
Master in Human Medicine in Ticino

Detailed report

Study Group
"Scenarios for structuring training in clinical medicine in Ticino"
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Abbreviations

BA	Bachelor
BE	University of Bern
BS	University of Basel
EMS	Aptitude test for the study of medicine
EOC	Ente ospedaliero cantonale (Multi-site Hospital of Ticino)
FMH	Swiss Medical Association
FR	University of Fribourg
GE	University of Geneva
HM	Human Medicine
IAU	Intercantonal Agreement on Universities
IOR	Institute for Research in Oncology, Bellinzona
IRB	Institute for Research in Biomedicine, Bellinzona
KVG	Federal Law on Health Insurance
LS	University of Lausanne
MA	Master
NC	Numerus clausus
NE	University of Neuchâtel
UFG	Federal Law on Financial Aid to Universities
UZH	University of Zurich

To make our report more readable, we have used only the masculine gender (he, his, etc.), which also includes persons of the female sex. We trust that our female readers will not be offended.

Executive Summary

As a result of the contacts we have made at cantonal level, with Swiss medical faculties and with federal government departments, we have reached the following working hypothesis.

On the structural/institutional level:

Medical faculties are organized in very different ways. It is therefore necessary to opt for **priority** – but not exclusive – **cooperation** with one major Swiss medical faculty. We have opted for the Zurich faculty, because of its willingness to cooperate, geographical proximity, existing joint ventures in the field of training and the large number of students from Ticino enrolled there. We have received a positive response from the Department of Education, the Rectorship and the Faculty, and it has been possible to set up a joint working group.

Swiss medical faculties have adopted the Bachelor (BA) and Master (MA) model, though some, in particular Zurich, have maintained the pattern of **a two-year preparatory course followed by a four-year clinical course**. Under the Intercantonal Agreement (IAU), the third Bachelor year is paid in the same way as the subsequent Master years. The USI project is based on a three-year BA and three-year MA model, while leaving open the possibility of collaboration for the third year of the BA course.

On the operational level and as regards resources:

Students: the aptitude test system for allocating training places has proved its worth. In 2012, 2,337 candidates took the test to win one of 745 places. Candidates can indicate their choice of university, but are allocated to the various faculties taking various factors into account, including the number of places available and their scores in the test.

The idea is to increase the number of places by 100 and allocate them to USI. Taking into account the number of candidates and the places available, this increase of 100 places does not mean a reduction in quality, and the students enrolled at or assigned to USI will be in the upper part of the range where points scores are concerned. For the first three years (BA), they will be hosted by other faculties, before continuing with the three-year MA course at USI.

Clinical resources: the lack of places for practical work and clinical seminars was flagged up as the chief limitation on increasing training places in existing faculties. A simulation confirmed that it would be possible to provide sufficient opportunities in Ticino, without laying an undue burden on contracted faculties (i.e. faculties with which USI has concluded a cooperation agreement).

Teaching resources: it will be necessary to make provision for ten or so tenured teaching staff, operating at USI and in the clinical structures. Other courses will be taught by teaching staff working on a contract basis. From the contacts we have made, there should be no difficulty in finding competent people.

Funding: The costs of training, calculated in various ways, can be covered from regular sources of federal (UFG), cantonal and intercantonal (IAU) funding, plus a regular contribution to the project by the Canton of Ticino.

Logistics/facilities: a mixed working group has assessed the impact on the EOC and the other clinical structures. Where USI is concerned, the necessary premises have already been provided for on the Lugano-Viganello Campus.

1 General considerations

1.1 Recapitulation of the conclusions of the Final Report "Master in Human Medicine in Ticino" of 28 January 2011.

The Ticino project should be seen as a contribution to solving an acute national problem.

Providing training in human medicine in Ticino, albeit limited to the clinical phase, is an achievable objective, given cooperation with other Swiss faculties and support from the Canton's public and private hospitals and clinics, cantonal institutions, the Ticino Medical Association (OMCT) and family physicians working in the region.

The financial flows outlined in the study show that the benefits would be commensurate with the costs borne by the Canton.

1.2 Models of medical training

Elsewhere in Europe, training is organized either in accordance with the Bologna model (3BA+3MA), or by combining a two-year preparatory cycle with four years of clinical training. In the United States, Medical School consists in a four-year course, preceded by Bachelor's degree in a related discipline. The Swiss faculties have adopted the Bologna model, with a three-year BA cycle and a three-year MA cycle, though some universities have maintained the structure of a two-year preparatory cycle followed by four years of clinical training. The Intercantonal Agreement (IAU) has maintained the subsidy of CHF 25,000 for the first two years and CHF 50,000 for the four clinical years.

