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The Structure of Medical Curricula  
in Europe:  
Implementing Bologna – On the Way  
to a European Success Story?

International Conference hosted by the  
German Rectors' Conference (HRK)

10.-11. October 2008  
Berlin, Ludwig Erhard Haus

The German Rectors' Conference (HRK), in cooperation with the German Federal Ministry of Education and Research (BMBF), organised the international conference "The Structure of Medical Education in Europe: Implementing Bologna - On the way to a European success story?". The goal of the conference was to assess medical education within the Bologna Process in Europe and in Germany. In this context, several pertinent EU projects on curricular reform were examined. The reform of medical education, the introduction of new teaching and learning formats, the strengthening of competencies in educational research and the need for further development of respective state guidelines were issues of intensive debates in Germany. But the discussion took into consideration the experience in other European countries as well – especially since controversies have been triggered in the context of the greater Bologna Process.

Selected examples of "Good Practice" from Bologna countries also served to provide more transparency, increase awareness for necessary changes and promote the feasibility of two-cycle study programmes for Medicine in Germany and Europe. Target groups for the conference included teachers, academics, students, representatives of European medical associations, research organisations, national and regional health ministries, EU Commission, representatives of medical employers, health and care companies, and the interested public.

**Imprint:**

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## **The structure of Medical Curricula in Europe: Implementing Bologna - On the way to a European success story? - International Conference hosted by the German Rectors' Conference (HRK) - 10.-11. October 2008 - Berlin, Ludwig Erhard Haus**

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Dear Readers,

it was an utmost interesting debate that unfolded at a conference in Berlin two years ago. At the invitation of the German Rectors' Conference (HRK), numerous specialists from ministries, professional associations, schools of medicine and student bodies came together to discuss the opportunities and limits of the Bologna Reform in the area of medicine.

The outcome is encouraging: The initial opposition from many of those concerned toward the reforms has given way to curiosity; a curiosity for the possibilities that such changes could provide. For some time now, other countries have been demonstrating positive experiences with Bologna reforms in medicine. Moreover, such good practice examples also show that the reforms are not a means in and of themselves, but rather that both medical students as well as the discipline as a whole can benefit.

To be sure, there are open questions to be addressed before a transition can take place in Germany. They include the issue of how the curriculum can be tiered. There is an unambiguous consensus that a Bachelor Degree will not qualify graduates to become physicians. What would be the pattern of employability? Another unresolved issue concerns, for example, the question of how the German state examination can be tied into a newly structured medical education. Yet, the Swiss example illustrates that convincing solutions do exist, a prospect that is also now gaining in acceptance in Germany.

For the next reform steps, ultimately the federal and state governments in Germany will have to provide support. At this point in time, responsible ministries and professional associations are firmly opposed to introduce Bachelor-Master cycles into the medical curriculum. It is, though, incumbent upon them to open those degree programmes completed by state-examination such as medicine, but also to adjust employment and professional laws accordingly. Moreover, it will also be necessary to foster conditions for adequate study conditions, particularly for good student-teacher ratios as well as innovative learning formats. As a result, there would be incentives to carry out new, viable and suitable medical curricula. Of course, there is no "one-size-fits-all" solution to converting degree programmes. But if the proper legal and financial conditions are not met in Germany, the political actors will be putting a significant opportunity on the line: an opportunity to provide a whole generation of aspiring health professionals with the best possible education.

We encourage you to read further on and hope you will find the following pages informative and stimulating.

Sincerely,

The editors (Prof. Dr. Eckhart Hahn, Prof. Dr. Margret Wintermantel)

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## For a European Medical Education

*Margret Wintermantel*

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For medicine in higher education, the Bologna Process is more a chance than a risk. Even controversial issues such as the continuation of state examinations and tiered-structure of curricula can be resolved as experience in other countries demonstrates. Above all, the students can benefit from a reform of the medical degree programmes.

In higher education, the area of medicine represents an exception with regard to the Bologna reforms. A certain duration of study or a certain amount of minimum hours serves as the requirement for medical curricula to be recognized in other EU member states. As of now, the issue of comparable degrees would thus seem to be resolved; in practice however, there is and will continue to exist a number of serious obstacles concerning stays abroad for medical students as long as the European Credit Transfer System (ECTS) is not implemented extensively in this field.

Meanwhile, there is already a great deal of positive experience with the reforms. Several countries are at the forefront such as Switzerland and, among the EU-member states, Belgium, Denmark, the Netherlands, and Portugal, having already made the transfer to tiered medical curricula with Bachelor and Master Degrees, while Switzerland even maintained the state examination for medicine. In Germany, the initial results from the CHE higher education rankings show that students have an above-average positive view of the model degree programmes in medicine. Particularly the linkage between clinical and pre-clinical content, the practice-oriented elements, as well as the inclusion of patient contact and care in the curriculum have received considerable praise. Surely these model curricula do not constitute the only way to develop good teaching and education – but they can be used as instruments in medical education for improvements that the students highly value, as the examples illustrate.

Probably the most controversial issue in the context of converting degree programmes in medicine concerns the possible introduction of the tiered structure of Bachelor and Master. For precisely this reason, a large number of the German academic and professional associations oppose the Bologna Process. In the reform discussion, a main topic is professional qualification and “employability” of Bachelor degree-holders. From the perspective of the German Rectors' Conference (HRK), it is clear that they will not be qualified for the physician profession with a Bachelor degree alone. Most likely, a large majority of the Bachelor graduates would enter Master degree programmes, which could then qualify (eventually with the 'Staatsexamen') for the medical profession.

As of now, particularly in the field of medicine, there is still indeed a lack of suitable occupations commensurate to the model of a fully-fledged, professional qualifying Bachelor degree. But it would be utmost worthwhile for the Bachelor degree to serve as a transfer option – as an interface, upon which students could pursue subjects such as molecular medicine, epidemiology or health sciences, which are being increasingly established at higher education institutions.

Closely correlated to the issue of tiered degree programmes is the question of student mobility. Introducing the ECTS credit transfer system on a wide scale in the medical disciplines could help to resolve the remaining problems in cross-border recognition. Consequently, students could easily study or even transfer abroad, in contrast to the past and even current situation. That would constitute an important step to establishing a transparent and international study of medicine that prepares students for changing working conditions and international challenges in their future professions.

Moreover, it is also crucial to have clearly defined learning outcomes. What should the graduates of a medical degree programme know and be able to do? Which skills are they supposed to acquire? What should they learn and in which courses? The so-called “Qualification Framework” for higher education degrees can provide a helpful tool for answering these key questions. Of

course, a catalogue of learning outcomes would need to be developed within the discipline of medicine, at the higher education institutions and in exchange with professional practice. There has long been basic agreement on the need for a nationally applicable set of learning outcomes, through which certain skills and achievements are tied to the needs and demands of a professional physician. This sort of catalogue would prevent each faculty from developing its own reform curricula separately, a situation which would otherwise undermine any nation-wide comparability.

The issue of the first state examination, its sustainability, and role in the future still needs to be discussed. Until now, the exam is taken after the first two years of the uniform state curriculum – a rule that would probably make less sense, if the Bachelor is to be seen as the first academic degree after a period of three years of study. Nevertheless, most medical professionals in Germany support a comprehensive, cross-university exam like the state examination. In light of this, a tiered structure for the degree programmes as well as the examinations seems realistic – as does the integration of clinical phases already in the first study phase. The state examination could take place, for instance, following the Master phase.

In the long-term, the medical discipline should establish structures that are compatible with those of other subjects and the principles of the Bologna Declaration. Certainly, there could be subject-specific regulations, for example in issues like the duration of studies or access to the physician profession. Similar arrangements have been made and work in Germany, as the case of Theology illustrates: those (limited) study programmes in this subject that qualify for direct professional access to the pastoral care will not be tiered into Bachelor and Master in the short-term, and the reforms must take church rules and regulations in Germany into account. Nonetheless, all theological degree programmes are set to be modularised and to carry ECTS-points.

The discipline of medicine in higher education does not need to shy away from study reform, if the latter is properly understood. Clearly, Bologna can work here just as well. As the case may be, the structural discussion up to now about the sense and nonsense of a Bachelor of Medicine has been to almost no avail. From the outset, concrete objectives need to be defined as to what a Bachelor degree-holder should be capable of at the end of studies. Following on that, one can certainly develop an excellent degree programme. The Bologna Process means more a chance than a risk. Academics and professionals of medicine can only profit from a reform of this discipline rich with tradition – in taking on this endeavour, they receive the opportunity to readjust a great deal of that material.

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## **The Structure of Medical Curricula in Europe: Implementing Bologna - On the way to a European success story? - Poster Exhibition Panel - Work in Progress: The state-of-the-art in reforming medical education curricula in the common European Higher Education Area**

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Aim of the international conference was to investigate in how far medical curricula in Germany and the other European countries align themselves with the Bologna Recommendations. Particularly to experience whether and if so how such curricula already have been implemented. Beyond the programme with invited speakers, a call was launched for poster contributions to assure as much as possible input. As a special aspect in this call, the focus was strictly directed to content. For this purpose, a poster template was designed in which prescribed fields guided the authors to put their content in. As its result – thanks the discipline of the authors and the production of the posters by the conference organization itself at a central site – all posters showed an identical 'make-up'.

Twenty-eight posters represented 15 countries with one to six contributions each. The distribution of the posters over the country of origin of the author(s) and their relationship to the nationality of the 250 congress participants shows figure 1. Table 1 shows the poster contributions as overview.

For being able to evaluate whether the posters responded to the aims of the conference – i.e. how far 'Work in Progress' was documented – each congress participant received three little stickers with the task to place only one sticker on each poster's upper-right sticker-box if in their eyes the content of the poster involved was their favourite. The result of this 'evaluation' presents the first column of the table. To the first three favourites belonged a contribution from respectively the United Kingdom (Edinburgh), The Netherlands (Groningen), and Germany (Aachen).

Knowing that the Bologna Process intends not only the implementation of a three-cycle system of under- and postgraduate qualifications but also the realization of three main and 10 secondary aims all poster contents have been searched through in how far these aims have been regarded. Main aims are promotion of international mobility, international competitiveness, and international employability. Secondary aims are among others:

1. Adoption of a system of easily readable and comparable degrees,
2. Adoption of a 2-cycle system,
3. Adoption of a uniform credit system (ECTS),
4. Promotion of mobility by elimination of mobility obstructions,
5. Promotion of cooperation in quality assurance,
6. Promotion of the European dimension in higher education,
7. Life-long and life-accompanying learning,
8. Student's participation (in all decisions and initiatives at all levels),
9. Promotion of attraction of the European higher education area,
10. Interlinking the European higher education area with the European research area, particularly by implementation of the doctorate phase.

The result of the search shows at first glance a very diverse picture. However, this rapidly changes if the contributions are divided according to the criterion, whether secondary aim number 2 'adoption of a 2-cycle system' have been realized or its implementation will be strived for: 12 posters (43%) concern contributions that do not take care of this aspect. They concern but in very diverse composition occupation-political and education-political statements, mobility, quality

assurance etc. It is interesting to conclude that no poster is able to report on a Bologna-conform curriculum 'in action'. 'Bologna-conform' means per definitionem (refer, for example, to the application form of Tempus Joint Projects, control-rubric 'Bologna' a successful completion of an undergraduate, employment-enabling curriculum by Bachelor honours, as well as the completion of any postgraduate curriculum with a Master- or Doctorate predicate (PhD).

Only two posters (7%), from nursing sciences (Osijek/Croatia) and oral medicine/dentistry (Aachen/Germany), report about concepts, which correspond to this default unambiguously.

From the remaining 14 posters (50%) one location (Graz/Austria) must renounce the implementation of a Bologna-conform curriculum for legal reasons explicitly. The other 13 posters show their clear will to implement whatever conditioned Bologna-conform curriculum but also their wrong understanding about the level of qualification of an undergraduate study.

A typical example is the implemented, so-called consecutive curriculum in Groningen (The Netherlands) which on its half time offers Bachelor honours, after 'streaming through' Master honours. Particular remarkable, as representative of some more posters, is the contribution from Edinburgh (United Kingdom): It represents a traditional curriculum with BMBS honours after 5 years but proposes for the future a consecutive 2 x 3 years Bachelor/Master-curriculum to reach (a misunderstood) Bologna conformity.

**In summary:** Stimulation of international mobility – as one of the three main aims of the Bologna Process – is under limited awareness of the universities represented by the posters.

Only the contribution from Aachen (Germany) regards the conditions of international competitiveness and international employability (after 3-4 years). About the secondary aims, point of unambiguous effort is the design of an easy to understand curriculum with consideration of the European Credit Transfer System for almost half of the contributions, just as implementation of the promotion-/doctorate-phase. However, the lack of understanding about how to be aware of a three-cycle life-long learning oriented system of qualifications is evident. Here communication is essential.

#### Remark

All Abstracts or Extended Abstracts of the posters are presented in this issue in the order as listed in table 1. All posters as all verbal presentations are available via [http://www.hrk-bologna.de/bologna/de/home/1945\\_3442.php](http://www.hrk-bologna.de/bologna/de/home/1945_3442.php).

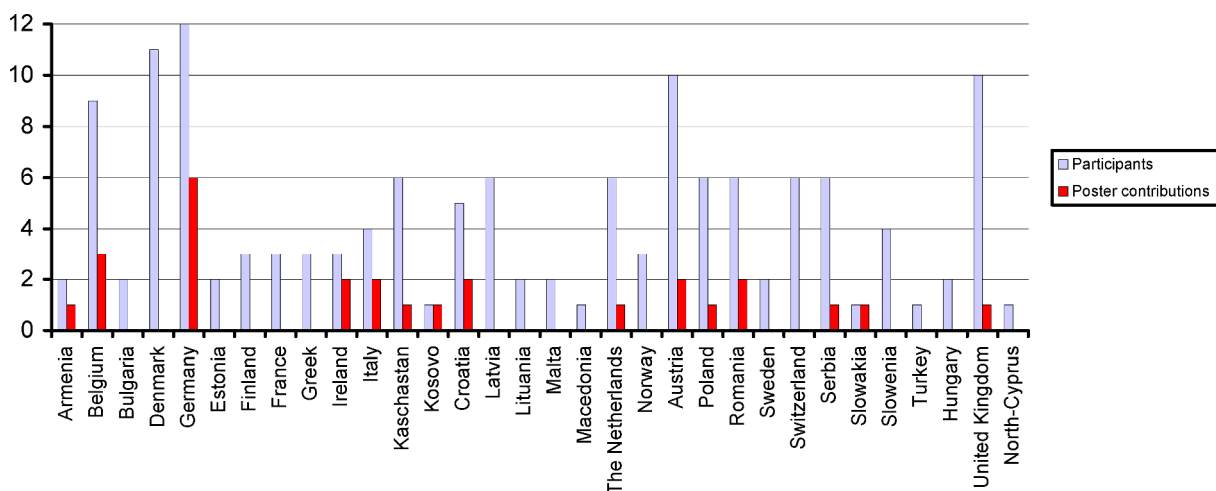


Figure 1: Distribution of the posters over the country of origin of the author(s) and their relationship to the nationality of the congress participants.



Favorite-Nr.	Poster contribution from ...	Poster titles	Bologna in action? Appraisal according to the 10 secondary aims										Bologna-conform cycles implemented?	Comments	
			1	2	3	4	5	6	7	8	9	10			
01	United Kingdom	Bologna and medical degrees – the importance of learning outcomes												yes	A traditional curriculum with BMBS honours after 5 years. However, proposal for a consecutive BaMa-curriculum (2 x 3 years) with Master honours
02	The Netherlands	G2010 - a competence based medical BaMa curriculum												yes	A consecutive BaMa-curriculum with Master honours after six years in action
03	Germany	A training and education continuum for dentistry: a Bologna oriented concept												yes	A Bologna-conform concept for an employment-enabling curriculum with Bachelor honours after three years
04	Kazakhstan	Kazakh Medical Academy: the leader of reform medical education system in Kazakhstan												yes	No exact information given; curriculum probably consecutive with Master honours after five/six years
04	United Kingdom	Symbiotic faculty development including an implementation of a two-tier medical education												yes	Probably a traditional curriculum with BMBS honours after five years. However, a consecutive BaMa-curriculum with Master honours in preparation
05	Austria	New diploma programme 'Human Medicine' at Medical University of Graz												no	For legal reasons not implemented. A new, discipline-integrated 6-year curriculum has been implemented
05	Germany	Bologna Process and scientifically qualified doctors – no conflict of interest												yes	A consecutive BaMa-curriculum with Master honours after six years is apparently strived for
06	Ireland	Implementing Bologna Standards in the medicine curriculum at the Royal College of Surgeons in Ireland												yes	A traditional curriculum in three phases with Bachelor honours after five years and proposal for an apparent consecutive BaMa-curriculum
07	Armenia	Suggestions for the implementation of a BaMa system at the Yerevan State Medical University												yes	A 5-year curriculum with Bachelor honours is strived for
07	Croatia	Bologna Process in medical education in Croatia												yes	A consecutive BaMa-Curriculum with Master honours after 5/6 years is apparently in the phase of implementation
07	Ireland	Modular structure at UCD Dublin School of Medicine and Medical Sciences												no	A traditional curriculum in four phases with MBCh Honours after five years
08	Austria	Life Science University Krems implementing Bologna in the medical education - a proposal												yes	A concept for a consecutive BaMa-curriculum with Master honours after six years
09	Belgium	European Medical Association: It's view on medical education in Europe												—	A positive occupation-political and education-political statement
09	Romania	TRANSMED national students exchange program												—	A national mobility program in action
10	Germany	Public health education integrating mobility: the MOCCA approach												—	A project to increase mobility
11	Italy	The international student exchange programs - Faculty of Medicine and Surgery, University of Florence -1- Teaching												—	An international mobility program in action
11	Italy	The international student exchange programs - Faculty of Medicine and Surgery, University of Florence -2- Mobility Secretariat												—	An international mobility program in action
11	Romania	International, national and institutional implementation of the Bologna Model at the Iuliu Haieganu University's Medical School - impact on medical education												—	A statement about the intention to regard Bologna's secondary aims
12	Germany	Germany's medicine on a legal way to Bologna: story but manageable												yes	For legal reasons not implemented. However, curriculum as consecutive BaMa-curriculum with Master honours after six years
13	Belgium	The 3 + 3 BaMa structure is inappropriate for undergraduate medical education												no	A consecutive BaMa-curriculum is criticized, a six year curriculum with Bachelor honours in favour
13	Croatia	Harmonization of two-cycle education of nurses in Croatia - opportunity for mobility development												yes	A Bologna-conform BaMa-curriculum (3 +2 years) for the nursing sciences is in preparation
13	Poland	Specificity of accreditation of medical schools												—	References to Bologna-conform accreditations
14	Germany	Cooperative medico-technical and administrative qualification of clinical management assistants												—	A project about curricula which relieves the medical profession supportingly
—	Belgium	Bologna Process needs academic career consulting in medical education												—	A concept for study advice
—	Germany	The German Association for Medical Education (GMA) and the Bologna-Process												—	A positive occupation-political and education-political statement
—	Kosovo	Initiatives of the University of Prishtina's Faculty of Medicine to cope with Bologna												—	A statement of intention for Bologna
—	Serbia	Update on the Bologna Process in medical education at the Faculty of Medicine, University of Nis: New curriculum and quality assurance												—	A project about quality assurance
—	Slovakia	The Faculty of Medicine Comenius University Bratislava, Slovak Republic												no	A traditional curriculum with MD honours after six years

Table 1: Results of the poster content evaluation by the participants of the conference in relation to secondary aims 1 till 10 of the Bologna Process (column 3 - 14) and their ranking (column 15) ('yes' = when cycled in Bachelor/Master, even if not strictly Bologna conform).

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04

## Bologna and medical degrees - the importance of learning outcomes

Allan Cumming

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**Introduction:** In the UK, over the last 15 years the General Medical Council (GMC) has driven medical schools in the direction of fully integrated 5-year undergraduate curricula, with strong early exposure to clinical learning and experience, and basic science revisited later in the curriculum. This is viewed as a 'quality standard' for accreditation.

The GMC, and other regulatory bodies in the United Kingdom and elsewhere, have rejected the application of the 'Bachelor/Master' model to medical degrees ([http://ec.europa.eu/education/policies/educ/bologna/bologna\\_en.html](http://ec.europa.eu/education/policies/educ/bologna/bologna_en.html)). A major objection is that it would inevitably lead to 'disintegration' of medical curricula, and a return to separate preclinical and clinical periods of study.

**The importance of learning outcomes:** An answer to these concerns lies in outcomes-based education (<http://tuning.unideusto.org/tuningeu>, <http://www.medicine2.com/>). Without specified

learning outcomes for the Bachelor and Master qualifications, medical schools could indeed create disintegrated, 'two-block' medical curricula. This model is illustrated in Figure 1.

However, if appropriate learning outcomes for the first and second cycles are agreed, then the opposite is true. For example, an agreed learning outcome for the first cycle degree might be 'ability to measure blood pressure and interpret the findings'. This would require the medical school to include teaching and assessment on blood pressure in the first three years of study. Similarly, a learning outcome for the second cycle might be 'ability to describe the anatomy of the pelvis'. This approach could also be applied to the Bologna 3<sup>rd</sup> cycle to emphasise the specifically medical nature of the degree. These models are illustrated in Figure 2.

**Conclusion:** There are many difficulties with the implementation of a Bologna 3-cycle model in medicine. However, concerns about loss of integrated teaching and learning can be overcome by strategic use of learning outcomes for each cycle. Such an approach may even be beneficial in relation to curriculum development [1], [2], [3].

