situation. One of the main goals in organization of the postgraduate studies is also to improve the quality control system.

PhD studies in medicine and medical biology at the Medical Centre of Postgraduate Education Warsaw, Poland

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At the Medical Centre of Postgraduate Education there are organised eight PhD programmes in a form of four years postgraduate research study which ends with doctoral thesis. PhD programmes are carried out under supervision of Scientific Council and responsible Head of the Study Programme.

The research study offered to the candidates include rather narrow subjects in clinical and theoretical medicine and in medical biology.

List of disciplines of currently existing PhD programmes:

- Clinical biochemistry
- Gastroenterology (cancer molecular biology)
- General surgery
- Plastic surgery
- Obstetrics and gynaecology
- Neurosurgery
- Orthopaedic surgery
- Urology

The PhD programmes are organized as a research for doctoral thesis under a guidance of scientific supervisor and additionally some theoretical courses are included into a study schedule.

Course load:

I year of the study programme

- Seminar on research methodology in medicine - 4 hours
- Seminar on ethical problems concerning scientific investigations in medical sciences – 4 hours
- Participation in scientific conferences, lectures, individual training, recommended by scientific supervisor – 10 hours

II year of the study programme

- Seminar on research methodology in medicine - 4 hours
- Seminar on statistical methodology and assessment of research findings in medical sciences - 4 hours
- Seminar on data bases and graphical presentation of scientific results – 4 hours

- Course “Educational minimum” (how to prepare presentation, lectures, classes and other educational activities) – 12 hours
- Participation in scientific conferences, lectures, individual training, recommended by scientific supervisor – 10 hours
- Seminar on candidates’ own research project – 20 hours
- Lectures given on postgraduate courses for physicians – 10 hours

III year of the study programme

- Seminar on research methodology in medical diciplines - 4 hours
- Participation in scientific conferences, lectures, individual training, recommended by scientific supervisor – 10 hours
- Seminar on candidates’ own research project – 20 hours
- Exam on philosophy or history of medicine
- Lectures given on postgraduate courses for physicians – 10 hours

IV year of the study programme

- Participation in scientific conferences, lectures, individual training, recommended by scientific supervisor – 10 hours
- Seminar on candidates’ own research project – 20 hours
- Lectures given on postgraduate courses for physicians – 10 hours

Conditions for PhD programme enrolment:

- M.D. or M.Sc. degree is prerogative,
- Good command of English
- Entry assessment (a competition exam) of candidates performed by recruitment commission. A candidate may be granted maximum 100 credit points (including 50 credits for exam, 25 credits for prior achievements (research already involved in, scientific papers etc), 15 credits for high score at medical studies, 10 credits for additional competencies.

Each person participating in PhD study programme has scientific supervisor which has to be a holder of professor or associate professor degree. Under guidance of this professor candidate performs research in chosen field and then prepares the doctoral thesis which has to be an original contribution to this field. There are additional requirements which include publishing three scientific papers, passing examinations on philosophy or history of medicine, and passing doctoral exam on the knowledge of the field. Two or three professors are appointed by Scientific Council as a reviewers to the thesis prepared. If reviewers opinions are positive, the candidate is allowed to publicly defend his or her thesis. Than candidate is awarded by the Scientific Council the degree of doctor of medical sciences.

PhD program at Medical Faculty, University of Kragujevac, Serbia and Montenegro

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The PhD program exists at Medical Faculty, University of Kragujevac, from 1990 and on. This program covers whole field of Medicine, which means that there are no restrictions in terms of PhD topic choice. The PhD program is organized as research under the guidance of a supervisor (mentor) of the PhD thesis. A candidate can apply for enrollment in PhD program only if previously has acquired the title of Master of Medical Science, and if at least one paper was published *in extenso* in a medical journal, with the candidate being the first author. The Master of Science course also exists at Medical Faculty in Kragujevac, and is organized as combination of research for the Master thesis and organized courses, in total duration of two years.

In order to be enrolled for PhD program, a candidate has to be Master of *Medical* Science, which means that he (she) has previously completed Master course at Medical Faculty. However, for the Master of Medical Science course, a candidate could be enrolled with following first qualifications: Medical Doctor, Dentist, Graduated Pharmacist, Graduated Biologist and Graduate of Physical Culture. In order to be enrolled for Master course, a candidate has to have at least average grade of 8; a supervisor (mentor) is obligatory.

In order to apply for approval of his (her) thesis, a candidate has to present at least one paper published *in extenso* in an international medical journal (indexed in INDEX MEDICUS, CURRENT CONTENTS or EXCERPTA MEDICA). However, the final (published) version of PhD dissertation does not contain published papers in it.

In the evaluation of PhD dissertation at least one expert has to be from some other university; however, involvement of foreign experts is exceptionally rare.

The attainment of the PhD degree is a prerequisite for academic career; in order to attain a status of Docent (lecturer), one has to have PhD degree. There is no substitute for PhD in scientific or academic career.

From the school year 2004/2005, Medical Faculty, University of Kragujevac will organize new PhD program, which will be a combination of research for the thesis and organized courses. For the model we have used the PhD course at Zagreb Medical faculty, the leader in high medical education reform in the region. In our Statute[1], we have introduced the backbone of the new course, which will last 6 semesters, with the first methodological semester, second and third semesters devoted to courses on narrow scientific fields, and fourth, fifth and sixth semesters devoted to research. The prerequisite for enrollment to this PhD program will be an MD degree, and average grade of at least 9.

Reference

1. Statute of the Medical Faculty in Kragujevac. Valid since March the 1st, 2004.

PhD Programmes at Jessenius Faculty of Medicine, Comenius University in Martin, Slovakia

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The Jessenius Faculty of Medicine is one of the thirteen faculties of Comenius University (Bratislava) – the oldest (established in 1919) and largest university in Slovakia. The beginnings of medical education in Martin (town in a central part of Slovakia) date in 1962. In 1969, the Faculty of Medicine of Comenius University with the seat in Martin was officially established as the 2nd Faculty of Medicine at Comenius University. The Faculty was renamed in 1991 to Jessenius Faculty of Medicine in honour of an outstanding medieval physician and humanist, Jan Jessenius, the Rector of Charles University in Prague, whose ancestors had their roots in Turiec region, in the region where the town Martin is situated.

The Faculty provides courses in a **General Medicine** Programme (6 years) and in a **Nursing** Bachelor or Master Programme (3/5 years). Graduates in General Medicine are awarded by the degree MUDr. (Doctor of Medicine) and graduates in Nursing Bc. (Bachelor) or Mgr. (Magister) corresponding to the Master´s degree.

The Jessenius Faculty of Medicine provides also the **PhD study** – programme of the third level in the following fields:

- Biophysics
- Medical Biology
- Physiology and Pathological Physiology
- Medical Biochemistry
- Pharmacology
- Clinical Pharmacology
- Pathological Anatomy, Forensic Medicine
- Internal Medicine
- Surgery
- Pediatrics
- Obstetrics and Gynecology
- Neurology
- Otorhinolaryngology
- Clinical Toxicology
- Nursing

At present, there are more than 200 PhD students, approx. 40 in the full-time and 160 in the part-time form of the PhD study.

Faculty as a higher education institution provides the education within the framework of accredited study programmes according to the **Higher Education Law N.131/2002.**

The PhD study programme is aimed at acquisition of knowledge based on current scientific knowledge and particularly at the student´s own contribution to it as a result of a scientific research.

Before commencing **the admission procedure** for the PhD study, the Faculty offers topics for dissertations, which may be applied for the study. Each of the topics offered is assigned a supervisor. The conditions for PhD study admission are: *completed* study programme - the *second level* in the relevant field and abilities/deep interests for research work. The finished relevant fields of the study are General Medicine, Nursing, and in some fields also anothers like Bioengineering (for Biophysics), Biology, Biochemistry, Chemistry, Pharmacy, etc.

The **entrance examination** is taken before the examination board composed of representatives from the Faculty appointed by the Dean. The admission procedure for the PhD study always includes the entrance examination. The decision on admission to the study in a study programme carried out by the Faculty is made by the Dean.

The study is carried out on the basis of individual plan supervised by **a supervisor**. The function of a supervisor for the given field of study may be carried out by teachers of a higher education institution at which the PhD study takes place and by other experts after the approval by the Scientific Board of the Faculty.

The PhD study consists of the **study part** and the **research part**. The curriculum (study plan) is developed by the supervisor and presented to the **Board of specialists** for approval.

The study part of the PhD study consists especially of a course Methodology of scientific work, a language course and of individual study, the research part consists of individual or team research work of the student relating to the dissertation theme. The research part is directed by the supervisor.

Next part of the PhD study of the full-time form is *a teaching activity* to the extent of not more than 4 hours per week on the average per academic year.

Organisation of all levels and forms of higher education study including the PhD study will be based on a **credit system -** this rule becomes applicable from this academic year (2004/2005). The credit system will use accumulation and transfer of credits - numerical values assigned to units of the study programme expressing the amounts of work required for their completion. For the PhD student, the standard load is expressed by the number of sixty credits per academic year - the same amount as during the 1st and 2nd level study. Determination of the credits by activities and the total number of credits required for due completion of the study in its respective levels was made by Scientific Board of Faculty.

The PhD study in the given field of study is monitored and evaluated by the **Board of Specialists** established with regulations of the higher education institution. Higher education institution may create, on the basis of agreement, **Common Board of Specialists** (from different institutions) in individual fields of study.

The conditions of due **completion of PhD study** is passing *dissertation examination* that belongs among the State examinations and *the defence of a dissertation*. There is not an intermediate degree (Master of Science etc.) during attaining the PhD. However, after the successful examination, which is approximately in the middle of PhD study, the student´s scholarship (in full-time form of the study) is increased.

The examination as well as the defence of a dissertation is made before the examination board. The examination board consists of the representatives of the field from different

institutions. The PhD study is completed by the defence of a dissertation. Each dissertation has three reviewers – opponents and two of them must be from another institution as the student. Approximately in 20% are to the evaluation involved foreign experts (mainly from Czech Republic).

The graduates demonstrate the ability of and preparedness for **the independent scientific activity** in the field of research and development and they are awarded the academic degree of **„doctor" (philosophiae doctor** – abr. **PhD**. written after the name).

The **standard length** of PhD study programme in *the full-time form* is at least three and at most, mainly at faculties of medicine, four years. In *the part-time form* it is five years at most.

The attainment of the PhD degree is a prerequisite for acquisition of the scientific pedagogical degree **„Docent"** (Associated Professor) and **„Professor"** (including clinical disciplines).

PhD Programmes at "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

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The ***"Iuliu Hatieganu" University of Medicine and Pharmacy*** of Cluj-Napoca, Romania, is a medical higher education institution including 5 faculties (long-term higher education):

- Medicine
- Dentistry (Dental Medicine)
- Pharmacy
- Nursing
- Midwifery

and 10 colleges (short-term higher education):

- Nursing - in Cluj-Napoca (now, converting progressively into the faculty of nursing), Bistrita and Hunedoara
- Laboratory technicians (Cluj-Napoca)
- Kinesitherapy and Rehabilitation (Cluj-Napoca)
- Medical technicians for Medical Imaging (Cluj-Napoca)
- Dental technicians (Cluj-Napoca)
- Assistants in dental prophylaxis (Cluj-Napoca)
- Pharmacy technicians (in Cluj-Napoca and Hunedoara)

"Iuliu Hatieganu" University is the second largest medical university in Romania. The number of students enrolled in full attendance, also including the third cycle students (residents, master degree students, PhD students), is approximately 8700.

At the "Iuliu Hatieganu" University, PhD students can be awarded the title of doctor in the fundamental field of Medical Science, or in the fields of Medicine, Dentistry and Pharmacy, respectively.

