Università
della
Svizzera
italiana

Master in Human Medicine in Ticino

Feasibility Report

Study Group
"Scenarios for structuring a Master in Human Medicine in Ticino"
Università della Svizzera italiana
Via Lambertenghi 10A
6900 Lugano

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Abbreviations

BA	Bachelor
BAG	Federal Office of Public Health
CCT	Cardiocentro Ticino
CdS	State Council
cp.	compare
CUS	Swiss University Conference
CRUS	Rectors' Conference of the Swiss Universities
EOC	Ente ospedaliero cantonale
FMH	Swiss Medical Association
FOPH	Federal Office of Public Health
FSO	Federal Statistical Office
GC	Cantonal Parliament
HM	Human Medicine
IA	Intercantonal agreement
IRB	Institute for Research in Biomedicine, Bellinzona
MA	Master
MAmed	Master in Human Medicine
MD	Medical Doctor
MEBEKO	Commission of medical professions
NC	Numerus clausus
OAQ	Swiss Center of Accreditation and Quality Assurance in Higher Education
SER	State Secretariat for Education and Research
Sem.	Semester
SIWF	Swiss Institute for Continuing Medical Education
SNSF	Swiss National Science Foundation
Unibas	University of Basel
UniBE	University of Bern
UniFR	University of Fribourg
UNIGE	University of Geneva
UniL	University of Lausanne
Unine	University of Neuchâtel
USI	Università della Svizzera italiana
UZH	University of Zurich
w.	week

Executive Summary

The limited number of study places available in Switzerland, the lack of physicians

In 1978, Swiss universities trained nearly 1,200 physicians, of whom less than 20% were women. In 2006, 600 students received their diploma in human medicine, of whom 60% were women. In 2009, over 2,000 young physicians started to actively work as physicians, of whom only about 700 were educated at Swiss universities; that is one out of three.

In 2010, nearly 4,000 candidates applied for one of the 1,084 available study places. The Cantons and the Confederation invest over CHF 1 billion per year for the medical faculties. In a nutshell, this is the situation in Switzerland.

The potential of medical education and research for Ticino

Ticino already possesses a pool of clinical resources and of resources for clinical and biomedical research and teaching, which could be better exploited.

In Ticino, there are currently 37 physicians holding a professor title or a title as PD ("Privat-Dozent") working at the EOC or in private clinics. The research in Ticino can count on about CHF 25 million of funds from third parties per year. In 2009, the EOC has produced 211 scientific publications in peer-reviewed journals. The existing public and private structures in Ticino have received 67 FMH certificates for the continuos education of medical specialists.

In the area of basic education, the EOC hosts about 150 senior medical students every year for a total of about 350 months of training. Half of these senior medical students are studying at Swiss universities, whilst the other half of them are students studying abroad, mainly from Germany. The available number of training places would allow to host a higher number of senior medical students. Moreover, from 2012 on, the changes in the financing of private clinics should enable an extension of training and hosting possibilities.

In Ticino there are some centres of excellence that distinguish themselves by the quality of clinical assistance or by their research and education activities (IOSI, CCT, NEUROCENTRO, IRB).

These skills and expertise are the fruit of the hard work of physicians and research pioneers, and could not be further developed without a radical change, such as the integration into a university-level education. The IRB is already affiliated with USI, but this process of consolidation of the network must be continued: the potential currently present in Ticino is certainly interesting and can be better exploited with the creation of a Master Medical School.

Students

In the academic year 2008/2009, 201 students from Ticino where studying human medicine in Switzerland. For the year 2010/2011, 141 candidates from Ticino have applied for a study place, but less than 30% of them will be assigned one. The first conclusion is thus the following: because of the limited number of students from Ticino and in order to avoid an academic isolation, it would not make sense to develop such a Master medical training only for students from Ticino.

Not a faculty, but a Master School

Even before starting with this study, it was clear that the option of creating an entire medical faculty would make little sense, since there is no close Faculty of Natural Sciences to which the education

in natural sciences could be delegated.

At the same time, however, we were surprised by the positive results when trying to match the current teaching potential in Ticino with the training structures and functions of other Swiss medical faculties. In fact, our analysis showed that the necessary prerequisites do exist that would allow the set-up of a Master medical training (i.e. the training years 4, 5 and 6), in close collaboration with one or more Swiss medical faculties.

The economic feasibility

From a financial point of view, even considering solely the costs for teaching and imagining the research funding being provided almost entirely by third parties, the project is challenging, but probably bearable for the cantonal finances.

Based on the intercantonal agreements, Canton Ticino already pays CHF 5.3 million for all students from Ticino doing their Master in Medicine outside the Canton. At the same time, its own current medical teaching activity as well as the places offered for senior medical students are subsidised neither by other cantonal universities, nor by the Confederation.

An extrapolation based on statistical data from the FSO shows that the teaching costs for about 70 MA students would amount to about CHF 18 million per year and would require a doubling in competitive research (from CHF 5 to 10 million). The additional costs for the Canton, according to the current conditions of the Performance Contract, would thus amount to CHF 4 million for the teaching activity and CHF 2 million for the research activity.

Advantages for the Canton

A Master medical school at USI would not only contribute to the solution of a serious national problem, but it would also have important positive effects on the quality of health care, on the development of research and its integration into an academic context. Ultimately, the Master medical school would also have important repercussions on the industrial and economic structure of Ticino, and it would increase the prestige, visibility and attractiveness of USI.

Moreover, the creation of the Master medical school would cause an opening of Ticino's research and teaching community to subsidies from the Confederation, from other Cantons and from research funds. All this would contribute to improving the positive economic impact of the University's activities as documented in the study "Bilancio economico e sociale USI SUPSI 2009". Furthermore, the establishment of a well-structured Master medical school could also ecourage contributions from private foundations.

Next steps

This report will be presented to the State Council (Consiglio di Stato, CdS) that together with USI will have to evaluate if a study group needs to be formed to develop a more detailed project. If the second study phase produces a convincing result, a Message to the Cantonal Parliament (Gran Consiglio, GC) would have to be prepared.

At the same time, the report will be presented to the federal bodies (SER, CRUS, CUS) for the decisions of their competence (particularly, related to the policy concerning the numerus clausus), as well as to the Swiss universities, with which conventions that are essential for the realisation of this project shall be negotiated.

1 Study Group

1.1 Summary of the mandate from the State Council of Canton Ticino

The mandate includes the following tasks to be consolidated in a report, possibly with recommendations and indications on the competitiveness and on the sustainability of the chosen models (see appendix A):

- Verify the conditions for an academic structure of the clinical training in human medicine and of the relevant research.
- Provide a complete list of the existing strengths and of the resources that must be attained through cantonal and cross-border collaborations.
- Examine the types of curricula that could be organised in the areas identified as potentially practicable.
- Indicate possibilities and conditions for student recruitment and the long-term sustainability of the proposed training model.
- Prepare a time frame for the project, including the expected implementation phase, a description of the obstacles that should be overcome and a general analysis of the financial conditions linked to the possible concrete realisation.

1.2 Study Group

The Study Group consists of the following members:

- Prof. Dr. Piero Martinoli, President of USI, President of the Study Group
- Dr. Carlo Maggini, Director of the EOC
- Prof. Dr. Sandro Rusconi, Director of the Governmental Division of Culture and University affairs
- Prof. Dr. Suzanne Suter, President of the Swiss Science and Technology Council
- Prof. Dr. Patrick Francioli, Dean of the Faculty of Biology and Medicine at the University of Lausanne
- Prof. Dr. Arnaud Perrier, Head of Internal Medicine at HUG and Professor in Medicine at UNIGE
- Prof. Dr. Bernard Vermeulen, Medical Director of HFR Fribourg

1.3 Project evolution

Project evolution		2009								2010												2011
Date	Activity	Mai	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Mai	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
12.05.2009	Received mandate from Canton Ticino	12.5.																				
18.08.2009	Meeting with Study Group				18.8.																	
08.12.2009	Meeting with Study Group								8.12.													
30.04.2010	Meeting with Study Group												30.4.									
24.06.2010	Meeting with University of Zurich														24.6.							
19.08.2010	Meeting with University of Basel																19.8.					
13.09.2010	Meeting with University of Bern																	13.9.				
03.12.2010	Meeting of the Consiglio dell'USI																				3.12	
15.12.2010	Event with physicians and hospital directors																				15.12.	
17.01.2011	Meeting with Study Group																					17.1.
January 2011	Handing in final report to the "Consiglio di Stato"																					

Table 1: Evolution of the project

Date	Meeting with	Location	Participants
18 Aug. 2009	Study Group	Università della Svizzera italiana, Lugano	The members of the Study Group
8 Dec. 2009	Study Group	Federal Office of Public Health, Bern	The members of the Study Group *Additionally*: - Mauro Martinoni, USI - Albino Zgraggen, USI - Luca Crivelli, USI - Aris Mozzini, DECS - Thomas Zeltner, FOPH - Stefan Spycher, FOPH - Catherine Gasser, SER
30 Apr. 2010	Study Group	Università della Svizzera italiana	The members of the Study Group *Additionally*: - Mauro Martinoni, USI - Albino Zgraggen, USI - Luca Crivelli, USI - Monica Link, USI - Aris Mozzini, DECS
24 Jul. 2010	University of Zurich	Università della Svizzera italiana	- Heini Murer, Prorector of Medicine & Natural Science, UZH - Klaus Grätz, Dean of Medicine, UZH - Erich Russi, Dean of Education, UZH - Gregor Zünd, Director of clinical research, USZ - Piero Martinoli, USI - Carlo Maggini, EOC - Mauro Martinoni, USI - Luca Crivelli, USI - Monica Link, USI *By phone:* Rita Ziegler, Director of Hospital, USZ
19 Aug. 2010	University of Basel	University of Basel, Basel	- Peter Meier-Abt, Vice Rector, Unibas - Albert Urwyler, Dean of Medicine, Unibas - Stephan Marsch, Vice Dean of Education, Unibas - Werner Kübler, Director of University Hospital, Basel - Hedwig-J. Kaiser, Vice Rector of Education, Unibas - Piero Martinoli, USI - Carlo Maggini, EOC - Mauro Martinoni, USI - Monica Link, USI - Sandro Rusconi, DECS

13 Sept. 2010	University of Bern	University of Bern, Bern	- Martin G. Täuber, Vice Rector, UniBE - Peter Eggli, Dean of Medicine, UniBE - Matthias Gugger, UniBE - Piero Martinoli, USI - Carlo Maggini, EOC - Mauro Martinoni, USI - Monica Link, USI - Sandro Rusconi, DECS
3 Dec. 2010	Consiglio della Università della Svizzera italiana	Università della Svizzera italiana, Lugano	The members of the "Consiglio dell' Università della Svizzera italiana" (CU)
15 Dec. 2010	Informative evening event	Università della Svizzera italiana, Lugano	Physicians with academic activity working in Ticino Directors of clinics in Ticino Physicians with institutional functions in Ticino Some physicians with medical practice in Ticino Directors of the EOC hospitals
17 Jan. 2011	Study Group	Università della Svizzera italiana, Lugano	The members of the Study Group

Table 2: Chronology of meetings

The Study Group was composed of representatives from the medical faculties in Geneva, Lausanne and Fribourg. Later, the universities of Zurich (UZH), Basel (Unibas) and Bern (UniBE) also expressed their interest in the project, which was then discussed bilaterally during separate meetings.