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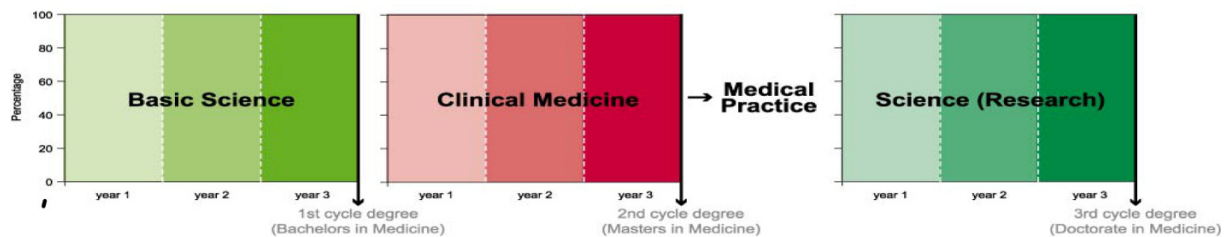
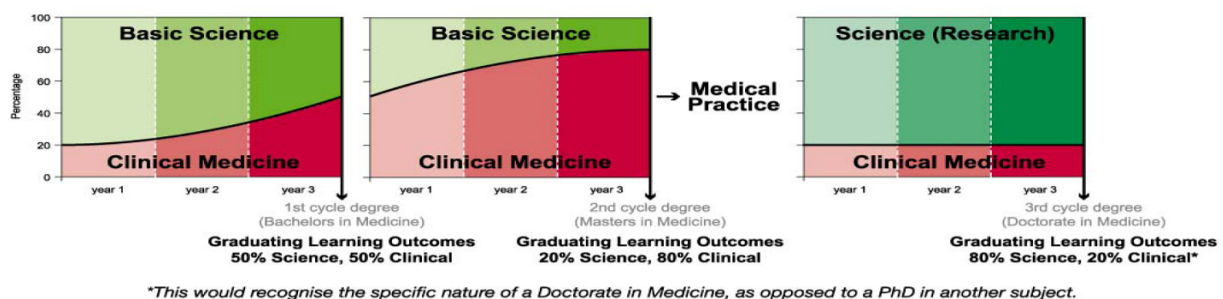


Figure 1: The Bologna Process and Integrated Medical Education: a possible model of the Bologna Process applied to Medical Education in the absence of agreed Learning Outcomes/Competences for each cycle, leading to loss of integration.



*\*This would recognise the specific nature of a Doctorate in Medicine, as opposed to a PhD in another subject.*

Figure 2: The Bologna Process and Integrated Medical Education: a possible model of the Bologna Process applied to Medical Education with agreed Learning Outcomes/Competences for each cycle, leading to enhanced integration.

Please cite as: Cumming A. Bologna and medical degrees - the importance of learning outcomes. In: *The Structure of Medical Education in Europe: Implementing Bologna – On the way to a European success story?* International Conference hosted by the German Rectors' Conference (HRK). Berlin, 10.-11.10.2008. Düsseldorf: German Medical Science GMS Publishing House; 2008. Doc08hrk4.

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Freely available from: <http://www.egms.de/en/meetings/hrk2008/08hrk04.shtml>

## G2010 - a competence based medical 3-cycle curriculum in Groningen, The Netherlands

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Within living memory, it is known that the House of Wisdom is built on Seven Pillars. This allegory is used for many processes. Virtual pillars to be the fundamentals for modern medical education may be described as

1. the need of a trainee-centred approach,
2. competency-based assessment,
3. service-based education with real world clinical problems,
4. quality assured curricula according to international standards,
5. flexibility for individual needs of students with
6. person-directed coaching instead of ex cathedra teaching, and
7. a well-structured learning course.

These principles may be thought-leading considering the usefulness and desirability of the Bachelor/Master (BaMa) system in medical education. On the one hand there is the need for a personal approach to enhance the development of the individual student on the other hand international collaboration to reach high standards is crucial. Add to these the increasing trend to mobility of students – and people in general – across the borders and it becomes evident that a successful medical education system may not be confined to one medical school or even to one country. To come to a European system for medical education many barriers have to be levelled and the challenge is to find an acceptable uniform standard without losing all the specific features of the distinct medical schools.

Although many sceptics and doubters exist (and their voice should be heard anyway!) there is also a huge movement of enthusiastic and creative advocates for the BaMa implementation in medical education. Caution is dictated not to walk into the pitfall of writing high-handed credos, of developing singular BaMa directed curricula and of promoting them to others without considering the problems of implementation elsewhere.

Aware of this possible trap this paper will present the structure of the Groningen Medical 3-cycle Curriculum without pretending this to be the only way to get to an ideal model but to show that it is possible to design a BaMa structured course.

The Groningen curriculum offers the capacity for enrolment of 440 students per year. It consists of a 3-year Bachelor and a 3-year Master programme (see figure 1), each year corresponding with 60 European credits. The first four years are divided in two semesters each containing two blocks of 10 weeks. Four out of the 12 Bachelor blocks are completely reserved for theoretical education without small group and other practical sessions in order to allow students to do elective activities. Beside the blocks, there is a line for professional development except for the last Master year.

Patient problems have a central place in the whole curriculum to motivate the students for studying basic concepts and to teach them what is important for practice of daily life. The emphasis in the very first year of the Bachelor curriculum is on basic sciences like (microscopic) anatomy, physiology, cell biology, immunology, and psychology. In the second and third year, clinical sciences are leading with frequent referral to basic concepts. Communication skills are taught in the Bachelor curriculum but furthermore education in clinical skills mostly is postponed to the Master curriculum. In addition, the other (CanMeds oriented) competencies have a place all over the curriculum and are practically trained in tutorial groups. Students are sent to patients at home to interview them and attend medical clinics together with their tutors during the whole Bachelor programme. In the Master curriculum, the clerkships are included with dual learning in the first year (four blocks with 5 weeks skillslab coupled to 5 weeks work on the ward)

and full time clinical work on several departments during 10-12 blocks of 4 weeks in the second year. Finally, the third Master year consists of a 20 weeks clinical electives and a 20 weeks period with scientific research.

For those students who have scientific ambitions there is a Bachelor honours stretch (30 European credits) beside the regular Bachelor programme. These students get the opportunity to enter a combined clinical and scientific course in order to obtain both a MD and a PhD award after 5 years (see figure 2). About 10% of our students does so and succeeds to pass through all three cycles, Bachelor, Master, and Doctorate (PhD).

One of the possibilities the BaMa structure offers is the opportunity to decide for another Master study after finishing the medical Bachelor programme. This is hardly done in the Groningen system (<1%). In The Netherlands, the medical Bachelor Degree does not result in a formal professional license. On the other hand, there may be lateral enrolment in the medical Master programme of students with another Bachelor Degree. Practically this concerns students who ran a Bachelor course with some links to Medicine (e.g. psychology, pharmacy, biology, chemistry, etc.). After selection, they run a one-year graduate entry programme equivalent to the second and third year of the regular Bachelor programme.

The University Medical Centre Groningen (UMCG) feels that the requirements as set in the Bologna Declaration have been met in its curriculum, and delivered the first medical Masters in September 2009. UMCG realize not to have invented the ideal and everywhere applicable programme but it feels this curriculum might provide some ideas for designing a more uniform European BaMa curriculum. Complete uniformity of all medical curricula in Europe should not be a Utopia to be quested because unique features for an individual medical school might be attractive for students and encourage them to cross their horizons. Furthermore it is mortal for enthusiast educators to be put into trammels of convention without possibilities for own creativity. However, to enhance interuniversity mobility, the duration and outcomes for Bachelor and Master programmes definitely should be standardized. Furthermore, universal quality standards and an international evaluation system are to be pursued amongst those universities who want to participate in a European network that meets the criteria of modern medical education.

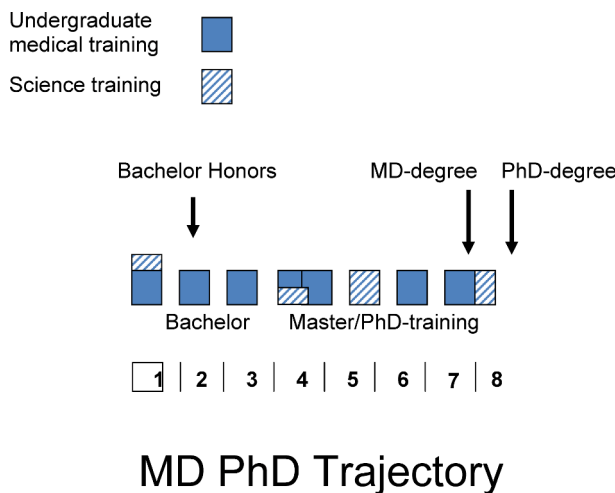


Figure 1

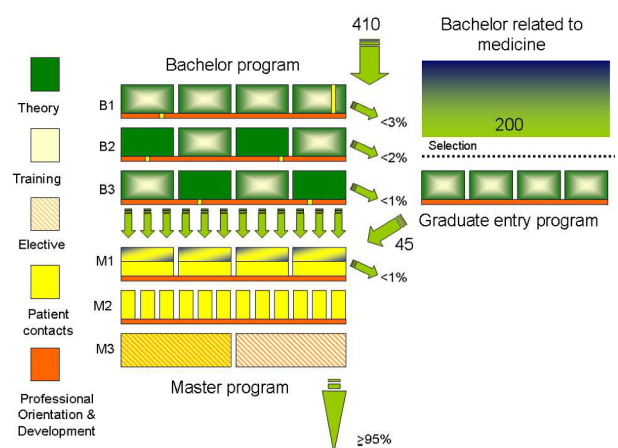


Figure 2

Please cite as: Kuks JBM, Borleffs JCC. G2010 - a competence based medical 3-cycle curriculum in Groningen, The Netherlands. In: The Structure of Medical Education in Europe: Implementing Bologna – On the way to a European success story? International Conference hosted by the German Rectors' Conference (HRK). Berlin, 10.-11.10.2008. Düsseldorf: German Medical Science GMS Publishing House; 2008. Doc08hrk5. DOI: 10.3205/08hrk05, URN: urn:nbn:de:0183-08hrk058

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## A training and education continuum for dentistry - a Bologna-oriented concept

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**Introduction:** 'Bologna' is characterized by stimulation of international mobility, international competitiveness, and international employability. Stimulation is supported within

- the European Higher Education Area by 2-cycles, modulated professional qualification. Cycle 1 for undergraduate qualified and employable Bachelors, cycle 2 for postgraduate specialization.
- the European Research Area by postgraduate doctorate qualifications, as third cycle according to the concept of life-long learning.

In Germany the 'Bologna Process' is irritating: Curricula are compressed from 5 into 3 years, mass summative assessment introduced, behaviorism instead of constructivism cared, study load unbearable, misleading packages as undergraduate consecutive Bachelor/Master curricula tied up.

German students in dentistry are not positioned well in EU-competition: On average 2-4 years older as their EU-fellow students. 2x14 weeks 'Lecture Time' per year and 24 weeks 'Semester Holidays' with seldom curricular scheduled activities, in contrast to internationally 40-46 curricular defined weeks. Outcome competences are inherently lower.

Given a 5-year curriculum and a half-value time of current medical knowledge of 4-6 year, students are in danger to qualify with obsolete knowledge. Beyond this, the question arises why a dentist should be a Master per se.

**Method:** An Aachen Think tank developed a concept in which the traditional 10-semester curriculum, without changes in content, is reorganized in trimester (3x14 weeks). This 3-year undergraduate qualification is honored with a Limited License (§13 ZHG), followed by a 2-year university supervised extramural practical training (according to the federal Academic Council's advice) to fulfil EU Parliament's Directive 2005/36 EG Art. 24, resulting in Full License (§ 2 ZHG) (see figure 1).

**Result:** The intended reorganisation

- conserves the quality of the hitherto, unchanged curriculum and allows the intended curricular changes without any special hurdles.
- strengthens European competitiveness and reaches employability in a shorter as previous time.
- assures that the shorter length of study is related to the half-life time of actual medical knowledge.
- meets the Bachelor standard by delivery of an employable dentist after 3 years but without any need to install this degree.
- allows students to start specialization two years earlier as before.

**Conclusion:** The reorganisation has no influence on existing curricula; structures stay preserved. Graduates are younger as previously, more competitive – with an interim limited license – as a full employable and (as formerly) qualified dentist. If needed as Bachelor enabled to meet the Bologna Recommendations exemplary. Curriculum time is adapted to the half-value time of medical knowledge. These characteristics stay unchanged if the reorganisation principles are applied to a formerly 6 year curriculum with a four year result.

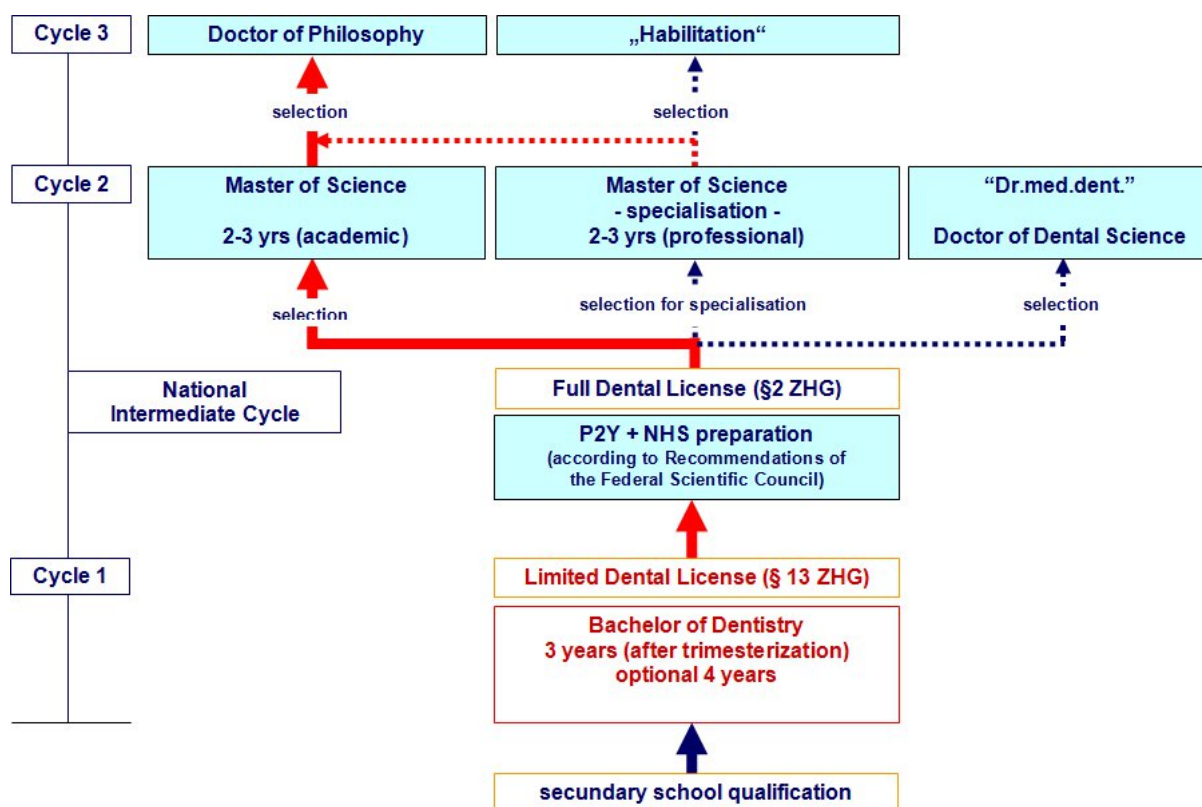


Figure 1: A training and education continuum for dentistry – a consequent Bologna-oriented concept.

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07

## Kazakh Medical Academy: The leader of reform in the medical education system of Kazakhstan

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**Introduction:** The Kazakh Medical Academy is one of leading medical schools in the field of higher medical education in the country. It is the largest institution for education, licensing, and postgraduate training on professional and scientific skills in medicine and pharmacy. Fundamental and applied scientific research, high quality medical service of the population, as well as promotion of achievements in medicine and pharmaceuticals are closely connected to the educational process. The Academy heads the Association for Medical Education of Kazakhstan.

**Status quo:** At all stages of development the Academy follows the concept of a traditional medical school to realize applied medical and pharmaceutical education. The transition to the actual three-cycled curriculum has been carried out successfully to offer students opportunities to become awarded with a Bachelor, Master, and/or Doctorate Degree (PhD) successively. It considers training in all medical disciplines according to the European Credit Transfer System. The Academy is the medical school in Kazakhstan which offers PhD-programmes exclusively.

**The system of quality in education:** To assure the quality of the educational processes «quality of given education» is the most essential criterion for the Academy for continuous awareness. In

consequence, in 2007, the Academy implemented a quality management system according to the recommendations of the European Fund of Quality Management (EFQM), which meets the requirements of standard ISO 9001/2000. It is oriented on the model of quality assurance from the Dutch Association of Universities as introduced and certificated by the British company Moody International. Main estimates to assure quality are:

- Management's policy and strategy.
- Management's role in preparing conditions to assure the training and education of qualified medical specialists.
- The use of teachers', employees' and trainees' potential to create conditions for the students to become trained and educated at high quality levels.
- The rational use of resources (material, financial, and human).
- Process's direction of how to prepare medical specialists for high quality awareness.
- The satisfaction of employers.
- The satisfaction of teachers, employees, and trainees with their respective working conditions.
- The influence of the Academy on society.
- The results achieved in relation to the goals set for preparing specialists to improve their quality.

**The future:** The Academy is part of the National Medical Holding. Holding's mission is to support a wide spectrum of medical services, to introduce the best management concepts for professional training and development of applied medical science. Its goal is to create the most modern medical school, integrated into the international community with a stable and independent financial and economical concept rendering innovative educational and medical services in correspondence with international standards of quality and safety. Also, to deliver competitive graduates – as innovative brand of Kazakhstan.

**Conclusions:** The efforts to implement modern curricula according to European standards have been successful. The Kazakh Medical Academy is ready for international cooperation and partnership. It will participate in the international educational programmes, seeks scientific and technical collaboration with higher educational institutions, and join medical scientific and professional organisations.

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08

## **Symbiotic faculty development and implementation of a two-tier medical education**

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**Abstract:** This paper describes how a project, which arose as an international collaboration between two faculties in the UK and Denmark, was subsequently developed to result in a two-tier medical education aligned to the objectives of the Bologna Declaration. It describes the processes involved and lessons learned from the experience. It is hoped that these experiences and lessons will encourage others to develop similar projects.



**Background:** The Hull York Medical School (HYMS) is a new United Kingdom (UK) Medical School, opened in 2003. The HYMS programme utilises PBL as the core pedagogical method in the context of a spiral, integrated undergraduate curriculum. A particular characteristic of the HYMS implementation of PBL is that all PBL facilitators are practising clinicians who work with their PBL group for the whole of the academic year. These facilitators train and develop as professional educators as a part of their portfolio careers alongside their clinical commitments. HYMS students have produced a comprehensive guide to PBL at HYMS which is available on the HYMS website ([http://www.hyms.ac.uk/documents/pbl\\_guide\\_student.pdf](http://www.hyms.ac.uk/documents/pbl_guide_student.pdf)).

Aalborg University in Denmark, has developed its own variant of PBL. This is based on the acquisition of learning and researching skills arising from students' involvement in projects [1].

**The project:** In 2005, the Aalborg University (AAU) consulted the UK General Medical Council (GMC) in order to establish contact with a UK medical school for guidance in setting up their 'Bachelor programme in Medicine with Industrial Specialisation'. New medical schools in the UK are subject to scrutiny, particularly in the early years, from the GMC. Their role is to assure the quality of both the programme and its graduates. The HYMS course is regarded favourably by the GMC, particularly in one specified area of the collaboration, PBL ([http://www.gmc-uk.org/education/undergraduate/medical\\_school\\_reports\\_full\\_list.asp](http://www.gmc-uk.org/education/undergraduate/medical_school_reports_full_list.asp)). The GMC recommended that AAU contact staff at HYMS for this support.

In consultation with AAU, HYMS staff designed a training programme to be delivered by a delegation of HYMS staff and students. During this initial training event in the summer of 2006, an agreement was made that AAU could use the well-developed teaching/curriculum materials in use in Phase 1 of the HYMS curriculum, to facilitate the development of the AAU curriculum.

These same materials are used across the three years of the AAU Bachelor course, the remaining time being occupied by the AAU programme of additional work in their own project-based learning activities.

A vital component of the HYMS curriculum is the clinical placements which begin in the first weeks of the undergraduate course. These allow the students to establish the relevance of their scientific learning and to practice the communication and clinical skills, which they are learning at the university. At the outset, there were no equivalent placements for the AAU students registered for the 'Medicine with Industrial Specialisation Programme'.

**The extended project:** Establishing clinical placements for students in the AAU programme was a major step in the continued development of the programme. In doing this, the faculty could offer students a similar experience to HYMS students, following the same academic programme in conjunction with consistent clinical experience to contextualise and integrate that learning. This then paved the way for consideration of student exchange between the two faculties.

This then represented a very specific implementation of a Bologna type of process facilitating international student mobility. There is enthusiasm in the UK for the mobility of students in medical education but with recognition that there are obstacles, which need to be overcome ([http://www.europeunit.ac.uk/resources/Full seminar report.doc](http://www.europeunit.ac.uk/resources/Full%20seminar%20report.doc)).

**Obstacles to progress:** Within the EU policies exist which are designed to overcome administrative barriers to student mobility, including the agreed equivalence of qualifications. The absence of a two-tier medical education process in the UK and linguistic and financial considerations are significant obstacles [2].

To progress this project, the AAU faculty required further support in the development of both its curriculum content and its curriculum delivery, with the goal of equipping a small number of its students to be able to enter Phase 2 of the HYMS curriculum (years 3-5).

An agreed level of attainment in the AAU Bachelor Degree was considered to be equivalent to the Phase 1 HYMS written assessments, as their curriculum so closely mirrored the HYMS curriculum. However, in the absence of established and validated clinical examinations at their home faculty, the AAU students would be required to pass the HYMS end-of-Phase 1 clinical examination in order to enter Phase 2 of the HYMS programme.



International students gaining admission to HYMS are required to demonstrate adequate proficiency in the English language by obtaining an average score of 7.5 across all components of the IELTS - International English Language Teaching Services (<http://www.ielts.org>). In addition, all entrants to HYMS are required to take an onscreen aptitude for medicine test (<http://www.ukcat.ac.uk/>)

**How to overcome the obstacles?** In the absence of an established exchange mechanism between the two faculties, the HYMS' admissions team needed to establish UK equivalent grades for the AAU Bachelor Degree classification. The HYMS Directors of PBL have now developed a protocol for the AAU faculty to follow for students applying to HYMS, to help them to navigate the admission process effectively.