In our school of medicine, the PhD program is structured as a combination of research in view of the thesis and scheduled courses.

In Romania, the organization of PhD programs is regulated by the Law no. 84/1995 (Education Act) and by the Government Decision no. 37/1999 (Decision on the organization and development of PhD programs). Consequently, in all the higher education institutions in Romania authorized to organize PhD programs, the structure of such programs is very similar.

At the "Iuliu Hatieganu" University, the structure of the PhD program is provided for in the "Rules on the organization of PhD programs and the award of the scientific title of doctor" which are part of the aforementioned general legal framework.

In order to enroll in the PhD programs, students must pass a doctoral admission test organized annually by every institution developing PhD programs. The number of places available within a PhD program is established every year by the Ministry of Education and Research.

The PhD program can be with "full attendance" – with a maximum duration of 4 years, and with "partial attendance" – with a maximum duration of 6 years, respectively.

The aforementioned duration includes the individual preparation stage (maximum 2 years for the full attendance PhD students and maximum 4 years for the partial attendance students), and the PhD elaboration stage (maximum 2 years for both categories of PhD students).

The individual preparation stage

At the "Iuliu Hatieganu" University, for both categories of PhD students, the program provides the obligation to pass 3 examinations and to deliver 3 scientific reports related to the topic of the thesis research (within 2 years for the full attendance students and within 4 years, respectively, for the partial attendance students).

The scientific adviser sets the specific field of research and the exam topics; the latter must directly related to the subject of the thesis research. Thus, for instance, the candidate preparing to elaborate a thesis approaching issues of pleural-pulmonary ultrasound may pass exams in the fields of pathologic anatomy, pneumology and imaging.

The scientific reports follow the exams and they usually concern the state-of-the-art on the topic researched (first report), and deliver the partial results of the research underlying the thesis (next two reports).

Moreover, both categories of PhD students must attend the course on the "Methodology of Scientific Research" (in case they haven't attended it as undergraduate students or after their graduation within a master program).

In addition:

- ***for the full attendance PhD students,*** *the program includes a combination of the actual research for the thesis,* under supervision by a PhD adviser, and *the obligation to attend post-graduate courses* (4 courses over the first two years of the program standing for the period of individual preparation);
- ***for the partial attendance PhD students****, the program involves the actual research for the thesis,* under supervision by a PhD adviser*, whereas the attendance of post-graduate courses is only recommended and not compulsory.*

For the full attendance students, the topics of the courses they must attend are generally related to their field of research. The courses are included in the PhD schedule with the agreement of the scientific adviser and of the university vice-president responsible for scientific research.

As a general rule, the post-graduate courses that PhD students shall attend are directly linked to their field of research, although this is not a strictly compulsory condition.

The course on the "Methodology of Scientific Research" (already attended by certain students as undergraduates) has a duration of 32 hours.

For the full attendance PhD students there are two post-graduate courses per year, scheduled over 2 years. The duration of other postgraduate courses included in the individual preparation stage in terms of hours is variable (10 – 214 hours/course), but, in average, there are 30-40 hours/course including seminaries and practical activities.

Thus, adding the course on the "Methodology of Scientific Research", there are *90-110 hours/year, and 180-220 hours per study program, respectively* (for the full attendance PhD students).

Remark:

After their admission to the PhD program, the full attendance PhD students sign an employment agreement with the university for 4 years, undertaking to perform a daily activity of 8 hours under their scientific adviser's guidance, enjoying all the rights and privileges of the other employees of the university.

Concerning the duration of studies, as already mentioned, the duration of PhD programs is regulated by law in Romania. Thus:

- the full attendance PhD program ***lasts for maximum 4 years***.
- the partial attendance PhD program ***lasts for maximum 6 years.***

At the "Iuliu Hatieganu" University are eligible for the PhD admission test *the graduates of long-term higher education* having taken their degree in the abovementioned fields (Medicine, Dentistry, Pharmacy) or the graduates in related fields.

At present, an intermediate degree (Master of Science) is not required before or during obtaining the PhD. For the PhD students having graduated from a master's program previously, some of the activities completed within the master's program (examinations, scientific reports) can be acknowledged as equivalent to various requirements of the PhD program by the Board of the University Senate and with the agreement of the scientific adviser.

In Romania, the duration of undergraduate studies is variable:

- 6 years for the Faculties of Medicine and Dentistry
- 5 years for the Faculty of Pharmacy
- 4 years for the Faculties of Nursing and Midwifery
- 4-6 years for the related fields (Biology, Physical Education, etc.)

Currently there is no credit system to assess potential prerequisites for obtaining the right to defend a PhD thesis. *However, as already mentioned, it is compulsory to attend a given number of courses, as well as to pass a set of exams and to deliver several scientific reports during the individual preparation stage.*

In order for a PhD thesis to be accepted for evaluation by the University Scientific Board, the author *must have published in extenso at least two scientific papers in the field of research of the thesis in outstanding national (international) reviews.*

The actual thesis is a volume with a well-defined structure: *table of contents, introduction, current knowledge in the field, personal contributions, references, appendices* (if applicable), *abstract.* It is compulsory to attach the *full versions of the published papers* to this volume.

The candidate is entitled to publicly defend the thesis only after it has been evaluated by the Scientific Board of the "Iuliu Hatieganu" University on the basis of criteria concerning the content quality and the elaboration of the thesis.

In our country, the jury set up for the public defense of the thesis gives appreciations and may award distinctions on the quality of the research/thesis.

The jury for the public defense of the PhD thesis is approved by the Board of the University Senate upon proposal by the scientific adviser and it includes:

- *a president* – the dean of the faculty, one of the vice-deans or a member of the University Senate;

- *the scientific adviser* of the PhD thesis;
- *3 official evaluators* (members) who can be professors, associated professors or senior scientific researchers experienced in the given field of research.
- only one member can be from the university where the thesis was elaborated (and the research conducted);
- at least 2 members must be from other universities in Romania.

Professors from foreign universities can be members of the jury for the public defense of the thesis. For the joint degrees, it is compulsory to have the scientific adviser representing the partner university as member of the jury.

For the award of appreciations ("*good*" or "*very good*") it is necessary to make proof of a scientific/ publication activity exceeding the minimum *requirements.*

For the award of distinctions ("cum laudae", "magna cum laudae" or "*summa cum laudae"*), it is necessary to have published research papers in prestigious international reviews and, possibly, monographs related to the PhD research topic.

The thesis is defended in a public meeting. The public debate consists of the presentation of the thesis and of the results obtained from the research, as well as of the presentation of the scientific reports by the scientific adviser and by the official evaluators.

The public defense may also involve questions and answers with the participation of the PhD student, of the members of the jury and of other experts attending the meeting.

In Romania, the PhD degree is a prerequisite for being eligible for the positions of lecturer, associated professor and professor.

New postgraduate university (PhD) study in Biomedicine and Health Sciences at Faculty of Medicine in Osijek – basic information

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Introduction

New postgraduate (PhD degree) study at our Faculty is organized according to the Higher Education and Science Activity Law (1) and University Statute (2), in line with the principles of the Bologna Declaration and the implementation of European Credit Transfer System (3).

The PhD degree study shall qualify the student for independent research work and other activities where high level of scientific insight is required. The study program, in accordance to the Low and University Statute, takes 3 years.

Admission to study

Admission to the postgraduate (PhD degree) study at our Faculty is open to candidate who has fulfilled the study in the following graduate programs: Human Medicine, Veterinary Medicine, Dentistry, Pharmacy and Biology. Required average grade is 3,50 and higher (in the grade system 1-5). Study supervisor is also required. To be admitted in study, each candidate should take and pass admission procedure, without entrance exam. Admission is based on overall assessment of candidate's qualifications for PhD degree study in the fields of Biomedicine and Health sciences. Criteria and credits for ranking qualified candidates are shown in Table 1.

Individual study plan

The content of the study (list of courses), a time schedule of the courses and individual research work on PhD Thesis are assigned to each student by an individual study plan. The student in consultation with the supervisor proposes the study plan. The study plan is submitted and presented to the PhD Study Board during a first semester of the PhD study. The approved individual study plan is mandatory for all involved persons and organizations taking part in the PhD study program. The change of individual study plan must be agreed upon in the same way as its original approved version. Once a year, the supervisor submits a written evaluation of the student progress in study program to the Faculty Council.

Study program

The study program is organized as a combination of both, courses (360 hours total) and full - time individual research work (1800 hours total) of student on PhD Thesis in duration of 3 semesters (in Croatia, 1 semester = 15 weeks). During three years of study, the student must accumulate a total of 180 credits.

Before submission of PhD Thesis, student must accumulate 60 course credits. 6 course hours are equivalent to 1,0 course credit. This part of study program consists of compulsory and elective component. The student in agreement with the supervisor selects elective component. All students must take and pass courses and guided tutorials in

compulsory module “Basis of scientific work” (25 course credits). The students obtain remaining course credits by taking and passing elective modules/courses organized by the Faculty of Medicine in Osijek or Medical Faculties of other Croatian Universities (up to 6,0 credits - equivalent to 36 course hour). In special cases, where suitable elective courses in the particular branch of Biomedicine and Health sciences are not available, an individual reading list may also be approved as the part of elective component (up to 4,0 course credits; 200 pages =1,0 credit). The list of modules is presented in Table 2.

In addition, before submission of PhD Thesis, student must collect 90 credits from individual research work on PhD Thesis. In this part of study, student focuses on solving a specific research topic in the fields of Biomedicine and Health sciences under guidance of the supervisor. The PhD Study Board must approve the topic. 20 hours of research work on PhD Thesis are equivalent to 1,0 credit. At the end of the research period, the supervisor submits a final report on whether the student research work on PhD Thesis is worthy of being awarded with 90 credits to the PhD Study Board.

Finally, before submission of PhD Thesis, student must collect another 30 credits by submitting evidence of their scientific activity, especially by publishing scientific article(s) during the study.

PhD (dissertation) thesis

Results obtained by the student during solving approved PhD Thesis topic are written in the form of a PhD (dissertation) Thesis. The PhD Thesis must be completed by the student alone, to document the student’s ability to inform in writing about the theoretical, experimental and practical results during the study. PhD Thesis is submitted in the Croatian language. Conditions for submitting a PhD Thesis are:

a) Fulfillment of all requirements in the organized study part and individual research part of study
b) Fulfillment of all study requirements regarding scientific activity
c) Publication of a considerable part of PhD Thesis, or eventually a confirmation of its submission for publication. Each student has to publish, at least, 1 original scientific article in Current Contents Journals.

PhD thesis evaluation and defense

To evaluate the dissertation, the Faculty appoints an expert adjudication committee (PhD Thesis Evaluation Committee) of at least three members. One of them must be appointed from outside of the Faculty.

In accordance to the Law and University Statute, postgraduate (PhD degree) study terminates by public defense of PhD thesis. PhD Thesis defense is a scientific dialogue between the student, the examiners (members of the expert adjudication committee, i.e. PhD Thesis Defense Committee), and other participants in the public defense. After successful defense of PhD Thesis, the student is awarded the PhD degree (dr. sc.) in accredited study fields of Biomedicine and Health sciences.