2 General overview

2.1 Trends regarding the number of medical personnel

The main trends in the development of medical personnel are the following:

- Feminisation entails an increasing number of part-time professionals, which requires the education of more physicians in order to fill the same number of full-time positions with part-time professionals (cp. BASS and appendix B).
- The age pyramid shows that 45% of all actively working physicians are over 50 years old, meaning that within the next 15-20 years many of them will retire (cp. FMH 2009 and appendix C).
- The Swiss universities educate only one third of the physicians needed in the country.
- The aging population is increasing the demand for medical services (cp. Obsan, 2009).

These trends clearly show that in the future, Switzerland will need more medical personnel, but it is currently unable to educate them.

2.1.1 Lack of physicians educated at Swiss universities

For the first time in 2009, the number of actively working physicians has surpassed 30,000. There were 30,166 physicians registered in Switzerland, of which 10,673 were female and 19,493 male (see figure 1). Of these 30,166 physicians, 7,123 hold a foreign degree. The total inflow of new physicians in the same year amounted to 2,051, of whom only 728 were educated at Swiss universities, whereas the remaining 1,323 physicians immigrated from abroad (cp. FMH statistics 2009 and UST and appendix D). This reveals that the Swiss medical faculties educate only one third of the necessary number of physicians. According to the age pyramid, this situation will worsen in the coming years, because about 13,500 physicians will retire within the next 10 to 15 years. In order to balance this outflow, the universities have to educate more physicians. According to data from 2010, the inflow amounts to approximately 2,000 physicians: Switzerland cannot continue to depend on foreign physicians attracted by good working conditions.

The following flow chart illustrates the current situation, showing the in- and outflow of physicians in 2009:

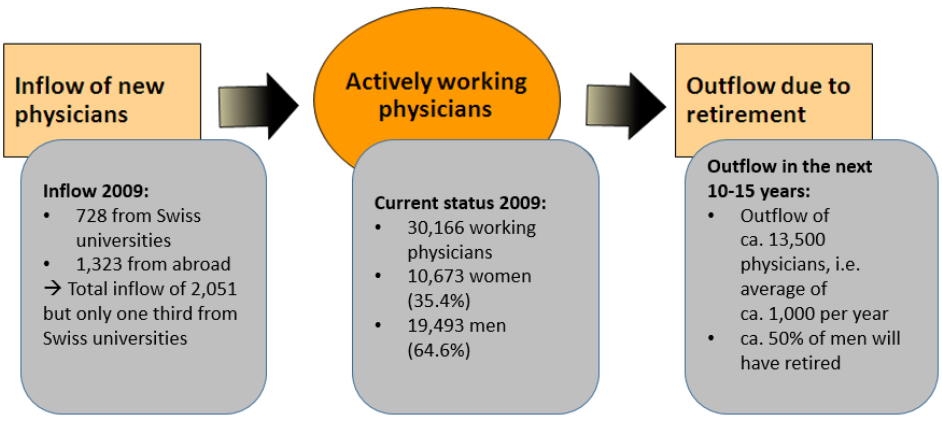


Figure 1: In- and outflow of actively working physicians

The main problem is the limited capacity in education: our university system restrains a great number of young Swiss people from studying human medicine. In fact, the aptitude test defines a ranking, which is used as *numerus clausus* (NC). It does not represent a qualification criterion. In 2010, only 763 of 2,651 candidates were granted a study place in human medicine. This does not mean that the candidate who ranked 764th and who therefore will not be able to start his studies, was not qualified to study human medicine. It simply means that there were not enough study places available. In particular, this situation reveals that there are well-qualified candidates who are restrained from studying human medicine, while medical personnel needs to be recruited from abroad.

As long as the Swiss working conditions keep attracting professionals from neigbouring countries, the fact that Switzerland educates an insufficient number of physicians, and that it thus depends on physicians educated abroad, can be considered a minor problem. However, one must not neglect the fact that education is closely tied to research, so that depending on foreign countries impairs the Swiss scientific network, with all the negative consequences for industrial and biotechnical impacts.

Also from an ethical point of view, Switzerland cannot ban its young generation from studying medicine, and instead take some of the best physicians from foreign countries that have invested in their education. This may be an emergency solution for the health system, but for the education system it is a serious impoverishment, also reducing the research potential and the related application impacts.

The same process can be observed in other scientific and technical areas, but in human medicine it is not the qualified and interested candidates who are missing (we should recall that the aptitude test defines a ranking and does not imply that an excluded individual lacks the abilities to successfully study human medicine). Furthermore, importing computer specialists from abroad has a different impact than recruiting general practitioners from culturally diverse countries, as long as the doctor-patient relationship and the knowledge of the dynamics are still considered aspects of the cure.

2.1.2 Willingness to increase the number of study places in Switzerland

This politically important situation was bound to cause reactions. In addition to the political initiatives, the universities have decided to slightly increase their intake capacities from 2010/11 onwards (by around 20%, i.e. approximately 100 places more in Switzerland), which is clearly not enough to cover the need for new physicians.

Since the Swiss government is worried about the lack of study places in medicine, it has asked the Swiss medical faculties to increase their intake capacity: this clearly is an enormous task, because the issue is not to increase the capacity by merely a few dozens of places, but rather to fill the gap between the ca. 700 newly-certified physicians and the required 2,000 new physicians per year (see figure 1).

2.1.3 Political request to USI about collaboration

First, Federal Councillor Couchepin followed by Federal Councillor Burkhalter from the Federal Department of Home Affairs both asked USI to contribute to the solution of this national emergency.

Canton Ticino's CdS and USI have accepted this interesting invitation, being fully aware of their limits, but convinced that this is an opportunity to develop both education and research at an academic level in Ticino. Even if this appears like a rather small contribution to the solution of a national problem, it is an important impulse on the way to improve the quality of health care.

2.2 Statistical data

The following statistical data reflect the current situation of demand and supply, related to the education in human medicine.

2.2.1 Students willing to study human medicine

In 2010, 3,824 people have registered to study human medicine, but there were only 1,084 study places available (653 places at universities with NC, 431 places at universities without NC). It has been a political decision to limit the number of study places, justified by the high costs of the education and by the limited resources available for the clinical education in university hospitals, but also by the threat that training an excessive number of physicians would lead to an uncontrollable increase of the health care costs.

2.2.2 Selection prior to studies

In 1998, the Universities of Bern (UniBE), Basel (Unibas), Zurich (UZH) and Fribourg (UniFR) introduced the *numerus clausus* by subjecting all candidates to an aptitude test, which puts them into a ranking. In this way, a controlled number of top candidates will be assigned a study place at one of the available universities (with the possibility of indicating preferences among available options).

For 2010/11, 2,651 candidates have applied for a study place at universities with NC. Of these, 2,040 have completed the aptitude test with a valid result and the 763 candidates with the highest scores have been admitted to a study programme. As a matter of fact, only 653 study places were available, but experience shows that not all the admitted candidates will actually start their studies, therefore more candidates were admitted (cp. EMS report 2010).

2.2.3 Selection during the education

The Universities of Geneva, Lausanne and Neuchâtel have not introduced the numerus clausus. All students with the necessary qualifications can register for the first semester. In 2010, 1,173 students registered at those three universities (UNIGE, UniL, Unine), despite there being only 431 study places available.

The selection takes place gradually like in other fields, but obviously with a higher failure rate than at the universities with NC: particularly Geneva considers the first year as a contest year with a success rate of about 35%, but with much higher success rates for the following years.

3 Medical education at Swiss faculties (BA, MA, MD and PhD)

3.1 Education models of the five faculties

The curricula of the five medical faculties are based on the same educational objectives, but they are different in structure and sequence. The first two years of the BA education are still quite similar at all five faculties, but from the third year on, the models start to vary remarkably. As a matter of fact, the didactic sequence can vary according to the objectives of the "Swiss Catalogue of Learning Objectives for Undergraduate Medical Training". The catalogue defines the competences that the student has to posses by the end of the study. These competences are tested during the state examination, which will be newly organised starting from 2011 (cp. www.scio.smifk.ch and 3.3).

3.2 Sinoptical table of the curricula at the five medical faculties in Switzerland

3.2.1 Bachelor education

The organisation of the Bachelor is quite similar at all five medical faculties (plus the Faculty of Science at the University of Fribourg), with some differences during the third year.

Bachelor	Semester	Month	Zurich	Bern	Basel	Geneva	Lausanne	Fribourg
1st year	1. sem.	Sept.	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Dec.:** 15 w.: corses & clinical education	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Dec.:** 14 w.: corses & clinical education
		Oct.						
		Nov.						
		Dec.	*holidays*	*holidays*	*holidays*	*holidays*	*holidays*	*holidays*
		Jan.		**Jan.-May.:** 15 w.: corses & clinical education				
	2. sem.	Feb.	**Feb.-May.:** 15 w.: corses & clinical education		**Feb.-May.:** 15 w.: corses & clinical education	**Feb.-May.:** 17 w.: corses & clinical education	**Feb.-May.:** 14 w.: corses & clinical education	**Feb.-May.:** 14 w.: corses & clinical education
		Mar.						
		Apr.						
		May						
		Jun.	*holidays*	*holidays*	*holidays*	*holidays*	*holidays*	*holidays*
		Jul.						
		Aug.						
2nd year	3. sem.	Sept.	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Feb.:** 18 w.: corses & clinical education	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Dec.:** 14 w.: corses & clinical education
		Oct.						
		Nov.						
		Dec.	*holidays*	*holidays*	*holidays*		*holidays*	*holidays*
		Jan.		**Jan.-May.:**				
	4. sem.	Feb.	**Feb.-May.:** 10 w.: corses & clinical formation	16 sett.: corsi & formazione clinica	**Feb.-May.:** 16 w.: corses & clinical education	**Feb.-May.:** 16 w.: corses & clinical education	**Feb.-May.:** 14 w.: corses & clinical education	**Feb.-May.:** 14 w.: corses & clinical education
		Mar.						
		Apr.						
		May						
		Jun.	*holidays*	*holidays*	*holidays*		*holidays*	*holidays*
		Jul.				*holidays*		
		Aug.						
3rd year	5. sem.	Sept.	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Dec.:** 15 w.: corses & clinical education	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Dec.:** 16 w.: corses & clinical education	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Dec.:** 14 w.: corses & clinical education
		Oct.						
		Nov.						
		Dec.	*holidays*	*holidays*	*holidays*		*holidays*	*holidays*
		Jan.		**Jan.-Jun.:**				
	6. sem.	Feb.	**Feb.-May.:** 13 w.: corses & clinical education	17 w.: corses & clinical education	**Feb.-May.:** 13 w.: corses & clinical education	**Feb.-Jun.:** 20 w.: corses & clinical education	**Feb.-May.:** 14 w.: corses & clinical education	**Feb.-May.:** 14 w.: corses & clinical education
		Mar.						
		Apr.						
		May						
		Jun.	*holidays*	*holidays*	*holidays*	*holidays*	*holidays*	*holidays*
Jul.: Bachelor study is finished		Jul.						
		Aug.						