A number of interfaculty visits were arranged. The HYMS' Directors of PBL delivered training programmes to the AAU faculty staff who would be involved in the delivery of PBL and clinical skills teaching. Observation of PBL and clinical placement sessions enabled HYMS staff to advise AAU on how best they could develop their clinical placement teaching in order to align closely with the HYMS curriculum outcomes. In addition, AAU faculty staff visited HYMS to observe PBL sessions in progress and to consult with various members of HYMS staff in driving the development of their own curriculum.

From the outset, HYMS students were actively involved in the interfaculty work. Groups of undergraduate students accompanied HYMS' faculty staff delivering training programmes in AAU. This permitted the delivery of live PBL demonstrations to engage the faculty staff in experiential learning in developing their own facilitation skills. Students from the two faculties had opportunities to discuss the details of the course to allow students interested in undertaking an exchange to obtain a student's view of many aspects of our curriculum.

Subsequently, a group of four selected students undertook a 3-week study period in Denmark, evaluating current curriculum development in order to identify key areas for continued development, to facilitate the exchange of students between the two faculties.

The Danish students applying to HYMS have worked closely with an identified member of staff on the AAU campus to complete their applications to HYMS, following the protocol developed as described above. In addition, these students have visited the HYMS campus, to observe teaching sessions in progress, to meet British students and to familiarise themselves with the live examination procedures which were not part of their home campus experience.

**Outcomes:** The AAU 'Bachelor Degree in Medicine with Industrial Specialisation' is now running autonomously with little need for further collaboration in its continued success, though faculty staff remains in contact for the continuing exchange of ideas and information. Both faculties have benefited because of the collaboration.

AAU offers placements for intercalated degrees to HYMS students at the end of the second year of their studies, providing opportunities expanding the range of intercalated programmes offered in the UK.

HYMS students have contributed to the development of the AAU faculty, with the learning outcomes for the HYMS students being formally assessed as parts of their HYMS programme. AAU and HYMS have subsequently collaborated in a tour of four medical schools in China, presenting models of PBL to the Chinese medical education community.

HYMS has established a two-tier medical education, which is applicable in the specific set of circumstances described in this paper. One AAU student, graduated in 2009, successfully completed the application process to gain entry to Phase 2 of the HYMS curriculum in 2009, but was unable to commence due to personal circumstances. However, the pathway is now established and groups of students, under the direction of AAU staff are now working towards future applications.

**Transferable and generalisable principles:** This paper is a description of an evolving project between two European faculties resulting in the establishment of a specific two-tier medical education that is faculty-specific.

The paper relates the obstacles to be overcome in the establishment of this exchange. The following points highlight the areas HYMS can identify from this experience which may help other faculties to develop similar projects.

- Close interfaculty collaboration is required over lengthy periods to establish such exchanges.
- Key academic staff need to be able to work together to become familiar with the details of curricula and their delivery in order to develop the project. Frank exchange of views and identification of areas for development is necessary.
- In the absence of established exchange systems, attention to detail on the part of admission staff is required to facilitate entry for the students to the UK organisation; protocols for the European faculty to follow are helpful in assisting students to navigate through the complex admission requirements.
- Staff mobility is a pre-requisite. Visiting the partner faculty has been a valuable experience for both faculties, in staff development and in identification of key areas for development.
- Student involvement at all stages is beneficial in faculty development and in facilitating the student exchanges, and as advocates for development of their curriculum.
- The process requires identified members of staff who will continue to progress the project and to work with the students in the European faculty to address both the learning needs and technical requirements to gain entry to the UK school.

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09

## The new diploma programme 'Human Medicine' at the Medical University of Graz

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**Motivation and legal frame:** In 1997, Austria's medical faculties were required by new law to transform the traditional study of medicine ('Rigorosenstudium') into a 6-year diploma programme, at the latest by year 2002. It was legally impossible to introduce a Bachelor/Master structure for human and dental medicine.

**Basic structure:** Because of the legal prerequisite, an integrated module-/track-based syllabus was decided to replace the former discipline-oriented approach. Twenty-five compulsory and five elective modules form the curriculum of the first five years whereas the sixth year focuses on practical training.

#### Major problems and their solutions:

**Reduction** of traditional disciplines (in order to save space in the curriculum for new issues) on the one hand, and integration of formerly 'autonomous' disciplines on the other hand were the two main challenges that had to be met.

### Integration of 'autonomous' disciplines by

- coordination of each module by one 'host' discipline ('Gastgeberfach') (see figure 1).
- strong support of the institutes and clinics in organisational issues by university's central administrative forces.
- strong commitment of university's leading bodies.
- strong cooperation with the students' union.
- development of a tailored virtual platform.

At the Medical University of Graz a virtual platform, the Virtual Medical Campus, was implemented to represent in digital format the new syllabus and to facilitate the integration of different disciplines into the new modules. Since its implementation, the Virtual Medical Campus has offered strong support to students, teachers, and administrative staff alike. Furthermore, it has proven to be a valuable tool for establishing close national and international cooperation in terms of curriculum development.

**Goals:** Digital representation of the new syllabus, support for students, teachers, and administrative staff, and to create a platform for blended learning.

**Achievements:** The availability of more than 15,000 reusable learning objects. A created successful virtual semester with a stable function of even with more than 15,000 downloads per day, and a platform for national and international cooperation.

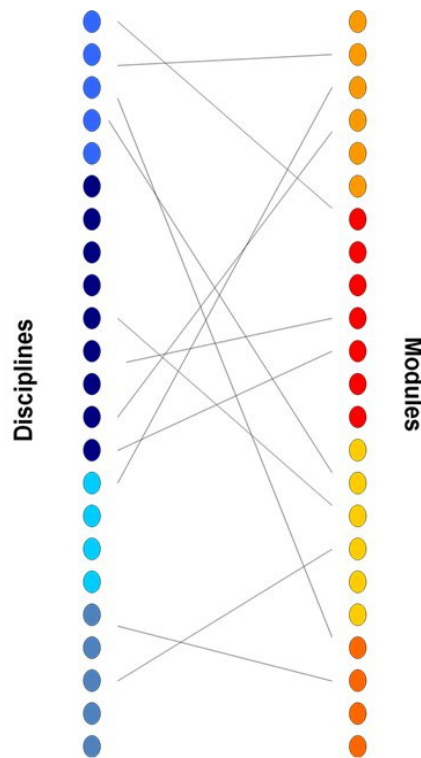


Figure 1: Coordination of each module by one 'host' discipline.

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## The Bologna Process and scientifically qualified doctors - no conflict of interest

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The German Medical Licensure Act (Approbationsordnung für Ärzte, ÄApprO) describes as one of the aims of medical education 'the scientifically and practically qualified doctor in medicine'. Accordingly, the education is scientifically based, conveys knowledge and practical skills, and is oriented towards service to the patients. Scientifically based means in form university-based and in content in line with scientific principles and knowledge. This reflects the history of the medical education in Germany and it is in accordance with the proposals of Flexner whose report revolutionised the American Medical Education and induced the development of its standardisation about 100 years ago: Medical schools (faculties) need proper equipment and have to be linked to excellent teaching hospitals. Students admitted to medical studies had been selected for their highest order of qualification. Training is based on the scientific method and 'its critical method will dominate all teaching whatsoever' [1]. Research and investigation are conducted in every medical school stimulated by problems that emerge from patient care. This is important because it improves patient care as well as teaching. These well intended proposals of Flexner were soon modified in daily round. Research got ahead of teaching in importance in university hospitals. Basic science content mainly taught context-free by nonclinical scientists grew in breadth and became widely unnecessary for prospective doctors. 15 years after his revolutionary report Flexner wrote 'Scientific medicine in America – young, vigorous, and positivistic – is today sadly deficient in cultural and philosophic background' [2]. What Flexner originally intended with scientific education was not pure content but rather method.

Today it is widely accepted that for doctors to be competent they have to acquire a substantial knowledge of basic sciences. Translated into practice this means that medical training in Germany in the regular curriculum is divided into a pre-clinical and a clinical stage. The first two years of study focus on natural sciences (anatomy, biology, biochemistry, chemistry, molecular biology, physics, and physiology) and social sciences (medical psychology and sociology). This is thought to be scientific education. Students complain about theory overload with topics taught three or four times from slightly different perspectives. Practical courses are mainly dull repetitions of boring experiments which have nothing to do with interesting and enthusiastic scientific working, nothing to do with curiosity and the use of scientific reasoning, which are fundamental to the practice of medicine. Teachers admit that after these first two years and the first state examination students forget most of the content ([http://www.mft-online.de/buch9/pdf/Seite\\_207.pdf](http://www.mft-online.de/buch9/pdf/Seite_207.pdf)). Given this unwanted result the answer is not search for an alternative approach but stick to the usual one.

Many opponents of the Bologna Process express their concern that the scientific character of medical studies and education will be lost if we change the present way of teaching the so called 'systematic' presentation of basic science content. The German spokesman admits that the medical curriculum in Germany is 'sick yes, dying not. The medical education system is far from perfect but it is still in working order, even though we have reached – and partly transgressed – the limits of its capacity.' [3]. Cause for the grievance is seen in an unacceptable student/teacher ratio – an attempt of an explanation that quite obvious goes awry. The student/teacher ratio can be quite easily alleviated by the introduction of new teaching formats e.g. teambased learning. Cure is needed for the content-overload of the curriculum, the teacher-centred education and the mix-up of scientific content and scientific method. The Bologna Process can be used as an initiation and a turn for the better of the current curriculum without compromising the scientific basis and character of medical education. The scientific basis is scientifically justified if understood as the necessary knowledge (not in-depth or encyclopaedic knowledge) of scientific facts and how current medical knowledge and what is more important scientific principles and methods which do not change from one day to the other. Scientific education is often

misunderstood as context-free formulated scientific knowledge grounded in the basic sciences with the experiment as the paradigm of scientific research. In the realm of medicine free living human beings are often involved in research projects as subjects of interest. Therefore students have to familiarise themselves with far more scientific methods right from the beginning: epidemiologic study designs, qualitative studies, biostatistics, and ethics of research.

Different medical schools put different emphasis on the diverse aspects of medical training. The faculty of the Charité chose the physician as a scientist and as a researcher as the key element of the academic education without neglecting practice, interaction, communication and ethical aspects. The Charité was the first German Medical School to introduce an obligatory research elective. Thus, in the two current curricula of the Charité, the regular one and the reformed one, students have to complete two scientific projects during their studies and have to present their results as a poster or an oral presentation respectively. In the reformed curriculum students carry out a first tiny scientific project at the end of the second year and present its result as a 10 minute oral presentation followed by 5 minutes discussion during an internal student conference. The second project is a small research project at the end of the fifth year – students publish their results as a poster. This is identical to the second project in the regular curriculum. The first project of the students of this track is a written report similar to a scientific article in the middle of the third year.

The Bologna Process with the three cycles of higher education qualification supports this concept with its weight to practical training and an emphasis on more or less intensive research projects which complete the first cycle with a Bachelor Degree, the second cycle with a Master Degree and the third cycle with a Doctoral Degree. Medical faculties can emphasise science and research in their curricula without the Bologna Process, but there is no reason to refuse an educational reform that sings from the same hymn sheet.

Beginning with the winter term 2010/2011 the Charité introduces a Bologna compatible model curriculum (compatible not a Bologna curriculum!). Three 4-week modules are devoted to scientific methods and research. They are scheduled at the end of the second, in the middle of the sixth (followed by an elective) and at the end of the tenth semester. The first module is an introduction into science and scientific working in the realm of medicine. On the one hand students get the opportunity to develop a feeling about ‘what is this thing called science?’ on the other hand they become familiarised with methods of data collection and data analysis, principles of study design and basic methods of research, finally they conduct projects in small groups as a teaser.

The second module will focus on a small research project and the presentation of the results, the third module on science and research in the clinical environment. The emphasis of the curriculum on the physician as a scientist/researcher is going to be supported by PBL as a teaching method in about 80% of all modules of the model curriculum [4]. This student-centred and active-learning pedagogy is commonly used in science education. The model curriculum of the Charité is going to show that a Bologna compatible curriculum is not inconsistent with a scientific education in medicine – quite the contrary.

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## Implementing Bologna Standards in the medicine curriculum at the Royal College of Surgeons in Ireland

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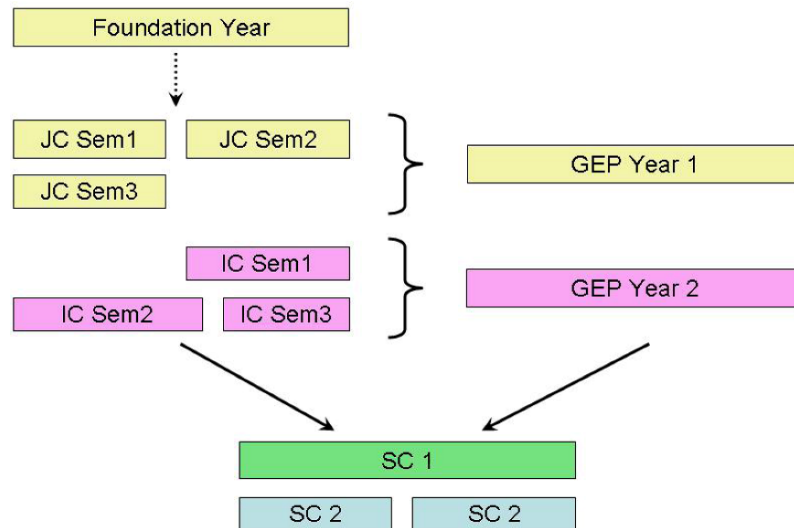
**Historical background:** The Royal College of Surgeons in Ireland (RCSI) is the second oldest third-level academic institution in Ireland. Preceded by the University of Dublin (Trinity College; founded in 1592), RCSI was established in 1784 and provided the only training in surgery in Ireland until 1851. In its early years, RCSI trained over 1,000 surgeons for service in the Napoleonic Wars. RCSI existed for 60 years prior to the foundation of the forerunners of the Irish University Colleges dating from 1845. It provided early recognition of academic qualifications in medicine from the Catholic University School of Medicine - the precursor of today's University College Dublin - from its foundation in 1855. RCSI is one of the four Royal Colleges of Surgeons in Great Britain and Ireland (Dublin, London, Glasgow, and Edinburgh) and, as such, is the professional body governing education, training, accreditation, and professional standards for surgery and related disciplines in Ireland.

Arising from the Medical Act of 1886, RCSI established an undergraduate School of Medicine under the aegis of the Conjoint Board of the Royal College of Surgeons in Ireland and the Royal College of Physicians of Ireland (RCPI). The graduates received the historical Licentiate of the RCSI and the RCPI. Since 1978 the College is a Recognised College of the National University of Ireland (NUI) with the award of the MB, BCh, BAO degrees to its graduates in addition to the historic Licentiate. Since the foundation of the undergraduate School of Medicine, some 20,000 students have graduated in medicine at RCSI, many of them international students. In addition to undergraduate medicine, the College also delivers undergraduate and postgraduate degree programmes in nursing, pharmacy, and physiotherapy.

**Medical degree programmes at the Royal College of Surgeons in Ireland:** The RCSI has offered a 5-year medical degree programme for over 25 years, accredited by the Irish Medical Council and leading to the award of the Licentiate and the degrees of MB, BCh, and BAO (NUI). A proportion of students are admitted to a 6-year programme which commences with Foundation Year and feeds students into the 5-year degree programme. Since 2004 the same degree programme has been offered in Bahrain at the RCSI Medical University of Bahrain (RCSI-MUB). In 2006 RCSI became the first medical school in Ireland to offer a 4-year Graduate Entry Programme (GEP) in medicine, the first such programme to receive full accreditation from the Irish Medical Council.

The undergraduate medical curriculum at RCSI has evolved considerably in the past decade, moving from a traditional discipline-based model via a partially integrated systems-based model to the current integrated, modularised, and semesterised curriculum. The curriculum, implemented in October 2005, divides the 5-year undergraduate medical degree programme into three cycles: Junior Cycle (JC), Intermediate Cycle (IC), and Senior Cycle (SC) (see figure 1). JC and IC each run over three semesters (1.5 academic years) while SC runs over two full academic years. In addition to modules running horizontally within cycles, key vertical themes run across all years of the programme including biomedical sciences & research, clinical medicine, clinical competence, personal & professional development, and population & international health. Content in the Junior & Intermediate Cycles is packaged as integrated modules whereas the Senior Cycle is more discipline-focused; this reflects the need to divide Senior Cycle students into groups for rotation through specialist clinics in the principal teaching hospitals (in Dublin) and the affiliated hospitals of RCSI (located outside of the greater Dublin area). Curriculum delivery involves didactic lectures, small-group tutorials, case-based teaching, and clinical skills tutorials. The curriculum becomes progressively more case-focused as students progress from JC, through IC and into SC. The 6-year programme involves students undertaking a Foundation Year (FY) programme before entering the 5-year programme (see figure 1). The more recent RCSI GEP medicine degree is a 4-year programme, which compresses the Junior and Intermediate Cycles

into two academic years, following which the GEP students join the 5-year degree programme for a common Senior Cycle (see figure 1). The GEP JC & IC are identical in modular content to the 5-year programme but there is a proportionately greater emphasis on small-group work and on case-based teaching.



**JC = Junior Cycle; IC = Intermediate Cycle; SC = Senior Cycle**

Figure 1: The structure of the 6-, 5- and 4-year degree programmes in the RCSI School of Medicine.

### Implementation of Bologna action-lines in the RCSI medicine programmes

- Adoption of a system of easily readable & comparable degrees:** The best guarantor of readability and comparability is a structured and outcomes-focused curriculum. The RCSI curriculum centres on the Medical Graduate Profile (MGP), a high-level outcomes document that specifies the knowledge, skills, and attitudes of the RCSI medical graduate under the five vertical curriculum themes: biomedical science & research, clinical medicine, clinical competence, population & international health, and personal & professional development (<http://www.rcsi.ie>). The subsidiary learning outcomes of every module, clinical discipline and activity in the programme are linked to the high-level curriculum themes in the MGP through the ARIADNE curriculum database [1]. This database plays a central role in curriculum review and in routine blueprinting to ensure constructive alignment between curriculum and assessment at all levels of the programme. ARIADNE maps curriculum elements also to the learning outcomes defined by the Tuning Project (Medicine) (<http://www.tuning-medicine.com/>). In addition, a Diploma Supplement, which confirms the level, context, content, and status of the degree programme, is issued to students at graduation.
- Implementation of the European Credit Transfer & Accumulation System:** To-date, the semesters of FY, JC and IC have been structured as ECTS-compliant modules (see table 1). In the 5-year programme, students passing through JC and IC accumulate 30 credits per semester to a total of 180. Students entering the 6-year programme accumulate 240 credits by the end of IC. The Senior Cycle programme remains discipline-based and is not modularized. Within the next two academic years, the RCSI School of Medicine plans
  - to rationalise the modular structure of the Intermediate Cycle to sub-divide the 15-credit CR module and to reduce the number of 10-credit modules.
  - to review curriculum content in SC1 and SC2 with a view to extending the existing system of ECTS-compliant modules to include the Senior Cycle.

Semester 1	Semester 2
<b>Foundation Year (30 credits)</b> Introduction to Medical Physics (5 credits) Introduction to Medicinal & Pharmaceutical Chemistry (5 credits) Introduction to Human Biology (5 credits) Human Systems 1 (5 credits) Information & Communications in Healthcare (5 credits) Biomedical Laboratory Sciences (2.5 credits) Language / Written & Communication Skills (2.5 credits)	<b>Foundation Year (30 credits)</b> Chemical Processes involved in Biological Systems (5 credits) Human Systems 2 (5 credits) Human Systems 3 (5 credits) Human Systems 4 (5 credits) Biomedical Laboratory Sciences (2.5 credits) Language / Written & Communication Skills (2.5 credits) Medicine: from concept to patient (2.5 credits) Elective (2.5 credits)
<b>Junior Cycle 1 (30 credits)</b> Neuromuscular (5 credits) Haematology & Immune System (5 credits) Alimentary System (5 credits) Concepts & Principles of Biomedicine (5 credits) Health, Behaviour & Society 1 (5 credits) Clinical Competencies (5 credits)	<b>Junior Cycle 2 (30 credits)</b> Cardiorespiratory (10 credits) Genitourinary & Endocrine (5 credits) Molecular Medicine (5 credits) Health, Behaviour & Society 2 (5 credits) Clinical Competencies (5 credits)
<b>Junior Cycle 3 (30 credits)</b> Neuroscience (10 credits) Population & International Health (5 credits) Evidence Based Health (5 credits) Early Patient Contact (5 credits) Clinical Competencies (5 credits)	<b>Intermediate Cycle 1 (30 credits)</b> Biology & Epidemiology of Disease (5 credits) Cardiorespiratory (15 credits) Gastrointestinal & Hepatology (10 credits)
<b>Intermediate Cycle 2 (30 credits)</b> Renal, Endocrine, Genitourinary, Breast (10 credits) CNS, Locomotor, Movement (10 credits) Haematolymphoid, Tropical Medicine (10 credits)	<b>Intermediate Cycle 3 (30 credits)</b> Intensive Clinical Attachment (30 credits)

Table 1: Modular structure and ECTS credit assignments in the Junior and Intermediate Cycles (5-year program) and the Foundation Year (6-year program) in the RCSI School of Medicine.

- Focus on life-long learning:** The RCSI MGP enshrines life-long learning among the key outcomes under the vertical theme of Personal & Professional Development. The degree programme includes training in information retrieval skills, critical evaluation of research studies, aspects of evidence-based health etc., and seeks to produce graduates who can define their own learning needs and who practice in a reflective manner.
- Promotion of the European dimension in higher education including mobility:** The promotion of mobility is hampered somewhat by variations across the European Higher Education Area (EHEA) in medical curriculum structure and delivery, particularly the extent to which clinical skills form part of undergraduate training. RCSI has developed a programme of semester-long exchanges of undergraduate medical students between RCSI (Dublin) and its sister campus in Bahrain (the RCSI Medical University of Bahrain). The greatest range of student exchange activities occurs in the context of the elective programme which is undertaken by almost all students at the end of IC3 or of SC1. Historically this has focused on partner institutions in North America (e.g. the Johns Hopkins Medical School & McMaster University) but, increasingly, elective agreements within Europe are being developed. Opportunities for staff exchange with comparable European institutions are being explored currently.