Table 1. Criteria and credits for ranking qualified candidates for admission to postgraduate (PhD) study at Faculty of Medicine in Osijek

CRITERIA	CREDITS
GRADUATE STUDY	
1. Average grade x 20*	70 to100 credits
2. Excellence in the graduate study **	10 credits
3. University J.J. Strossmayer in Osijek Rector Award or similar Award obtained on other Croatian Universities	10 credits
4. Final exam, grade 4,0 and higher	5 credits
PREVIOUS RESEARCH WORK	
5. Scientific article	12 to 60 credits per article, depending of the type, quality and number of authors
6. Scientific abstract	2 – 10 credits per abstract, depending of the type, quality and number of authors
7. Research in abroad (continuous stay in duration of, at least, 3 months)	10 credits
8. Postgraduate Master study, successful defense of Master of Science Thesis and Master of Science degree	30 credits
PROFESSIONAL	
9. Recognized medical specialty	20 credits
10. Professional postgraduate study (specialization courses)	10 credits

*Average grade 3,5 to 5,0 x 20 = 70 to 100 credits
**In accordance with University Statute

Table 2. The list of elective modules

MODULE	TOTAL COURSE HOURS (L + S + P)	TOTAL CREDITS
1. NEUROSCIENCE	162	27.5
2. TISSUES AND ORGAN SYSTEMS	149	25.5
3. CELLULAR AND MOLECULAR BIOMEDICINE	145	26.0
4. GENETICS, REPRODUCTION, DEVELOPMENT AND MATURATION	118	20.0
5. INFECTION AND IMMUNITY	126	22.0
6. EXPERIMENTAL AND CLINICAL ONCOLOGY	146	25.0
7. CLINICAL DIAGNOSTIC AND THERAPY	152	25.5
8. SURGERY, ANATOMY AND RELATED SCIENCES	140	23.5
9. SPECIAL TOPICS IN BIOMEDICINE AND HEALTH SCIENCES	131	22.0

L = lectures, S = seminars, P = practical

References:

1. Croatian Parliament. Higher Education and Science Activity Law. Official Gazette, (123) 2003.
2. University J. J. Strossmayer in Osijek. University Statute, 2004.
3. European Commission. European Credit Transfer System. ECTS User's Guide. 1998.

Draft consensus statement on the role of master's degrees in research training in medicine and health sciences

Draft was prepared during the Conference by Professor Charles Normand but did not reach consensus and could be reconsidered again

- In this statement we interpret master's programs as one or two year taught courses for people with medical or other master degrees
- Given the variation in what is described as a master's programs it is important to provide details about the purpose, content and level of such courses
- While it is recognized that there may be important other purposes for such courses such as in career and professional development, but this statement is focused on their role in research training.

Potential roles for master's degrees
Before starting a PhD program students should be able to demonstrate relevant scientific and contextual knowledge. Taught master's programme may provide a suitable vehicle to achieve this initial level of knowledge. In particular this may be useful for:

- Providing basic knowledge and skills in a new area of medicine or public health (for example in immunology, genomics, epidemiology or biostatistics)
- Bridge from professional education to academic education
- Specializing in specific areas from general background
- Opportunity to understand theoretical basis for practical and experiential knowledge.

A further advantage of formal master's type courses is that they offer recognition of learning for those who choose not to pursue studied to PhD level, and can allow students to make more informed decisions about their future research careers.

Sorbonne Joint Declaration - Joint declaration on harmonisation of the architecture of the European higher education system

by the four Ministers in charge for France, Germany, Italy and the United Kingdom
*Paris, the **Sorbonne**, May 25 1998*

The European process has very recently moved some extremely important steps ahead. Relevant as they are, they should not make one forget that Europe is not only that of the Euro, of the banks and the economy: it must be a Europe of knowledge as well. We must strengthen and build upon the intellectual, cultural, social and technical dimensions of our continent. These have to a large extent been shaped by its universities, which continue to play a pivotal role for their development.

Universities were born in Europe, some three-quarters of a millenium ago. Our four countries boast some of the oldest, who are celebrating important anniversaries around now, as the University of Paris is doing today. In those times, students and academics would freely circulate and rapidly disseminate knowledge throughout the continent. Nowadays, too many of our students still graduate without having had the benefit of a study period outside of national boundaries.

We are heading for a period of major change in education and working conditions, to a diversification of courses of professional careers with education and training throughout life becoming a clear obligation. We owe our students, and our society at large, a higher education system in which they are given the best opportunities to seek and find their own area of excellence.

An open European area for higher learning carries a wealth of positive perspectives, of course respecting our diversities, but requires on the other hand continuous efforts to remove barriers and to develop a framework for teaching and learning, which would enhance mobility and an ever closer cooperation.

The international recognition and attractive potential of our systems are directly related to their external and internal readabilities. A system, in which two main cycles, undergraduate and graduate, should be recognized for international comparison and equivalence, seems to emerge.

Much of the originality and flexibility in this system will be achieved through the use of credits (such as in the ECTS scheme) and semesters. This will allow for validation of these acquired credits for those who choose initial or continued education in different European universities and wish to be able to acquire degrees in due time throughout life. Indeed, students should be able to enter the academic world at any time in their professional life and from diverse backgrounds.

Undergraduates should have access to a diversity of programmes, including opportunities for multidisciplinary studies, development of a proficiency in languages and the ability to use new information technologies.

International recognition of the first cycle degree as an appropriate level of qualification is important for the success of this endeavour, in which we wish to make our higher education schemes clear to all.

In the graduate cycle there would be a choice between a shorter master's degree and a longer doctor’s degree, with possibilities to transfer from one to the other. In both graduate degrees, appropriate emphasis would be placed on research and autonomous work.

At both undergraduate and graduate level, students would be encouraged to spend at least one semester in universities outside their own country. At the same time, more teaching

and research staff should be working in European countries other than their own. The fast growing support of the European Union, for the mobility of students and teachers should be employed to the full.
Most countries, not only within Europe, have become fully conscious of the need to foster such evolution. The conferences of European rectors, University presidents, and groups of experts and academics in our respective countries have engaged in widespread thinking along these lines.
A convention, recognising higher education qualifications in the academic field within Europe, was agreed on last year in Lisbon. The convention set a number of basic requirements and acknowledged that individual countries could engage in an even more constructive scheme. Standing by these conclusions, one can build on them and go further. There is already much common ground for the mutual recognition of higher education degrees for professional purposes through the respective directives of the European Union. Our governments, nevertheless, continue to have a significant role to play to these ends, by encouraging ways in which acquired knowledge can be validated and respective degrees can be better recognised. We expect this to promote further inter-university agreements. Progressive harmonisation of the overall framework of our degrees and cycles can be achieved through strengthening of already existing experience, joint diplomas, pilot initiatives, and dialogue with all concerned.
We hereby commit ourselves to encouraging a common frame of reference, aimed at improving external recognition and facilitating student mobility as well as employability. The anniversary of the University of Paris, today here in the **Sorbonne**, offers us a solemn opportunity to engage in the endeavour to create a European area of higher education, where national identities and common interests can interact and strengthen each other for the benefit of Europe, of its students, and more generally of its citizens. We call on other Member States of the Union and other European countries to join us in this objective and on all European Universities to consolidate Europe's standing in the world through continuously improved and updated education for its citizens.

Claude ALLEGRE
Minister for National Education,
Research and Technology
(France)

Tessa BLACKSTONE
Minister for Higher Education
(United Kingdom)

Luigi BERLINGUER
Minister for Public Instruction,
University and Research
(Italy)

Jürgen RÜTTGERS
Minister for Education, Sciences,
Research and Technology
(Germany)

THE EUROPEAN HIGHER EDUCATION AREA
Joint Declaration of the European Ministers of Education Convened in Bologna on the 19th of June 1999

The European process, thanks to the extraordinary achievements of the last few years, has become an increasingly concrete and relevant reality for the Union and its citizens. Enlargement prospects together with deepening relations with other European countries, provide even wider dimensions to that reality. Meanwhile, we are witnessing a growing awareness in large parts of the political and academic world and in public opinion of the need to establish a more complete and far-reaching Europe, in particular building upon and strengthening its intellectual, cultural, social and scientific and technological dimensions.

A Europe of Knowledge is now widely recognised as an irreplaceable factor for social and human growth and as an indispensable component to consolidate and enrich the European citizenship, capable of giving its citizens the necessary competences to face the challenges of the new millennium, together with an awareness of shared values and belonging to a common social and cultural space.

The importance of education and educational co-operation in the development and strengthening of stable, peaceful and democratic societies is universally acknowledged as paramount, the more so in view of the situation in South East Europe.

The Sorbonne Declaration of 25th of May 1998, which was underpinned by these considerations, stressed the Universities' central role in developing European cultural dimensions. It emphasised the creation of the European area of higher education as a key way to promote citizens' mobility and employability and the Continent's overall development.

Several European countries have accepted the invitation to commit themselves to achieving the objectives set out in the declaration, by signing it or expressing their agreement in principle. The direction taken by several higher education reforms launched in the meantime in Europe has proved many Governments' determination to act.

European higher education institutions, for their part, have accepted the challenge and taken up a main role in constructing the European area of higher education, also in the wake of the fundamental principles laid down in the Bologna Magna Charta Universitatum of 1988. This is of the highest importance, given that Universities' independence and autonomy ensure that higher education and research systems continuously adapt to changing needs, society's demands and advances in scientific knowledge.

The course has been set in the right direction and with meaningful purpose. The achievement of greater compatibility and comparability of the systems of higher education nevertheless requires continual momentum in order to be fully accomplished. We need to support it through promoting concrete measures to achieve tangible forward steps. The 18th June meeting saw participation by authoritative experts and scholars from all our countries and provides us with very useful suggestions on the initiatives to be taken.

We must in particular look at the objective of increasing the international competitiveness of the European system of higher education. The vitality and efficiency of any civilisation can be measured by the appeal that its culture has for other countries. We need to ensure that the European higher education system acquires a world-wide degree of attraction equal to our extraordinary cultural and scientific traditions.

While affirming our support to the general principles laid down in the Sorbonne declaration, we engage in co-ordinating our policies to reach in the short term, and in any case within the first decade of the third millennium, the following objectives, which we consider to be of primary relevance in order to establish the European area of higher education and to promote the European system of higher education world-wide:
Adoption of a system of easily readable and comparable degrees, also through the implementation of the Diploma Supplement, in order to promote European citizens employability and the international competitiveness of the European higher education system
Adoption of a system essentially based on two main cycles, undergraduate and graduate. Access to the second cycle shall require successful completion of first cycle studies, lasting a minimum of three years. The degree awarded after the first cycle shall also be relevant to the European labour market as an appropriate level of qualification. The second cycle should lead to the master and/or doctorate degree as in many European countries.
Establishment of a system of credits - such as in the ECTS system - as a proper means of promoting the most widespread student mobility. Credits could also be acquired in non-higher education contexts, including lifelong learning, provided they are recognised by receiving Universities concerned.
Promotion of mobility by overcoming obstacles to the effective exercise of free movement with particular attention to:
- for students, access to study and training opportunities and to related services
- for teachers, researchers and administrative staff, recognition and valorisation of periods spent in a European context researching, teaching and training, without prejudicing their statutory rights.

- Promotion of European co-operation in quality assurance with a view to developing comparable criteria and methodologies
- Promotion of the necessary European dimensions in higher education, particularly with regards to curricular development, inter-institutional co-operation, mobility schemes and integrated programmes of study, training and research.

We hereby undertake to attain these objectives - within the framework of our institutional competences and taking full respect of the diversity of cultures, languages, national education systems and of University autonomy - to consolidate the European area of higher education. To that end, we will pursue the ways of intergovernmental co-operation, together with those of non governmental European organisations with competence on higher education. We expect Universities again to respond promptly and positively and to contribute actively to the success of our endeavour.
Convinced that the establishment of the European area of higher education requires constant support, supervision and adaptation to the continuously evolving needs, we decide to meet again within two years in order to assess the progress achieved and the new steps to be taken.