Table 3: Sinoptical table of Bachelor curricula in human medicine in Switzerland

3.2.2 Master education

This table shows a simplified model of the organisation of the MA education at the five faculties:

Master	Semester	Month	Zurich	Bern	Basel	Geneva	Lausanne
4th year	1. sem.	Sept.	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Dec.:** 15 w.: corses & clinical education	**Sept.-Dec.:** 17 w.: corses & clinical education
		Oct.					
		Nov.					
		Dec.					
		Jan.	*holidays*	*holidays*	*holidays*	*holidays*	*holidays*
	2. sem.	Feb.	**Feb.-Jun.:** 15 w.: corses & clinical education	**Feb.-Jul.:** 24 w.: corses & clinical education	**Mar.-Jun.:** 13 w.: corses & clinical education	**Feb.-Jun.:** 16 w.: corses & clinical education	**Mar.-Jul.:** 16 w.: corses & clinical education
		Mar.					
		Apr.					
		May					
		Jun.				*holidays*	
		Jul.	*holidays*		*holidays*	**Jul.-Aug.:** 8 w.: corses & clinical education	
		Aug.					*holidays*
5th year	3. sem.	Sept.	**Sept.-Jul.:** practical year 10 months	**Aug.-Sept.:** 8 w.: Master thesis	**Sept.-Dec.:** 14 w.: corses & clinical education	**Sept.-Nov.:** 12 w.: corses & clinical education	3 w.: Master thesis
		Oct.		*holidays*		*holidays*	**Oct.-Feb.:** 17 w.: corses & clinical education
		Nov.		**Dec.-Feb.:** 14 w.: corses & clinical education		**Jan.-Apr.:** 12 w.: corses & clinical education	
		Dec.			*holidays*		
		Jan.		**Feb.-Mar.:** 3 w.: preparation	**Mar.-Dec.:** practical year 30 weeks		*holidays*
	4. sem.	Feb.		*holidays*		4 w.: Master thesis	**May.-Apr.:** practical year 10 months
		Mar.		**May.-Nov.:** practical year 30 weeks		*holidays*	
		Apr.				**Aug.-Jun.:** practical year 40 weeks	
		May					
		Jun.					
		Jul.	*holidays*				
		Aug.					
6th year	5. sem.	Sept.	**Sept.-Dec.:** 14 w.: corses & clinical education				
		Oct.					
		Nov.					
		Dec.		*holidays*			
		Jan.	*holidays*		*holidays*		
	6. sem.	Feb.	**Feb.-Apr.:** 7 w.: repetition	**Feb.-Apr.:** 14 w.: repetition			
		Mar.			**Mar.-Apr.:** 7 w.: Master thesis		**Mar.-Apr.:** 7 w.: Master thesis
		Apr.					
		May	**May.-Jun.:** 7 w.: practice in groups	**May.-Jun.:** 4 w.: preparation	**May.-Jun.:** 7 w.: repetition		**May.-Jun.:** 6 w.: repetition
		Jun.					
***Lug.:** finito il studio di master*		Jul.	*holidays*	*holidays*	*holidays*	*holidays*	*holidays*
		Aug.	**Aug.-Sept.:** state examination	**Aug.-Sept.:** state examination	**Aug.-Sept.:** state examination	**Aug.-Sept.:** state examination	**Aug.-Sept.:** state examination
		Sept.					

Legend:
- corses & clinical education
- practical year
- repetition, preparation and Master thesis

Table 4: Sinoptical table of Master curricula in human medicine in Switzerland

3.3 State examination (competence of the FOPH)

According to the federal law on medical professions at a university level (MedBG), the new state examination in human medicine will be carried out for the first time in August/September 2011. It is the faculties' responsibility to ensure that all exams during the BA and MA education meet the objectives defined in the Catalogue (see 3.1). The responsibility of the state examination, in turn, lies with the Confederation and the FOPH, together with the Commission of Medical Professions, MEBEKO (cp. www.bag.ch).

3.4 Medical doctor

According to the law, successfully passing the state examination allows the use of the doctor title. From an academic point of view, a clearer process for obtaining the title Medical Doctor (MD) is being discussed. It still leaves the possibility open to attain a PhD according to the modalities of a doctorate in scientific disciplines, including an important part of research and an investment of at least three years.

3.5 Accreditation (competence of the CUS)

The Swiss University Conference (CUS) alone is in charge of the accreditation of all university faculties except for the medical faculties. The accreditation of medical education is part of the responsibilities of the independent accreditation authority (Swiss Accreditation Council), whereas the responsibility for the specialised education of physicians lies with the Federal Department of Internal Affairs. In the case of a new faculty, the accreditation is attributed at the end of a whole study cycle, which can cause uncertainties for the students.

The Swiss Center of Accreditation and Quality Assurance in Higher Education (OAQ) is responsible for the evaluation of the quality of teaching and of research. This evaluation is based on an inspection by an expert commission (cp. www.cus.ch).

Nevertheless, a study title obtained at a recognised university has a value, even if the study cycle or the faculty has not yet been accredited. Particularly in medicine, none of the current evaluation procedures at the existing faculties have been concluded. Accreditation procedures for academic medical education have started in 2010 and will have to be concluded by 31 August 2012 (cp. www.oaq.ch and Art. 63 MedBG).

Essential, though, is the competence of the FOPH, which allows MA students of a new faculty to attend the state examination.

3.6 Specialisation Swiss Medical Association (FMH): competences and financing

Many changes will take place in this sector, as well; in most European countries, the specialisation is the universities' task, whereas in Switzerland the FMH assumes an important role. The FMH acts like an umbrella association of the various associations of medical specialists. One of the central tasks of the FMH, besides the allocation of FMH specialisations, is the continuing education of physicians through the Swiss Institute for Continuing Medical Education (SIWF). The fee for a FMH title is CHF 4,000 (cp. www.FMH.ch, Gebührenordnung).

4 General financing in Switzerland

4.1 Collecting data from the faculties

Considering the organisational differences, it is extremely difficult to obtain comparable data about the costs and revenues of medical education: the distribution between universities, faculties, research institutes and hospitals varies strongly, which makes the financial situation quite intransparent. The SUK has commissioned a study, but it is not available yet; similar efforts have been made in the past without attaining satisfactory results.

4.2 Costs

The Federal Office of Statistics (FOS) has published comprehensive data, warning, however, about hasty generalisations in consideration of the difficulties in having common parameters.

Based on the study "*Kosten der universitären Hochschulen 2009",* FOS, the total sum of over CHF 1 billion is split into the following units (average of all medical faculties in Switzerland):

- Basic education (BA + MA) 17.9%
- In-depth education (e.g. PhD) 5.4%
- Research and development 61.7%
- Continuing education (e.g. MAS) 5.2%
- Services 9.9%

This report analyses the costs for "Basic education" and for "Research and development" only.

4.2.1 Costs for basic education

Table 5 illustrates an extrapolation of the data presented in the document *"Kosten der universitären Hochschulen 2009"*, FOS. The first column represents the total costs per university. The second column shows the costs for the basic education per university (17.9% of total costs). The third column displays the number of certified students in 2009. The fourth column presents the costs per student for the basic education and finally the last column contains the costs per student per year. It needs to be highlighted that this is simply an extrapolation to give an idea of the cost dimensions: any comparison between the different universities is speculative.

University	Total costs for faculties in human medicine 2009	Costs for BA and MA (17.9% of total costs)	Number of certified students in human medicine 2009	Costs per student for BA and MA, 6 years	Costs per student per year
Unibas	154,975,165	27,740,554	150	184,937	30,823
UniBE	234,114,352	42,906,469	146	287,031	47,838
UZH	319,616,127	57,211,287	216	264,867	44,145
UNIGE	132,569,526	23,729,945	104	228,173	38,029
UniL	204,636,140	36,629,869	112	327,052	54,509
Total	1,045,911,309	187,218,124	728		**Average 43,069**

Table 5: Costs per student per year, per medical faculty in Switzerland (in CHF)

4.2.2 Costs for research and development

In the following table, the costs presented in the first two columns have been gathered from the document *"Kosten der universitären Hochschulen 2009"*[1)], whereas the last two columns list the contributions from third parties, taken from the document *"Finanzen der universitären Hochschulen 2009"* [2)] (see appendix E).

University	Total costs for the faculties in human medicine 2009	Costs for research and development (61.7% of total) [1)]	*Financing from SNSF* [2)]	*Financing from third-party funds* [2)]
Unibas	154,975,165	95,619,677	*13,163,496*	*33,536,765*
UniBE	234,114,352	144,448,555	*14,411,004*	*39,418,561*
UZH	319,616,127	197,203,150	*24,854,660*	*62,312,353*
UNIGE	132,569,526	81,795,397	*21,828,652*	*35,973,125*
UniL	204,636,140	126,260,498	*24,019,727*	*37,757,251*
Total	**1,045,911,309**	**648,327,278**	***98,277,539***	***208,998,054***

Table 6: Costs for research and development and financing of third parties (in CHF)

Basic research is financed with competitive mandates and represents a moderate part of the total costs. Keeping in mind the different funds, it remains difficult to explain the difference between the costs for research and development and the specific financing funds (FNRS and third party). This aspect will be elaborated in more detail during phase 2.

4.3 Financing

Federal act on the promotion of universities (Universitätsförderungsgesetz UFG)

In order to promote the quality of education and research, the Swiss Confederation collaborates with the Cantons in the area of university politics. Among other things, the Confederation participates in university politics by granting subsidies in the form of basic support and project-based support. The yearly total amount is split between the beneficiaries according to their teaching and research activities. The contributions paid for the teaching activities are mainly calculated per student. Therefore, the amounts will vary from year to year. For this project, the contributions should amount to approximately CHF 14,000 per MA student (cp. Universitätsförderungsgesetz, UFG, Art. 1; 4; 15). The contributions from UFG favour research from the SNSF and the EU.

Intercantonal agreement on universities (IA)

The intercantonal agreement regulates the admission to universities according to the principle of equal treatment and defines the amount that a student's Canton of origin must pay to the university Canton. The three years of Master in Human Medicine are in "Faculty Group III", hence the contribution paid to the university Canton for each student is CHF 48,600 per year, for a limited duration of 16 semesters (cp. Intercantonal agreement about universities, Art. 1; 9; 12; 14).

The amount is the result of a political agreement between the Cantons depending on various factors, including academic migration. It cannot be used as reference data for the costs of a single year of study.

Mandates from the SNSF and the EU

SNSF and EU projects represent the main source of financing of scientific projects. In the coming years, SNSF intends to increase the contribution granted for specific projects in the area of medical research (cp. www.snf.ch, Statuten und Jahresbericht 2009).

Applied and clinical research and mandates

In the area of medicine, clinical research, in particular clinical research linked to the development of new pharmaceuticals, assumes high importance and is developed in collaboration with pharmaceutical companies as well as with external agencies that participate strongly in the funding.