- **Promotion of European cooperation in quality assurance:** RCSI adopted its Quality Strategy in 2002, which included adoption of the World Federation of Medical Education (WFME) Global Standards for Quality Improvement in Basic Medical Education as key quality metrics for the School of Medicine (<http://www.wfme.org>). Professor Dame Lesley Southgate (Professor of Medical Education, St. George's School of Medicine, University of London) was commissioned by the Quality Board to assemble an Independent Review Group, which comprises experts in medical education drawn from a range of EHEA countries. This Group is engaged with the School of Medicine in a cyclical Quality Assurance/Quality Improvement process that is currently in its second cycle. The first cycle (2005) was the first time that the WFME Global Standards had been used in an independent quality review of this type. Furthermore, this initiative on the part of RCSI served also to prompt the Irish Medical Council to adopt the WFME Global Standards as the framework for their regular accreditation inspections of medical schools in the Republic of Ireland.
- **Adoption of a 2-cycle system:** The 2-cycle model (3-year Bachelor Degree + 3-year Master Degree) envisaged for medicine in the Bologna Process remains controversial. The February 2005 joint WFME/AMEE statement on the Bologna Process rejected the two-cycle model, while a subsequent AMEE/MEDINE survey of its implementation across the Bologna signatory countries demonstrated its adoption by less than 20% of the schools surveyed [2], [3]. No guidance regarding national policy on the implementation of a two-cycle structure in medical education in the Republic of Ireland has issued thus far, either from the Irish Medical Council or from Government. Accordingly RCSI has no immediate plans to implement a two-cycle model. However, an outline plan is under discussion for a response to a possible future national policy decision mandating the adoption of a two-cycle structure. In brief this would involve:
  - to develop a Bachelor Cycle terminating at the end of IC3; this would equate to 180 credits in the case of students in the 5-year programme.
  - to develop a Master Cycle terminating at the end of SC2. This, in itself, would equate to 180 credits giving a total of 360 credits on final graduation.

**Summary:** In common with other Irish medical schools, RCSI is committed to implementing the Bologna Process. While this remains a 'Work in Progress', a substantial amount has been achieved across the majority of the action lines. The issue of the two-cycle structure remains controversial, just as much in Ireland as elsewhere within the EHEA.

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## Suggestions for the implementation of a BaMa system at the Yerevan State Medical University

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**Abstract:** According to the law adopted in 2005 in the Republic of Armenia, a higher education must adopt the Bologna 2-cycle system. Since 2005, the new model of a Bachelor programme has been implemented at YSMU as a pilot project. In the suggested model, undergraduate medical education lasts 5 years and results in a Bachelor Degree. According to the standards defined by the state, the Bachelor of Medicine is a health care professional, qualified to perform biomedical research, administrative and organizational tasks related to basic and fundamental medical disciplines.

After passed through the Bachelor programme, focus in eight major divisions of medicine will be offered in the Master programme: internal medicine, general surgery, obstetrics and gynaecology, paediatrics, general practice (family medicine), general practice (military medicine), and public health biomedical sciences.

**Introduction:** The Bologna Declaration, signed in 1999 by Ministers of Education of 29 European countries, has defined six action lines (<http://www.ond.vlaanderen.be/hogeronderwijs/bologna/>) which are:

- Adoption of system of easily readable and comparable degrees.
- Adoption of a system essentially based on two main cycles.
- Establishment of a system of credits.
- Promotion of mobility for students, academic and administrative staff.
- Promotion of European cooperation in quality assurance.
- Promotion of the European dimension in higher education.

In 2004 the Republic of Armenia joined the signatory countries. The Law on Higher and Postgraduate Professional Education was adopted in Armenia in 2005. The law ensures the state policy of having comparable degrees with those of European countries and recognition of diplomas and their supplement. Among others it set also goals to switch to the two-cycle system of education, implementation of the European Credit Transfer System and quality assurance. According to this law, the two-cycle system is adopted with Bachelor and Master qualifications for medical specialties with duration of education of at least five years for Bachelor programmes and up to 4 years for Master programmes (<http://www.education.am/english/education/turizm.html>).

Since the adoption of this law, the Yerevan State Medical University (YSMU) began the implementation of reforms related to the Bologna Declaration.

**History:** During the past decades education of General Medicine at YSMU has been carried out according to the following model of Higher Medical Education: Medical training and education lasted six years. During the first three years basic medical sciences were taught. During the following three years students learned clinical subjects in hospitals. Upon graduation the degree 'MD Physician' was conferred. The graduate was allowed to practice medicine after completion of subsequent one year internship or a 1 to 4 years residency programme (so-called 'clinical ordinatura').

**Bachelor of Medicine:** Since 2005 the new model, the Bachelor programme has been implemented at YSMU as a pilot project: An intensive curriculum development project is undertaken. The curriculum has been fully revised horizontal integration has been introduced in the premedical curriculum.

In this curriculum, undergraduate medical education lasts five years and results in a Bachelor Degree. This duration is justified by the fact that education in the secondary school in Armenia

lasts 10 years, as opposed to 12 years secondary education in Europe. Thus, during the first year of the Bachelor programme medical students learn medical biology, medical physics and chemistry. The next two years (year 2 and 3) are preclinical where students learn fundamental medical disciplines, such as human anatomy, normal physiology, histology, biochemistry, pathology and pharmacology. The last two years (year 4 and 5) are clinical with clinical rotations in major surgical, therapeutic, and preventive disciplines. According to the Bologna Process action lines, each academic year corresponds to 60 ECTS credits (30 credits per semester).

According to the standards defined by the state, the Bachelor of Medicine is a health care professional, qualified to perform biomedical research, administrative and organizational tasks related to basic and fundamental medical disciplines. Upon graduation the Bachelor of Medicine can carry out his/her own research, educational and organizational activities in the following way:

- Perform basic science research in biomedical labs.
- Teach professional disciplines in vocational schools.
- Perform preventive and educational activities for patients and their families.
- Perform administrative duties, updating and filing medical records in health care institutions.
- Provide medical aid to the population during epidemics and emergency situations.
- Perform advocacy and educational public health activities.

Upon completion of the subsequent one-year internship, the Bachelor of Medicine is allowed to perform the following preventive activities under the supervision of a licensed physician:

- Primary, secondary, and tertiary preventive activities, among healthy people, people with illnesses, their families, and community members.
- Diagnostic examinations and first aid.
- Treatment of patients with therapeutic and surgical methods.
- Diagnosing and following-up pregnancy.
- Ability-to-work assessment.
- Forensic inquiry.

These Bachelors can choose one of the two paths to continue their education, i.e. internship or a Master Programme.

**Master Programmes:** After the Bachelor qualification opportunities in eight major divisions of medicine are at choice for students for a Master qualification to gain the necessary skills for both general medical practice and their Master subspecialty. Upon completion, this track confers a 'MD-MSc' Degree. The following Master programmes are offered for graduates of the Bachelor of Medicine programme: internal medicine, general surgery, obstetrics and gynaecology, paediatrics, general practice (family medicine), general practice (military medicine), public health, and biomedical sciences.

The duration of Master programmes is two years (120 credits) during which students mostly perform practical tasks. The programme is structured to promote student mobility: the student is allowed to take courses in other countries/institutions and bring back up to 12 credits. 75% of disciplines in the Master curricula are mandatory for the chosen specialty, 25% are voluntary to choose disciplines. Among these disciplines, the student has a choice of four electives out of eight.

For 'narrower' medical specialties, graduates may apply for residency programmes following the corresponding Master programmes. The residency programmes must be complemented before entering Master programmes. The duration of the residency programmes will depend on the chosen specialty (1-4 years).

Schematically, the medical education path can be presented in the following way (see figure 1):

**Discussion:** Introduction of a Bachelor/Master model in medical education is a time-consuming and expensive task that requires resources (both human and financial) and corresponding reforms in the health care system. Alongside with these reforms the quality of education should be placed in the forefront. Naturally, this process will meet a lot of resistance.

Having a Bachelor of Medicine as a graduate of a medical school implies that she/he should have a relevant place in the labour market. This is also one of the prerequisites of the Bologna Process related to the implementation of the two-cycle system, which has not been met by any of the signatory countries up to now. The definition of job description for a Bachelor of Medicine helps understanding better their place in the labour market and leads to a reform in health care system of Armenia, aiming at the introduction of an 'Assistant Physician' as a separate group of healthcare providers.

The two-cycle system will allow a selective awarding of the 'Medical Doctor' Degree, on a competitive basis, i.e. students with poor performance on entry exams to the Master programme will not be admitted, as opposed to students with high academic achievements. Later on, upon graduation in the Master programme, only a limited number of best graduates will get spots in residency programmes, thus assuring the quality of specialized medical education and provision of medical care in the country.

Those students who wish to pursue a career in biomedical research only, may continue their education in a corresponding Master programme, and subsequently in a PhD programme. In this sense, the concept implies a more rational use of time and resources, since instead of six years of medical education (previous model) its students will study only five years and obtain the necessary skills and knowledge for doing research in biomedical science.

The five year duration of the Bachelor programme is also temporary, since recent educational reforms in the country lead to an increase of the secondary education time from 10 to 12 years. In a few years, this will allow YSMU to cut the first year of the Bachelor programme, leaving it for 4 years in total.

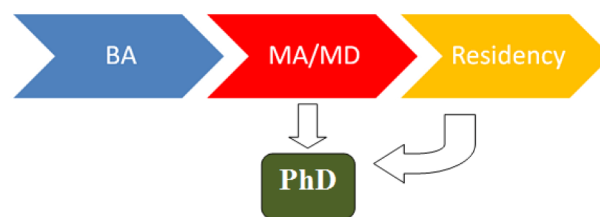


Figure 1

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## The influence of the Bologna Process on medical education in Croatia

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**Introduction of the Bologna Process:** Croatia joined the Bologna Process and signed the Bologna Declaration (<http://www.ond.vlaanderen.be/hogeronderwijs/bologna>) in Prague, in May 2001. Implementation of the Bologna Process in higher education started in the academic year 2005/2006. However, the Bologna Declaration was introduced into the Croatian medical education system in 2000, when the European Credit Transfer System (ECTS) was first to be applied at the University of Zagreb School of Medicine (UZSM).

Founded in 1917, the UZSM is the leading institution in undergraduate, postgraduate, and continuous education for health care professionals in Croatia and South-East Europe, with almost 20 years of experience in promoting the improvement of teaching skills through continuous teacher training. Less than a year after the Bologna Declaration was adopted, UZSM decided to introduce the ECTS and assigned the credits to all courses taught. In order to properly define the student workload for each course – as basis for the relative value within 60 ECTS per year – a questionnaire requesting information about teaching hours and the hours needed to accomplish each educational unit of each course was developed. Faculty and students were asked to estimate the time needed and to calculate the total number of hours needed to pass the relevant exam. Interestingly enough, there was no big deference between faculty's and students' estimation. The results of the survey, being formulated as the total student working hours for each course, were used as a student workload coefficient to establish the relative value of ECTS for each course, within the total of 60 ECTS as the representative sum of all course credits in one academic year.

From the academic year 2000/20001 on, the calculated ECTS was introduced into the study programme at UZSM and evaluated after 3 years. Its analysis has shown the role of ECTS in the teaching load, particularly in the evaluation of less successful teaching blocks, where the ECTS were not adequately assigned. The evaluation has been an excellent basis for development of a new study programme, since UZSM was ready to change the curriculum, to keep the specific approaches based on positive experience, to apply benchmarking and quality assurance.

The Croatian Government decided to implement the Bologna Process in higher educational institutions in Croatia from the academic year 2005/2006. Thus, all four medical schools in Croatia (from the Universities of Zagreb, Rijeka, Split, and Osijek) decided to work jointly on the improvement of the medical education system, as well as on the implementation of the Bologna Process in the curricula. All four medical schools consented to create together a core curriculum and to evaluate its implementation on the principles of the Bologna Process. Based on the UZSM experience in implementing the ECTS, all medical schools decided to formulate the ECTS as an indicator of student workload, as well as to emphasise the importance of quality assurance, to promote mobility within the Croatian universities, to develop life-long learning skills, to define national competences and qualifications, to work on joint degrees in doctoral studies and to enhance the European cooperation. These joint actions were also decisive for bridging the gap between the academic community and professional societies.

**The new core curriculum:** The new core curriculum was developed after an exhaustive needs assessment analysis, including identification of actual deficits in knowledge, skills, and attitudes, as well as through defining goals, objectives, and educational strategies to be implemented. Various medical education resources and models have also been studied and discussed on that occasion. The new curriculum was applied on the first generation of students in the academic year 2005/2006. The modular system was introduced, electives were mutually offered to all schools promoting students' and teachers' mobility. Thus, on the grounds of the electives jointly offered, students' mobility within the Croatian universities was established and was well accepted by the students. Consequently, education became more student-centred, emphasising the position of students as partners in the educational process. The Interactive Medical Education Center (InterMeCo) for estimating educational needs was established, resulting in several elective e-courses which are very popular among students from all schools. The project declared several goals: to bring standardisation and quality assurance into teaching, to introduce new content of studies through the use of information technology, to develop learning facilities and services necessary for building virtual and real-life network connection.

Additionally, all four university senates decided that the Croatian curricula should remain integrated, which means that a two-cycle system was not accepted for medical education in Croatia. All other postulates of the Bologna Process have been acknowledged for medical curricula (see table 1), as well as for other university studies in Croatia.

Implemented Bologna Recommendations:
<ul style="list-style-type: none"> <li>- Introduction of ECTS</li> <li>- Development of original method of student workload evaluation to define credits</li> <li>- Promotion of mobility within Croatian universities</li> <li>- Promotion of quality assurance</li> <li>- Promotion of European dimension in medical higher education</li> <li>- Development of PhD study network in biomedicine and health sciences in Croatian universities</li> <li>- Continuous medical education – Life-Long-Learning</li> <li>- Progress in defining competences and learning outcomes for Croatian medical doctors</li> <li>- Progress in diploma supplement</li> <li>- Role of medical education in development of national qualification framework</li> <li>- Emphasis on position of students - partners in higher education institution</li> <li>- Two-cycle system was not accepted in Croatian medical study programmes</li> </ul>

Table 1: Overview of implemented Bologna Recommendations in Croatian medical education.

In course of the development and implementation of the new curriculum associated with the Bologna Recommendations, UZSM has also respected the World Federation for Medical Education (WFME) Global Standards for Quality Improvement in Basic Medical Education, particularly in the context of the European educational situation, as well as the WFME and AMEE Statement on the Bologna Process and Medical Education [1], [2].

The legal framework for medical schools' cooperation was defined by two recently adopted laws in Croatia: the National Health Care Law, and the Law on Scientific Activities and Higher Education, both adopted by the Croatian Parliament in 2003.

**National qualifications framework:** After the requirements established at the Berlin Conference 2003 and the Copenhagen Conference in 2005, the need for a national and European overarching qualification framework was formulated. Basic components of the European Qualification Framework have been defined as the common orientation points related to learning outcomes. Common principles and procedures in the European Qualification Framework stimulated the cooperation guidelines with emphasis on quality assurance, clearly related to academic standards. It was understood that public trust in academic standards requires the general understanding of achievements represented by various qualifications and titles in the area of higher education ([http://ec.europa.eu/education/lifelong-learning-policy/doc44\\_en.htm](http://ec.europa.eu/education/lifelong-learning-policy/doc44_en.htm)).

After study and analysis of various national and international documents, progress has been made in defining competences and learning outcomes for the Croatian medical doctors. Based on the old 'Catalogue of Knowledge' published by the UZSM in 1982, and the needs of the present curriculum, the medical schools have completed the catalogue coordinated by all schools, defining the level of knowledge and skills, as well as the Booklet of Skills. Presently UZSM is in the process to develop learning outcomes for medical doctors in Croatia on all educational levels. Competences are being defined for courses within the undergraduate curriculum; learning outcomes are discussed in the light of several European documents as well as benchmarking with other national and institutional acts. Medical schools have also given impetus to the development of new competency-based postgraduate specialty training programmes which are nearly completed. At all educational levels, special attention is paid to the development of generic competencies (<http://www.tuning-medicine.com/>), [3], [4].

In the meantime, the Croatian government has initiated the development of the Croatian Quality Framework. Owing to the Croatian medical schools' initiative, the role of medical education in the development of a national qualification framework has been additionally recognised.

**Doctoral Studies:** According to the Bologna Process, doctoral studies have been declared as a third cycle, but of the European Research Area. It has become clear that the dominant component in doctoral studies has to be the research part, while the educational part should support the research. So far, there are large differences among the European universities in organising doctoral studies. This is particularly important for biomedicine. In 2004, UZSM organised the European Conference on Harmonisation of PhD-Programmes in Biomedicine and Health Sciences with delegates from 33 universities and institutions from 21 countries. Standards for doctoral studies in health sciences were discussed and defined. The conference concluded with 'The

Declaration of the European Conference on Harmonisation of PhD-Programmes in Medicine and Health Sciences' (the so-called 'Zagreb Declaration'). The Zagreb Declaration defines the expected content of a PhD-thesis in the biomedical context. At the second conference, organised at UZSM in 2005, the European Association for Doctoral Programmes named ORPHEUS (Organisation for PhD-Education in Biomedicine and Health Sciences in the European System) was established. Since then several European conferences have been organized by the ORPHEUS group, promoting the advancement of clinical research, as well as strengthening basic research in the area of biomedicine and health sciences. Consequently, there is a growing interest for the ORPHEUS membership, as well as for spreading its mission (<http://www.orpheus-med.org/>).

Another initiative aimed at the development of a doctoral study network in biomedicine and health sciences at the Croatian universities is also gaining momentum. Besides the existing agreements which facilitate the medical schools' cooperation in PhD programmes, other faculties in the area of biomedicine are invited to participate. It is expected that cooperation in both research and organised teaching will increase mobility and interdisciplinary co-operation, leading to the joint programmes offered to the biomedical community.

**Conclusion:** The Bologna Process is implemented in Croatian medical education at national level in concert with other developments in medical education in order to promote both educational and health systems. The Bologna Process contributes to many aspects of medical education, all more important than deciding on the 2-cycle system. Critical analysis reveals that not all Bologna Process principles have been equally implemented: the quality assurance culture, mobility of faculty and students should be further promoted, students to be seen as full partners, particularly their sensitivity for the social dimension should be adequately respected. There is a growing need to secure significant funding and to rethink the position of doctoral students in research projects. Finally, the synergy between the European Higher Education Area and the European Research Area still has to be developed both in Croatia, as well as at the European level.

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## The modular structure at UCD Dublin School of Medicine and Medical Sciences

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**Medicine Programme Outline:** University College Dublin (UCD) admits 240 students per year to the medical (MBBCh BAO) degree programme. 180 enter a 5-year core undergraduate curriculum. Of these 60 students with a strong sciences background enter the 5-year programme directly and 120 take an additional (foundation) year. In addition, 60 graduate students from various backgrounds enter a 4-year graduate entry curriculum. The last 2 years of both curricula (undergraduate and graduate) are in common.

**Modular and Semester-Based Programme:** The courses are fully modular and semesterised (see figure 1). Years 1-3 have six modules per semester with five ECTS credits per module (30 credits per semester). Years 4 and 5 have larger modules (120 credits over 2 years). The undergraduate course comprises four stages:

- Systems 1 (year 1 and year 2 semester 1): a systems based clinical and biomedical curriculum incorporating anatomy, physiology, biochemistry and clinical and behavioural sciences.
- Systems 2 (year 2 semester 2 and year 3 semester 1): a systems based clinical and biomedical curriculum incorporating pathology, pharmacology, microbiology and clinical sciences.
- Clinical 1 (year 3 semester 2): an introduction to clinical practice incorporating clinical skills, clinical diagnosis and therapeutics, ENT/Ophthalmology, reproductive/child/psychological medicine.
- Clinical 2 (years 4 and 5): module courses in medicine, surgery, paediatrics, obstetrics/gynaecology and psychiatry plus clinical and research electives and a professional completion module.

All graduates are required to take an intern year in a combination of medical and surgical specialities prior to full registration with the Irish Medical Council.

**Summary:** The UCD Medical Curriculum is fully modular and semesterised with an ECTS compliant credit system. Students are encouraged to participate in the Erasmus programme.

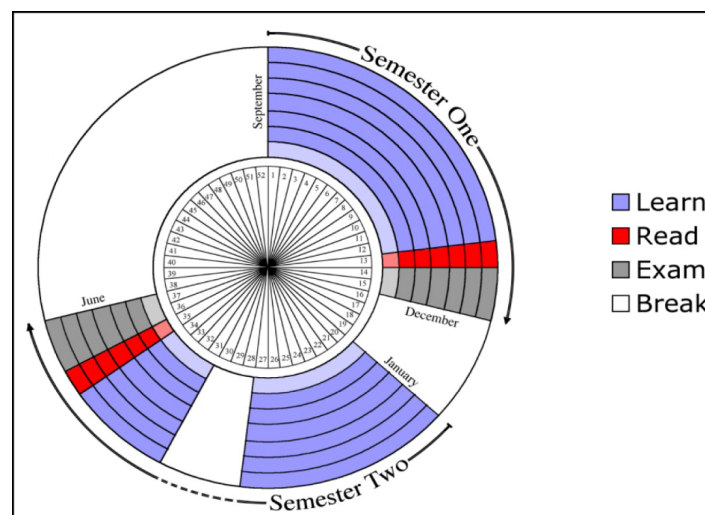


Figure 1: The modular and semester-based programme.