Caspar EINEM
Minister of Science and Transport
(Austria)

Gerard SCHMIT
Director General of French Community
Ministry for Higher Education and Research
(Belgium)

Jan ADE
Director General
Ministry of the Flemish Community
Department of Education
(Belgium)

Anna Mmia TOTOMANOVA
Vice Minister of Education and Science
(Bulgaria)

Eduard ZEMAN
Minister of Education, Youth and Sport
(Czech Republic)

Margrethe VESTAGER
Minister of Education
(Dermnark)

Tonis LUKAS
Minister of Education
(Estonia)

Maija RASK
Minister of Education and Science
(Finland)

Claude ALLEGRE
Minister of National Education,
Research and Technology
(France)

Wolf-Michael CATENHUSEN
Parliamentary State Secretary
Federal Ministry of Education and
Research
(Germany)

Ute ERDSIEK-RAVE
Minister of Education, Science, Research
And Culture of the Land
Scheswig-Holstein
(Permanent Conference of the Ministers
of Culture of the German Länders)

Gherassimos ARSENIS
Minister of Public Education and
Religious Affairs
(Greece)

Adam KISS
Deputy State Secretary for Higher
Education and Science
(Hungary)

Gudridur SIGURDARDOTTIR
Secretary General
Ministry of Education, Science and
Culture
(Iceland)

Pat DOWLING
Principal Officer
Ministry for Education and Science
(Ireland)

Ortensio ZECCHINO
Minister of University and Scientific
And Technological Research
(Italy)

Tatiana KOKEK
State Minister of Higher Education and
Science
(Latvia)

Kornelijus PLATELIS
Minister of Education and Science
(Lithuania)

Erna HENNICOT-SCHOEPGES
Minister of National Education and
Vocational Training
(Luxembourg)

Louis GALEA
Minister of Education
(Malta)

Loek HERMANS
Minister of Education, Culture and
Science
(the Netherlands)

Jon LILLETUN
Minister of Education, Research and
Church Affairs
(Norway)

Wilibald WINKLER
Under Secretary of State of National
Education
(Poland)

Eduardo Marτal GRILO
Minister of Education
(Portugal)

Andrei MARGA
Minister of National Education
(Romania)

Milan FTACNIK
Minister of Education
(Slovak Republic)

Pavel ZGAGA
State Secretary for Higher Education
(Slovenia)

D.Jorge FERNANDEZ DIAZ
Secretary of State of Education,
Universities,
Research and Development
(Spain)

Agneta BLADH
State Secretary for Education and Science
(Sweden)

Charles KLEIBER
State Secretary for Science and Research
(Swiss Confederation)

Baroness Tessa BLACKSTONE of Stoke Newington
Minister of State for Education and Employment
(United Kingdom)

The Declaration of the European Conference on Harmonisation of PhD Programmes in Medicine and Health Sciences

Convened in Zagreb on April 24 – 25, 2004

(hereafter referred to as the «Zagreb Declaration»)

After extensive discussion and exchange of ideas and experiences among participants coming from 25 universities and from 16 European countries having different schemes for obtaining PhD degree in medicine and health sciences regarding both form and the way of evaluation, ranging from monograph and evaluation within the same university to high standards of PhD thesis containing four or more papers published in internationally recognized peer reviewed journals, often with high impact factor and the inclusion of evaluators from abroad, the participants of the European Conference on Harmonisation of PhD Programmes in Medicine and Health Sciences (hereafter referred to as the «Zagreb Conference» or the «Conference») have agreed on the following:

Article 1

PhD programme is intended to enable individuals, after completing and defending their PhD thesis, to carry out independent, original and scientifically significant research and critically evaluate work done by others. To assure the above, the participants of the Conference reached consensus on the following:

Article 2

As in any kind of scientific peer review process, the reviewers of PhD thesis should be competent and independent from the PhD thesis, candidates and supervisor. In this sense, the participants of the Conference would like to encourage the inclusion of reviewers from other universities and countries.

Article 3

The Conference agreed that a suitable benchmark to describe the necessary achievement is a PhD thesis based on original *in extenso* publications in internationally recognized scientific-medical journals. The independent contribution of the candidate should be clearly demonstrated (for example the candidate being the first author). The Conference recommends that the minimal requirement for the PhD thesis in medicine and health sciences should be the equivalent of at least three *in extenso* papers published in internationally recognized journals. In addition to the papers presented the candidate should provide a full review of the literature relevant to the themes in the papers, and, where necessary, a fuller account of the research methods and results. Where the PhD research is presented in other formats, such as the single monograph, reviewers should demonstrate that the contribution is at least equivalent to this benchmark, and should encourage inclusion of publication from the research.

Article 4

While the main demonstration of the achievement should be the thesis and published papers, PhD programmes should include theoretical basis as well as development of technical research skills in taught courses where appropriate.

Article 5

The Conference recommends to all universities to make their PhD programmes publicly available to students, lecturers and tutors from other universities and countries. All medical schools are recommended to create their web pages and written material about PhD programmes in English and to make their programs open to candidates from other universities and countries. The Conference encourages the development of joint PhD programmes in order to enhance the link between the European Higher Education Area and the European Research Area with a view to ensure higher quality and enable joint degree recognition.

Article 6

The development of well-designed and high-quality PhD programmes requires substantial support by medical faculties, universities, national governments, the European Commission or private sponsors and other institutions in order to engage the best medical students into scientific research so as not to lose our future in medicine and public health.

The Zagreb Declaration was adopted unanimously on April 25, 2004 at 2:00 P.M. by:

Conference participants

Representatives of international and Croatian professional/academic associations and governmental institutions (in alphabetical order)

Association of Medical Education in Europe (AMEE)
Prof. Jadwiga Mirecka, MD, PhD, Executive Committee member

Association of Medical Schools in Europe (AMSE)
Prof. Petr Hach, MD, PhD, President

Association of Schools of Public Health in the European Region (ASPHER)
Prof. Charles Normand, BA, DPhil, FFPHM, President

Croatian Medical Association
Prof. Ivan Bakran, MD, PhD, Vice-President

European Medical Association (EMA)
Vincenzo Costigliola, MD, President

German Academic Exchange Service (DAAD), South-Eastern European Cooperation, Curriculum Reform in Medicine
Prof. Hans Joachim Seitz, MD,

Ministry of Health and Social Welfare of the Republic of Croatia
Prof. Velimir Božikov, MD, PhD, State Secretary for Health

Ministry of Science, Education and Sports of the Republic of Croatia
Prof. Pavo Barišić, PhD, Assistant Minister

University of Zagreb, Croatia
Prof. Aleksa Bjeliš, PhD, Vice-Rector
Prof. Helena Jasna Mencer, PhD, Rector

Representatives of medical schools and schools of public health (in alphabetical order by country name)

University of Mostar, Medical School, Mostar, Bosnia and Herzegovina

Prof. Filip Čulo, MD, PhD, Dean
Prof. Mirna Saraga-Babić, MD, PhD, Vice-Dean for Science

University of Sarajevo, Medical School, Sarajevo, Bosnia and Herzegovina

Prof. Jadranka Dizdarević, MD, PhD, Vice-Dean for Undergraduate Studies
Prof. Benjamin Vojniković, MD, PhD, Secretary General of the Medical School

University of Tuzla, Medical School, Tuzla, Bosnia and Herzegovina

Prof. Lejla Begić, MD, PhD, Vice-Dean for Science
Prof. Osman Sinanović, MD, PhD, PhD ProgrammeDirector
Prof. Husref Tahirović, MD, PhD, Dean

Higher Medical Institute of Pleven, Pleven, Bulgaria

Prof. Maria Simeonova, MD, PhD, Head of Medical Genetics Department

J. J. Strossmayer University, Medical School, Osijek, Croatia

Asst. Prof. Gordan Lauc, MD, PhD, Vice-Dean for Education
Asst. Professor Ante Tvrdeić, MD, PhD, Vice-Dean for Postgraduate Studies

University of Rijeka, Medical School, Rijeka, Croatia

Prof. Anđelka Radojčić Badovinac, MD, PhD, Vice-Dean for Postgraduate Studies
Prof. Dragica Bobinac, MD, PhD, Vice-Dean for Graduated Studies
Asst. Prof. Zlatko Trobonjača, MD, PhD
Prof. Luka Zaputović, MD, PhD, Vice-Dean for Science

University of Split, Medical School, Split, Croatia

Prof. Mladen Boban, MD, PhD, Dean
Prof. Željko Dujić, MD, PhD, Coordinator of Postgraduate Studies
Prof. Stjepan Gamulin, MD, PhD, Head of Postgraduate Studies Committee
Prof. Marijan Saraga, MD, PhD, Vice-Dean for Science

University of Zagreb, Medical School, Zagreb, Croatia

Prof. Nada Čikeš, MD, PhD, ECTS Coordinator
Prof. Marija Dominis, MD, PhD, Vice-Dean for Postgraduate Studies
Prof. Boris Labar, MD, PhD, Dean
Prof. Zdravko Lacković, MD, PhD, PhD Programme Director, Deputy Dean for Postgraduate Studies

University of Zagreb, Medical School, Andrija Štampar School of Public Health, Zagreb, Croatia

Prof. Jadranka Božikov, PhD, PhD Programme Deputy Director
Prof. Luka Kovačić, MD, PhD Deputy Director
Prof. Stjepan Orešković, PhD, Director

Charles University in Prague, First Faculty of Medicine, Prague, Czech Republic

Prof. MUDr. Stanislav Štípek, DrSc., Vice-Dean for Pedagogical Affairs

University of Helsinki, Faculty of Medicine, Finland

Prof. Seppo Meri, MD, PhD, Head, Committee for Postgraduate Scientific Studies in Medicine

University of Hamburg-Eppendorf, Germany

Prof. Dr. Hans Joachim Seitz, MD, Director of the Institute for Biochemistry and Molecular Biology III - Biochemical Endocrinology

University of Szeged, Albert Szent-Gyorgyi Medical and Pharmaceutical Centre, Faculty of General Medicine, Szeged, Hungary

Prof. László Vécsei, MD, PhD, DSc, Director of the Experimental and Clinical Neuroscience PhD Programme

University of Dublin, Trinity College, Dublin, Ireland

Prof. Charles Normand, BA, DPhil, FFPHM, Edward Kennedy Professor of Health Policy and Management

University of Pavia, Faculty of Medicine and Surgery, Pavia, Italy

Prof. Alberto Calligaro, Deputy Dean

University "St. Cyril and Methodius", Medical School, Skopje, R. Macedonia

Prof. Magdalena Žanteva-Naumoska, MD, PhD, Vice-Dean for Postgraduate Studies

Prof. Ljubica Georgijevski-Ismail, MD, PhD, FESC, Member of the Postgraduate Studies Committee

Norwegian University of Science and Technology (NTNU), Faculty of Medicine, Trondheim, Norway

Anne Britt Storeng, Senior Executive Officer, Research Administration

Prof. Alf O. Brubakk, Professor of Environmental Physiology

University of Oslo, Faculty of Medicine, Oslo, Norway

Sigrid Bergseng, Senior Executive Officer and Head of PhD Programme University Administration

Medical Centre of Postgraduate Education, Warsaw, Poland

Zbigniew Wegrzyn, MD, Department of Education and Quality Assessment

Jagellonian University, University Medical College, Kraków, Poland

Prof. Jadwiga Mirecka, MD, PhD, Head of the Department of Medical Education

Poznan University of Medical Sciences, Poznan, Poland

Prof. Maciej Zabel, PhD, Head of PhD Program

Iuliu Hatieganu University of Medicine and Pharmacy, Cluj-Napoca, Romania

Prof. Petru Adrian Mircea, Vice-President of the University

University of Niš, School of Medicine, Niš, Serbia and Montenegro

Prof. Goran Nikolić, MD, Vice-Dean

University of Novi Sad, Faculty of Medicine, Novi Sad, Serbia and Montenegro

Prof. Nevena Sečen, MD, PhD, Vice-Dean for Foreign Communication and Foreign Students

Comenius University, Jessenius Faculty of Medicine, Slovak Republic

Prof. Kamil Javorka, MD, DSc, Vice-Dean for PhD Study

University of Navarra, Medical School, Navarra, Spain

Prof. Alfonso Sánchez Ibarrola, MD, PhD, member of University PhD Committee

List of other invited lecturers not listed above (in alphabetical order):