Apart from clinical research with patients, research on the different applied sciences related to medicine (mechanical and electronical prostheses, domotics, new materials, etc.) should be established in collaboration with agencies, which is of particular importance for the development of new innovative agencies.

Another significant sector is represented by mandates from public companies or foundations for particular aspects of economic (health costs), communicative (prevention campaigns, health education) or sociological nature (ageing of the population, impact of the urban structure on medical consumption). USI and its institutions already possess experience and competences in these areas.

5 Analysis of the situation in Ticino

This chapter lists the existing know-how, skills and expertise, as well as the structures in Canton Ticino that could support the project of a Master in Human Medicine.

In order to proceed with a preliminary feasibility assessment of the project, the teaching skills existing in Ticino have been compared with two current models: the Master in Medicine at the University of Lausanne and the Master in Medicine at the University of Zurich.

5.1 Analysis of potential students from Ticino

In 2008/2009, 201 students from Ticino were matriculated at the Swiss medical faculties: 91 students were in their 1st and 2nd year, whilst 110 students were in their clinical training phase, from the 3rd to the 6th year (cp. FSO and see appendix F).

In addition, there are students from Ticino matriculated at universities in Italy. An approximation of the number of students has been made based on the rule of proportion: 71 of the 201 students from Ticino studying in Switzerland receive a scholarship. Since there are 11 students from Ticino studying medicine in Italy and receiving a scholarship, there shall be a total of approximately 31 students from the Canton studying medicine in Italy. Therefore, in total there are about 230 students from Ticino studying human medicine in 2008/2009.

Human medicine	**In Switzerland**	**In Italy**	**Total**
Students from Ticino with a scholarship	71	11	**82**
Total of students from Ticino studying human medicine in 2008	201	*31 (estimate)*	***232***

Table 7: Students from Ticino studying in Switzerland and in Italy in 2008/2009

5.2 Expertise and structures available at hospitals and clinics in Ticino

5.2.1 Physicians with academic teaching activity (habilitated physicians)

At the moment, 37 physicians who are actively working at hospitals and clinics in Ticino do have an academic teaching qualification (hereafter referred to as "habilitated physicians"); 19 of them hold a professor title and 18 hold a title of "Privat-Dozent" (PD). The table below shows how these habilitated physicians are distributed among the different institutions:

Institution	**Prof.**	**PD**	**Total**
Ente ospedaliero cantonale	12	13	25
Cardiocentro	3	2	5
Other institutions in Ticino	1	1	2
Private institutions	3	2	5
Total	**19**	**18**	**37**

Table 8: Number of habilitated physicians actively working in Ticino

Most of the habilitated physicians are working in the areas of internal medicine and surgery.

Some of these habilitated physicians are already over 65 years old. Since the realisation of this project will take some time, it is not reasonable to take these senior physicians into consideration. However, it is foreseen that they will be substituted by new postdoctoral candidates and by new habilitated physicians. Therefore, the current potential amounts to about 40 lecturers.

Moreover, many physicians working in public and private institutions of the Canton can be taken into consideration for this project. Even if they are not habilitated physicians, they often possess extensive clinical experience. Besides that, not all lecturers working at the Swiss medical faculties are habilitated physicians either. In those cases, they usually need the support from a chief physician (there are about 70 heads of department active at hospitals in the Canton).

In addition, there are three biologists active in the clinics in Ticino, of whom one holds a professor, the other two a PD title.

5.2.2 Specialisation in medicine (FMH)

The public and private structures in Ticino currently offer 67 FMH certified modules for the education of medical specialists, of which 11 are in category A, 32 in category B, 23 in category C and one in category D. The centres of specialisation are classified into four categories, according to their importance, infrastructure and quality of specialisation (category A being the best qualification).

The certified units/modules are subdivided in the following way:

Institutions	**Number of recognitions**
Ente ospedaliero cantonale	* 54 certificates
Cardiocentro	4 certificates
Other institutions in Ticino	3 certificates
Private institutions	** 6 certificates
Total	**67 certificates**
** of which eight are in category A / ** of which three are in category A*	

Table 9: Certified FMH continuous training modules in Ticino

The medical practices in the area are also able to participate in the specialisation, provided that they offer at least one training place (cp. 5.2.7).

5.2.3 Basic education in medicine

In the area of basic education, the Ente opedaliero cantonale hosts about 150 senior medical students every year for a total of about 350 months of clinical training (2.33 months per senior medical student). The majority of senior medical students are from Swiss (50%) and from German (40%) universities. They are mainly hosted in the departments of internal medicine, surgery and paediatrics. On average, the private medical practices host additional 10 senior medical students every year.

Of all the training places offered in Ticino, only about 45% are occupied: this means that in case of a MA education in Ticino, students from other universities could still continue to come to Ticino for their clinical training, as there are enough available training places (see appendix G).

5.2.4 Research

Table 10 lists the research activities of the institutions in Ticino in 2008, measured by the number of peer-reviewed publications:

Institutions	Number of publications
Ente ospedaliero cantonale	* 133 publications
Cardiocentro	26 publications
Istituto di ricerca in biomedicina (IRB)	22 publications
Institutions in Ticino	20 publications
Other private institutions	10 publications
Total	**211 publications**
** of which 62 publications are from the Istituto oncologico della Svizzera italiana (IOSI)*	

Table 10: Research activity in Ticino 2009, measured by number of publications

The volume of publications in 2009 is basically equal to the one in 2008, both in absolute terms (212 publications) and in terms of distribution among the institutions. In order to make a correct evaluation of the publications, the impact factor needs to be taken into consideration as well. Particularly, the IRB has a high impact factor. The results from ten years of research performed at the IRB are published in about 300 articles with an average impact factor of 11.5.

The research activity can also be measured by the amount of third party funds, which are beneficial to the clinical research. The total volume of these funds in Ticino amounts to about CHF 25 million (CHF 10 million IRB, CHF 11 million EOC institutions, CHF 3 million Cardiocentro Ticino (CCT), CHF 1 million other clinics or research institutions).

5.2.5 Centres of excellence

In Ticino, there are some centres of excellence that distinguish themselves either by the quality of clinical assistance or by their research and education activities. Based on these criteria, the following institutions are considered as centres of excellence:

- Oncology Institute of Soutern Switzerland (Istituto oncologico della Svizzera italiana, IOSI) at the EOC
- The Neurocentro of the Italian part of Switzerland at EOC
- The Cardiocentro Ticino (CCT)

Also, the Institute for Research in Biomedicine (IRB), which is active in the area of immunological research, belongs to the category of centres of excellence. Furthermore, the IRB also offers a high-level scientific training, both for students and graduates. The program includes seminars, lessons and summer courses. Since the beginning of the programme, 40 doctoral theses have been successfully defended.

5.2.6 Composition of clinics

Currently, there are 20 institutions registered in the planning list for cantonal hospitals. Together, they have 1,913 available beds, 1,432 of them in the area of acute care, 306 in psychiatry and 175 in rehabilitation.

For this study, the two largest institutions in Ticino have been taken into consideration: the “Ospedale regionale di Lugano” (ORL) with the affiliated CCT, and the “Ospedale regionale di Bellinzona” (ORB) with the associated Oncology Institute of Southern Switzerland (IOSI). The following table lists the statistical data of these two conglomerates for the year 2009:

	ORL + CCT	ORB + IOSI	Total
Hospital beds	340	233	573
In-house patients	26,000	10,000	36,000
Number of days of cure	110,000	72,000	182,000
Outpatients	108,000	73,000	181,000
Number of employed physicians	250	170	420
Number of hosted senior medical students	50	40	90
Number of physicians with academic title	10	14	24
FMH certificates	18	18	36
Scientific publications	71	84	155

Table 11: Resources at ORL+CCT and at ORB+IOSI

Within these institutions, all the basic and specialised disciplines characterising hospitals with centralised assistance are present.

5.2.7 General practitioners

In Ticino, there are about 1,000 general practitioners (independent physicians with a private practice).

The regulation for FMH specialisations foresees that medical practices can be recognised as centres of specialised education. Currently, there are 16 medical practices in Ticino, which are recognised by FMH for their specialisation. The medical faculties often turn to general practitioners for the clinical training. For example, on the list "Praktizierende Ärzte, welche bereit sind, cand. med. im Wahlstudienjahr auszubilden" from the University of Zurich there are currently 3 medical practices in Ticino offering places for senior medical students (cp. www.med.uzh.ch, Institut für Hausarztmedizin).

5.2.8 Other centres for medical education

In Ticino there are two important specialist schools that would have the competences to support the teaching activity of the Master in Medicine. Those are:

- **The ESASO** (European School for Advanced Studies in Ophthalmology): the ESASO aims at improving the clinical and surgical practice of specialists in ophthalmology in order to promote and enhance professional skills. Its objective is to provide ophthalmologists with postgraduate education and hands-on training from an internationally renowned School. Logistically, the School is situated close to USI.

- **The ESO** (European School of Oncology): the school organises a wide variety of courses, including various discussion sessions for all professionals working in the area of oncology, no matter how experienced they are. The school's seat in Ticino is situated next to the IOSI and it coordinates the organisation of a Clinical Master class, an education activity organised in Switzerland by the international conference "Cancer on the internet," with all the activities in connection with the Cancerworld portal.

5.3 Comparison of resources engaged in the Master education

We present here below two purely illustrative simulations of the organisation of a MA, looking at the resources for teaching, the structures of the clinics and the existing research. The aim was to determine the size of the gap between available and necessary resources.

5.3.1 Comparison with the Master in medicine of the University of Lausanne

The MA in human medicine taught in Lausanne foresees 11 modules of teaching during the 4th and the 5th year of study, as well as clinical practice and preparation of the MA thesis (cp. Appendix H). In total, there are about 300 teachers associated with the programme, of whom about 250 are habilitated physicians.

Keeping in mind the academic profiles and teaching skills currently present in Ticino, 6 of these 11 modules could be conducted with some support by external lecturers. 2 modules could only be conducted with a strong reinforcement of lecturers and the remaining 3 modules could not be carried out (see appendix I).

5.3.2 Comparison with the Master in medicine of the University of Zurich

The MA taught in Zurich foresees 10 modules in the 4th year, as well as clinical training. The practical year is scheduled for the 5th year of study and the 6th year involves repetition, clinical training and preparation for the state examination (see appendix H). The modules of the 4th year engage about 220 lecturers, of whom about 150 are habilitated physicians. For the winter semester of the 6th year, UZH employs about 100 lecturers, of whom 60 are habilitated physicians. The following summer semester involves 140 lecturers, of whom 110 are habilitated physicians.

Keeping in mind the academic profiles and teaching skills currently present in Ticino, 3 ZH-modules could be conducted, 4 ZH-modules could be conducted with strong reinforcement and 3 modules could not be carried out. Some courses of the clinical training during the 4th and 6th year could also be offered (see appendix J).

5.3.3 Preliminary conclusions

This first simulation reveals the size of the gap between the human resources (lecturers) engaged in the two MAs in Lausanne and in Zurich and the resources currently available in Ticino.