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## 'Life Science University Krems' - implementing Bologna in the medical education: a proposal

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**Introduction:** Recently, the Government of Lower Austria decided to establish a new university on life science with emphasis on medicine. One of the major driving forces for this decision is the fact that Lower Austria, although being the largest state in Austria, does not have a regular university, but only a college for continued education and several institutes for applied science which offer application-oriented studies only.

Under Austrian federal law only the federal government is authorized to establish public universities, all others will be private. Furthermore, all private universities have to undergo an accreditation, where the Bologna Process is evident thus giving the opportunity to discuss new ideas about the medical education.

**Medical Studies:** In Austria as well as in most European countries, curricula require at least six years or 5,500 hours of theoretical and practical work at a university or under the supervision of a university. After finishing the required studies at the university, regulations for further education and training differ in the countries of the European Union. In Austria, an additional 3- to 6-year cycle, a so-called 'Turnus' has to be performed at a university hospital or a medical consulting facility with a teaching license. If the three-year cycle is chosen, students get the 'Approbation' (license to practice medicine) and are allowed to work as medical doctors ('Allgemeinmediziner'). The six-year cycle leads to the 'Facharzt für ...' (specialist in ...).

Prerequisite to enter the curriculum is 12 or 13 years of education at primary and secondary school levels with the 'Abitur' as final degree. For students who do not wish to work as physicians but rather as medical scientists and researchers or in related scientific fields like biomedicine, medical technique, medical information technology as well as hospital and/or nursing management or health care management, etc, the actual situation results in an unreasonably length of study. Such students have to satisfy all the actual requirements of the curriculum – which are six years of undergraduate study followed by at least a 3-year 'Turnus' – to get the academic medical degree even though they will never work as practicing physicians.

To ameliorate such an unsatisfactory situation, the Life Science University Krems proposes the idea of dividing the medical curriculum into two separate sections, a theoretical part, which after three years of successful study confers the degree of 'Bachelor of Medicine' and an extended clinical part, requiring an additional three years of study with the final degree of 'Master of Medicine' and, in combination with a thesis, the 'Dr.med.univ.' (doctor medicinae universae) which is the standard final degree at Austrian medical schools. To ensure that students in the Bachelor part also achieve knowledge about hospital-work, project work and short clinical phases are incorporated.

If students complete both parts, the content of their study programme will fulfil all the EU requirements and be identical to the programmes offered at public Austrian medical schools. The students then can enter the usual educational and training programmes to get their 'Approbation' at the end.

Students who finish only the first, the Bachelor part may transfer to related technical, socio-economic or management studies, lasting two to three years, and finish with an appropriate Master Degree. Nevertheless, it is worth noting that these students will not be allowed to work as physicians, as they will not have attained the Master of Medicine, a required prerequisite.

Figure 1 shows a scheme of the medical Bachelor curriculum and the ensuing Master programmes offered at the Life Science University Krems (LSU). It should be noted again that the medical track (Bachelor of Medicine and the consecutive Master of Medicine) is the **only** way to

become a physician. As mentioned above, students have to write a thesis to earn the final degree 'Dr.med.univ.' before entering the 'Turnus', after which they may be licensed to work as physicians ('Approbation').

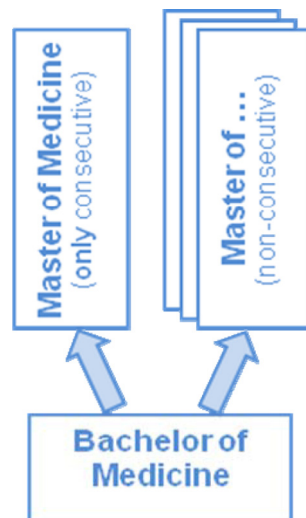


Figure 1: Scheme of medical BA-study and ensuing Master programmes at LSU

Students of the first cycle would not only be confronted with the core medical curriculum, but also with many electives that help qualify them for immediate employment as well as to pursue other Master studies. These facts, especially the employability of the Bachelor, prompt an appropriate curriculum.

**Bachelor of Medicine:** Based on the qualifications of a Bachelor of Medicine, the question to answer was 'what does a Bachelor of Medicine really have to know' to equip them with adequate knowledge for continuing she/her studies or employment.

Additional to all subjects, who are common for undergraduate medical curricula, graduates from LSU will acquire substantial insight in the various fields of health care, management, medical informatics as well as how the Austrian health system functions. Students will also take part in a clinical training and introductory lectures about the main clinical subjects.

All subjects are arranged in four didactic blocks. They are put together according to their content and coordinated with each other based on a system of prerequisites. The Bachelor of Medicine Degree can be achieved after three years, having been awarded with 180 ETCS credits.

**Master of Medicine:** Students, who want to become medical doctors, have to enrol in the Master of Medicine programme. The concept of LSU has as goal to give its students a thorough clinical education by confronting them to a broad diversity of patients and diseases. The Master programme consists of rotations covering the clinical fields. Each rotation consists of a lecture part and its clinical integration. To achieve an effective clinical experience, students will be divided into small groups with a maximum of seven per group. After three years and having gained 180 ETCS credits, the students will be promoted to Doctor of Medicine ('Dr.med.univ.') which is the regular final degree for medical studies in Austria. It is worthy to notice that this Austria specific degree is a diploma degree and not equal to a PhD Degree.

The concept of the Life Science University Krems foresees to implement the Bachelor/Master programme into its medical education. It aims to achieve that the degree is completed within six years, not only on paper but also in reality. Although this may mean no shortening of study time, LSU students may in contrast to studies at a public Austrian university be sure to finish their studies in time. However, shortening could be realized easily by reduction of the term breaks and to increase student's work load from about 1,500 hrs per year, as it is the actual number in Austria, to about 2,000 hrs which means about 45 hrs per week with 7 weeks per year vacation.

Additionally it should be noted that previous considerations were based on a five year curriculum but the EU directives on the recognition of professional qualifications requires a 6-year medical study programme. Therefore, LSU shifted to 3-year Bachelor and 3-year Master programmes. Figure 2 gives an overview on the concept of the medical curriculum at Life Science University Krems.

LSU is quite sure that the presented Bachelor/Master structure takes up the challenges of modern medical education and opens a way to its future.

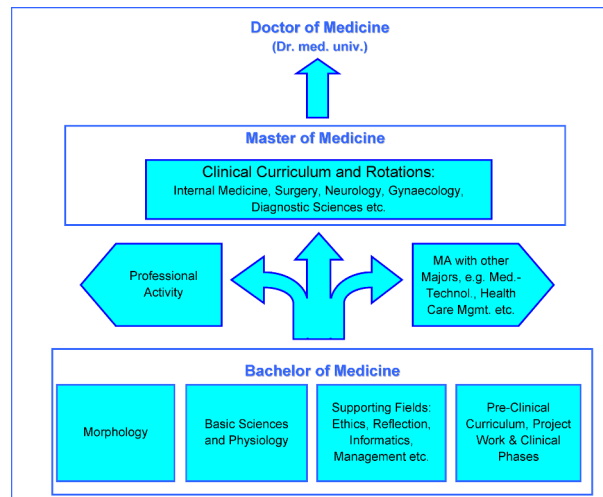


Figure 2: Overview of the medical curriculum concept at LSU

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## European Medical Association: its view on medical education in Europe

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**Introduction:** Created in 1990 by doctors from the 12 member states, the European Medical Association was established as an 'international foundation pursuing a scientific aim'. It is a unique, independent non-profit organisation.

**EMA and education:** The European area is not only that of the Euro, the banks, the economy. It is also that of education and knowledge, the European Area of Higher Education. This Area can be justified by the need to adapt educational programmes to new socio-economic, demographic, and employment situations resulting from the building of a united Europe.

**EMA's strengths:** To bring together individuals and organisations working in the European Health Community, to provide a meeting point between Eastern and Western Europe, and to contribute to the harmonization of European medical education and practice.

### EMA aims at

- to improve education by a better implementation of the medical studies into the Bologna Process, in order to establish the European Area of Higher Education,
- to encourage information, and
- to support collaboration and students mobility.

Innovations in favour of EMA about student's learning shows figure 1.

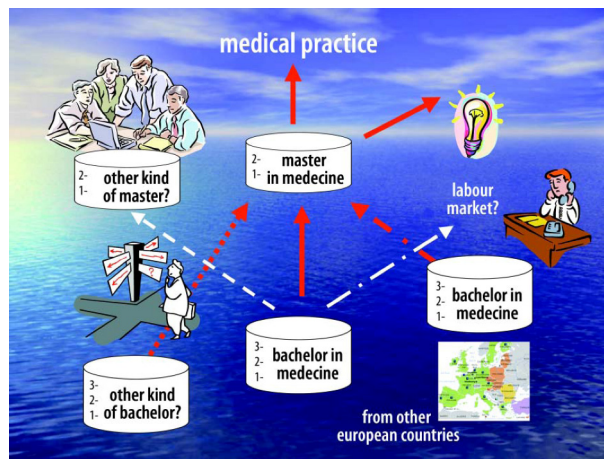


Figure 1: Curricular innovations in favour of EMA to stimulate student's learning.

**Conclusion:** 'Better-informed doctors make better-treated patients'.

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## TransMed national students exchange programme

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**Abstract:** TransMed is a national exchange programme, conceived by and for medical students, representing an official IFMSA-Romania project. A local committee created it in 2000 aiming to offer an opportunity to medical students to find information about the ways to study medicine in other faculties in Romania. It is now involving 10 medical universities throughout Romania and has also a partnership with the University of Medicine and Pharmacy in Chisinau (Republic of Moldavia). Being a medical education programme, it cannot develop without agreement and partnership of the medical universities in which the student organizations are established.

The programme consists out of a two weeks exchange between 10 medical universities. Incoming students attend the same disciplines as in their home university but with the beneficial opportunity to explore and experience at the same time local student life and local social, cultural, and touristic values as well. Each exchange includes a fixed number of students, selected on specific criteria. The rotation periods are decided at a national level during the annual General Assembly in dependence on each centre's school schedule and resources.

The purpose of the TransMed-project is to improve communication between medical students all around the country, aiming to contribute to the development of a unitary medical student's community in Romania. It also aims to contribute to the professional development of the student, as it offers the opportunity to work in a different environment, to exchange experiences, to compare and to gain valuable information about the differences between teaching systems and

techniques all around the country. At the same time, students are offered the possibility to gain a full image of the local on-campus environment, of the local cultural, social points of interest.

**Introduction:** TransMed is an official project of IFMSA-Romania (International Federation of Medical Students Association) which aims on to offer the opportunity to medical students to study in other faculties in Romania. A local committee started the project in 2000 and since then it grew up very fast. It is now involving 10 Medical Universities in Romania: Bucharest, Brasov, Cluj-Napoca, Constanta, Craiova, Iasi, Oradea, Sibiu, Tirgu-Mures and Timisoara, and has also a partnership with the University of Medicine and Pharmacy 'Nicolae Testemitanu' in Chisinau (Republic of Moldavia). The programme consists of a one or two weeks of exchange period in which students follow theoretical classes and clinical practice. It has full support from the medical universities that are involved in the project and aims to improve academic quality, student's learning, and professional development of the students.

**Objectives:** Organizing a volunteer team that is well enough motivated is sometimes difficult but most of the medical student organizations have a large number of students that know the important principle of 'Students Helping Students'.

Usually the programme is scheduled in two periods, one in May and one in November, but it can run also in one period taking two weeks. At least 15 students from each centre participate each exchange period. They are granted accommodation, have access to courses from the guest university, and join a cultural programme from the receiving student organization.

All feedback and evaluation forms are collected centrally at national level; their results are discussed in any next national meeting.

#### **Running the programme step by step**

- **Preparations:** The exchange periods are decided at national level during TransMed's General Assembly, depending on the schedule and resources of each university. The project needs to be approved every time by the universities, as the amount of accommodation facilities to book. Afterwards, posters, flyers, and e-mails are spread among the students and the sign-up period is then opened. The number of applicants grows every year as the number of participants. From 60 students in the first years up to 160 students participated in the last exchange period, which took place in May 2010. Every section selects its participants according to their marks, research, and voluntary activity. The accommodation is usually granted for 10 persons. Other students can participate in the programme also but they need to find accommodation themselves. Usually it is not difficult among students and this makes the project very flexible

#### **Activities:**

- **Scientific:** All students join the theoretical courses that they would have in the same period in their home university. In special cases, they are allowed to choose other courses of their interest. For example, students that are already running a research project can extend it or establish collaboration with other researchers at the hosting university.
- **Social and cultural:** Every local committee establishes its own programme, which usually consists of theatre or movie visits, meeting with other students, etc. Experimenting new culture and social environments is very important for a complete view on the student life in a new city.

**Evaluation:** Taking in account that the project involves many students and teachers, evaluation is decided upon from different angles. The participating students evaluate the guest university, the organizing students evaluate themselves, and the teachers evaluate the programme and the students they had in their classes. At the end of this assessment, the local coordinators make a report about the problems and draw-up the difficulties they encountered, supported by some statistics as derived from the evaluation forms. These evaluation data reflect serious involvement of the students in the project. It also shows that many ideas are developing from the students' needs.

The reports are discussed in the University Council and in the next TransMed General Assembly.

Positive feedback is given every year for the project itself. There are always organizational problems but everyone has still a lot to learn.

**Recognition:** All coordinators must confirm for the participating students that they attended the respective courses by certificates. Each course certificate is specifically documenting student's activity. At the end of the programme, each student receives a diploma which documents all the activities that the student undertook during the exchange period. The local coordinators make out the diplomas but the officials of the university sign them for a higher recognition. Because the medical education system in Romania is quite homogenous, there were no recognition problems until now.

**Development of the project:** TransMed developed very much since its first run. In the beginning, the exchanges took place only between three universities, for one week per year but not in the same time and only for students in the fourth, fifth and sixth year of study. Today, the project runs in all medical universities in the country, twice a year and with students from the second to the sixth year. In the last two years, the project was extended to a transnational project and collaboration was set up with the University of Medicine and Pharmacy Chisinau. Other countries that could join the programme in future are Bulgaria, Hungary, and Italy. They all have similar projects running but with many differences. At the IFMSA General Assembly, discussions took place to find ways of working together and to exchange students in this international dimension.

The European Medical Students Association (EMSA) has a similar project called 'Twinning project'. It runs only between partner universities but very few in Romania are members of EMSA. One interesting development could be the collaboration of TransMed with this project if more medical student organizations would become members of EMSA.

Nevertheless, the lack of curricular compatibility and university programmes is a major factor that sets back the initiative. Recognition is very important for every student; this is one area where a European Core Curriculum would help to develop the TUNING-project.

**Conclusion:** Mobility is desirable on all levels of medical training and education, allowing access to many new opportunities. TransMed improves the communication between medical students all around the country and contributes to the development of a unitary medical student community in Romania. It contributes to the professional development of the student, as it offers the opportunity to work in a different environment, to exchange experiences, to compare and gain valuable information about the differences between teaching systems and techniques all around the country. At the same time, students are offered the possibility to gain a full image of the local on-campus environment, of the local cultural, social points of interest. Not only once it happened that students changed their university for the next years after taking part in the programme.

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## Public health education integrating mobility: The MOCCA approach

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**Background:** The Bologna Process was initiated to establish the European Area of Higher Education with increasing transnational mobility of students as integral part of study programmes. Though main recommendations, as outcome orientation, modularisation, and the application of the European Credit Transfer System (ECTS) have successfully been implemented, the frequency of students' transnational mobility and the length of study times abroad are still not satisfying. German medical students in particular show an increasing interest in mobility but they prefer short time practical placements without integration into theoretical courses of the host university. Less than a third of all German students are mobile during their study period with students in technical disciplines showing the lowest mobility rates ([http://www.his.de/presse/news/ganze\\_pm?pm\\_nr=473](http://www.his.de/presse/news/ganze_pm?pm_nr=473)).

The MOCCA project (Model for Core Curricula with Integrated Mobility Abroad), financed by the European Commission (2006-2008) was initiated to bring the views of national agencies and comparable organisations, professors, lecturers, programme coordinators and students from five European countries onto the integration of student mobility in regular study programmes together. All participating universities already delivered a postgraduate course in public health. The universities were sufficiently diverse in their higher educational infrastructures, regulations, approach to curriculum development and module delivery to enable the working group to gain a good understanding of the contextual factors that can promote or impede the development of study programmes embodying the Bologna aims and recommendations. Furthermore, the five countries have different public health systems which have evolved over centuries within different social and political contexts and legislative frameworks, and which have developed to meet the challenges of different health problems. Consequently, the professional profiles, the academic requirements, and the employment expectations of public health graduates also vary, thereby, providing the group with an additional insight into identifying core competences and learning outcomes which are coherent across several different institutions and countries.

**Aim:** Against the background described above, the aim of the MOCCA project was to develop concepts for study programmes that enhance mobility on students' individual choice. For that reason, joined programmes or double degree programmes were not in the remit of the project because they limit the student's choice onto declared study parts and fixed places of studying abroad. In contrast, the aim of the MOCCA project was to identify structural elements that enhance student mobility and that can be integrated in every study programme of the 'Bologna area', regardless of the field or the level of study.

Though the objectives of the project focused on the integration of mandatory mobility, the project results should also be applicable for curricula that enhance optional mobility of students. The objectives were set on to identify and to use the chances of the Bologna tools at programme design level to overcome barriers which students face when considering mobility within their course of study. For that reason, subjects as financing, language problems and personal responsibilities at home that are proven to hamper mobility regardless of the Bologna Recommendations [1], ([http://www.his.de/presse/news/ganze\\_pm?pm\\_nr=473](http://www.his.de/presse/news/ganze_pm?pm_nr=473)), but are out of the decided scope of curriculum design, were not in the focus of the project.

**Method:** The representatives of the five national agencies developed general guidelines [2]. They checked the guidelines for feasibility by designing a Master programme in public health [3]. The project partners agreed on a consensus-based procedure, always taking the perspective of a sending institution, and reflecting the conditions for integrating mobility in study programmes, the recognition modalities, and assessment procedures etc. against their national regulations and

manners. The partners decided to design a Master programme covering 120 ECTS which for a two years course seemed to be a realistic frame for discussing integrated mobility.

Following the Bologna Recommendations, in the first step the descriptors of the Qualifications Framework of the European Higher Education Area [4] were used to describe the learning outcomes of the 120 ECTS credits programme in public health. They were then translated and bundled into learning outcomes on module level, each module covering 10 ECTS credits. Taking the perspective of a sending institution, options for structural integration of mobility into study programmes were developed by

1. identifying those learning outcomes whose achievement could be enhanced by an international experience,
2. systematising the workload and outcomes of informal learning in context of mobility, and
3. developing an assessment procedure for those competences.

**Results:** In the main, the results concern methodological issues of programme development that can be transferred to all fields of study, developed along the example of public health.

In principle, the needs of the labour market should be taken into account when designing a study programme. For many fields of study, especially on Master's level, the 'corresponding labour market' can be divided into two main sections: the 'classical' labour market and the scientific/research section.

Although the scientific dimensions of public health are widely accepted, the roles and functions of public health professionals vary in different countries due to the diversity of the health systems. A shared approach to curriculum design at the Master's level, therefore, firstly requires the identification of core functions of public health and elements of public health practice that are common across European health systems. Furthermore, to define the scope and depth of a study course, skills and competences that should be developed by studying have to be distinguished from skills and competences that will develop later through ongoing practical experience.

The identified skills and competences that are required at graduate level, regardless of the specific shape of the very health system, then have to be translated into learning outcomes on programme level. To describe the learning outcomes with the level descriptors of the chosen qualifications framework is crucial for the differentiation between the Bachelor and the Master level. Even in the field of public health there is a need for differentiation, for some European countries have developed complementary Bachelor programmes in public health to meet the national requirements for public health practitioners working in different settings.

When using the terms of the European Higher Education Area (EHEA) framework, that means using the Dublin Descriptors to specify the range and the level of skills and competences that a public health graduate is expected to achieve, it is to recommend to start with the higher order descriptor 'Making Judgements' and then to reflect on the skills and knowledge required to achieve these capabilities. The process can further be facilitated by translating the descriptors in simple questions related to the specific field of study, so that all the crucial elements will be answered in a logical sequence (see table 1).

At module level, the learning outcomes can be defined in the same manner. A simple structure of the curriculum, i.e. the predefinition of identical module sizes, is one contributing factor to facilitate mobility because modules of identical ECTS value can more easily be changed in their sequence, for example, when arranging an individual study plan for students who want to be mobile. When describing the learning outcomes on module level, mandatory and optional elements will be defined. A second effective option to facilitate mobility is to order the optional modules into one semester, thus creating a 'mobility window'.

The third opportunity to foster mobility on programme design level is the assessment of subject related outcomes of self-directed learning abroad in line with the ECTS principles, thus defining a 'mobility module'. Regardless of the modules studied or the practical work done abroad, the students will develop intercultural sensibilities and the competence to act in their field of study with a broader view than could be achieved by remaining within a familiar cultural environment.



Concerning public health, the students will, for example, have greater exposure to different social processes and environmental factors which influence living conditions and health. The time abroad will allow students to reflect on different approaches to health problems and how these compare with strategies used by their home nation. The results of the MOCCA project illustrate that the EHEA descriptors are applicable even when describing learning outcomes expected for a mobility experience, and that the distinction between learning outcomes on Bachelor and Master level can be made even for a ‘mobility module’. Concerning the mode of assessment, oral presentations or poster presentations are recommended for they offer the opportunity to fellow students and the home university staff to attend the exam sessions, thus fostering a ‘collective body of experience’ and knowledge about mobility related issues in the specific field of study.

Qualifications that signify completion of the second cycle are awarded to students who:		
- have demonstrated <b>knowledge and understanding</b> that is founded upon and extends and/or enhances that typically associated with the first cycle, and that provides a basis or opportunity for originality in developing and/or applying ideas, often within a research context;	- can <b>apply their knowledge and understanding</b> , and problem solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study;	- have the ability to integrate knowledge and handle complexity, and <b>formulate judgements</b> with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgements;
the relationship between socio-cultural, environmental, biological and organisational determinants / conditions and health	← use research methods to investigate emerging health threats and special needs of vulnerable groups	identify health care priorities at the local, regional, national and international level
methods for investigating putative health-related risk factors at regional, national, international and global level	←	←
<b>3. What must a graduate know to be able to do so?</b>	<b>2. What must a graduate be able to do for achieving this aim?</b>	<b>1. What is a graduate expected to be able to decide?</b>

Table 1: The application of three Dublin Descriptors of the EHEA-Framework (grey) on the specification of learning outcomes of a second cycle public health programme

Figure 1 illustrates the structure of a public health curriculum covering 120 ECTS with both an integrated ‘mobility window’ and ‘mobility module’.