Tina Dušek, MD, PhD student, University of Zagreb Medical School, Croatia

Dr. Guy Haug, Expert on the European Higher Education Area (Bologna Process), Bruxelles

Alena Kavalírová, graduated pharmacist, PhD student, Faculty of Pharmacy in Hradec Králové, Charles University in Prague

Dr. Cees C. Leibbrandt, MD, Former Secretary General (1999–2002) of the European Union of Medical Specialists (UEMS)

List of observers (in alphabetical order)

Sandra Belko, BA (English), PhD Programme Secretary, Medical School, University of Zagreb; **Kristina Fišter**, MD, Research Fellow, Andrija Štampar School of Public Health, Medical School, University of Zagreb; **Asst. Prof. Ileana Linčir**, MD, PhD, Vice-Dean for Postgraduate Education, University of Zagreb School of Stomatology; **Prof. Josip Madić**, DVM, PhD, Vice-Dean of Science and International Cooperation, Faculty of Veterinary Medicine, University of Zagreb; **Prof. Albert Marinculić**, DVM, PhD, Vice-Dean of Education, Faculty of Veterinary Medicine, University of Zagreb; **Anita Putrić**, BA (Political Science), Senior Executive Officer of PhD Programme Administration, Medical School, University of Zagreb; **Marita Mimica**, BA (psychologist), Head of Postgraduate Studies Department, Medical School, University of Split, **Miroslav Sabolek**, BA (economy), Head of PhD Programme Administration, Medical School, University of Zagreb; Assoc. Prof. **Velimir Sušić** DVM, PhD, ECTS Coordinator, Faculty of Veterinary Medicine, University of Zagreb; **Tea Vukušić Rukavina**, MD, Research Fellow, Andrija Štampar School of Public Health, Medical School, University of Zagreb.

Deklaration der europäischen Konferenz zur Angleichung des Doktoratsstudiums der medizinischen Wissenschaften und Gesundheitswissenschaften

In Zagreb, vom 24. bis 25. April 2004

(weiter im Text: Zagreber Deklaration)

Nach einer ausführlichen Erörterung und Austausch sowohl der Meinungen wie auch der Erfahrungen unter den Konferenzteilnehmern von 25 Hochschulen aus 16 europäischen Ländern, die in der Art und Weise wie der akademische Titel Doktor der Wissenschaften auf dem Gebiet der Medizin und der Gesundheitswissenschaften erreicht wird, wie die Dissertation zu gestallten ist und wie sie bewertet wird keine einheitliche Kriterien aufweisen. Die Form der Doktordissertation weist eine Vielfalt auf: von der Monographie, die innerhalb einer Universität bewertet wird bis zu sehr hohen Kriterien, die auf vier veröffentlichten Werke in international anerkannten Zeitschriften inklusive Rezension und starke Annahme innerhalb der Fachkreise und internationaler Besatzung der Bewertungsausschusses basieren. In Bezug darauf haben sich die Teilnehmer der europäischen Konferenz über Harmonisierung der Doktoratsstudien in der medizinischen Wissenschaften und der Gesundheitswissenschaften (weiter im Text: Zagreber Konferenz oder Konferenz) wie folgt geeinigt:

Artikel 1

Das Doktoratstudienprogramm ist auf Befähigung der einzelnen Anwerber, die ihre Doktordissertation fertig geschrieben und verteidigt haben ausgerichtet und soll ihnen eine unabhängige, originelle und wissenschaftlich signifikante Forschung und eine kritische Bewertung der Arbeit und der Ergebnisse der Kollegen ermöglichen. Um dies sicherzustellen, haben die Teilnehmer der Konferenz den folgenden Konsens erreicht:

Artikel 2

Wie in jedem anderen Verfahren einer wissenschaftlichen Rezension, müssen die Gutachter der Dissertation zuständig und unabhängig in Bezug auf das Thema, Doktoranden und Studienleiter sein. In diesem Sinne befürworten die Teilnehmer der Konferenz Einbeziehung der Mitglieder der Bewertungskommission von anderen Universitäten und aus anderen Ländern.

Artikel 3

Es wurde auf der Konferenz einvernehmlich festgestellt, dass als maßgebende Basis für die Qualität einer Doktordissertation die veröffentlichten Arbeiten *in extenso* in internationalen wissenschaftlichen Zeitschriften für Medizin gelten. Ein Dissertation hat unabhängigen Beitrag des Kandidaten aufzuweisen (z.B. der Kandidat als Hauptautor). Im Sinne der Empfehlung der Konferenz soll die Mindestvoraussetzung für eine

Doktoratdissertation in medizinischen Wissenschaften und Gesundheitswissenschaften mindestens drei in international anerkannten Zeitschriften veröffentlichte Arbeiten *in extenso* sein. Zusätzlich zu den vorgelegten Arbeiten hat der Doktorand ein ausführliches Literaturverzeichnis einschlägiger Werke und Literatur beizulegen und wenn erforderlich, einen ausführlichen Bericht über Forschungsmethoden und -ergebnissen. Fall die Doktoratdissertation in anderweitigen Formen vorgelegt wird, zum Beispiel in Form einer Monographie, haben die Rezensenten nachzuweisen, dass dieser Beitrag mindestens die Mindestvoraussetzung erfüllt und sie sollen die Einbeziehung der veröffentlichten Arbeiten aus dieser Forschung fördern.

Artikel 4

Da als Hauptnachweis des wissenschaftlichen Beitrages die Dissertation und die veröffentlichten Arbeiten gelten, ist es unentbehrlich, dass das Doktoratsstudium auch die Lehre in entsprechenden Fachkollegien als theoretische Basis umfasst wie auch die Lehre von technischen Fertigkeiten, die für Forschungsarbeit von Nöten sind.

Artikel 5

Die Konferenz empfiehlt allen Universitäten, ihre Doktoratsprogramme den Studenten, Professoren und Mentoren auf anderen Universitäten und in andren Ländern öffentlich zugänglich zu machen. Es wird allen Hochschulen für Medizin geraten, ihre eigene Webseite zum Thema Doktoratstudium zu gestalten und ein Studienhandbuch in Englischer Sprache drucken zu lassen und auf diese Art und Weise die Zulassungsmöglichkeit für Doktoratsprogramme auf ihren Hochschulen für Doktoranden aus anderen Ländern anzubieten. Die Konferenz befürwortet die Entwicklung von gemeinsamen Doktoratsprogrammen um die Verbindungen im Bereich Hochschulbildung und Forschung in Europa zwecks Qualitätssicherung und gegenseitiger Anerkennung der Zeugnissen bzw. der Diplomen zu stärken.

Artikel 6

Die Entwicklung gut gestalteten und qualitativ einwandfreien Doktoratstudien benötigt eine starke Unterstützung der medizinischen Fakultäten, der Universitäten, der Nationalregierungen, der Europäischen Kommission und privater Schirmherrschaft wie auch anderer Institutionen, damit sich an der wissenschaftlichen Forschungen die besten Medizinstudenten beteiligen können und damit der Zukunft der Medizin und der Gesundheitswissenschaften gerecht zu werden

Die Zagreber Deklaration wurde am 25. April 2004 um 14.00 einvernehmlich durch die nachfolgenden Teilnehmer angenommen:

Konferenzteilnehmer

Vertreter internationaler und kroatischer Fachvereine und akademischer Vereine und Behörden (alphabetisch aufgezählt)

Association of Medical Education in Europe (AMEE)(Europäisches Verein für medizinische Bildung)

Prof. Dr. Dr. med. Jadwiga Mirecka, Mitglied des Lenkungsausschusses

Association of Medical Schools in Europe (AMSE) (Europäisches Verein der Hochschulen für Medizin)

Prof. Dr. Dr. med. Petr Hach, Präsident

Association of Schools of Public Health in the European Region (ASPHER) (Verein der Hochschulen für Gesundheitswissenschaften in der europäischen Region)

Prof. Dr. Phil. Charles Normand, Präsident

Kroatische Ärztekammer

Prof. Dr. Dr. med. Ivan Bakran, Vize-Präsident

Europäische Ärztekammer (EMA)

Dr. med. Vincenzo Costigliola, Präsident

Deutscher Akademischer Austauschdienst (DAAD), Kooperation für Südöstliches Europa, Curriculumreform und Medizin

Prof. Dr. med. Hans Joachim Seitz

Ministerium für Gesundheit und öffentliche Wohlfahrt der Republik Kroatien

Prof. Dr. Dr. med. Velimir Božikov, Staatssekretär für Gesundheitswesen

Ministerium für Wissenschaft, Bildung und Sport der Republik Kroatien

Prof. Dr. Pavo Barišić, Assistent des Ministers

Universität Zagreb, Kroatien

Prof. Dr. Aleksa Bjeliš, Vize-Rektor
Prof. Dr. Helena Jasna Mencer, Rektorin

Vertreter der Hochschulen für Medizin und Gesundhwitswissenschaften (alphabetisch nach Ländernamen aufgezählt)

Universität Mostar, Hochschule für Medizin, Mostar, Bosnien and Herzegowina

Prof. Dr. Dr. med. Filip Čulo, Dekan
Prof. Dr. Dr. med. Mirna Saraga-Babić, Prodekan für Wissenschaft

Universität Sarajevo, Hochschule für Medizin, Sarajevo, Bosnien and Herzegowina

Prof. Dr. Dr. med. Jadranka Dizdarević, Prodekan für Vordiplomstudium
Prof. Dr. Dr. med. Benjamin Vojniković, Generalsekretär der Hochschule für Medizin

Universität Tuzla, Hochschule für Medizin, Tuzla, Bosnien and Herzegowina

Prof. Dr. Dr. med. Lejla Begić, Prodekan für Wissenschaft
Prof. Dr. Dr. med. Osman Sinanović, Leiter des Doktoratsstudiums
Prof. Dr. Dr. med. Husref Tahirović, Dekan

Höheres medizinisches Institut zu Pleven, Pleven, Bulgaria

Prof. Dr. Dr. med. Maria Simeonova, Leiterin der Abteilung für medizinische Genetik

J. J. Strossmayer Universität, Hochschule für Medizin, Osijek, Kroatien

Dozent Dr. Dr. med. Gordan Lauc, Studiendekan
Dozent Dr. Dr. med. Ante Tvrdeić, Prodekan für Nachdiplomstudium

Universität of Rijeka, Hochschule für Medizin, Rijeka, Kroatien

Prof. Dr. Dr. med. Anđelka Radojčić Badovinac, Prodekan für Nachdiplomstudien
Prof. Dr. Dr. med. Dragica Bobinac, Prodekan für Hauptstudium
Dozent Dr. Dr. med. latko Trobonjača,
Prof. Dr. Dr. med. Luka Zaputović, Prodekan für Wissenschaft

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Prof. Dr. Dr. med. Mladen Boban, Dekan
Prof. Dr. Dr. med. Željko Dujić, Koordinator für Nachdiplomstudium
Prof. Dr. Dr. med. Stjepan Gamulin, Vorsitzender des Ausschusses für Nachdiplomstudium
Prof. Dr. Dr. med. Marijan Saraga, Prodekan

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Prof. Dr. Dr. med. Nada Čikeš, ECTS Koordinator
Prof. Dr. Dr. med. Marija Dominis, Prodekan für Nachdiplomstudium
Prof. Dr. Dr. med. Boris Labar, Dekan

Prof. Dr. Dr. med. Zdravko Lacković, Leiter des Doktoratsstudiums, Stellvertretender Dekan für Nachdiplomstudium

Universität Zagreb, Hochschule für Medizin, Andrija Štampar Institut für Gesundheitswesen , Zagreb, Kroatien