Having professors employed in the clinics does not automatically imply that these would show interest and availability to teach: the privilege to teach and to do research entails a significant increase of work. Therefore, it is inevitable that substitutes must be found for the time during which these resources are used for teaching and research.

It needs to be considered that starting from 1 January 2012, private clinics will also be financed by the Canton. Therefore, their teaching and research activity is bound to increase.

Increasing the teaching staff is a crucial condition, but it will surely not be possible to find adequate resources for all the training modules. Therefore, the collaboration with one or more faculties becomes indispensable.

Some of the clinical training and the practical year, as well as the support and supervision of MA theses, can be proposed in Ticino.

6 Hypothesis of a Master in Ticino / didactic model

6.1 Students

USI aims at increasing study places for medical education in Switzerland; to enable this, the intervention needs to occur at the moment when students enrol for the BA programme, that is when the ranking of the aptitude test is done.

USI proposes to admit 100 additional students to start the BA, students who would commit to USI as their preferred university for the MA studies. This will be one of the crucial factors of the project: the other medical faculties will have to guarantee the education of 100 additional BA students in Human Medicine who foresee to continue their MA education at USI. Already during the BA, USI could offer to those students some training modules in themes regarding the medical education (doctor-patient communication, health economics, sociology, etc.).

For the three years of BA, a 30% failure rate can be assumed, because of the requirements and the exams. Therefore, the MA would be structured for about 70 entering students per year. During the MA, there will still be some failures, but in such a negligible amount that they have not been taken into consideration in our model.

Foreign students

USI has a long tradition of admitting foreign students. Therefore, the option to also accommodate foreign students who hold a degree of "Bachelor in Human Medicine" is not excluded at this point. One problem, however, would be that apparently only very few countries plan to introduce the Bologna system (BA-MA) for medical studies. Another problem with hosting foreign students would be that USI, above all, wants to increase the number of study places to accommodate Swiss students.

In this report, it is not foreseen to host foreign students (foreign students being students who live abroad and hold a foreign high school diploma): exceptions would only be possible in collaboration with federal authorities, considering the recommendations from the CUS, of 12 October 2006, and, in particular, verifying possibilities to access the state examination.

6.2 Language of teaching and in clinics

The language of instruction shall depend on the collaboration and the origin of professors (national languages and English). At the bedside, some knowledge of the Italian language, as well as of the other Swiss national languages, is necessary (the practical year could be accomplished at institutions North of the Alps).

6.3 Simulation of a resource model

The curricula of the Swiss medical faculties are quite different in structure: in a simplified way, the five curricula can be merged into two models, with the practical year after two semesters of MA (model 1) or with the practical year after three semesters (model 2).

Model 1 refers to the curricula of UZH:

Semester / Activity	I	II	III	IV	V	VI	
Courses and clinical training	14 w.: courses and clinical training	15 w.: courses and clinical training			14 w.: courses and clinical training	14 w.: repetition and Master thesis	
Clinics and hospitals			20 w.: clinical practice	20 w.: clinical practice			
Courses in other subjects	law / ethics / communication / economics / psychology / sociology						
Individual research		Master thesis / methodology of research / individual coaching					Doctorate
Exams	Exams	Exams				Master exams	State examination / MD exams

Table 12: Didactic model 1

Model 2 refers, in a simplified way, to the MA curricula taught in Bern, Basel and Lausanne: Geneva has implemented a different structure for its MA, different from model 1 and 2.

Semester / Activity	I	II	III	IV	V	VI	
Courses and clinical training	14 w.: courses and clinical training	15 w.: courses and clinical training	14 w.: courses and clinical training			14 w.: repetition and Master thesis	
Clinics and hospitals				20 w.: clinical practice	20 w.: clinical practice		
Courses in other subjects	law / ethics / communication / economics / psychology / sociology						
Individual research							Doctorate
Exams	Exams	Exams				Final exams of Master	State examination / MD exams

Identical in models 1 and 2

Table 13: Didactic model 2

These simplified tables allow for an analytical quantification of the necessary educational resources: the modules show differences in sequence, but are similar when it comes to general quantities.

6.4 Peculiarities of the education in Ticino – federal conditions

The medical education concludes with a state examination. On the one hand, the catalogue of learning objectives imposes several obligations on the didactic offer (see 3.1). On the other hand, the variety of curricula within the Swiss medical faculties reveals room for some academic autonomy, giving each MA its own imprint. Competent bodies will have to evaluate the final contents, but some hypotheses related to the currently existing skills and expertise at USI can already be formulated.

One important topic is certainly Communication Sciences, be it for the time during treatment (i.e. the doctor-patient relationship) or for general problems (Communication as a voice of politics in the general health care system). Another subject is related to economics and to research at all levels of the Economic Faculty. More and more, the ageing of the population is becoming a research topic because of both the increase in demand for medical services, and the challenge of managing urban areas and services. Also the know-how currently offered by the Faculty of Informatics should not be neglected, because this

field includes a significant potential for health applications. If we take into account the "Institute of Health Communication", the "Master of Advanced Studies in health and socio-medical economics and management" (Net-MEGS) and the "Institute of Computational Sciences", we understand that USI possesses important competences in these areas.

The final didactic model defining "how" to transmit all this knowledge and these competences assumes an increasing importance and will be elaborated in more detail together with the affiliated university/ies (which have stipulated an agreement with USI) during phase 2.

6.5 Timing of the project realisation

The entire project can be divided into four phases (see table 14):

- **Phase 1** includes the preparation of this report and concludes with its acceptance by Ticino's CdS.
- **Phase 2** foresees a deeper analysis of the project and the preparation of a second in-depth report that would allow the elaboration of a Message from Ticino's CdS and its possible approval by the GC. Phase 2 should clarify the possibilities of stipulating conventions with the interested universities; the modification of the NC regulation by admitting an extra 100 BA students and the allocation of MA study places.
- **Phase 3** includes the BA education of USI's future students at the partner university/ies as well as the organisation of some teaching activities in Ticino in order to create a bond between those students and USI, the place where they will continue their MA studies. During this phase, Ticino will take action in the preparation of the clinical structures, in the elaboration of the organisational model, in the elaboration of the pedagogical model and the contents of classroom lectures, in the training of a "junior faculty", in choosing tutors, in preparing the infrastructures (library, e-lab, etc.), and in kicking-off the research activity.
- **Phase 4** foresees the beginning of the MA courses in Ticino, whilst the education of the BA students would continue at the partner university/ies.

<table>
<tr><th>Phase</th><th>2010</th><th>2011</th><th>2012</th><th>2013</th><th>2014</th><th>2015</th><th>2016</th><th>2017</th><th>2018</th></tr>
<tr><td>Phase 1</td><td colspan="2">Feasibility study</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Phase 2</td><td></td><td colspan="2">• Decision FC
• Decision NC
• Partner university/ies</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Phase 3</td><td></td><td></td><td></td><td colspan="3">Education of BA students at partner universities

Activities at USI:
• Preparation of the clinical structures
• Prepartion of tutors
• Bloc courses
• Research impuls
• Elaborate organisational model
• Elaborate pedagogical model
• Preparation of content for classroom lectures</td><td></td><td></td><td></td></tr>
<tr><td>Phase 4</td><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="3">Education of BA students at partner universities</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>70 MA students at USI</td><td>140 MA students at USI</td><td>210 MA students at USI</td></tr>
</table>

Table 14: Phases of realisation

These forecasts are very conservative. It is possible to accelerate the different phases depending on the time needed for the decisions by the GC and the federal authorities.

7 Financial scenarios for a Master medical education in Ticino

The scenario of this project is based on the possibility of clearly separating the financial responsibilities, with maximum transparency, as follows:

- The allowances for head physicians employed by the hospitals, having a mandate as professors at USI, would be handled internally between USI and EOC.
- The allowances for the teaching activity of titular lecturers and tutors in clinics, having a direct relation with the EOC or the clinics, would be split among the institutions.
- The allowances for the teaching activity of researchers, employed by affiliated institutions, would be split among the institutions.

The affiliation model foreseen by the university law in Ticino allows an academic integration, keeping the management responsibilities separate: this should enable a more transparent management.

In order to guarantee an updated and high quality teaching, the need for strong research activities is acute and remains a key objective. During the initial phase, much as it occurred at the other Faculties of USI, the main focus will be on the quality of the teaching activity, in collaboration with professors on contract basis coming from other universities, who would perform their research at their home universities. This explains the cautious cost forecasts: besides the teaching costs, which are extrapolations from federal statistics, the remuneration for 10 chairs of professorship has been included, allowing for in-house research activity. For the competitive research, double the current costs have been estimated (from CHF 5 to 10 million). Based on the proposed management model (clear separation of management responsibilities), the clinical and the applied research are expected to be covered by third party funds in this initial phase, retaining the resources included in the chairs of professorship and being aware of the fact that financing by DRG (Diagnosis Related Groups) will not be possible for the clinics.

7.1 Phase 2

Mandate of further study for USI, engagement of a professional project manager and definition of a project structure.

The costs of this phase are difficult to estimate, but they can be estimated as the equivalent of two full time positions at academic level and one secretary (indicative estimate of CHF 500,000 per year for 2011 and 2012).

7.2 Phase 3

To enforce the commitment of those students who have indicated USI as their preferred university for their MA studies (see 6.1), some activities (e.g. block weeks) can be foreseen at limited costs that do not have to be quantified at this stage.

The clinics in Ticino are used to hosting students during their training, but they have not developed specific programmes. The medical and health personnel needs to be prepared in order to offer a high quality and well-structured training to students.

In this phase, during which no direct teaching activity will occur in Ticino yet, the teaching staff - be it physicians who already have a habilitation or new junior professors - needs to be trained. Models similar to the ones applied by the SNSF (junior faculty) for assistant professors can serve as examples for this preparation.

A quantification of costs for this phase would be premature at this stage of the analysis, but it will be one of the tasks during phase 2; however, the cost dimension can be estimated to amount to about CHF 2 million per year.

7.3 Phase 4: implementation of the Master

7.3.1 Costs for the set-up

Apart from logistics (see chapter 8), additional costs related to the library need to be foreseen (access to specialised journals cause costs in the range of CHF 1 million), as well as costs related to IT infrastructures for teleteaching and for intervention simulations (indicatively CHF 5 million, with a 10-year amortisation).

7.3.2 Teaching and basic infrastructure for research

As mentioned earlier, the MA would be organised to host 70 Swiss students per year (210 students at steady annual operation), of whom one third would be from Ticino.

The model presented below gives an idea of the magnitude of costs. The calculation is based on data from the FSO. As was mentioned in chapter 4.2.1, the FSO has published a study containing the total costs of each medical faculty as well as an estimate of average costs per student, respectively of the costs for the various activities (teaching, research and development, continuing education, services).

The data from 2009 show average yearly costs for teaching of CHF 43,000, which equals to 17.9% of the total costs (see 4.2 and table 5). This is of course a rough estimate, but it allows for a first quantification of the costs.