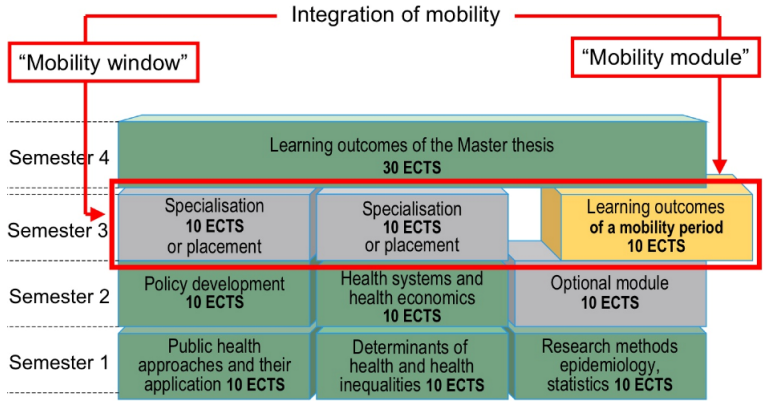


Figure 1: An example for a Masters programme in public health covering 120 ECTS. Green = mandatory study parts

**Conclusions:** The ‘mobility window’ and the ‘mobility module’ are two options for fostering student mobility even within short study cycles. Bundling of flexible study parts to one semester (30 ECTS) opens a time slot for mandatory/optional mobility. Outcomes of informal learning in context of mobility can be systematised using the EHEA-descriptors and, hence, be assessed and credited, that way rewarding the students’ efforts for mobility.

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## The international student exchange programmes - Faculty of Medicine and Surgery, University of Florence (1): Teaching

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**Introduction:** The medical-surgical 'tradition' in Florence has a much longer history than Florence University itself, which was founded in 1924 together with the Faculty of Medicine. Indeed, a School of Surgery was present within the Santa Maria Nuova Hospital as early as in the XIII<sup>th</sup> century. The Florentine School of Surgery was very much appreciated during the centuries, insomuch as even those who graduated in medicine at the prestigious Universities of Pisa and Siena were obliged to attend a two-year internship at the Santa Maria Nuova Hospital Surgery School in order to obtain their licence to practice as doctors. Indeed, in the Middle Ages in Tuscany, in order to develop the right skills to become a qualified medical doctor, it was considered of primary importance not to study and practice within one single university but to travel and study in distant schools: a premonition of the present international student exchange programmes. Still to-day the Faculty of Medicine at Florence University, together with the Dean, the Delegate Committee, and the Didactic Committee for International Mobility strongly believes in international student exchange programmes. The faculty considers them a top investment for the development of internationally-oriented future medical doctors. Modern-day students, travelling and studying in various countries, have the opportunity to open their minds, to learn a new language, and to acquire the right skills to practise throughout the various countries of a united Europe.

**Student mobility:** Erasmus is now the major part of the Life-Long Learning Programme which represents the last and most ambitious evolution of the Socrates programme for international mobility of students and teachers. The Medical Faculty of Florence has been active in the Erasmus Programme over the last 30 years. Since 1989, the university has coordinated Erasmus Interuniversity Co-operation Programmes (ICPs) building up a European network of 17 institutions. The Erasmus ICPs, however, were independent teacher-centred programmes, limited to a specific disciplinary area, in case of medicine pharmacology/biochemistry, and mostly limited to the exchange of students for laboratory work related to their thesis.

When the Erasmus ICPs were incorporated into the university-centred Socrates Programme, in its first year of activity the number of outgoing and incoming students was 10 and 5 respectively. In the subsequent years, there has been an exponential increase in the number of students exchanged by the medical faculty, both throughout Europe and overseas, reaching in the last two years over 550 students exchanged in both directions. Through the Erasmus Life-Long Learning

Programme study and placement mobility, as well as through the interuniversity and interfaculty agreements, the number of incoming exchange students and teaching staff visiting the faculty has steadily increased since the programme started in 1996 (see figure 1 and 2).

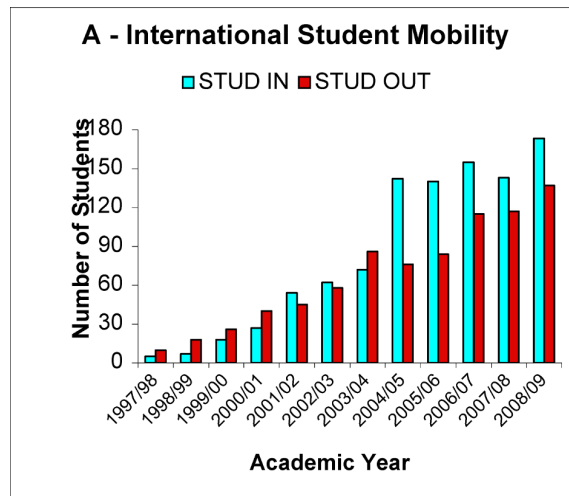


Figure 1: Overview of student mobility

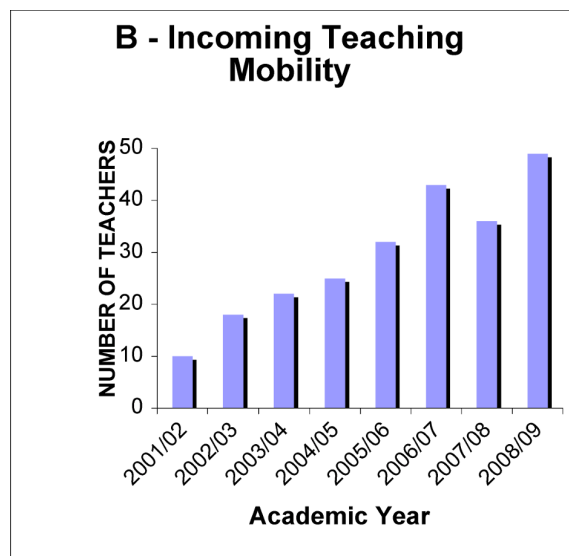


Figure 2: Overview of teacher mobility

The great diversity of didactic offers and because of students’ needs on the one hand, and the increasing number of exchanged students on the other hand, required a heavy commitment to assure all students of the 33 different degree courses equal rights and equal opportunities along the procedures, starting from the preparation of their Learning Agreements down to the final recognition step. The crucial part of these procedures – defined as ‘International Didactics’ – is necessarily under the responsibility of teaching staff rather than administrative staff. Furthermore, it was recognised that only a specific didactic committee, dedicated to international mobility with representatives from all degree courses, could deal with the complexity of these procedures. The faculty dean appoints teaching staff members of the ‘Didactic Committee for International Mobility’. The committee is responsible for

1. the acceptance of incoming student applications and approval of their Learning Agreements,
2. preparation and approval of Learning Agreements of outgoing students and local recognition of their studies performed abroad as per the Transcript of Record issued abroad.

The great diversity in the didactic needs of both outgoing and incoming students from so many different European universities requires flexibility: each Learning Agreement has to be ‘tailor-

made', taking into account both the home core curriculum and that of the partner university, in relation to the specific requirements of each student.

This organizational model set up by the faculty of Medicine of Florence has been recognised as excellent, both at national and international level. Over the past 4 years the international mobility activities of the Faculty scored between the first and third place among those of all Italian medical faculties, as shown in the CENSIS statistics.

**Core curriculum:** The core curriculum of the Degree Course in Medicine and Surgery consists of integrated courses, modules, clinical rotations, as well as optional activities. The entire course develops over a six-year period and students must acquire 60 Italian CFU credits, equivalent to 60 ECTS credits, per year (360 in total) in order to graduate. Incoming students may take courses from the fourth year onward, according to the 'Study Plan' presented in Table 1 for the academic year 2010-2011.

Incoming students may attend courses, and take exams for individual modules of the integrated courses as shown in table 1, aside from pathological anatomy 1 and 2, which are considered a single exam. Most of the teaching still takes place in large lecture halls and class attendance is compulsory (minimum attendance permitted: 70%). Most lectures and clinical trainings are held at Careggi Hospital, the main University Hospital for the City of Florence. Students are also expected to study independently to prepare for exams. Exam sessions are held in February, June/July and September and are mainly oral. Some courses have written tests during the semester or before the oral exam. A number of sessions are available within each exam period and students can book the date of their choice. Students not satisfied with their exam result may take that exam again, although there are rules as to how often an exam may be taken within the same examination period.

Incoming students may also take clinical rotations in subjects of their choice (a minimum of four weeks per subject). In order to attend clinical rotations good knowledge of Italian is required. Incoming Erasmus students are offered one Italian language course free of charge at the University Language Center to book online (<http://www.cla.unifi.it>).

**Summary:** Internationalisation and student mobility programmes represent an opportunity and a challenge rather than a danger. Their success depends on the following key points:

- *Flexibility* - flexibility in accepting different modalities of teaching and evaluation used in different partner institutions is of primary importance for making the most of diversity.
- *Diversity* does not mean a difference in quality. The acceptance of diversity must be based on trust.
- *Trust* - It is crucial to trust the professional expertise and teaching methods of colleagues of other European Faculties. Medical doctors are trained to later exert their profession freely in any other member state of the European Union after passing the state examination and obtaining the licence to practise. The profession of Medical Doctor is in fact one of the seven professions fully recognised at European level without the need for further examinations. If it is possible to recognise the medical profession throughout Europe, it must be possible to give full recognition to examinations that medical students have passed in other European universities.

Florence, Renaissance cradle of culture and humanities, still today promotes *diversity* in the name of *university*.

4th YEAR	Semester	CFU	Y/S
<b>PHARMACOLOGY 2</b>	<b>1</b>	<b>3.5</b>	<b>S</b>
<b>MEDICAL SPECIALTIES</b>	<b>1</b>	<b>10.0</b>	<b>S</b>
Infectious diseases/Parasitology		4.0	
Haematology		3.0	
Oncology and Radiotherapy		3.0	
<b>MEDICAL &amp; SURGICAL SPECIALTIES 1</b>	<b>1</b>	<b>9.5</b>	<b>S</b>
Gastroenterology		3.0	
Endocrinology		3.5	
Introduction to General Surgery		1.0	
Systems Medicine and Surgery 1		2.0	
<b>PHARMACOLOGY 3</b>	<b>2</b>	<b>3.5</b>	<b>S</b>
<b>MEDICAL &amp; SURGICAL SPECIALTIES 2</b>	<b>2</b>	<b>6.0</b>	<b>S</b>
Nephrology		1.0	
Urology		2.0	
Rheumatology	<b>1</b>	1.0	
Dermatology	<b>1</b>	2.0	
<b>PATHOLOGICAL ANATOMY 1</b>	<b>2</b>	<b>6.0</b>	<b>2S</b>
<b>MEDICAL &amp; SURGICAL SPECIALTIES 3</b>	<b>2</b>	<b>14.0</b>	<b>S</b>
Cardiovascular diseases		4.0	
Respiratory diseases		5.0	
Thoracic surgery		1.0	
Vascular surgery		1.0	
Cardiac surgery		1.0	
Systems Medicine and Surgery 2		2.0	
5th YEAR	Semester	CFU	Y/S
<b>PATHOLOGICAL ANATOMY 2</b>	<b>1</b>	<b>2.0</b>	<b>2S</b>
<b>CLINICAL MEDICINE 1 (not available)</b>	<b>1</b>	<b>7.5</b>	<b>2S</b>
Clinical Medicine 1		4.0	
Evidence Based Medicine		1.0	
Clinical Immunology		2.5	
<b>CLINICAL SURGERY 1 (not available)</b>	<b>1</b>	<b>2.0</b>	<b>2S</b>
<b>ORTHOPEDICS AND PLASTIC SURGERY</b>	<b>1</b>	<b>5.5</b>	<b>S</b>
Orthopaedics		3.0	
Rehabilitation		1.0	
Metabolic Bone Diseases		0.5	
Plastic Surgery		1.0	
<b>HYGIENE AND PREVENTIVE MEDICINE 2</b>	<b>1</b>	<b>3.0</b>	<b>S</b>
<b>RADIOLOGY</b>	<b>1</b>	<b>5.0</b>	<b>S</b>
<b>LEGAL AND OCCUPATIONAL MEDICINE</b>	<b>1</b>	<b>4.5</b>	<b>S</b>
<b>GERIATRICS 1</b>	<b>1</b>	<b>1.0</b>	<b>2S</b>
<b>CLERKSHIP 5th (16 weeks Rotations)</b>	<b>2</b>	<b>30.0</b>	<b>AFP</b>
6th YEAR	Semester	CFU	Y/S
<b>CLINICAL MEDICINE 2 (not available)</b>	<b>1</b>	<b>7.5</b>	<b>2S</b>
<b>CLINICAL SURGERY 2 (not available)</b>	<b>1</b>	<b>4.0</b>	<b>2</b>
<b>NEUROLOGY</b>	<b>1</b>	<b>6.0</b>	<b>S</b>
<b>PSYCHIATRY</b>	<b>1</b>	<b>4.0</b>	<b>S</b>
<b>OBSTETRICS &amp; GYNAECOLOGY</b>	<b>1</b>	<b>4.0</b>	<b>S</b>
<b>MEDICAL SURGICAL SPECIALTIES 4</b>	<b>1</b>	<b>7.0</b>	<b>S</b>
Ophthalmology		2.0	
Ear Nose and Throat (ENT)		2.0	
Audiology		1.0	
Odontostomatology		1.0	
Maxillo-facial surgery		1.0	
<b>GERIATRICS 2</b>	<b>2</b>	<b>3.0</b>	<b>2S</b>
<b>ANESTHESIOLOGY &amp; EMERGENCY</b>	<b>2</b>	<b>7.0</b>	<b>S</b>
<b>PEDIATRICS</b>	<b>2</b>	<b>8.0</b>	<b>S</b>
Child Neuropsychiatry	<b>1</b>	1.0	
General and Specialist Paediatrics		6.0	
Paediatric Surgery		1.0	

Table 1: Study Plan for incoming students (academic year 2010/2011).

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## International student exchange programmes - Faculty of Medicine and Surgery, University of Florence (2): Mobility Secretariat

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**Introduction:** The process of internationalization of Italian universities should be considered as a strategic objective to pursue, in agreement with the Bologna Declaration and the orientation of the European Union. To this aim, universities need to make the didactic programmes offered to foreign students as attractive as possible, with stimulating research models based on networks where reciprocal exchanges between partners from different countries are encouraged.

**Mobility:** Supporting the mobility of Italian students towards foreign institutions and implementing adequate measures of welcoming foreign students at the University of Florence, through the Erasmus Life-Long Learning Programme and other programmes, represents a priority, particularly in view of the opportunity for amelioration of language skills and increased opportunities in the job market.

International student exchanges necessarily require a real ‘contract’ to sign by the student, the home, and host institution, containing both the economical and didactic terms. The didactic part of the contract consists in a detailed study plan on a specific form known as ‘Learning Agreement’, in which the student lists courses and clinical rotations planned for attendance according to those offered by the host institution. The Learning Agreement is submitted for approval to the Didactic Committee for International Mobility and then forwarded to the host institution for approval also. When fully approved by all parties, the Learning Agreement becomes a contract binding the student, the host, and the home institution, to its content. Once abroad, students may, within certain dates, propose changes in terms of cancellations or additions to their original Learning Agreement, using the official ‘Changes to Learning Agreement’ form, which again requires the approval of all three parties.

In the field of medicine, owing to a great diversity of

1. host institutions located in many different cultural settings,
2. differing periods of study abroad (from 3 to 12 months),
3. the study plans offered and (4) the individual’s didactic requirements, the Learning Agreement has to be ‘tailor-made’ for each student.

The whole process of preparing a Learning Agreement acceptable by all three parties requires a continuous interaction between the student, the Didactic Committee and the International Mobility Secretariat, which in Florence is the central driving force of the whole system. Two staff members operate with great competency to support students in this complex procedure, offering information, advice, and orientation throughout the entire mobility, from the moment of application until the student’s return with the ‘Transcript of Records’ obtained.

The International Mobility Secretariat: The secretariat operates with two full time staff members, 5 days a week. It is open to the public 4 hours, 4 mornings a week, and by appointment also. In peak periods, it provides over 120 front office consultations per week. Both staff members have a long-standing experience in this office and are highly motivated. Optimal relations with students are established through listening, encouragement, and good will. Alongside the invaluable and untiring professional attention provided by dedicated members of the teaching staff, the secretariat has surely contributed to the steady increase in recent years in the number of student exchanges with excellent feedback. All this is achieved, despite being short-staffed for processing applications for the various programmes and handling over 300 incoming and outgoing students whose numbers actually increases each year, with scarce online facilities and inadequate financing.

Over 150 medical students and 40 teaching staff visit the faculty yearly, would you like to come too? Our goals, strengths, but weakness too may convince you:

**Goals:** Goals of the Medical Faculty of Florence are the expansion of exchanges for medical students and teaching staff in the European Union and overseas; to make incoming students and staff welcome to the faculty, and offer them advice and support, optimizing social and academic integration.

**Strengths:** Long-term experience and motivation, optimal relations through understanding, encouragement, and good will, and steady increase in exchanges and excellent feedback.

**Weaknesses:** Under-staffed conditions, inadequate financing, and scarce online facilities.

**Conclusions:** The International Mobility Secretariat is a driving force of the Medical Faculty of Florence and operates with competence. It supports students throughout the entire procedure of their exchange adventure.

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## **International, national and institutional use of the Bologna Model implemented at the Iuliu Hatieganu University's Medical School - impact on medical education**

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**Introduction:** Romania signed the Bologna Declaration on the 19<sup>th</sup> of June 1999, joining other 45 European countries, which accepted to involve themselves actively in fulfilling the established goals. The Romanian Republic participated actively on the meetings in Prague 2001, Berlin 2003, Bergen 2005, London 2007, and Leuven 2009.

The Bologna Process is a European reform process aiming at the creation of the 'European Higher Education Area' until 2010. It is actually joined by 46 countries in co-operation with international organizations such as the European Council.

The Bologna Process is not a treaty. It has a flexible structure; therefore the implementation of agreed principles is up to each of the involved countries.

According to this process, the European Higher Education Area should be organized as followed by 2010 and beyond:

- Simplified movement from one country to another for study or employment.
- Increase of attraction towards the European Higher Education Area and labour market for non-European citizens.
- Provision of high quality education contributing to the development of European countries within a stable, tolerant, and peaceful community.

The Bologna principles stated in the Bologna Declaration (1999) are

- adoption of a system of easily readable and comparable degrees.
- adoption of a system essentially based on two main cycles, undergraduate (Bachelor) and postgraduate (Master and Doctorate/PhD).
- adoption of a system of credits - such as the European Credit Transfer System (ECTS).

- promotion of mobility by overcoming obstacles to the free movement of students, teachers, researchers and administrative staff.
- promotion of European co-operation in quality assurance.
- promotion of the European dimensions in higher education.

During the Prague meeting (2010), the following principles were added:

- Promotion of Life-Long Learning (LLL).
- Promotion of student's participation (in all decisions and initiatives at all levels).
- Promotion of the attractiveness towards the European Higher Education Area.

From the Berlin meeting (2003):

- Establishment of the European Research Area as main support for a knowledge-centred society.

In this contribution, the Faculty of Medicine of the University of Medicine and Pharmacy 'Iuliu Hatieganu' in Cluj-Napoca will present how it adapts its curricula, particularly its medical curriculum to these principles.

**Curriculum development:** The Medical Faculty of Cluj offers six undergraduate curricula: Medicine (360 ECTS, 6 years), Midwifery (240 ECTS, 4 years), Nursing (240 ECTS, 4 years), Radiology and Medical Imaging (180 ECTS, 3 years), Clinical Laboratory (180 ECTS, 3 years) and Physiotherapy and Medical Recovery (180 ECTS, 3 years).

Earlier as the Bologna Process started, the Medical Faculty initiated already in 1996 curricula reforms. Main goal was the implementation of principles such as introducing student-centred, flexible, and life-long learning didactic formats to stimulate independent critical and analytical thinking with the use of scientific methods, to develop social, ethical, and economic and communication skills as well.

From 2002 on the Medical Faculty was, in Romania, the leading higher education institution in the negotiation process on European Parliament's Directive 93/16/EEC and 2005/36/EC about the recognition of diplomas and qualifications in higher education.

## **Implementation of Bologna Recommendations**

### **1. Adoption of a system of easily readable and comparable degrees**

Within the European Higher Education Area, EU Parliament's Directive 2005/36/EC Art. 24.2 defines that 'basic medical training shall comprise a total of at least six years of study or 5 500 hours of theoretical and practical training provided by, or under the supervision of a university'.

In Romania, the criteria to become recognized in the Diploma Supplement have been implemented into the curricula of all medical faculties in accordance with the Law on Medical Curricula OMEN3659/200 and OMEN3741/200 Art. 20c from 2005. In consequence, university diplomas are accompanied by supplements to assure international transparency and enhancing professional integration. It contains brief information in both Romanian and English language about the attended curriculum to secure a safe practice of medicine.

### **2. Adoption of a system essentially based on two main cycles, undergraduate and postgraduate**

Introduction of the system consisting of a 2-cycle structure in medical education is perceived at this moment with concern about possible negative consequences for the medicine curriculum. Up to date, at the Medical Faculty of Cluj efforts have been concentrated on an integrative spiral curriculum. This curriculum stresses upon the early integration of basic study objects and clinical science as being essential for the training and education of competent doctors who are going to have a competitive integration on the European health services market. This type of curricula does not allow the curriculum to become fragmented into two cycles; such separation is against the integrative spiral principle. Meanwhile, based on the spiral principle the medical faculty has implemented Master curricula with 3, 4, or 6 year duration based on 60 credits per year.