Prof. Dr. Jadranka Božikov, Stellvertretender Leiter des Doktoratsstudiums
Prof. Dr. Dr. med. Luka Kovačić, stellvertretender Dekan
Prof. Dr. Stjepan Orešković, Vorstand
Charles Universität in Prague, Erste Hochschule für Medizin, Prague, Tschechien
Prof. Dr. Sc. Stanislav Štípek, Prodekan für pädagogische Anglegenheiten

Universität zu Helsinki, Medizinische Fakultät, Finnland

Prof. Dr. Dr. med. Seppo Meri, Vorsitzender des Ausschusses für wissenschaftliches Nachdiplomstudium der Medizin

Universität Hamburg-Eppendorf, Deutschland

Prof. Dr. Dr. med. Hans Joachim Seitz, Vorstand des Institutes für Biochemie und molekulare Biologie III- biochemische Endokrinologie

Universität Szeged, Albert Szent-Gyorgyi Zentrum für Medizin und Pharmazie, Fakultät für allgemeine Medizin, Szeged, Ungarn

Prof. Dr. Dr. med. László Vécsei, Leiter des Doktoratsstudiums der Neurowissenschaft

Universität Dublin, Trinity College, Dublin, Ireland

Prof. Dr. Charles Normand, FFPHM, Edward Kennedy Professor Gesundheitspolitik und Management

Universität Pavia, Fakultät für Medizin und Chirurgie , Pavia, Italien

Prof. Alberto Calligaro, stellvertretender Dekan

Universität "St. Kyril und Methodius", Hochschule für Medizin, Skopje, R. Makedonien

Prof. Dr. Dr. med. Magdalena Žanteva-Naumoska, Prodekan für Nachdiplomstudium
Prof. Dr. Dr. med. Ljubica Georgijevski-Ismail, FESC, Mitglied des Ausschusses für Nachdiplomstudien

Norwegian Universität für Wissenschaft und Technologie (NTNU), Fakultät für Medizin, Trondheim, Norway

Anne Britt Storeng, leitende Beamtin , Forschungsverwaltung
Prof. Alf O. Brubakk, Professor für Umweltphysiologie

Universität Oslo, Hochschule für Medizin, Oslo, Norwegen

Sigrid Bergseng, Vorstandsmitglied und Verwaltungsleiterin des Programms für Doktoratsstudium

Medizinisches Zentrum für NAchdiplomstudium , Warschai, Polen

Dr. med. Zbigniew Wegrzyn, Abteilung für Bidlung und Evaluation/Qualitätsbewertung

Jagellonian Universität, Hochschule für Medizin, Kraków, Poland

Prof. Dr. Dr. med. Jadwiga Mirecka, Vorsteherin der Abteilung für medizinische Bildung

Poznan Universität für medizinische Wissenschaften, Poznan, Polen

Prof. Dr. Maciej Zabel, Leiter des Doktoratsstudiums

Iuliu Hatieganu Universität für Medizin und Pharmazie , Cluj-Napoc Rumänien

Prof. Petru Adrian Mircea, Vizepräsidentin der Universität

Universität Niš, Hochschule für Medizin, Niš, Serbien und Montenegro

Dr. med. Goran Nikolić, Prodekan

Universität Novi Sad, Fakultät für Medizin, Novi Sad, Serbien und Montenegro

Prof. Dr. Dr. med. Nevena Sečen, Prodekan für Auslandsverbindungen und ausländische Studenten

Comenius Universität, Jessenius Hochschule für Medizin, Slovak Republic

Prof. Dr. med. sci. Kamil Javorka, Prodekan für Doktoratsstudium

Universität of Navarra, Hochschule für Medizin, Navarra, Spain

Prof. Dr. Dr. med. Alfonso Sánchez Ibarrola, Mitglied des Universitätsausschusses für Doktoratsstudium

Aufzeichnung der Gastvorträger die nicht oben angeführt sind (in alphabetischer Reihenfolge):

Dr. med. Tina Dušek, Doktoratstudent, Universität Zagreb Hochschule für Medizin, Kroatien

Dr. Guy Haug, FAchkundgier /Expert für europäischen Hochschulraum (Bologna process), Bruxelles

Dipl. Pharmazeut Alena Kavalírová, Doktoratstudentin, Fakultät für Pharmazie Hradec Králové, Charles Universität in Prag

Dr. Dr. med. Cees C. Leibbrandt, ehemaliger Generalsekretär (1999–2002) des Europäischen Dachverbandes der Internisten (UEMS)

Verzeichnis der Betrachter (in der alphabetischen Reihenfolge)

Sandra Belko, Dipl-Anglist, Sekretariat des Doktoratsstudiums, Hochschule für Medizin, Universität Zagreb; Dr. med. **Kristina Fišter**, Forschungsstipendium, Andrija Štampar Institut für öffentliches Gesundheitswesen, Hochschule für Medizin, Universität Zagreb, **Dozent Dr. Dr. med. Ileana Linčir**, Prodekan für Nachdiplomweiterbildung, Universität Zagreb Hochschule für Zahnmedizin; **Prof. Dr. Dr. med. vet. Josip Madić**, Prodekan für Wissenschaft und internationale Zusammenarbeit Hochschule für Tiermedizin, Universität Zagreb; **Prof. Dr. Dr. med. Vet. Albert Marinculić**, Prodekan für Bildung, Hochschule für Tiermedizin, Universität Zagreb; Dipl. Psych. **Marita Mimica**, Leiterin der Abteilung für Nachdiplomstudium, Hochschule für Medizin, Universität of Split, Dipl. Pol. **Anita Putrić**, Leiterin des Doktorandendienstes, Hochschule für Medizin, Universität Zagreb; Dipl.-Kfm. **Miroslav Sabolek**, Vorstehen des Verwaltung des Doktoratsstudiums Hochschule für Medizin, Universität Zagreb; **Doz. Dr. med. vet. Velimir Sušić**, ECTS Koordinator, Hochschule für Veterinärmedizin, Universität Zagreb; Dr. med. **Tea Vukušić Rukavina**, Forschungsstipendium , Andrija Štampar Institut für öffentliches Gesundheitswesen, Hochschule für Medizin, Universität Zagreb.

Déclaration de la Conférence européenne sur l'harmonisation des études doctorales dans les domaines de la médecine et de la santé

Zagreb, 24-25 avril 2004

(dans le texte qui suit «La Déclaration de Zagreb»)

Durant la Conférence, les participants, venus de 25 universités et de 16 pays européens, ont discuté en profondeur et échangé leurs opinions et expériences sur les particularités des cursus menant à l'obtention du diplôme de docteur ès sciences dans les domaines de la médecine et de la santé. Les différences portent sur la forme même de la thèse de doctorat ainsi que sur la notation de celle-ci. En effet, les critères de notation varient de la monographie notée au sein même de l'université jusqu'à des exigences telles que la publication d'au minimum quatre articles dans des revues internationalement reconnues, ayant fait l'objet d'une relecture et ayant eu une répercussion significative, l'ensemble devant être noté par un jury international. Sur la base de ce constat, les participants à la Conférence européenne sur l'harmonisation des études doctorales dans les domaines de la médecine et de la santé (ci-dessous, «La Conférence de Zagreb» ou «la Conférence») ont convenu de ce qui suit :

Article 1

Les études doctorales ont pour but de permettre aux étudiants ayant terminé leur cursus et soutenu leur thèse de doctorat de mener de façon autonome des recherches originales et importantes sur le plan scientifique d'une part, et de pouvoir évaluer d'autres recherches de façon critique d'autre part. Pour atteindre cet objectif, les participants à la Conférence sont parvenus au consensus suivant :

Article 2

Comme dans toute démarche de relecture scientifique d'une thèse de doctorat, les relecteurs doivent être compétents et faire preuve de neutralité vis-à-vis du sujet de la thèse, du candidat et de son directeur de recherche. Ainsi, les participants à la Conférence sont en faveur de l'implication d'autres universités (y compris à l'étranger) dans les jurys de notation.

Article 3

La Conférence estime pertinent le critère selon lequel la thèse de doctorat doit correspondre aux travaux originaux publiés *in extenso* dans les revues médicales et scientifiques mondialement reconnues. L'apport personnel du doctorant doit apparaître clairement (par exemple, si le doctorant est l'auteur principal). La Conférence propose que le critère de base pour une thèse de doctorat dans les domaines de la médecine et de la santé consiste en un minimum de trois articles publiés *in extenso* dans des revues internationalement reconnues. Outre ces articles, le doctorant doit présenter une

bibliographie significative pour les sujets traités dans les articles et, si nécessaire, les méthodes utilisées et les résultats des recherches. Si la thèse de doctorat est d'un format différent, par exemple une monographie, les relecteurs devront démontrer que son apport satisfait au critère exigé, et favoriser l'inclusion de cette recherche dans des travaux publiés.

Article 4

Etant donné que l'apport scientifique doit s'appuyer sur la thèse et sur les travaux publiés, il est indispensable que les études doctorales comprennent un certain nombre de cours, de la base théorique au développement des techniques pratiques indispensables à la recherche.

Article 5

La Conférence recommande à toutes les universités de publier un programme de leurs études doctorales destiné aux étudiants, enseignants et directeurs de thèse, disponible également depuis l'étranger. Il est également conseillé à toutes les facultés de médecine de créer des pages Internet et des brochures sur leurs études doctorales, en anglais, et ainsi d'ouvrir leur cursus aux candidats d'autres universités et de l'étranger. La Conférence est en faveur du développement de programmes doctoraux communs de façon à renforcer les liens entre les secteurs européens de l'enseignement supérieur et de la recherche, et dans un souci d'une plus grande qualité et de la reconnaissance mutuelle des diplômes.

Article 6

Le développement d'études doctorales structurées et de haute qualité exige un ferme soutien des facultés de médecine, des universités, des gouvernements, de la Commission européenne, de sponsors privés et d'autres institutions, afin que les meilleurs étudiants en médecine soient impliqués dans la recherche scientifique et ainsi prennent part de façon optimale à l'avenir de la médecine et de la santé publique.

La Déclaration de Zagreb a été adoptée à l'unanimité le 25 avril 2004 à 14 heures.