Our discussions with the various medical faculties confirmed that the main difficulty in increasing the number of training places arises at the beginning of clinical training, in the third BA or first MA year.

1.3 Integration of training at USI with Swiss university strategy

Students need to be trained in all areas of medicine, but where research is concerned (particularly basic research), it would be wise to concentrate on just a few institutions, some of which already exist, so as to guarantee excellence. This is in keeping with Swiss university strategy, which tends to avoid structures which are too small and therefore unable to achieve the necessary level of quality. For teaching purposes, we will need to use tenured teaching staff, who are integrated with the EOC or other clinical structures, or teaching staff working under contract (who perform their clinical activities in their own universities or hospitals).

1.4 Educational model

The model for training physicians (and care personnel generally) is central to current studies and discussion: the changing face of the medical profession and organizational changes in the way care is delivered mean that training has to be reconsidered. A recent report in the *Lancet* [J. Frenk *et al.*, *The Lancet* 376, 1923 (2010)] insists on the importance of training in teamwork, inter-professional training and the need for a balance between scientific, social and personal skills. The patient is regarded as central to the training process, not only in cutting-edge health facilities, but in the whole range of care and life situations: the patient becomes an actor in the teaching process.

The methodology of medical training should not be reduced to mere teaching technique, but should consist in an effort to place the young doctor's learning process in the real context of the profession. This means taking account of the request to emphasize basic medical training, avoiding situations in which, during his training, the student is dealing exclusively with the cutting-edge aspects of medicine. The creation of an Institute of Family Medicine, as part of the project being formulated by the Swiss University Conference (SUC), is an opportunity that we can build on.

E-learning, simulations and new technologies also offer promising teaching tools.

2 The plan for clinical training at USI (Master in Human Medicine)

2.1 General hypotheses

This detailed report is based on the following working hypotheses:

- **Choice of a primary partner:** the diversity of the training provided by Swiss medical faculties makes it necessary to opt for a **primary, though not exclusive, partnership** with one medical faculty. We have chosen the University of Zurich (UZH), because of its geographical proximity, the large number of students from Ticino enrolled there, and its willingness enter into partnership. It is also important to mention that the Cardiocentro (CCT) has recently been recognized as a teaching institution ("Lehrspital"), by the UZH Faculty of Medicine. The EOC, for its part, is setting up a similar collaborative venture with UZH (see letter from the Dean of the UZH Faculty of Medicine dated 20 November 2012), whereby its hospitals will soon become "Lehrspitäler" of the UZH Faculty.

There is also the special case of cooperation with the **University of Fribourg**, which has recently supplemented its BA training programme in order to gain accreditation for this study cycle. We can therefore envisage an increase in the number of BA students at Fribourg, who would then continue their studies at USI, under a special agreement.

- **Structure of the training:** The faculties – whether they have a system of two preparatory years with clinical training beginning in the third year, as at UZH, or whether they adopt the Bologna model, like other universities – have informed us that problems of capacity (the famous "bottleneck) begin to make themselves felt from the third year of the BA course.

The **BA** course will be organized in the various host faculties in accordance with their own models. The **MA training** will take place at USI, primarily in partnership with UZH, but also with other Swiss faculties. The MA diploma will be awarded, until USI's MA course has been accredited, jointly by UZH and USI.

- **Concentration on just a few high-level research institutions** for basic research and cooperation/networking for teaching and research in other disciplines, in keeping with the Swiss universities' development strategy.
- **Special attention to teaching methodology**, so as to set the medical student's learning process within the real context of the profession: relationship with the patient, teamwork, scientific knowledge, social skills.

- **Differentiation of opportunities to gain practical experience:** as well as practical work in hospitals and clinics, there are plans for students to gain experience in medical practices and local health-care structures.
- This differentiation is particularly important for giving due attention to family medicine, not just cutting-edge aspects of the profession.
- **Language of instruction:** as borne out by the experience of other USI faculties, we need to speak of languages in the plural. At the patient's bedside and in clinical practice, the main language will be Italian; for group teaching, the language that prevails within the group will be used; for classroom lessons/lectures, English will be the language of choice (though other languages may be used to maximize e-learning opportunities).

2.2 Students

Our preference is to use the aptitude test for the study of medicine (EMS) to obtain an increase in the number of training places allocated to USI. This procedure, which still requires approval by the RCSU and the SUC, implies registration at USI from the beginning of a student's medical studies, or some other form of binding commitment to continue his MA training at USI.