### **3. Adoption of a system of transferable credits - the European Credit Transfer System**

Implementation of the essential principle of adoption a system of transferable credits – as the ECTS – is necessary for achieving an increased flexibility in the study process to ensure credit accumulation and transferability.

At the same time, it supports the access of graduates on the European labour market and ultimately contributes in increasing the attractiveness of the European Higher Education Area. ECTS's fundamental principle implies that 60 credits represent the entire workload for a student per year, 30 credits for each semester. The credits for a discipline cannot be fragmented.

In case of student movement, there are four compulsory ECTS documents to regard:

1. The Student Application Form
2. The Learning Agreement,
3. The ECTS Study Guide (Course Catalogue) and
4. The Transcript of Records.

At the Medical Faculty of Cluj, as well as in the entire Romanian higher education area, implementation of the ECTS was introduced by law in 2005. Each discipline became assigned a certain number of credits which the student accumulates by graduating the exam.

Initially, credits were allocated after the number of course hours, practical activities, and clinical internships as contact hours. This allocation method, does not meet the definition and signification of the ECTS. Therefore, the Medical Faculty is now undergoing a process of re-calculating ECTS credits considering student's workload for each discipline.

However, the faculty is not yet prepared to implement the third approach of ECTS allocation, implying learning outcomes ([http://www.ee.bilkent.edu.tr/undergrad/ects/credit\\_allocation.pdf](http://www.ee.bilkent.edu.tr/undergrad/ects/credit_allocation.pdf)): In order to achieve a correct and steady implementation of the ECTS, and student evaluation criteria, there is the need to define for each discipline its specific teaching and learning activities. These definitions will result in precise descriptions of the curriculum units (as modules and courses), their contents, level, learning/teaching methods, and evaluation, in the faculty's ECTS Study Guide (<http://ec.europa.eu/geninfo/query/resultaction.jsp?userinput=ECTS%20User%20Guide>).

### **4. Promotion of mobility**

The Bologna Process has as one main goal the continuous growth in international student mobility by increase in transparency, diploma recognition, financial support, foreign language courses, and involvement of student associations to organize this mobility. The Medical Faculty of Cluj promotes students' mobility through bilateral and multilateral partnership within the Erasmus framework, the Central European Exchange Programme for University Studies CEEPUS as well as through the national programme TransMed.

Every year many students participate in international mobility programmes in whose selection student organizations are actively involved. At the university level there is an International Relations Department dealing with co-ordination of student and teachers mobility within European programmes. In each faculty, there is an ECTS responsible person to coordinate the recognition process of studies carried out abroad and the validation of these studies.

### **5. Promotion of European co-operation in quality assurance**

To achieve this high priority goal of the Bologna Process the Medical Faculty of Cluj is involved in a variety of international organizations, such as the World Federation of Medical Education (WFME), the Association for Medical Education in Europe (AMEE), the Association of Medical Schools in Europe (AMSE), the International Federation of Medical Students Associations (IFMSA), the European Medical Student Association (EMSA), and activities as the European Thematic Network Project MEDINE (financed by a grant from the European Commission 114063-CP-1-2004 -1- UK- Erasmus – TNPP) to increase its competences in the field.

## **6. Promotion of the European dimensions in higher education**

Considering the aspect of promotion of the European dimensions in higher education the Medical Faculty of Cluj has ensured for its students the opportunity to improve their foreign languages skills. The main foreign languages English, French, and German are scheduled in the faculty's curriculum as both compulsive and optional courses. Even faculty have been evaluated for their foreign language skills. To assure language competences of both students and faculty, the university offers foreign languages courses taking into serious account that curricula are offered in English and French.

## **7. Promotion of life-long learning**

Life-long learning is an essential element in building the European Higher Education Area (<http://www.unige.ch/>), ([http://eacea.ec.europa.eu/llp/about\\_llp/about\\_llp\\_en.php](http://eacea.ec.europa.eu/llp/about_llp/about_llp_en.php)), [1]. Within the Medical Faculty of Cluj continuous medical education (CME) and, more complete, continuous professional development (CPD) promote life-long learning through modern interactive teaching methods, long distance courses and, particularly, offering students individual learning packages depending on their skills and abilities by a diversity of electives and optional courses.

## **8. Promotion of student's participation (in all decisions and initiatives at all levels)**

Implementation of the principle that students should participate in all university's decisions and initiatives involves a necessarily close partnership between higher educational institutions and students as beneficiaries of the educational act. In Romania, the recognition of students as competent, active, and constructive partners is stipulated by the Law on Education: students should be represented in 25% of all academic and administrative structures being actively involved in taking decisions.

## **9. Promoting the attractiveness of the European Higher Education Area**

The Medical Faculty of Cluj is highly engaged in promoting the attractiveness of the European Higher Education Area through attractive training and educational offers for both European and non-European students.

This engagement resulted on success by implementation of English and French teaching programmes. These programmes were introduced in 1997 (English) and 2000 (French) respectively, undergoing continuous improvements. Nowadays, these programmes show about 1,000 students (30% of faculty's student body) enrolled from 54 countries around the world.

Cluj's Medical Faculty has the biggest number of foreign students in Romania. This is because of its attractive educational offer, skilled academic lecturers, and a convenient study environment. Its balanced student/teacher ratio (5:1) allows intensive practical learning experiences and direct patient contact what is characteristic for Romanian medical education. Professional and cultural integration of the foreign students is one of the big challenges for faculty and university to accept. Its multicultural dimension is experienced as a great gain and opportunity for professional and personal development of both teachers and students.

## **10. Establishment of the European Research Area – as main support for a knowledge-centred society**

In accordance with legal stipulations of the issue to support the establishment of the European Research Area, the PhD programmes on the University of Medicine and Pharmacy 'Iuliu Hatieganu' Cluj-Napoca have been organized within a 'Doctoral School'. This school offers one year of advanced doctoral education: 60 ECTS credits to become awarded by the study of several disciplines as, for example, scientific research methodology, scientific research ethics, research legislation, and publishing – with the aim to improve the research abilities of its students. Beyond this, a 2-year training programme on Scientific Research Methodology, honoured with a Master Degree has been established.

**Conclusion:** The implementation of a 2-cycle structure (Bachelor and Master) in medical education does not suit our faculty's medical curriculum. For the moment, the Medical Faculty of Cluj is concerned about the possible negative consequences involved by the implementation of

two cycles. However, in spite of this opinion this structure has been implemented in short study programmes with dimensions of 180 and 240 ECTS. Though the faculty cannot agree upon the 2-cycle structure, it has applied the rest of the Bologna principles as a continuous and dynamic process.

In order to improve, before acting and thinking on local level, institutions must have a global view upon the implications of creating the European Higher Education Area after 2010.

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## Germany's medicine on the legal way to Bologna: stony but manageable

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For all degree programmes in Germany which end with a state examination (teacher, law, medicine) no regulations exist for the implementation of the Bologna-Process. National health is one major concern for all governments. The functioning and thriving of national health systems, the assurance of quality of care and patient safety depend among others on the regulation of the medical profession. Especially the medical education is strongly regulated by different laws. The Treaty of Rome, establishing the European Community, declares that member states are responsible for the specific conditions for taking up a profession within their national territory.

Within the European community supranational law, Directive 2005/36/EC of the European Parliament regulates the minimal standards of basic medical education for both duration and content. Basic medical training comprises a total of at least six years of study or (to be read as 'and') 5,500 hours of theoretical and practical training provided by a university. Content is broadly and unspecific described as knowledge of the sciences on which medicine is based, understanding of structure, function and behaviour of healthy and sick persons and adequate knowledge of clinical disciplines and practices and suitable clinical experience.

Germany is a federal republic. It comprises 16 Länder (states). The Federal Ministry of Health (Bundesministerium für Gesundheit, BMG), the ministries responsible for health of the Länder and the system of medical self-administration, the German Medical Association (Bundesärztekammer) and independent Chambers of Doctors (Ärzttekammern) in the Länder are the main players in a complex governance system for the German Medical Regulation. The Federal Medical Practitioners Act (Bundesärzteordnung, BÄO) regulates the licensure of physicians. It authorises the BMG to conceptualise the Medical Licensure Act (Ärztliche Approbationsordnung, ÄApprO) and to introduce it with the consent of the Bundesrat (constitutional body of the Länder to participate in the legislation). This ensures and establishes common and equivalent standards for medical education in Germany which are necessary in the national interest. The ÄApprO regulates and specifies the minimal necessary content of teaching and assessment of student's qualifications for receiving the license to practice medicine by the state. The first state examination (M1) takes place after two years of study mainly devoted to natural sciences and social sciences. The second state examination (M2) takes place after six years of study. During the four years between both examinations students take courses in clinical subjects for three years. Credits of these courses are a prerequisite for admission to the practical year (Praktisches Jahr). The ÄApprO encourages

the integration of clinical subjects into theoretical background of the natural sciences. It makes demands on the restriction of the theory overload. Only scientific content absolutely essential for the clinical understanding should be taught during the preclinical years.

§ 41 of the ÄApprO grants the development of alternative and innovative study courses. This requires a special study regulation on the part of the respective university and allows that the medical state examination may consist of only part two of the medical examination after six years of medical studies. The university has to provide evidence that the assessment of the content of the M1 examination is equivalent to the assessment in the regular curriculum. The first completely reformed curriculum in Germany has been piloted at the Charité Berlin [1].

There is no imperative to establish the Bologna-Process in the medical curriculum for Germany's faculties. Some authors argue that it is alien to the system of medical education since most programmes in medicine are provided in a single cycle lasting 6 years. In addition the structure of the state examination with the first examination after two years and the second after six years is not in accordance with the 2-cycle system of the Bologna Process with a 3-year Bachelor study and a subsequent 2-year Master programme. Nevertheless with § 41 of the ÄApprO the lawmakers honour the autonomy of the universities and encourages the responsibility of their faculties for the medical education. Faculties who take this opportunity serious can make use of the 'model-clause' which provides a relative academic freedom to establish a Bologna friendly curriculum: modular structure, interdisciplinary teaching, and significant clinical content right from the beginning. Embedded in this curriculum which fulfils the requirements for the state examination after six years is the possibility to receive two university grades: the Bachelor Degree at the end of the sixth semester and the Master Degree at the end of the tenth semester. The acquisition of these degrees is voluntarily and has no influence on the study progress for the state examination. A little pejorative this has been called the 'Bachelor/Master en passant' [2]. The authors do not share the opinion, that these degrees are entirely useless to those who have gained those[2]. On the contrary they provide an opportunity to leave medical studies for those, who in the course of their studies changed their main interests. With a bachelor degree students can apply for an employment in the industry or in the administration or they can continue their studies in a great variety of master programmes ranging from public health or molecular medicine to law, politics, or journalism. Students with a Master Degree in medicine may pass on the practical year and go directly into research. As a matter of course the bachelor and master programme need accreditation.

Using the opportunity given by § 41 of the ÄApprO on the way to Bologna is an auxiliary construction and should not become a permanent solution. If politicians mean business with the implementation of the Bologna-Process in medical education they have to start a new legislative process as soon as possible. German medical faculties should not ignorantly abstain from the Bologna reform while North American Universities discuss it as an opportunity for international cooperation [3], [4].

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## The 3 + 3 BA-MA structure is inappropriate for undergraduate medical education

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**Introduction:** In this contribution it is intended to assess the option of a 3+3 Bachelor/Master structure for undergraduate medical education. Actually, a lot of countries have not implemented this structure to undergraduate medical education. Moreover, some of the countries that implemented the structure did it but not based on clear arguments about content and educational design of the curriculum. They applied simply the format of 3+3 to an existing curriculum. The question arises whether the implementation of such 3+3 BA-MA structure is appropriate for medicine.

**Target point: The quality of the educational project:** Traditionally, in the previous century, the study of medicine was based on a first cycle of 3 years, completed with the basic natural and basic medical sciences physics, chemistry, biology, physiology, anatomy, pharmacology, biochemistry, etc. All these disciplines thoroughly studied with little, if any relation to clinical practice and care. In the second cycle (three to four years) diseases were studied, very often starting from disciplines as pathology, pathological physiology, etc. Late in the curriculum there was the first patient contact through clinical demonstrations and clerkships, mostly in hospitals.

The result of such curriculum was, as assessed in different international accreditation procedures, that students were ill prepared in clinical skills, patient communication, clinical decision-making, and patient management. So, 'learning' mostly happened by 'doing' in the third cycle (specialty training). There a classical 'expert-apprentice' strategy was used.

Starting from the Seventies in the last century reflections about this approach led to more patient integration in the curriculum: Problem-based learning, as it was developed in McMaster (Canada), Newcastle (Australia), Maastricht (The Netherlands), demonstrated how patients with their problems could be used in order to understand basic mechanisms of disease and to train students from the very beginning of their study in clinical decision making, clinical and technical skills, and communication skills. The development of evidence-based medicine in the Nineties reinforced this integration, as the importance of clinical epidemiology in undergraduate training increased.

A consequence of this development was that the traditional 2-cycle structure was no more appropriate. Accreditation committees advised medical faculties strongly to think about the curriculum as a continuum of six years with a 'spiral'-learning strategy, starting from the first year onwards, problem-based and patient-and-community oriented.

Now, the Bologna structure requires that to go back to the two-cycle design that has been just left in the last two decades. This does not seem very logical: A high quality training and education programme in medicine requires an integrated, problem-based, and patient-oriented curriculum that develops continually during the six year of undergraduate training, and mixes theory and practice from the very beginning on. The traditional pre-clinical/clinical dichotomy is no more relevant in a modern medical curriculum.

**The 3+3 BA-MA structure:** The actual problems with the 3+3 BA-MA structure are that there is first no societal 'output' for Bachelors in medicine after the first three years of the curriculum; they cannot start a professional career. Moreover, the 'Master of Medicine' after six years is not allowed to take responsibilities in health care independently. Such Master is ready for the next training phase: specialty training of three to six years according to European regulations.

The Bologna Recommendations require clear 'objectives' for a Bachelor Degree: these are very difficult to define, as all faculties use a different sequence in their undergraduate training and a different mix of 'normal' and 'pathological' sequences in the different study years. So, to define

the objectives for the 'Bachelor of Medicine' based on basic medical sciences and uncertain clinical subjects is nearly impossible. Actually, the Bachelor Degree is just an artificial 'stop' that in some faculties is pragmatically being used for extra recruitment from other disciplines. But of course, in the actual 'credit saver transfer system' a Bachelor Degree is not needed to organize this kind of extra recruitment from other disciplines.

A comprehensive integrated and problem-based medical curriculum does not fit into the Bachelor/Master dichotomy.

**Conclusion:** Looking at the Bologna Recommendations and the Dublin Descriptors on the one hand, and on the needs for a modern, integrated undergraduate medical curriculum on the other hand leads to the conclusion that a 3+3 BA-MA structure is not appropriate. If the principles as suggested by the Bologna Recommendations are applied in a consistent way medical training should consist of six years of Bachelor-training followed by a variable number of years in Master training leading to, for example, a Master in family medicine, in specialized medicine as gynaecology, surgery, in occupational medicine and so on. If for cosmetic reasons or for reasons of 'similarity', the 3+3 BA-MA structure will be chosen, one has to be aware that this is both conceptually and from an educational viewpoint not the best thing to do.

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## Harmonization of the two-cycle education of nurses in Croatia - an opportunity for mobility development

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**Yesterday:** The Faculty of Medicine Osijek has been conducting a professional nursing curriculum since the academic year 2003/2004. Since 2005, the faculty has been actively participating in the reform of study programmes, in co-operation with the other three centres for nursing education in Croatia (Zagreb, Split, and Rijeka).

At that point, the decision was made to organize nursing education in at least two cycles, a 3-year course (180 ECTS) at Bachelor level and a 2-year course (120 ECTS) at Master level.

**Today:** From 2005 to 2008, the Faculty of Medicine Osijek managed to develop the study programme according to the guidelines of European Parliament's Directive 77/453/EEC-2 and to standardize the basic part of the curriculum at Bachelor level at all three centres of education. At the same time, the developed curricula have been competitive due to the development of local different elective courses.

Faculty of Medicine Osijek's position on the way towards mobility is shown in figure 1.

**Tomorrow:** A major obstacle to more rapid development of higher education of nurses in Croatia is serious lack of competent teachers in the area of nursing care. Therefore, in the next five years the Faculty of Medicine Osijek plans to educate additional numbers of teachers which will contribute to the development of the elective part of the curriculum and in this way develop centres of excellence in particular areas. It is its intention to develop complementary education of nurses at Master level in various health care areas at least at two more centres of education of nurses.

**Conclusion:** Increase of quality in specific areas of higher education of nurses would certainly result in greater mobility of both students and teachers, strengthening of the modular teaching approach and logical development of the education of nurses at Master level in particular areas.

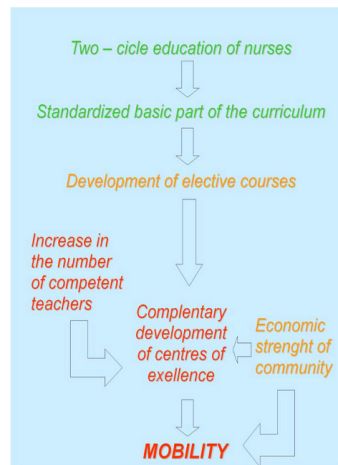


Figure 1: Faculty of Medicine Osijek's position on the way towards mobility.

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## Specificity of the accreditation of medical schools: The '2 in 1'- or '1 in 2'-model

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**Introduction:** In the year 2010, the Jagiellonian University Medical College could celebrate its 100 years anniversary of accreditation of its medical school, which had started in USA and Canada in 1910. Since the very beginning, accreditation had a significant impact on quality of medical schools and medical education in North America. On a long distance, it had also influenced development of the accreditation systems in other parts of the world. By now, the need for accreditation of schools and programmes leading to qualifications of a medical doctor, is understood and supported in all six regions of the World (Africa, Americas, Europe, Eastern Mediterranean, South-East Asia and Western Pacific) although such an accreditation is not yet commonly established [1].

In Europe, the Bologna Declaration has stipulated an interest in accreditation and the process related to its implementation. The accreditation systems established in Europe within the Bologna Process, in principle follow the European Standards and Guidelines for Quality Assurance (<http://www.enqa.eu/files/ENQA%20Bergen%20Report.pdf>), which have been designed to fit all institutions of Higher Education (HE). Therefore, most of the accreditations carried actually in Europe do not reflect the specificity of medical education.

Yet the experience gathered so far from medically tailored accreditation (including the experience of the Accreditation Committee for Medical Universities in Poland) indicates that accreditation of medical schools should not rely on 'one fits all size" model, but combine a 'generic framework' with specific elements and criteria ('2 in 1'-model meaning here two perspectives in a single approach).

**General accreditation aspects:** Regardless the type of HE institution and the programme evaluated, the procedure of accreditation usually remains the same and includes institutional self-evaluation, analysis of the self-report by the accreditation commission, the site visit of the accrediting team, the report of the visiting team, and the decision about accreditation. The following aspects are usually evaluated in relation to all HE institutions:

- Specification of the institutional mission, its educational objectives, and its reflection on the curriculum.
- Organization of the educational programme (use of ECTS, appropriateness of the weekly and yearly schedule, adequacy of self-study time, opportunities for electives).
- Methods of assessment used to monitor students' progress (different formats, appropriateness for the purpose, availability of feedback).
- Academic staff (number, professional and educational qualifications, development of teaching skills).
- Internal systems for quality assurance (permanent control of the teaching effectiveness, students feedback regarding the teaching process and teachers, monitoring the further careers of graduates, regular surveys on students' and staff's satisfaction).
- Facilities (lecture halls, library, computer rooms, and laboratories).
- Institutional management (information gathering, data collection, financial aspects, prospects of future development).
- The role of students and student support for extra-curricular activities.
- Internationalisation (student exchange programmes, visiting teachers from abroad, courses in foreign languages).

**Medical accreditation aspects:** In relation to medical curricula, the general aspects as mentioned above should be viewed from the perspective of the European Parliament's Directive 2005/36/EU (from 7 September 2005) on the recognition of professional qualifications which outline the borderline requirements for medical education. Specific standards defined for medical education are the WFME Global Standards for Quality Improvement in Basic Medical Education [2] and their later adoption specific for Europe [3] should be also taken into consideration.

The main concept promoted by the WFME documents is a combination of the basic standards, which must be met by every school, with standards for quality development in relation to examples of best practice in the field. The school which can demonstrate a compliance with some of the latter standards deserves a certificate confirming a higher quality.

The WFME Global Standards require in addition much deeper insight into the above listed parameters as compared with accreditation of other disciplines (to mention only characteristics of the curriculum models, the mechanism for programme evaluation, various formats of assessment, student representation, student support, and the role of stakeholders). Up to now, quality criteria used for evaluation of medical schools do not include implementation of the Bachelor/Master system in the medical curriculum but this might change after the revision of the European Parliament's Directive 2005/36/EU which is planned for the year 2012.

In order to check compliance with the specific standards, the commission to accredit a medical school should review in addition the following aspects: Adequate content of basic, preclinical, and clinical sciences.

- Incorporation of clinically relevant material.
- Provision of a scientific basis for clinical decisions (evidence-based medicine).
- Methods of teaching and assessment in regard to clinical reasoning, problem solving, and team working.
- Premises for clinical training (hospital, outpatient clinics, emergency, community, and chronic care units).
- Variety of patients experience (full representation of "typical diseases").
- Range of diagnostic methods and specialist procedures available for use of demonstration.



- Direct access of students to patients (number of patients contacts, characters of tasks required, the level of personal responsibility expected from students).
- Practical training of clinical skills (list of skills, training laboratories, training methods and specific assessment of skills).
- Organization and supervision of internship/clerkship periods.
- Preparation of students to the doctor's role (ethical issues, attitudes, professionalism).
- Teaching role of clinical staff (qualifications, school supervision, conflict of duties between medical service and teaching).