Estimated yearly costs for the teaching activity per student	**Costs in CHF**
Average costs per student per year of Human Medicine studies (2009)	43,000
+ 15% inflation (2016)	7,000
+ 40% because the MA education is more expensive than the BA one	20,000
Subtotal: estimated yearly costs per MA Human Medicine student at USI	**70,000**

Table 15: Estimated costs for one student per year based on data from the FSO

This estimation enables to calculate the dimension of the steady annual operating expenditure of the MA: calculating CHF 5 million of installation costs (library, e-lab, auditoriums, etc.) with a 10-year amortisation. One part of the activity will take place at the clinics, with expenses that will be reimbursed. Moreover, an additional fixed fee for each chair of professorship of CHF 200,000 per year, for 10 ordinary professors, is included. Emphasising that this is a rough estimate, it will be a task in phase 2 to prepare a better documented forecast.

Costs for 70 students per year → 210 students at steady annual operation	**Costs in CHF**
Costs for infrastructure (amortisation: 10% of 5 million)	500,000
Direct expenses for teaching activity (CHF 70,000 * 210 students)	14,700,000
Expenses for activities in clinics	1,000,000
Endowment for "chairs of professorship" (10 chairs * CHF 200,000)	2,000,000
Total	**18,200,000**

Table 16: Costs for 210 students at steady annual operation

Based on the current data (IA, UFG contributions, fees, Ticino's Performance Contract), it is possible to make an estimate regarding the magnitude of revenues.

Revenues for 70 students per year → 210 at steady annual operation	**Revenues in**
Intercantonal agreement (210 students* CHF 48,600)	10,206,000
UFG (210 students * CHF 14,000)	2,940,000
Immatriculation fees (210 students * CHF 4,000)	840,000
Performance Contract TI (30% of IA + UFG + fees)	4,195,000
Total	**18,181,000**

Table 17: Revenues for 210 students at steady annual operation

To give a better idea of the cost and revenue dimensions, appendix K simulates the progression of costs and revenues starting from the first year of MA with 70 students up to a situation of steady annual operation with 210 students.

7.3.3 Basic research, clinical research and applied research

In the previous chapter, we considered only the costs related to teaching and to infrastructure. The realisation of specific research projects will usually depend on receiving external fundings. The distinction between basic research, clinical research and applied research is not univocal: in this report we consider solely the administrative aspects that have financial implications.

Basic research, SNSF

Three main parties fund basic research conducted at universities:

- The SNSF, which grants research mandates on a competitive basis, covering the biggest part of the costs assumed by the universities. EU projects are granted in the same way.
- The UFG, which contributes a yearly amount per student to cover the costs for infrastructure.
- The Canton, for this project Canton Ticino, which – according to the current Performance Contract – aims at incentivising basic research with an additional contribution of 40% on SNSF competitive fundings.

In the future, this activity will augment, due to the increase of the number of professors as well as the increased collaboration options with other Faculties at USI (increase of CHF 5 million which may impact on Ticino's Performance Contract).

Clinical research, applied research

At the federal level, clinical and applied research are considered activities that should be covered entirely by third parties (companies, foundations, federal administrations) and hence, a direct supplementary contribution is not foreseen.

Currently, the clinical research at the EOC is funded entirely by third parties: in the future, an increase in clinical research is thus imaginable without a cost increase for the Canton.

7.3.4. Financial commitment of the various involved parties

Recalling the general considerations that were made at the beginning of chapter 7 regarding the split of financial responsibilities between the various parties, the data from the FOS (see 4.2.1) show that the overall costs amount to CHF 1 billion for 728 diplomas (data from 2009). Extrapolating this for 70 diplomas and considering that the educational offer in Ticino will be limited to 3 years, the financial expenses should amount to CHF 50 million per year (60% thereof dedicated to research).

The projections of the present report do not vary significantly from this dimension, but they foresee a different distribution of financial responsibilities:

Activity	Engaged parties	Costs in CHF
Teaching and research infrastructure	UFG, IA, Performance Contract TI, fees	18 million
Basic research (currently 5 million, with an increase of 5 million)	SNSF, UFG, Performance Contract TI, other competitive funds	10 million
Applied research (currently 20 million, with an increase of 5 million)	Companies, foundations, administrations	25 million
Total		**53 million**

Table 18: Distribution of financial responsibilities

These figures may be studied more in detail in phase 2.

7.4 Financial implications for the Canton Ticino

7.4.1 Phase 2, in-depth analysis

Estimate of CHF 0.5 million – to be negotiated

7.4.2 Phase 3, preparation

Estimate of CHF 2 million – to be negotiated

7.4.3 Phase 4: implementation of the Master

Recalling one more time how difficult it is to make plausible financial forecasts in this first phase of the analysis, the dimension should nevertheless be sufficient for taking a basic decision.

Teaching and infrastructure for research

The current Performance Contract foresees a contribution of 30% of all revenues per student (UFG, IA, fees):

- For 70 students, 30% is equivalent to about CHF 1.4 million (see appendix K). Hence, after the first 3 years, the contribution from the Canton would amount to CHF 4.2 million for 210 students (see table 17).

The payments from the intercantonal agreement would not be new expenses for the Canton, since part of the payments that the Canton previously transferred to other cantonal universities would be re-addressed to USI.

Competitive research

According to the Performance Contract, the Canton pays an overhead of 40% of the revenues derived from competitive research (SNSF, EU). The contribution allocated to the USI-affiliated IRB has been included and estimated in a message to the GC (cp. Message to the Cantonal Parliament no. 6282, 13 October 2009). The additional research performed by other institutions should increase the volume by about CHF 2 million. This would imply an increase of cantonal payments due to the Performance Contract of about CHF 0.8 million.

Clinical and applied research

No cantonal contribution from the Performance Contract is foreseen for clinical and applied research.

7.4.4 Additional charges

The overall additional charges for Canton Ticino during the 3 years of MA education can therefore be estimated to amount to CHF 3 to 4 million. The additional charges for the research activity during the same time can be estimated to amount to CHF 0.8 million (the contribution for the research at IRB is already included in the affiliation agreement).

Additional charges for the EOC are not foreseen. The EOC is currently funded acording to the parameters defined by TARMED, which do not include contributions for education or for basic or clinical research from third parties. This should not change under DRG financing modus.

7.4.5 Financial flows

Looking at the cash flows from a national point of view and not from a cantonal one, Canton Ticino has to expect the following cash flows, calculated for the model with 70 students per year (total 210), of which one third would be from Ticino.

(in CHF)	Current situation		Situation with MAmed at USI	
	Outflows	**Inflows**	**Outflows**	**Inflows**
Intercantonal agreement	110 Master students *48,600.— = 5.3 million		70 students from Ticino studying outside Ticino * 48,600.— = 3.4 million *70 students from Ticino at USI * 48,600 = 3.4 million*	140 students from CH * 48,600.— =6.8 million
UFG	--	--	--	210 * 14,000.— =2.9 million
Research SNF	--	--	--	5 million
Performance Contract, teaching	--	--	*4.2 million (see table 16)*	
Performance Contract, research	--	--	*2 million*	--
Total	-5.3 million	0	-3.4 million	14.7 million
Balance of cash flows	**-5.3 million**		**11.3 million**	

Table 19: Financial flows

Currently, the Canton is paying CHF 5.3 million per year to other universities without receiving any inflows. With the set-up of the Master School, the financial flows for Ticino will change: it is hypothesised that 70 students from Ticino study outside the Canton, and other 70 students from the Canton study at the MAmed-USI. According to the current Performance Contract, the net outflow of CHF 5.3 million would be converted to a net inflow of CHF 11.3 million.

This calculation could be further refined by taking into account the flows for the scholarships, the research revenues and the costs for senior medical students currently covered by the EOC. All of these elements entail an increase of inflows, making the balance sheet look even more positive.

8 Logistics

The mentioned logistical needs refer solely to the MA education activity. As for other projects, USI shall identify a definite logistical solution based on concrete experience, without deciding now on logistical solutions that may turn out to be unsuitable later.

8.1 Teaching: USI, Campus Lugano-Viganello, classroom lectures

Both didactic models foresee 4 semesters of on-site classroom education: two age-groups would be present at the same time, with classes of 50 to 70 students, requiring the occupation of two auditoriums during all semesters, in the morning.

8.2 Clinical training: EOC, clinical sites (Lugano and Bellinzona)

In the afternoons, the practical and theoretical training is scheduled to take place directly in the clinics, in presence of tutors and lecturers and in contact with patiens. 5 to 7 rooms for 10 to 14 people are needed for seminar activities: in general, there are two courses per semester, so that the need for rooms may rise up to 10 to 14 at each site.

8.3 Basic research at the sites of affiliated institutions

All the affiliated institutions have the necessary research facilities.

9 Collaboration scenarios

For the previously illustrated reasons (limitations regarding academic and teaching competences present in Ticino, students coming from different medical faculties, opening towards the FMH specialisation), it will be inevitable to collaborate with one or more Swiss medical faculties, at least in the initial phase.

Although the state examination should guarantee a comprehensive catalogue of mandatory competences, this has not produced a unified didactic model. Each faculty organises the program of studies differently (see 3.2.2), rendering the collaboration modalities more difficult. A convention with one or more faculties should facilitate the achievement of the following objectives:

- **Teaching quality:** some of the teaching activities will be offered in Ticino, others will be offered in Ticino with professors and resources from other faculties, and others again may be held as block courses at other faculties, necessitating the mobility of students. The affiliated faculty/ies are expected to assist USI in assuring a high level of education.
- **Origin of students**: the idea is by no means to organise a School that would be solely aimed at students from Ticino: the extra 100 BA study places shall be made available to all Swiss students. In fact, the affiliated Swiss medical faculty/ies are expected to properly inform and orient students about the possibility of ocmpleting the MA in Ticino.
- **Study title:** the title Master in Medicine guarantees an immediate recognition and access to the state examination.
- Allow physicians that have been newly trained in Ticino equal access to the FMH specialist education.
- Support USI with the procedures of accreditation and recognition (see 3.5)

In order to reach the objectives of the Convention, the following bodies are foreseen (*for analogy see the competences of the Council constituted at the moment of USI's foundation):*

- **USI Council:** approves requests from the Institute Council
- **Strategic Council:** Deans or presidents of the affiliated university/ies
    - *Consulting body of the USI Council*

- **Council of the Institute of Medicine at USI**
    1. In the initial phase, the composition shall be defined by USI, the affiliated faculties and by the EOC. Tasks:
        - *Preparation of the didactic program*
        - *Proposals for job advertisement*
        - *Proposals for teaching assignments*
        - *Procedure for appointing professors (composition of the committee: USI, affiliated university, EOC)*

    2. During the phase of regular functioning:
        - *Directing body of the Institute of Medicine, like a faculty council: the affiliated faculty/ies is/are represented by its/their professors.*

        - *The Council will be a body that coordinates actions between USI and the partner hospitals.*

The Swiss faculties have shown a significant interest in this project and have expressed their availability to collaborate. At the moment, it is too early to take a decision. A concrete evaluation will only be possible during the second phase of the project, after a preliminary decision by the CdS.