The present procedure of selection by aptitude test has proved scientifically valid, the selected candidates having gone on to achieve a high success rate.

The procedure for allocating places, managed by the RCSU, has yielded positive results [see EMS Report - K.-D. Hänsgen und B. Spicher, Bericht 19 (2012), p. 11], and increasing the number of training places is a political decision compatible with the aptitude test.

	Total no. of candidates	<i>Of whom from Ticino</i>	No. places awarded	%
2000	678	26	652	98
2005	1107	21	624	56
2011	2172	86	745	34
2012	2337	103	745	32

Table 1: Changes in number of registrations for the aptitude test and places available

The steady increase in interest in undertaking training is not reflected in an increase in the number of places. Candidates are awarded a place on the basis of their ranking in the test and the places available. Exclusion does not mean that they are unsuited to medical studies, therefore an increase in the number of training places would not jeopardize quality - a point stressed in the 2012 EMS Report.

The Report also considers at some length how the results differ in the three language regions: in 2012, the difference between the results of German and Italian-speakers was modest, far less significant than in earlier years (see page 69).

The Confederation and the Cantons have decided to increase the numbers of training places at existing faculties, so as to obtain an additional 300 qualified physicians in 2019-20. The Ticino project envisages **a further increase of 100 training places to be allocated to USI:** as with the other universities, students may indicate USI as their preferred university or be assigned to USI by the central authority. Students are registered with USI from their first semester. For their BA training, they are hosted by partner uni-

versities with, if requested, the cooperation of USI for the third year. They then continue with their MA studies at USI.

Access to training without an aptitude test, as occurs at the universities of Geneva and Lausanne, is not appropriate for our project, as it does not provide a criterion for selecting candidates, awarding places and assigning a faculty at the time of registration. This does not mean that it is not possible to cooperate with the Geneva and Lausanne faculties, which have expressed great willingness to be involved, both in selecting individual students after the BA and in considering a different model for transfer from their BA programmes to USI's MA course.

We particularly need to examine the possibility of cooperation with the University of Fribourg, which offers a full BA course, but has no MA programme.

For 2012, 745 places have been awarded, 20% more than the number of places actually available. This could mean that, if an additional 100 places are allocated, we shall effectively obtain 80 places as part of the Ticino project and, allowing for a drop-out rate of 10% during the BA course, 70 students for MA training. These figures will be achieved gradually, depending on enrolments and cooperation with the other faculties.

In the event of registration at USI (or some other form of binding commitment) from the start of the BA course not being possible, we would have to explore the possibility of concluding bilateral agreements with individual universities, governed by cantonal law. This report is based on the hypothesis that students will be assigned to USI from their first semester. If necessary, USI might make provision to increase clinical practice resources for the third year and offer students teaching sessions to make their registration at USI a more concrete reality.

Foreign students

Art. 12 of the Federal Law on Academic Medical Professions of 23 June 2006 stipulates that holders of a Swiss high school-leaving certificate or qualification recognized under federal law may apply to take the federal examination. On 12 October 2006, the RCSU issued Recommendations on the conditions under which foreign students (citizens of Lichtenstein, foreigners resident in Switzerland, refugees, etc.) might be admitted for medical studies. The cantonal universities adopted the RCSU recommendations and implemented them. The admission during a course of study of foreign students who have successfully completed training abroad is subject to places being available.

Indeed, due to the initial conditions for admission (RCSU), admission to the state examination (federal law) and the shortage of training places available, foreign students holding a foreign high school-leaving certificate are admitted only by way of exception.

The situation of Swiss students at foreign universities merits special attention, however: they are able to access clinical training subject to an assessment of acquired skills.

2.3 Examinations and accreditation

The BA diploma is awarded by the contracted university (i.e. with which USI has concluded an agreement in respect of BA training).

The MA diploma is awarded by USI in conjunction with UZH. The application for accreditation will be put in motion as soon as possible. However, accreditation will not be granted until a full cycle has been completed and the first Master diplomas awarded. Once the accreditation formalities are completed, the award of the MA diploma can be reviewed.

3 Training model

For BA training, we would refer you to the models of the individual faculties hosting students registered with USI. Relations between USI and the hosting faculties will be defined in a general agreement, drawn up in consultation with the SUC and the RCSU.

We shall therefore limit ourselves to describing plans for the Master programme.

3.1. Reference model

A mixed UZH-USI working group has been established (see letter from UZH Rector dated 23 October 2012) to explore and define a basis for cooperation.