The competent evaluation of the parameters specific for medical education requires not only specific criteria to compare with but also an adequate composition of the accreditation committee. According to the Guidelines for Accreditation of Basic Medical Education, proposed by WHO and WFME [4]. One third of the members of the accreditation committee should represent the academic community (academic teachers, school management, full time senior staff), one third should represent the medical profession (physicians from hospitals, general practice, professional bodies), and the final third should consist of other stakeholders (representatives of the government, authorities in charge of the national health care system, students). In fact, a stress on involvement of practicing physicians and students distinguishes the teams that evaluate medical schools from others dealing with general education only.

**The dilemma:** As practical point remains how to arrange the medical-specific accreditation in countries where the national regulations require a mandatory accreditation of all high education institutions by the one accrediting body. This is actually the situation in Poland where the Accreditation Committee for Medical Universities was established in 1996 due to a joint initiative of the rectors of medical universities, but in the year 2000, the State Accreditation Commission was set by the governmental decision. It is the latter which has a statutory obligation to evaluate all programmes in universities and higher education institutions. Whereas such an accreditation fulfils national requirements, in relation to medical schools it does seem adequate for an international recognition, which according to the WHO/WFME documents should be based on compliance both with their standards as well as with their procedural guidelines. In addition, the US Department of Medical Education requires a specific, medical-oriented accreditation of foreign medical schools in order to allow American citizens who undertake medical studies abroad to apply for the Federal Loans Programme.

The possible solution could then be a combination of the two accreditation procedures into a one process (another meaning of the '2 in 1'-model). It means the creation of a joint 'ad hoc Accreditation Team' for every medical school which would represent both the State Commission and the Accreditation Committee for Medical Universities. Alternatively, the two, separately carried out processes can be summed up for a final report ('1 in 2'-model).

Jagiellonian University Medical College is now trying to solve the dilemma. Most of the accreditation procedures regarding medical education were until now focusing on the school structure and teaching process. An approach focusing on competencies achieved by graduates, used by the Council of Medical Colleges in the UK is at the moment rather exceptional. This will have to change when implementation of the National Qualifications Framework will lead to a mandatory redefinition of the curricula in terms of learning outcomes. Therefore, the standards of programme (courses, hours) and standards of content (topics covered) will become replaced by the standard of (core) competencies. Such a switch from an input measure (curriculum characteristics, teaching methods, educational environment) towards outcomes measure (learning outcomes) will be certainly reflected in the accreditation criteria.

Apart from USA and Canada, where positive influence of the accreditation on quality of medical schools have been reported, there are no scientific data to support an assumption that implementation of the accreditation will improve both quality of medical education and of health care worldwide [1]. One of the main reasons why it is so difficult to prove it, are variations in the methodology of accreditation as applied in different countries and sometimes even a misinterpretation of the very term of accreditation. As a first step leading to clarification of this issue the Foundation for Advancement of International Medical Education and Research (FAIMER) has

undertaken an initiative to register and compare accreditation systems operating in relation to medical undergraduate education all over the world [1].

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## Cooperative medico-technical and administrative qualification of clinical management assistants

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Health care systems around the world are under pressure to adapt to rapid change and development of scientific and technical innovations, legal regulations, global competition, and cost efficiency. Hospitals in particular face these challenges. In Germany, hospital organisation is based traditionally on the three columns *medical service, nursing, and administration*. Each of them developed its own complex expertise and contributes to the overall performance. There is, however, yet no professional cross-functional management to coordinate the whole and to take into account the interdependence of individual optimization measures. Most needed are management skills, which rely on factual knowledge of all three functionalities, their key success factors, and bottlenecks – enhancing communication and co-operation between them.

So far, medical doctors with their complex and challenging professional qualification to medical experts have no capacity to engage additionally in administrative and technical management of a hospital; the same is true for the operating officers of the nursing and technical services.

A contribution to the solution of this dilemma, a hybrid qualification model for future clinical management assistants was designed and tested by the authors. So far, an established function within the medical service line to assist physicians in Germany is the medico-technical assistant (MTA). Her/his qualification is in the responsibility of authorised clinical schools, leading to a state acknowledged professional degree (MTA) after a three years course (4,400 hrs of training), consisting of both profound theoretical education and practical training within medical institutions. The main qualification fields are basics in medical science (mathematics, chemistry and biochemistry, physics, biology, statistics, anatomy, physiology/pathophysiology, psychology, immunology, histology, haematology, microbiology) plus applied skills such as hygiene, use of data processing systems in medicine, legal obligations, first aid and clinical analysis incorporating the use and functionality of corresponding equipment, added up by internships in histology, clinical analysis, haematology and microbiology (alternative to the clinical analysis path a radiology specialisation can be chosen).

After the first year high potential students of this course have the chance with thorough assessment and career mentoring to enrol in a three and a half year Bachelor course in business administration at Provadis School of Management and Technology, University of Applied Science in Frankfurt. This curriculum is integrated into the university's programmes and covers the

theoretical knowledge needed to run a project, business, or department in the health care sector. Within various elective modules, including their thesis, the students can focus their general economic and management know how on cost and risk management, fulfilment of patient requirements, handling of insurance prerogatives, facility management and similar in the health care sector.

With support of the hospital general management, these medico-technical assistants will have the challenge to network the inter-phases between the classical functionalities, identify improvement potentials and to exculpate physicians, nurses, and administration alike.

It is hoped that this ambitious qualification model can comply with the Bologna aims of professional education in the health care sector and will contribute substantially on an operative level to an optimised patient care in Germany.

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## The Bologna Process needs academic career consulting in medical education

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**Abstract:** This paper results from the poster exhibition of the international conference on the Structure of Medical Education in Europe, hosted by the German Rector's Conference (HRK), which took place on 10/11 October 2008 in Berlin.

In response to the European Bologna guidelines to create a European Higher Education Area in which students should become more mobile and to the need of more flexibility in higher education also, the Vrije Universiteit Brussel (VUB) installed in 2004 'Academic Career Consultants' (ACCs) open to all (potential) students, national and international. The ACC deals with questions or challenges in connection with the (flexible and/or mobile) academic educational path. For the students (wanting to study at) the Faculty of Medicine and Pharmacy of the VUB there is a full time ACC. From the five years of experience in working with medical students VUB wants to inform all involved medical education professionals on the assets of academic career consultancy. VUB also wants to invite others to help setting up a quality driven international network of ACCs.

**Introduction:** The international conference on the Structure of Medical Education in Europe hosted by the German Rector's Conference took place on 10/11 October 2008 in Berlin. Participants from Medical Schools and others came from all over of Europe and the world, to take part in these two days of gathering around the main topic of this conference, being the curricular reform in medical education within the Bologna Process. On the programme were presentations, panel discussions, workshops, and a poster exhibition.

For this occasion Professor Jerome Rotgans (Aachen/Germany) coordinated and invited participants to submit abstracts for posters concerning the implementation of the Bologna Process in medical education in Europe. The poster on the 'Bologna Process needs academic career consultancy (ACC) in medical education' was selected for presentation on this international conference [1] and later, as 'extended abstract', for this article in this issue of *Medizinische Ausbildung*.

The aim of this article is to reveal a specific answer to the formulated need for ACC recognition. The Vrije Universiteit Brussel, being an innovative university, was one of the first of the Belgian universities to introduce a new profession, the academic career consultant (meanwhile all Flemish universities and other higher education institutes installed these ACCs). The authors present a model of the facility which the ACC offers to students and educational professionals<sup>1</sup>.

**Bologna and the changing reality for medical students:** The Bologna Process directs the European Higher Education Area. This process has brought new directives with new regulations and policies, for medical and other students. The Bologna Process brought the introduction of the Bachelor/Master system, the stress on mobility in the European Higher Education Area and a credit system regulated by European Credit Transfer System (ECTS). A central aim of the Bologna Process is an increase in mobility during the (medical) studies (Bologna Process: 'by 2020, at least 20% of those graduating in the European Higher Education Area should have had a study or training period abroad') (<http://www.ond.vlaanderen.be/hogeronderwijs/bologna/>) and as a logical consequence of this European policy during professional life also.

In response to, on the one hand the European Bologna guidelines to create a European Higher Education Area, in which, as referred to earlier, students should become more mobile, and on the other hand the Flemish Flexibility Decree, where students whatever their studies are seen as part of the Erasmus Life-Long Learning Project, the VUB installed in 2004 the 'Academic Career Consultant' (there are eight full-time equivalent ACCs for more than 10,000 students at the VUB) open to all (potential) students, national and international. As the job title says, the ACC deals with any questions or challenges in connection with the (flexible and/or mobile) academic educational path.

**Academic career consultancy as a case study:** At the Faculty of Medicine and Pharmacy of the VUB, a one full-time equivalent ACC is ready to advise (mobile) (medical) students in Europe, having questions on one of the above mentioned topics.

More than five years of experience in dealing with questions from medical students learned that the Bologna Process is much more than a highbrow or abstract process, as some might consider. It changes a lot in everyday life of medical students. Without going into detail on all these matters, VUB learned that medical students are in need of clear information

- on the impact of the Bologna Declaration and the Bologna Process.
- on the structure of the medical curriculum in the VUB or elsewhere, and this in regards to their current studies or later professional possibilities, or they may have questions when confronted with the choice among several Master programmes once one has earned a Bachelor Degree in Medicine, or the choice among several 'Master after Master' programmes once one has earned a Master Degree in Medicine ('Master after Master' is the official name for postgraduate programmes in Flanders/Belgium, such as the Master in Advanced Medicine or the Master in General Practice) [2].
- on mobility in or outside of Europe, on clinical or research internships abroad.
- on Erasmus placement [3], on flexibility of the medical studies in order to continue their studies following a tailor-made educational path (APL, APEL, etc.), or individualized study programme.
- on exemptions or retakes.
- on learning outcomes and recognition of qualifications (ECTS and ECVET).

The VUB is convinced that the availability of correct information on all these matters may favour a more flexible and mobile spirit in students.

**Medical education and Academic Career Consultants:** The ACC watches over a continuous progress of all medical students through the medical curriculum (the medical curriculum in Belgium (still) is seven years – 3 years of Bachelor and 4 years of Master). Individual and collective academic sessions are organized to offer consultation and advice on the medical curriculum. Besides the control of progress, the students are in need of a consultant who guides them through complex recognition procedures. (Future) medical students want their credits recognized in a maximum way in order to start medical studies or continue them elsewhere or

even retake them at a later stadium. In order to offer students an individual approach, the intended learning outcomes of the medical curriculum are compared to the already achieved learning outcomes of every potential medical student (all medical faculties in Flanders agreed on common learning outcomes for the Master in Medicine; [4]). The ACC will look at the obtained individual records of every student. This will result in an individual and flexible study trajectory which will have to be approved by the ACC together with the responsible academics.

In order to facilitate the mobility of medical students and its recognition, a combination of comparable volume and content is needed. The widely used ECTS offers a standard measure of volume of learning and deserves to be differed in all medical schools in Europe (a survey by MEDINE showed that a majority of the European medical schools have installed or at least are planning to install ECTS; [5]). Other and more recent surveys have confirmed these data. The content of learning is expressed in learning outcomes. With the TUNING methodology applied in medical education by the thematic networks MEDINE (2004-2007) and MEDINE 2 (2009-2011) (<http://medine2.com/>) there will be comparable learning outcomes for Bachelor and Master qualifications. The project 'TUNING Educational Structures in Europe' started in 2000 as a project to link the political objectives of the Bologna Process and at a later stage the Lisbon Strategy higher educational sector. Over time TUNING has developed into a process, an approach to (re-)design, develop, implement, evaluate and enhance quality of first, second and third cycle degree programmes (TUNING, 2000, [http://tuning.unideusto.org/tuningeu/index.php?option=com\\_frontpage&Itemid=1](http://tuning.unideusto.org/tuningeu/index.php?option=com_frontpage&Itemid=1)).

The transparency created by use of the TUNING methodology is needed to create trust within and between all involved medical schools. With a 'Golden Standard' in volume (ECTS) and a consensus on the minimum of agreed common learning outcomes (TUNING) one only need to trust each others' documents. It is there that the ACC will be able to play an important role of goalkeeper. Both volume and content will appear on diplomas and their diploma supplement. In an era of advanced technologies, fraud with (copied) 'official' documents is a real threat. Therefore, not only will ACCs help the students, they will provide universities with a quality control of the learning outcomes, and they also will be of help in the quality control of the documents leading to the recognition of ECTS. All documents should be checked by the ACCs in order to avoid 'false' recognition of perverted data. Control of these documents will not only lead towards an honest mobility but will also help to keep out fraudulent persons from the medical profession and in the end the ACC will be a small but vital link in a safe and high quality health care.

**Academic Career Consultants as key persons in the mobility of medical students on a European level:** The authors fully subscribe the feeling of the HRK conference on the Structure of Medical Education in Europe 'that special national solutions are counterproductive (...) as they tend to make mobility and mutual recognition in the Common European Higher Education Area more difficult' (HRK, 2008, [http://www.ond.vlaanderen.be/hogeronderwijs/bologna/calendar/documents/Conference\\_on\\_medical\\_education\\_programme.pdf](http://www.ond.vlaanderen.be/hogeronderwijs/bologna/calendar/documents/Conference_on_medical_education_programme.pdf)).

The ACCs are key persons for teachers and students in regard to the information on Bologna. They have become an essential interface in facilitation of the recognition of study periods in medical faculties and schools undertaken by mobile European students. Mobility and flexibility in medical studies bring many good things as there are international experiences, exchange of clinical and research knowledge and skills, learning about other (medical) culture, widen the own view, etc. Students are invited and encouraged to participate in the 'making' of an Area of Higher Education in Europe. Therefore every (medical) student should have the right to receive adequate and 'tailor made' advice by a professional who can look up the individual challenges when students want to be mobile. ACCs also fill in the need of control and quality assessment. For all these reasons, and there are certainly more, the authors plea for a European network of these ACCs in order to promote flexibility and mobility and to facilitate the recognition of study periods and/or placements abroad.

**Conclusion:** A good working network of Academic Career Consultants will be an asset in the promotion of mobility of medical students but also in preservation of the quality control of

achieved learning outcomes in mobile students. In their way, they will eventually contribute to a safe health care system in Europe. All interested persons are invited to contact the authors [5].

#### Remark

<sup>1</sup> Ruddy Verbinnen, MSc, PhD, was working on Academic Career Consultancy (2005-2010/01) guiding students, working on educational policy and mobility. Now in Quality Assurance at Life Sciences VUB.

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## The German Association for Medical Education and the Bologna Process

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**Introduction:** The German Association for Medical Education (Gesellschaft für Medizinische Ausbildung GMA) published in 2005 a position paper with recommendations on 'Medical Education and the Bologna Process' written by its Committee for 'Study Reform in the European Higher Education Area'. This careful analysis was widely discussed in the German speaking area of Europe. In succession, a new committee was established to work on the Bologna reform

**The Bologna-Process:** The Bologna Process offers a chance for the reform and modernisation of medical curricula. All activities should be critically monitored if they are in line with this chance. The GMA participates in this process and will support activities to improve medical education in Europe.

The implementation of the 2-cycle system in medical education in Switzerland gives the chance to learn from mistakes and to build on the positive aspects of the Bologna reform in Germany. Experiences from other European countries will add to this ongoing process.

**Committee for Study Reform in the European Higher Education Area:** The committee's recent work is done on the following topics:

- Collection of material to support activities within medical faculties.
- Clarification of the regulatory framework for the implementation of the 2-cycle system in Germany.
- Identification and description of the expenses needed for implementation of the Bachelor/Master structure.
- Modularisation and the growing examination burden - a necessity?
- Mobility and collaboration.
- Follow-up of Bachelor graduates.
- Structure of the quality assurance process.

**Conclusions:** More than 20 people from 15 different German speaking Medical Faculties are working on the various topics of the Bologna Process. The structure of the GMA facilitates an open dialogue where ideas are shared and can be learned from first-line experiences with the implementation of Bologna reforms.

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## **Initiatives of the University of Prishtina's Faculty of Medicine to cope with Bologna**

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**Introduction:** Prishtina is the capital of Kosovo with approximately 500,000 inhabitants. The University of Prishtina is founded in 1970, its Faculty of Medicine in 1969. The faculty offers five branches of studies: medicine (1969), dentistry (1975), pharmacy (1996), physiotherapy (2001), and nursery and midwifery (2003). with the following study times: medicine and dentistry 6 years, pharmacy 5 years, physiotherapy, nursery and midwifery 3 years as Bachelor programme.

The university hosts 2,000 active students and graduated more than 4,000 students.

New curricula are implemented from the academic year 2007/2008 on. For the near future PhD programmes are planned.

For medical education implementation of the Bologna Recommendations is seen as one of the ways to go forward, for a better future of its institution.

**Goals:** The University of Prishtina wants

- to be part of the European Higher Education Area.
- to implement the Bologna Process in medical education.
- to reform/reconstruct its curricula.
- to introduce new teaching and learning formats.
- to cooperate.

**Strength:** The University of Prishtina has a very young population.

**Weakness:** As weaknesses the university is aware of its actual low economic power, its low and old infrastructure, as well as its low research capacity.

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## Update on the Bologna Process in medical education at the Faculty of Medicine, University of Nis: The new curriculum and quality assurance

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**Aims:** The Faculty of Medicine in Nis aims at the establishment of a modern European system of higher learning in accordance with the Bologna Process by

- implementing learning concepts which are based on modern educational theories with appropriate IT support.
- interactive communication among teachers and students through various formats of teaching, consultations and learning.
- allowing a higher degree of student involvement as partners in the educational process.
- introducing a curriculum which offers a higher percentage of practical and individual student work.
- achievement and sustainability of the standards for self-evaluation and quality assessment of institutions of higher learning and curricula.
- establishment of mechanisms to monitor various aspects of quality in education and research.

To reach these aims, the faculty established the Centre for Monitoring, Assurance, Improvement, and Development of Quality of Study Programs, Teaching and Research.

**Tasks:** To meet the Bologna Recommendations the centre hosts

- the commission for allocation of ECTS credits, to create ways to accumulate ECTS credits and to assess student workloads.
- the commission for study efficacy analysis.
- the commission for monitoring, improvement and control of the quality of research activities.
- the commission for quality control and assurance according to the concept of figure 1.

### A QUALITY ASSESSMENT MODEL

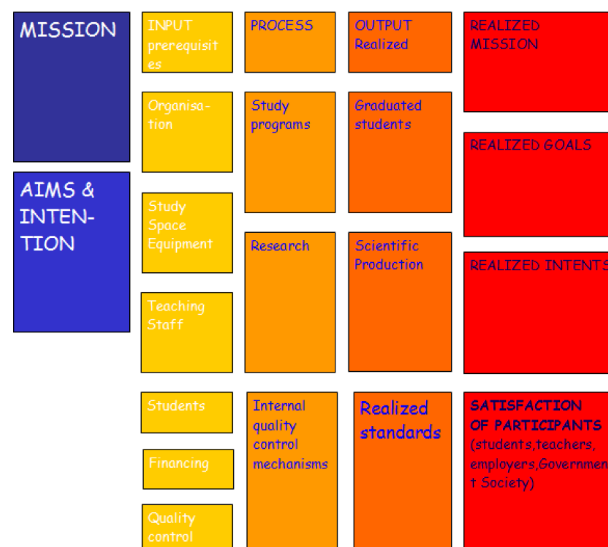


Figure 1: Concept for quality assessment of the Faculty of Medicine, University of Nis



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## The Faculty of Medicine Comenius University Bratislava, Slovak Republic

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**Introduction:** The Comenius University (CU) founded in 1919, is the greatest, oldest, and outstanding national university of the Slovak Republic. The university's core strategic objectives are:

- to deliver graduates not only with high personal and professional achievement but also with high human qualities.
- to enhance the scientific and cultural vision of society as well as its economic well-being. As Centre of Excellence, the university pays special attention to continuous evaluation of its research and teaching in order to ensure that its students are lead by outstanding experts, researchers, and lecturers.
- to sustain and develop its identity as a research and teaching institution of highest international quality.

**The study at CU Faculty of Medicine:** High quality medical education is central to our mission. Currently the Comenius University's Medical Faculty offers two main undergraduate study programmes, general medicine and dentistry, both in 6 year day-time curricula in Slovak and in English language. However, no undergraduate doctoral programmes are offered for 'external', i.e. international students.

In the first 3 years courses provide theoretical and pre-clinical lectures, labs and practical classes. For the remainder 3 years diverse clinical experiences are offered to the students.

After passing the state examination, the graduate is conferred the degree 'MUDr. - Medicinae Universae Doctor' (Doctor of Medicine) or 'MDDr. - Medicinae Dentale Doctor' (Doctor of Dentistry). The diplomas and titles are valid in all European countries according to the Diploma Supplement.

Beyond the undergraduate curricula, several residency training programmes and advanced postgraduate PhD qualification programmes are offered.

**The Bologna Process:** Representatives of all three faculties of medicine in Slovakia, Bratislava, Martin, and Kosice have agreed on to continue teaching general medicine and dentistry in traditional 6-year state examination programmes and not to implement the 2- or 3-cycle system in their curricula.

However, to meet one important Bologna Recommendation, since the academic year 2001/2002 a local credit system has been introduced which is compatible with the European Credit Transfer System (ECTS) to support student's mobility. Figure 1 shows the number of outgoing and ingoing students in the period 2001/2002 till 2007/2008.

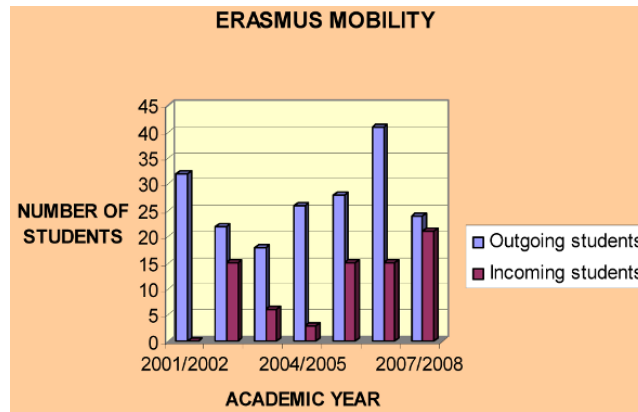


Figure 1: Student's mobility in the period 2001/2002 – 2007/2008.

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