10 Accompanying measures

The accompanying measures do not concern the key questions of the project, but they could help to build significant competences and relations.

10.1 Executive (continuing) education

Executive education refers to short-term offers for professionals with the goal of going in-depth on specific topics, often in an interdisciplinary way: so far, USI has successfully organised two courses: e-cardio and bio.business.

10.2 Post-graduate courses in medicine (see 5.2.8)

- **The ESASO** (European School for advanced studies in ophthalmology)
- **The ESO** (European School of oncology)

10.3 Education in complementary sectors

- Health Communication, Medical Humanities
- Simulations, Computational Science
- Economics: Health Economics and Management
- Urban structure, access to treatment, ageing of population
- E-learning (updating physicians according to the FMH agreement)

10.4 Scientific congresses and meetings

- Congress of Oncology (Congresso di oncologia)

10.5 Technological transfer

Biomedical companies, microelectronical companies, etc.

11 Final considerations

Based on this report, it is not possible to take final decisions; nevertheless, enough elements have been collected to indicate that a clinical training in Ticino, with the necessary collaborations, is an attainable objective.

The set-up of a Master medical school at USI would provide, on the one hand, a solution to a national problem, and on the other hand, it would strengthen USI's scientific component, giving important incentives to improve the clinical offer while increasing the overall research activity, with significant benefits also for the industrial and economic sector of Canton Ticino.

The financial flow analysis shows that the costs for the Canton could be compensated with the expected benefits.

Mandate for phase 2

Ticino's CdS is kindly asked to approve the present report and, if considered appropriate, to give a mandate to USI to continue with study phase 2.

Phase 2 should make it possible to gather the necessary elements to allow Ticino's CdS to elaborate a Message addressed to the GC which, in turn, will debate and take the necessary political decisions.

Phase 2 will enable in particular to clarify the modification possibilities of the NC clauses, to negotiate a convention with one or more Swiss medical faculties, to elaborate a teaching model and to prepare a solid financial forecast.

Acknowledgements

Acknowledgements go to the Study Group, the Federal and Cantonal authorities, the Medical Faculties as well as to the Federal and Cantonal administrations for their availability and their kind and constructive collaboration. The Study Group thanks particularly the coordinator Mauro Martinoni and his assistant Monica Link for their invaluable support in preparing this report.

For the Study Group, the President

Piero Martinoli

Lugano, 18 February 2011

References

BASS (2005). Grundversorgungsmedizin in der Schweiz. Bericht Nr. 15. Büro für Arbeits- und Sozialpolitische Studien. Bern.

EMS (2010). Eignungstest für das Medizinstudium 2010. Bericht 17. ZTD Zentrum für Testentwicklung und Diagnostik. Dept. Psychologie der Uni Freiburg.

MEDFLUX UST (2007). Studierende in Medizin nach Hochschule, Jahr des 1. Fachsemesters, bestand. Prope und Hauptfach. Humanmedizin. Bundesamt für Statistik.

SWTR (2007). Ärztedemogrphie und Reform der ärztlichen Berufsbildung. Schweizerischer Wirtschafts- und Technologierat. Bern.

www.bfs.admin.ch. Themen. 15-Bildung. Tertiärstufe: Hochschulen. Various data and statistics.

www.crus.ch. Anmeldung zum Medizinstudium. Kapazitäten.

www.fmh.ch. (FMH statistics 2001-2009). SIWF. Internationales. Statistik 2001bis2009. Einwanderung der erwerbstätigen ausländischen Wohnbevölkerung.

www.fmh.ch. (FMH 2009). Weitere Themen. Ärztedemographie. Ärztestatistik. FMH-Ärztestatistik 2009.

www.sclo.smifk.ch. Swiss Catalogue of Learning Objectives for Undergraduate Medical Training.

http://www.bag.admin.ch/themen/berufe/07918/07919/index.html?lang=de. Bundesamt für Gesundheit. Neue eidgenössische Prüfung Humanmedizin. Information an die Fakultäten und die Studierenden. Bern. 19. Januar 2010.

http://www.cus.ch/wDeutsch/akkreditierung/index.php?navid=24. Schweizerische Universitätskonferenz. Akkreditierung. Bern. 18. Oktober 2010.

Legge federale sull'aiuto alle università e la cooperazione nel settore universitario, LAU. 1 agosto 2008.

Accordo intercantonale sulle università (AI). 20 febbraio 1997. Berna.

http://www.usi.ch/container_prospective_students/container_education_master_program/master-tasse.htm Tasse per il programma di Master. Lugano. 19 Ottobre 2010.

http://www.snf.ch/SiteCollectionDocuments/inb_jb_09_d.pdf. Schweizerischer Nationalfonds. Jahresbericht 2009. Berna. 20 Ottobre 2010.

http://www.crus.ch/information-programme/anmeldung-zum-medizinstudium/vd/zulassung-auslaendischer-studienanwaerterinnen-und-anwaerter.html?L=3#Empfehlung. Conferenza dei Rettori delle Università Svizzere. Zulassung ausländischer Studienanwärterinnen und –anwärter. Berna. 20 Ottobre 2010.

http://www.mft-online.de/dokument/Hildebrandt_15_3_10.pdf. Fakten zur ärztlichen Ausbildung: Rückblick auf Erreichtes und nicht Erreichtes. Medizinischer Fakultätentag der Bundesrepublik Deutschland. Dr. Volker Hildebrandt. 20 Ottobre 2010.

http://www.ond.vlaanderen.be/hogeronderwijs/bologna/2010_conference/documents/IndependentAssessment_1_DetailedRept.pdf. The Bologna Process independent Assessment. The first decade of working on the European Higher Education Area.

http://www.oaq.ch/pub/de/03_05_01_med_ausbildung.php. Accreditamento nel settore professioni mediche universitarie in Svizzera. Formazione universitaria. 25.11.2010.

Messaggio no. 6282. Affiliazione dell'Istituto di ricerca in biomedicina di Bellinzona (IRB) all'Università della Svizzera italiana (USI). Dipartimento educazione, cultura e sport. Canton Ticino. 13 ottobre 2009.

www.med.uzh.ch. Liste der praktizierende Ärzte, welche bereit sind, cand. med. im Wahlstudienjahr auszubilden. Institut für Hausarztmedizin. University of Zurich. 23.2.2010.

Appendix

Appendix A: Mandate from the State Council of Canton Ticino

numero			Bellinzona
2237	lm	17	12 maggio 2009

Repubblica e Cantone
Ticino

Il Consiglio di Stato

viste:
- le recenti modifiche nel campo della formazione medica in Svizzera in conformità al modello risultante dalla Dichiarazione di Bologna;
- la necessità di garantire uno sviluppo dell'USI in generale nel settore delle scienze naturali;
- le opportunità offerte da una migliore strutturazione delle forze esistenti o potenziali del Cantone nel settore della formazione e la ricerca nel campo della medicina clinica e della biomedicina;
- le prevedibili ricadute positive di un consolidamento dei settori menzionati;

richiamati:
- il Messaggio n. 5978 del 10 ottobre 2007 concernente la Pianificazione 2008-2011 della politica universitaria: Università della Svizzera italiana (USI), Scuola universitaria professionale della Svizzera italiana (SUPSI), Alta scuola pedagogica (ASP) e Accordi intercantonali (AI), in particolare il Punto 2.2 e il relativo capitolo "Conclusioni";
- l'art. 1, cpv. 3 della Legge sull'USI, sulla SUPSI e sugli Istituti di ricerca, del 3 ottobre 1995;

sentito l'avviso della Presidenza dell'Università della Svizzera italiana e della Divisione della cultura e degli studi universitari;

su proposta del Dipartimento dell'educazione, della cultura e dello sport;

r i s o l v e :

1. È istituito il **Gruppo di studio "Scenari per una strutturazione della formazione clinica in medicina in Ticino"**, in seguito "Gruppo di studio".

2. Composizione
   2.1. Il Gruppo di studio è costituito da:
      a) Tre membri designati dal DECS, nelle persone di:
      - **Piero Martinoli**, Presidente dell'USI, Presidente del Gruppo di studio;
      - **Carlo Maggini**, Direttore dell'EOC;
      - **Sandro Rusconi**, Direttore della Divisione della cultura e degli studi universitari.

10002

b) Quattro esperti designati dal Consiglio dell'USI nelle persone di:
- **Prof. Dr. Suzanne Suter** (Presidente del Consiglio svizzero della scienza e della tecnologia, CSST);
- **Prof. Dr. Patrick Francioli** (Decano della Facoltà di biologia e medicina dell'Università di Losanna);
- **Prof. Dr. Arnaud Perrier** (capo del servizio di medicina interna generale Hôpital universitaire Genevois e professore ordinario alla facoltà di medicina dell'UNIGE);
- **Prof. Dr. Bernard Vermeulen** (Direttore medico del consorzio Hôpital fribourgeois).

2.2. Il Gruppo di studio ha la facoltà di attivare consulenze e perizie esterne.
2.3. Le funzioni di segretariato sono assunte dal coordinatore dell'Area degli studi universitari.

3. I compiti del Gruppo di studio sono così definiti:
   3.1. Verificare se e quali condizioni esistono per una strutturazione accademica sul territorio cantonale della formazione clinica in medicina e della ricerca affine.
   3.2. Fornire un quadro completo delle forze esistenti e delle risorse che dovrebbero, rispettivamente potrebbero essere attinte da collaborazioni trans-cantonali o trans-frontaliere, procedendo alle necessarie audizioni preliminari delle parti interessate.
   3.3. Esaminare quali tipi di percorso formativo potrebbero venire strutturati negli ambiti identificati come potenzialmente attuabili.
   3.4. Dare indicazioni sulle effettive possibilità di reclutamento degli studenti e di sostenibilità dell'offerta formativa sul lungo termine, tenendo conto delle offerte concorrenziali in altre sedi ed identificando le eventuali nicchie di specializzazione ancora aperte.
   3.5. Preparare una tempistica di progetto comprensiva delle fasi di implementazione prevedibili, una descrizione degli ostacoli da superare ed un'analisi generale sulle condizioni finanziarie legate all'eventuale concretizzazione.
   3.6. Riassumere i punti 3.1.-3.5. in un rapporto che includa le eventuali raccomandazioni e fornisca indicazioni sulla competitività e la sostenibilità potenziale dei modelli prescelti.

4. Il termine di scadenza per il rapporto conclusivo è fissato al 30 settembre 2010.

5. I membri del Gruppo sono indennizzati secondo il Regolamento concernente le indennità ai dipendenti dello Stato, del 5 febbraio 1997. I costi sono attribuiti al conto n. 318.001 CRB 655 "Onorari e spese per consulenze, incarichi e perizie". Spese supplementari per perizie esterne possono venire suddivise fra Cantone e USI.