The MA model described in this report has therefore been formulated by adopting the model proposed by the UZH Faculty of Medicine as our reference. In terms of content, it does not differ substantially from those proposed by the other Swiss faculties. In terms of teaching methodology, it still favours classroom teaching/lecturing, rather than small-group teaching, which makes it easier to implement in our academic and clinical setting.

In the first year of the MA course, the UZH model includes theoretical lessons grouped into thematic modules ("Themenblöcke"), optional subjects ("Mantelstudium") and practical courses ("Kurse und Praktika"). The second year of MA studies is entirely devoted to hospital practice ("Wahlstudienjahr"). The third year comprises further thematic modules, clinical courses ("Differentialdiagnose"), tutorials, the writing of an MA thesis and preparation for the state examination.

3.2 USI training model

Taking the UZH model as a basis, we carried out a simulation to ascertain what resources are potentially present in Ticino, on the premise that medical training demands close cooperation between the university and clinical structures (EOC structures and others) for the purposes of both theoretical training (usually delivered by habilitated head physicians – with and without tenured teaching posts) and practical training (often delivered by non-habilitated physicians, generally heads of clinic). Only with joint planning between University and clinical structures will it be possible to attract top-level teaching staff and clinicians, which will in turn have the effect of improving the quality of hospital care. Although there are no standard models, generally a head physician with teaching responsibilities will devote 60% of his time to the hospital and 40% to the university (teaching and research). Universities and hospitals then stipulate contracts, working conditions and financial contributions by mutual agreement.

For periods of practical training, too, dialogue and coordination are vital, because the student has to be able to rely on physicians, heads of department and heads of clinic, in particular, being able to devote time to him and so impart their knowledge and skills. And these physicians, adequately remunerated for their teaching duties, will also need to be equipped with the teaching skills required to provide quality teaching, as well as being assured of adequate career development prospects.

In managing the Master in Medicine, it will also be necessary to set up bodies to ensure coordination between USI and the clinical structures, and certain procedures will have to be established, first of all a procedure for appointing teaching staff who are engaged in clinical activities. As regards selection procedures, which must comply with the standards of other Swiss medical faculties, it will be necessary to achieve a good balance between clinical, scientific and teaching skills and abilities. All of these aspects will need to be the subject of specific agreements between USI and the hospitals. These agreements will also have to cover financial matters, on the premise that, given the hospitals' current funding arrangements, the costs of basic training and research must be borne in full by the University.

In line with the general considerations, there is also a need for close cooperation with general practitioners (GPs) active in the Canton, alongside whom students will receive an important part of their practical training.

The Board and General Management of the EOC, having consulted with the EOC's Clinical Coordination Committee, have given their assurance in a letter dated 9 August 2012 (attached) of their full support for the Master programme, in that it can make a significant contribution to growth in health-care provision and research, and would be a far-from-negligible factor in attracting new physicians wanting to perform clinical functions in the EOC's hospitals.

The Committee of the Canton Ticino Medical Association has also expressed interest in this project, especially with regard to its potential impact on the development of family medicine.

3.2.1 Lecture-based courses

Courses of lectures are generally given by habilitated physicians. The objective is not in any case to have all teaching assignments covered by tenured teaching staff. From our contacts with other medical faculties, it is clear that cooperation with contracted teachers and other forms of cooperation are perfectly possible. Part of the teaching could also be delivered by non-habilitated physicians active in the Canton having wide-ranging clinical experience and documented teaching skills, as in fact occurs in other Swiss medical faculties.

We might, for instance, consider setting up ten or so departments using USI-recruited professors who perform clinical activities in cantonal institutions and have adequate resources for clinical research. These departments would be responsible in particular for managing the related "block-topics".

This is an objective we would work towards gradually, in close cooperation with the EOC, private clinics and, if possible, cantonal institutions. We might envisage the following departments/lectureships, with their related modules:

- | | |
|---------------------------|---|
| 1. Internal Medicine | Nephrology/Metabolism/Care of the elderly |
| 2. Surgery | |
| 3. Paediatrics | Children and adolescents |
| 4. Gynaecology-obstetrics | |
| 5. Psychiatry | Mental states and behaviour |
| 6. Pathology | |
| 7. Oncology | Blood and neoplasms |
| 8. Neurology | Nervous system |

9. Cardiology	Heart and cardiovascular system
10. Social and preventive medicine	Social and preventive medicine / law
11. Family medicine	Bridge module between MA and FMH specialism