Les participants à la Conférence

Les représentants des organisations internationales et des organisations scientifiques, universitaires et gouvernementales croates (dans l'ordre alphabétique et selon leur appellation anglaise)

Association d'enseignement médical en Europe (Association of Medical Education in Europe, AMEE)

Prof. Jadwiga Mirecka, docteur ès médecine, Membre du Comite exécutif

Association des écoles de médecine d'Europe (Association of Medical Schools in Europe, AMSE)

Prof. Petr Hach, docteur ès médecine, Président

Association des écoles de santé publique dans la région européenne (Association of Schools of Public Health in the European Region, ASPHER)

Prof. Charles Normand, diplômé ès lettres, docteur ès philosophie, FFPHM, Président

Association médicale croate, Croatian Medical Association

Prof. Ivan Bakran, docteur ès médecine, Vice-président

Association médicale d'Europe (European Medical Association, EMA)

Vincenzo Costigliola, docteur ès médecine, Président

Service allemand d'échange académique, Coopération en Europe du sud-est, reforme des curricula de médecine (German Academic Exchange Service, DAAD, South-Eastern European Cooperation, Curriculum Reform in Medicine)

Prof. Hans Joachim Seitz, docteur ès médecine

Ministère de la Santé et des Affaires sociales de la République de Croatie (Ministry of Health and Social Welfare of the Republic of Croatia)

Prof. Velimir Božikov, docteur ès médecine, Secrétaire d'Etat à la Santé

Ministère de la science, de l'éducation et du sport de la République de Croatie (Ministry of Science, Education and Sports of the Republic of Croatia)

Prof. Pavo Barišić, docteur, vice-ministre

Université de Zagreb, Croatie (University of Zagreb, Croatia)

Prof. Aleksa Bjeliš, docteur, vice-recteur
Prof. Helena Jasna Mencer, docteur, recteur

Représentants des facultés de médecine et des écoles de santé publique (dans l'ordre alphabétique, selon l'appellation anglaise des Etats)

Université de Mostar, Faculté de Médecine, Mostar, Bosnie-Herzégovine (University of Mostar, Medical School, Mostar, Bosnia and Herzegovina)

Prof. Filip Čulo, docteur ès médecine, doyen
Prof. Mirna Saraga-Babić, docteur ès médecine, vice doyen pour la Science

Université de Sarajevo, Faculté de Médecine, Sarajevo, Bosnie-Herzégovine (University of Sarajevo, Medical School, Sarajevo, Bosnia and Herzegovina)

Prof. Jadranka Dizdarević, docteur ès médecine, vice doyenne pour les études de premier et second cycles
Prof. Benjamin Vojniković, docteur ès médecine, Secrétaire Général de l'école de médecine

Université de Tuzla, Faculté de Médecine, Tuzla, Bosnie-Herzégovine (University of Tuzla, Medical School, Tuzla, Bosnia and Herzegovina)

Prof. Lejla Begić, docteur ès médecine, vice doyenne pour la science
Prof. Osman Sinanović, docteur ès médecine, directeur du programme de doctorat
Prof. Husref Tahirović, docteur ès médecine, doyen

Institut supérieur de médecine de Pleven, Pleven, Bulgarie (Higher Medical Institute of Pleven, Pleven, Bulgaria)

Prof. Maria Simeonova, docteur ès médecine, chef du département de médecine génétique

Faculté de médecine de l'université J.J. Strossmayer, Osijek, Croatie (J. J. Strossmayer University, Medical School, Osijek, Croatia)

Asst. Prof. Gordan Lauc, docteur ès médecine, vice doyen pour l'enseignement
Asst. Professor Ante Tvrdeić, docteur ès médecine, vice doyen pour les études de troisième cycle

Université de Rijeka, Faculté de Médecine, Rijeka, Croatie (University of Rijeka, Medical School, Rijeka, Croatia)

Prof. Anđelka Radojčić Badovinac, docteur ès médecine, vice doyen pour les études de troisième cycle
Prof. Dragica Bobinac, docteur ès médecine, vice doyenne pour les études de troisième cycle
Asst. Prof. Zlatko Trobonjača, docteur ès médecine
Prof. Luka Zaputović, docteur ès médecine, vice doyen pour la science

Université de Split, Faculté de Médecine, Split, Croatie (University of Split, Medical School, Split, Croatia)

Prof. Mladen Boban, docteur ès médecine, doyen
Prof. Željko Dujić, docteur ès médecine, coordinateur des études doctorales
Prof. Stjepan Gamulin, docteur ès médecine, président du Comite des études doctorales
Prof. Marijan Saraga, docteur ès médecine, vice doyen

Université de Zagreb, Faculté de médecine, Zagreb, Croatie (University of Zagreb, Medical School, Zagreb, Croatia)

Prof. Nada Čikeš, docteur ès médecine, coordinatrice ECTS
Prof. Marija Dominis, docteur ès médecine, vice doyen pour les études doctorales
Prof. Boris Labar, docteur ès médecine, doyen
Prof. Zdravko Lacković, docteur ès médecine, directeur des études doctorales, vice doyen pour les études de troisième cycle

Université de Zagreb, Faculté de Médecine, Ecole de santé publique Andrija Stampar, Zagreb, Croatie (University of Zagreb, Medical School, Andrija Štampar School of Public Health, Zagreb, Croatia)

Prof. Jadranka Božikov, docteur, directeur adjoint du programme de doctorat
Prof. Luka Kovačić, docteur ès médecine, directeur adjoint
Prof. Stjepan Orešković, docteur, directeur

Université Charles de Prague, Première Faculté de Médecine, Prague, République Tchèque

(Charles University in Prague, First Faculty of Medicine, Prague, Czech Republic)

Prof. Dr. Stanislav Štípek, docteur ès médecine et ès sciences, vice doyen pour la pédagogie

Université d'Helsinki, Faculté de Médecine, Finlande (University of Helsinki, Faculty of Medicine, Finland)

Prof. Seppo Meri, docteur ès médecine, président, département pour les études scientifiques doctorales en médecine

Université de Hambourg-Eppendorf, Allemagne (University of Hamburg-Eppendorf, Germany)

Prof. Hans Joachim Seitz, docteur ès médecine, **d**irecteur de l'Institut de Biochimie et Biologie moléculaire III – Endocrinologie biochimique

Université de Szeged, Centre médical et pharmaceutique Albert Szent-Gyorgyi, Faculté de médecine générale, Szeged, Hongrie (University of Szeged, Albert Szent-Gyorgyi Medical and Pharmaceutical Center, Faculty of General Medicine, Szeged, Hungary)

Prof. László Vécsei, docteur ès médecine et ès sciences, directeur du programme doctoral de science neurologique clinique et expérimentale

Université de Dublin, Ecole supérieure de la Trinité, Dublin, Irlande (University of Dublin, Trinity College, Dublin, Ireland)

Prof. Charles Normand, diplômé ès lettres, docteur ès philosophie, FFPHM, professeur «Edward Kennedy» pour la gestion et la politique de la santé

Université de Pavie, Faculté de médecine et de chirurgie, Pavie, Italie (University of Pavia, Faculty of Medicine and Surgery, Pavia, Italy)

Prof. Alberto Calligaro, vice doyen

Université Saints Cyrille et Méthode, Ecole de médecine, Skopje, ERY de Macédoine (University "St. Cyril and Methodius", Medical School, Skopje, FYROMacedonia)

Prof. Magdalena Žanteva-Naumoska, docteur ès médecine, vice doyen pour les études de troisième cycle
Prof. Ljubica Georgijevski-Ismail, docteur ès médecine, FESC, membre du comite d'études de troisième cycle

Université norvégienne de Science et Technologie NTNU, Faculté de médecine, Trondheim, Norvège (Norwegian University of Science and Technology (NTNU), Faculty of Medicine, Trondheim, Norway)

Anne Britt Storeng, Responsable du comité exécutif, Bureau de la recherche
Prof. Alf O. Brubakk, professeur de physiologie de l'environnement

Université d'Oslo, Faculté de médecine, Oslo, Norvège (University of Oslo, Faculty of Medicine, Oslo, Norway)

Sigrid Bergseng, Responsable du comité exécutif, chef du programme doctoral auprès du bureau de l'université

Centre de Médecine de l'Enseignement de Troisième Cycle, Varsovie, Pologne (Medical Centre of Postgraduate Education, Warsaw, Poland)

Zbigniew Wegrzyn, docteur ès médecine, Département de l'enseignement et du contrôle qualité

Jagellonian University, University Medical College, Kraków, Poland

Prof. Jadwiga Mirecka, docteur ès médecine, Chef du département de l'enseignement médical

Université de Sciences médicales de Poznan, Poznan, Pologne (Poznan University of Medical Sciences, Poznan, Poland)

Prof. Maciej Zabel, docteur, chef du programme doctoral

Université de médecine et de pharmacie Iuliu Hatieganu, Cluj-Napoca, Roumanie (Iuliu Hatieganu University of Medicine and Pharmacy, Cluj-Napoca, Romania)

Prof. Petru Adrian Mircea, vice-président de l'université

Université de Nis, Ecole de médecine, Nis, Serbie et Monténégro (University of Niš, School of Medicine, Niš, Serbia and Montenegro)

Goran Nikolić, docteur ès médecine, vice doyen

Université de Novi Sad, Faculté de médecine, Novi Sad, Serbie et Monténégro (University of Novi Sad, Faculty of Medicine, Novi Sad, Serbia and Montenegro)

Prof. Nevena Sečen, docteur ès médecine, vice doyenne pour la communication et les études internationales

Université Comenius, Faculté de médecine de Jesenius, République de Slovaquie (Comenius University, Jessenius Faculty of Medicine, Slovak Republic)

Prof. Kamil Javorka, docteur ès médecine, docteur ès sciences, vice doyen pour les études doctorales

Université de Navarre, Ecole de médecine, Navarre, Espagne (University of Navarra, Medical School, Navarra, Spain)

Prof. Alfonso Sánchez Ibarrola, docteur ès médecine, membre du comité universitaire d'études doctorales

Orateurs invités non mentionnés ci-dessus (par ordre alphabétique):

Tina Dušek, doctorante en médecine, université de Zagreb, école de médecine, Croatie (University of Zagreb Medical School, Croatia)

Dr. Guy Haug, expert dans le secteur des études supérieures européennes (Processus de Bologne), Bruxelles

Alena Kavalírová, pharmacienne diplômée, doctorante, faculté de pharmacie de l'université Charles de Prague (Faculty of Pharmacy in Hradec Králové, Charles University in Prague)

Dr. Cees C. Leibbrandt, docteur ès médecine, ancien secrétaire général (1999–2002) de l'Union européenne des spécialistes en médecine (European Union of Medical Specialists, UEMS)

Observateurs (par ordre alphabétique)

Sandra Belko, diplômée ès Lettres (anglais), secrétaire du programme doctoral, école de médecine, université de Zagreb; **Kristina Fišter**, docteur ès médecine, chercheur, Ecole de santé publique Andrija Štampar, école de médecine, université de Zagreb, **Prof. Asst. Ileana Linčir**, docteur ès médecine, vice doyen pour l'enseignement de troisième cycle, Université de Zagreb, école de stomatologie; **Prof. Josip Madić**, docteur vétérinaire, vice doyen pour la science et la coopération internationale, Faculté Vétérinaire, Université de Zagreb; **Prof. Albert Marinculić**, docteur vétérinaire, vice doyen pour l'éducation, faculté vétérinaire, Université de Zagreb; **Marita Mimica**, diplômée ès lettres (psychologie), chef du département des études doctorales, école de médecine, université de Split, Croatie ; **Anita Putrić**, diplômée ès lettres (sciences politiques), responsable du comite exécutif du bureau en charge du programme doctoral, école médicale, Université de Zagreb; **Miroslav Sabolek**, diplômée ès lettres (économie), chef du bureau en charge des études doctorales, école médicale, Université de Zagreb; **Prof. Assoc.Velimir Sušić**, docteur vétérinaire, ECTS coordinateur, Faculté vétérinaire, Université de Zagreb; **Tea Vukušić Rukavina**, docteur ès médecine, chercheur, Ecole de santé publique Andrija Štampar, école de médecine, Université de Zagreb

Declaración de la Conferencia europea sobre la armonización de los estudios de doctorado en medicina y sanidad

Convocada en Zagreb el 24 y 25 abril 2004

(en continuación "Declaración de Zagreb")

Después de una extensa discusión y de los cambios de ideas y experiencias entre los participantes provenientes de 25 universidades y de 16 países europeos entre los cuales hay diferenciones en la manera de obtener el grado de doctor en los campos de medicina y sanidad, en el aspecto de la tesis de doctorado, y también en el modo de suya valutación, que varian desde monografíe y son valutadas entre la misma universidad hasta aquellas basadas en los criterios muy altos para el doctorado que contiene por lo menos cuatro artículos científicos publicados en las rivistas internacionalmente reconocidas con la reseña y con altos factores de impacto, juntos con los evaluadores provenientes del extranjero, participantes de la Conferencia europea sobre la armonización de los estudios de doctorado en los campos de medicina y sanidad (en continuación: "Conferencia de Zagreb" o "Conferencia") se han puesto de acuerdo sobre el siguiente:

Artículo 1

El Progama de doctorado tiene la finalidad de hacer los individuales, después de terminar los estudios y presentar la tesis de doctorado, capaces de realizar las investigaciones originales y científicamente significativas, y de evaluar las investigaciones hechas por otros. Para asegurar lo encima, los participantes de la Conferencia han establecido el siguiente:

Artículo 2

Como en qualquier procedimiento de la reseña científica, los reseñantes de la tesis de doctorado tienen que ser competentes y independientes con respecto a la tesis de doctorado , al candidato y al director. En este sentido, los participantes de la Conferencia estimulan la inclusión de los miembros provenientes de otras universidades y otros países para la evaluación.