6. Intimazione a: - Presidenza dell'USI per sé e per i membri di sua designazione (5)
- Direzione del DECS per sé e per i membri di sua designazione (4)

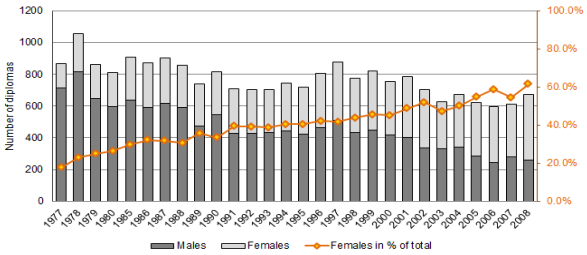
7. Copia a: Divisione della cultura e degli studi universitari, per sé e per l'Area degli studi universitari (2); Sezione amministrativa del DECS; Sezione delle finanze; Controllo cantonale delle finanze; Divisione delle contribuzioni; Sezione delle risorse umane; Ufficio stipendi.

PER IL CONSIGLIO DI STATO

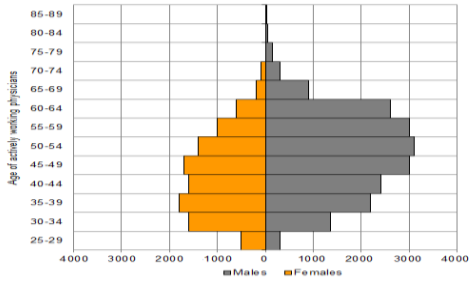
Il Presidente:
G. Gendotti

Il Cancelliere:
G. Gianella

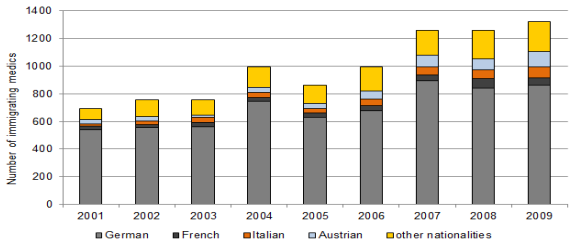
Appendix B: Diplomas in human medicine, 1977-2008 (years 1981-81 missing)



Appendix C: Age pyramid of the actively working physicians in Switzerland



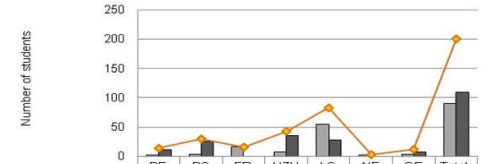
Appendix D: Immigrating physicians per country of origin, 2001-2009



Appendix E: Expenses in human medicine 2009, per university

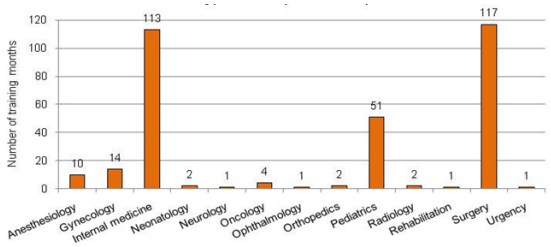
Persaufwand		Basel	Bern	Zurich	Genf	Lausanne	CH Total
Hochschulrechnung		18'759'148	67'806'391	90'752'782	72'616'453	23'880'870	273'815'645
Drittmittel	*-CH Nationalfonds*	9'961'698	9'990'905	19'107'625	12'915'100	15'483'851	67'459'179
	-übrige Drittmittel	22'257'804	24'007'752	44'123'579	24'478'878	26'253'481	141'121'493
alle Finanzquellen		50'978'650	101'805'048	153'983'986	110'010'430	65'618'202	**482'396'317**
Sachaufwand		**Basel**	**Bern**	**Zurich**	**Genf**	**Lausanne**	**CH Total**
Hochschulrechnung		89'515'755	112'478'395	141'696'331	2'151'297	118'978'292	464'820'071
Drittmittel	*-CH Nationalfonds*	3'201'798	4'420'099	5'747'036	8'913'551	8'535'876	30'818'360
	-übrige Drittmittel	11'278'961	15'410'809	18'188'774	11'494'247	11'503'770	67'876'561
alle Finanzquellen		103'996'515	132'309'304	165'632'141	22'559'095	139'017'938	**563'514'993**
Total Aufwand		**Basel**	**Bern**	**Zurich**	**Genf**	**Lausanne**	**CH Total**
Hochschulrechnung		108'274'903	180'284'787	232'449'114	74'767'749	142'859'163	738'635'716
Drittmittel	*-CH Nationalfonds*	13'163'496	14'411'004	24'854'660	21'828'652	24'019'727	98'277'539
	-übrige Drittmittel	33'536'765	39'418'561	62'312'353	35'973'125	37'757'251	208'998'054
alle Finanzquellen		**154'975'165**	**234'114'352**	**319'616'127**	**132'569'526**	**204'636'140**	**1'045'911'309**

Appendix F: Human medicine students from Ticino (data from 31.12.2009)



	BE	BS	FR	UZH	LS	NE	GE	Total
1-2 anno	2	4	16	7	55	3	4	91
3-6 anno	12	26	0	36	28	0	8	110
Total TI students	14	30	16	43	83	3	12	201

Appendix G: EOC training places occupied in 2009, per area



Appendix H: The five curricula of the Master in human medicine existing in Switzerland

Curricula

Master	Zurich	Bern	Basel	Geneva	Lausanne
1st year	**Core study (456 h in courses and 216 h clinical education):** *10 thematic blocks:* - 4 w. psychology & comportment - 3 w. sense organs, face, throat - 4 w. nervous system - 3 w. methabolism, endocrinal organs - 3 w. blood, tumors - 1.5 w. skin, dermatology - 3 w. childhood, adolescence, senium - 4 w. kidney, water balance - 1.5 w. social, legal, ethnical medicine - 2 w. emergencies **Major study 4 h per week:** either bio medicine or clinical medicine	**Sept-Dec:** -14 w. introduction into practice "courses and clinical practice" -3 w. preparation time for exams **Feb-Nov (24 w.):** Thematic blocks: - 5 x 4 w. clinical practice - 1 x 3 w. practice at general practitioner - 1 x 1 w. practice at anesthetist -8 weeks: Master thesis -9 weeks: holidays	**Sept-Dec (14 weeks):** - 4 w. cardiovascular - 3 w. endocrinal systems - 4 w. musculoskeletal system - 3 w. respiratory system **Mar-Jun (14 weeks):** - 2 w. boundry layer - 4 w. blood, infections, resistance - 4 w. digestive tract - 3 w. kidney	**Sept-Dec:** - 15 w. UIDC (Introduction into clinical procedures), incl. basics in radiology, pathology, ORL, ophtalmology and dermatology - 2 w. exams **Feb-Jun:** - 8 w. internal medicine (semiology, pharmacology, medical science, nephrology, quality of care, pathology, legal medicine, radiology) - 8 w. communication & medic first aid / emergencies - 3 w.: exams - 8 w. pediatrics	**Sept-Dec (17 weeks):** - 7 w. Arthralgia (orthopedy, rheumatology, immunology, ORL, deramthology, ophtomology) - 7 w. Mother&child (gynecology, genetics, neonatology) - 3 w. Generalist (internal & general medicine, urology, geriatrics, psychology) **Mar-Jul (16 weeks block couses)** - psychology, pneumology, pediatrics, ORL, gynecology, surgery
2nd year	Practical year - 10 months	**Dec- Mar:** - 14 w. final courses part 1 - 3 w. preparation time for exams and Master thesis	**Thema:** - nervous system - psychatry / ethic / legal medicine - reproduction - scientifical cometencies	**Thematic blocks:** - 8 w. surgery - 4 w. psychiatry - 4 w. gynecology - 3 w. exams - 2x2 w. neuro-ophtalmology - 2x2 w. ORL-dematology - 4 w. emergencies - 4 w. Master thesis - 4 w. exams	**Themathic blocks:** - 3 w. scientific competencies - 4 w. endocrinology, surgery, psychiatry - 4 w. oncology, infect., hematology - 3 w. legal medicine, hematology, immunology, surgery, neurosurgery, genetics, pharmaceuticals 3 w. transplantation, palliative, sexology - 3 w. Generalist II (internal & general medicine)
		Mai-Jan: **Practical year** *-30 weeks* *-11 weeks* holidays	Practical year		**Mai - Apr:** **Practical year:** 10 months training and finish of Master thesis
3rd year	**Core study (600 h courses and 200 h clinical practice):** - 400 h courses (symptom oriented, incl. differential diagnostic thoughts) - 200 h repetition as prepartion for the state examination - 200 h clinical practice as group lessons and staggered, at different clinics and instituts	**Feb-Mai:** -14 w. final couses part 2 - 4 w. preparation time for exams and Master thesis	Master thesis Emergencies	Practical year - 40 weeks	- 6 w. repetition knowledge and clinical practice

Appendix I: Feasibility of the modules offered at UniL

Modules	Feasible with support	Feasible with stong support	Not feasible
Douleurs articulaires	X		
Mère-enfant			X
ORL, Dermatologie, Ophtalmologie			X
Généralisme I	X		
MICS, Médecine, individu, communauté société	X		
Travial de Maîtrise	X		
Maladies chroniques et complexes		X	
Oncologie, Maladies infectieuses, Hématologie	X		
Cours cliniques généraux		X	
Cours coordonnés			X
Généralisme II	X		

Appendix J: Feasibility of the modules offered at UZH

Modules	Feasible with support	Feasible with stong support	Not feasible
Psyche und Verhalten			X
Sinnesorgane, Gesicht, Hals			X
Nervensystem		X	
Stoffwechsel / Endokrine Organe		X	
Haut			X
Sozialmedizin, Recht und Ethik	X		
Lebensabschnitte Kindheit, Adoleszenz und Senium		X	
Blut / Neoplasien	X		
Niere, Elektrolyte, Wasserhaushalt		X	
Notfallmedizin	X		

Appendix K: Costs and revenues for starting the Master

Model based on data from FSO	1st year	2nd year	3rd year	steady year-over-year costs
Costs for the basic education (70'000 CHF per student, per year)	4'900'000	9'800'000	14'700'000	14'700'000
Start-up costs (5 mio. amortised over 10 years)	500'000	500'000	500'000	500'000
Costs for adm. and mgmnt. (infrastructure for research and in clinics)	1'500'000	2'000'000	3'000'000	3'000'000
Total costs for the basic education	6'900'000	12'300'000	18'200'000	18'200'000
Federal revenues LAU(14'000 CHF per student)	980'000	1'960'000	2'940'000	2'940'000
Revenues IA from other cantons * (48'600 CHF per student)	2'187'000	4'374'000	6'804'000	6'804'000
Revenues IA for ticinese students * (48'600 CHF per student)	1'215'000	2'430'000	3'402'000	3'402'000
Revenues student fees (4'000 CHF per student)	280'000	560'000	840'000	840'000
Cantonal contribution based on the Contract of Services (30%)	1'398'600	2'797'200	4'195'800	4'195'800
Total revenues for the basic education	6'060'600	12'121'200	18'181'800	18'181'800
Gain / loss	**-839'400**	**-178'800**	**-18'200**	**-18'200**
** Master students*	*70*	*140*	*210*	
of which, Ticinese (estimate)	*25*	*50*	*70*	
of which, from other cantons (estimate)	*45*	*90*	*140*	