Artículo 3

La Conferencia ha concluso que una buena tesis de doctorado tiene que ser basada en los artículos científicos originales publicados *in extenso* en las rivistas científicas, internacionalmente reconocidas. La contribución independiente del doctorando debe ser evidente (por ejemplo siendo el doctorando el primer autor). La Conferencia recomiende tres artículos científicos publicados *in extenso* en rivistas internacionalmente reconocidas como requisito mínimo para la tesis de doctorado. Además de los artículos científicos, el candidato debe proveer una revision detallada de la literatura relevante a los asuntos tratados y, si es necesario, un informe más extenso de los métodos y risultados de la investigación. Si la tesis de doctorado fuese escribida en la forma diferente, por ejemplo

en forma de monografía, los reseñantes debrían demostrar que suya contribución es equivalente a los criterios fijados y debrían estimular la inclusión de los artículos de esta misma investigación ya publicados.

Artículo 4

Aunque la prueba más importante de la contribución científica debrían ser la tesis de doctorado y los artículos publicados, es necesario que los estudios de doctorado incluyen también las enseñanzas de las materias adecuadas, materias de base teórica y aquellas dedicadas al desarrollo de las abilidades técnicas necesarias en la investigación.

Artículo 5

La Conferencia recomiende a todas las universidades que hagan los programas de sus estudios públicamente disponibles a los estudiantes, profesores y a los mentores de otras universidades y países. Todas las escuelas médicas son recomendadas que crean sus sitos de internet y que publiquen material estampado sobre sus propios estudios en lengua inglés y de este modo abren sus estudios a los candidatos de otras universidades y países. La Conferencia sostiene el desarrollo de los programas de doctorado conjuntos para intensificar los enlaces entre los campos europeos de educación universitaria y aquello de campo de investigación científica al nivel europeo en orden de asegurar mejor calidad y el mutuo reconocimiento de los diplomas.

Articulo 6

El desarrollo de los estudios de doctorado bien organizados y de alta calidad exige un apoyo muy fuerte de las facultades de medicina, universidades, gobiernos nacionales, Comisión europea, patrocinadores privados y otras instituciones para que los mejores estudiantes de medicina tomen parte en la investigación científica y en orden de evitar negligencias en el futuro de medicina y sanidad pública.

La Declaración de Zagreb ha sido aprobada unánimamente el 25 abril 2004 a las 14,00 de:

Partecipantes en la Conferencia

Representantes de las organizaciones internacionales y croatas profesionales, acádemicas y instituciones gubernamentales (en orden alfabético según título inglés)

Asociación Europea de Educación Médica (Association of Medical Education in Europe-AMEE)
Prof.a Jadwiga Mirecka, Miembro de la Junta Directiva

Asociación Europea de las Facultades de Medicina (Association of Medical Schools in Europe-AMSE)
Prof. Petr Hach, presidente

Asociación de las Escuelas de Sanidad Pública en la Región Europea (ASPHER)
Prof. Charles Normand, presidente

Asociación Médica Croata
Prof. Ivan Bakran, vicepresidente

Aasociación Médica Europea (European Medical Association-EMA)
Dr. Vincenzo Costigliola, presidente

Servicio alemán del intercambio académico (DAAD), Cooperación de los países del sudeste europeo,

Reforma del currículo en medicina, (Curriculum reform in Medicine)
Prof. Hans Joachim Seitz

Ministerio de Sanidad y Asistencia Social de la República de Croacia

Prof. Velimir Božikov, secretario de país para la sanidad

Ministerio de Ciencia , Educación y Deporte de la República de Croacia

Prof. Pavo Barišić, viceministro

Universidad de Zagreb

Prof. Aleksa Bjeliš, vicerector
Prof.a Helena Jasna Mencer, rector

Representantes de las facultades de medicina y escuelas de sanidad pública (en orden alfabético según el nombre del país inglés)

Univesidad de Mostar, Facultad de Medicina, Mostar, Bosnia y Erzegovina

Prof. Filip Čulo, decano
Prof.a Mirna Saraga-Babić, vicedecano para la sanidad

Universidad de Sarajevo, Facultad de Medicina, Sarajevo, Bosnia y Erzegovina

Prof.a Jadranka Dizdarević, vicedecano para los estudios de licenciatura
Prof. Benjamin Vojniković, segretario de la facultad

Universidad de Tuzla, Facultad de Medicina, Tuzla, Bosnia y Erzegovina

Prof.a Lejla Begić, vicedecano para la ciencia
Prof. Osman Sinanović, director del programa de doctorado de investigación
Prof. Husref Tahirović, decano

Instituto Médico Superior, Pleven, Bulgaria

Prof.a Maria Simeonova, jefa del Departamento de génetica

Universidad J.J. Strossmayer, Facultad de Medicina, Osijek, Croacia

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Docente Ante Trvdeić, vicedecano para los cursos posgraduados

Universidad de Rijeka, Facultad de Medicina, Rijeka, Croacia

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Prof.a Dragica Bobinac, vicedecano para los estudios de licenciatura
Dr. Zlatko Trobonjača, docente
Prof. Luka Zaputović, vicedecano para la ciencia

Universidad de Split, Facultad de Medicina, Split, Croacia

Prof. Mladen Boban, decano
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Prof. Luka Kovačić, subdirector para los estudios de doctorado de investigación
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Prof. Alfonso Sánchez Ibarrola, miembo del Comité universitario para los estudios de doctorado

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Dr. Guy Haug, perito en el campo de la educación universitaria en Europa (el proceso de Bolonia), Bruselas

Alena Kavalírova, licenciada en farmacia, doctoranda, Facultad de Farmacia en Hradec Králové, Universidad de Carlos IV de Praga

Dr. Cees C. Leibbrandt, ex secretario general (1999-2002) de la Unión Europea de los especialistas médicos

Observadores (en orden alfabético)

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Декларация Европейской конференции по вопросам согласования критериев докторских работ в области медицины и здравоохранения

Состоявшейся в Загребе, 24.-25. апреля 2004 г.

(далее в тексте «Загребская декларация»)

После широкого обсуждения и обмена, идеями и опытом, среди участников Международной Конференции, приехавших из 25 университетов 16-ти европейских стран, имеющих различные методы оценки критериев получения докторской степени в области медицины и здравоохранения, как относительно формы, так и относительно пути оценки. В обоих случаях, как включение в монографию и оценка самого университета по высшим стандартам докторских работ, так и имеющих четыре или более публикации, изданные во всемирно известных журналах, имеющих высокий фактор воздействия из-за иностранного анализа. Учитывая все вышеприведенное, участники Европейской конференции по вопросам согласования критериев докторских работ в области медицины и здравоохранения (далее в тексте «Загребская конференция» или «Конференция») договорилась о следующем:

Статья 1

Цель процесса получения докторской степени – подготовить кандидатов, которые окончив свою научную работу и защитив ее, могут самостоятельно проводить новые и научно актуальные исследования, а так же критически оценивать исследования других. Для того, что бы осуществить этот процесс, участники конференции пришли к консенсусу по следующим вопросам:

Статья 2

Как и при любой другой процедуре научного отзыва, рецензент докторской диссертации должен быть компетентным и независимым по отношению к теме, кандидату защиты и научному руководителю. По этой причине, участники Конференции поддерживают идею включения в экзаменационную комиссию научных работников других университетов и стран.

Статья 3

Участники Конференции согласилась, что эталоном докторской диссертации, является диссертация, основанная на подлинных, (*in extenso*) то есть полностью основанных на оригинальных публикациях во всемирно признанных научно-медицинских журналах. Независимый вклад кандидата на защиту должен быть очевидным (например: то, что кандидат действительно является автором). Участники конференции рекомендуют взять за минимальный критерий для

докторской диссертации в области медицины и здравоохранения - эквивалент не менее трех публикаций (*in extenso*) статей напечатанных в журналах получивших международное признание. В дополнение к опубликованным статьям, кандидат должен приложить полный список литературы, которая использовалась для написания статьи, а так же, если возможно, дополнить описанием методов и результатов исследования. Если же докторская диссертация подготовлена в другой форме, например в виде монографии, рецензенты должны доказать то, что она удовлетворяет определенным критериям и поощрять публикации работ с такими исследованиями.

Статья 4

Так как главным доказательством научного вклада должна стать диссертация и опубликованные работы, в процесс защиты докторской диссертации необходимо включить соответствующие занятия, основанные на теории, а так же опыты, которые предназначены для развития технических умений необходимых в исследовании.

Статья 5

Участники конференции рекомендуют всем университетам создать программы процесса получения докторских степеней доступных студентам, преподавателям и научным руководителям в других университетах и в других странах. Всем медицинским институтам рекомендуется создавать свои ВЕБ сайты, издавать печатные материалы на английском языке о процедуре получения докторской степени. Таким образом открыть путь для дальнейшего обучения кандидатам из других университетов разных стран. Участники конференции поддерживают идею согласования критериев процесса получения докторской степени. Это в конечном итоге должно привести к укреплению связи европейского образования с европейской областью исследований. Обеспечить качественность и взаимозаменяемость дипломов различных государств.

Статья 6

Для развития хорошо осмысленных и высококачественных программ процесса защиты докторских диссертаций, требуется огромная поддержка медицинских институтов, университетов, национальных государственных учреждений, европейской Комиссии, а так же частных спонсоров и других учреждений. Благодаря этому в процесс научного исследования могут включиться лучшие студенты медицины, чтобы не потерять будущее медицины и народного здравоохранения.

Загребская декларация принята единогласно 25 апреля, 2004 года, в 14,00 часов

Участники Конференции

Представители международных организаций; хорватских, профессиональных и вузовских организаций и правительственных учреждений (в алфавитным порядком согласно английским названиям)

Сообщество Европейского Медицинского Образования (CEMO)

Проф. Др. наук, Ядвига Мирецка, др. мед. Член исполнительной комиссии

Сообщество Европейских Медицинских Вузов (CEMB)

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Европейское Областное Сообщество Вузов Народного Здравоохранения (EOCBHЗ)

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Хорватское Медицинское Содружество (ХМС)

Проф. Др. наук, Иван Бакран, др. мед. Заместитель президента

Европейское Медицинское Содружество (ЕМС)

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Проф. Др. наук, Ханс Йоким Заиц, др. мед.

Министерство Здравоохранения и Социального Обеспечения Республики Хорватии (МЗСОРХ)

Проф. Др. наук, Велемир Божиков, др. мед. Государственный секретарь здравоохранения

Министерство Науки, Образования и Спорта Республики Хорватии (МНОСРХ)

Проф. Др. наук, Паво Баришич, Помощник министра

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Проф. Др. наук, Алекса Бьелиш, Заместитель ректора
Проф. Др. наук, Елена Ясна Менцер, Ректор

Представители медицинских институтов и вузов народного здравоохранения (в алфавитном порядке в соответствии с английским названием страны)

Мостарский Университет, Медицинский институт, Мостар, Босния и Герцеговина)

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Проф. Др. наук, Мирна Сарага – Бабич, др. мед. Заместитель декана по науке

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Проф. Др. наук, Степан Гамулин, др. мед. Председатель комиссии по работе с аспирантами
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Збигнев Вегжин , др. мед. Отдел по образованию и развитию качества образования

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Университет Наварры, Медицинский институт, Наварра, Испания
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