This list is purely indicative, based principally on the UZH modules. Some departments are nevertheless indispensable from the outset, particularly those covering the "major medical disciplines" (internal medicine, together with geriatrics, surgery, paediatrics, gynaecology-obstetrics, psychiatry and pathology), which also involve a heavy teaching load. Some departments, on the other hand, would have the task of developing the centres of reference present in the Canton: oncology (IOSI), cardiology (CCT), neurology (Neurocentro). Other areas in which Ticino has a reputation for innovation, e.g. palliative care, could be promoted by recruiting a tenured academic and providing him/her with the necessary resources for research. With the same thing in mind, the presence of the IRB should make it possible to organize specific courses in the field of basic immunology, strengthening the UZH biomedical sciences option. This option might be of special interest to young doctors who later intend to go into research.

The Canton Ticino Medical Association's significant commitment to promoting family medicine justifies the institution of a department covering this discipline. As well as providing specific training, this department might contribute to the promotion of a medical culture favourable to family medicine within the context of basic training. This department could be associated with an "Institute of Family Medicine" on the lines of the one operating, for example, at UZH ("Institut für Hausarztmedizin"). Such an institute could form a bridge between basic training and FMH training, possibly benefiting from the financial subsidies the Confederation intends to provide to promote family medicine.

The holders of these chairs will be supported by teaching staff working under contract to cover the complementary topics in the modules, and to bear some of the teaching burden for the main topic. The contract staff will also be responsible for managing modules not directly linked to the lectureships and for which the Canton lacks the critical mass and research activity to be able to feature them more prominently.

Finally, we should not overlook the possibilities of e-learning, simulations and other opportunities offered by the new technologies generally.

3.2.2 Seminars and practical work

In our discussions with medical faculties, it was clear that it will be difficult to provide further training places in the clinical structures of cantons with such faculties, as they were already hard pressed to find places for local students. An essential condition for offering training in Ticino is therefore the ability to guarantee sufficient resources for 70 students, without needing to appeal to the existing network of university hospitals.

Practical training is heavily dependent on patient volumes, which in turn are closely related to population numbers. In this respect, it has to be frankly acknowledged that the "pool" of patients in Canton Ticino (62,000 patients hospitalized in 2010 in the somatic-acute sectors, rehabilitation and psychiatry, representing a total of 570,000 days' treatment), even taking into account the inflow of patients from other cantons and from abroad, is nearing its limits.

The analysis nevertheless showed that it is feasible to offer periods of practice and seminars on the UHZ model, provided we can count on the cooperation of all the Canton's clinical structures. In performing the simulation, we concentrated the periods of practice in the first 14 weeks of each semester. But stretching the practice out over a longer period increases the possibilities, particularly in disciplines involving many hours of practical teaching, those exercised in one or just a few hospitals, and low-volume "sub-disciplines". This training, concentrated predominantly in the afternoons, will require a major reorganization of treatment activities, as these will have to be brought into line with training activities. To compensate for the burden of teaching activity, we plan to recruit additional heads of clinic in the various hospitals that become involved in practical training (equivalent to a total of twenty full-time posts). The costs of doing so are accounted for in the estimates given under point 6. In present market conditions, finding these physicians will not be easy, so these jobs will have to be made attractive in material terms and where career development is concerned.

Where practical training is concerned, we shall also have to be able to count on the willingness of family doctors to take on the 70 students for at least 20 hours' teaching during the first year of the Master programme.

3.2.3 Research

As already stated in our January 2011 report, valuable clinical research is currently being performed in Ticino, concentrated mainly at the EOC institutions and the Cardicentro. And this activity will continue to be of relevance to hospitals and clinics. EOC research activity will be organized around the new Clinical Trial Unit, from which institutions not belonging to the EOC could also benefit, given appropriate cooperation agreements.

Basic research, on the other hand, should be concentrated mainly at the IRB, the IOR and the Neurocentro and, gradually, on the new departments endowed with specific funding for research. The objective is still to concentrate on a few disciplines, so as to ensure critical mass and quality comparable with that of the other Swiss university institutes. In the major Swiss universities, this activity is generally managed directly by the faculty. When the Master programme is instituted in Ticino, it will therefore be necessary to reorganize basic research, which will also have the effect of promoting synergies among the different institutions. From an institutional point of view, the affiliation model, recently adopted by USI and IRB, could well provide an interesting solution, also ensuring greater financial transparency.

As is evident from the estimates set out under point 6, research will benefit from significant financial subsidies if the Master programme is instituted, and this would considerably improve the existing framework of support.

3.2.4 Collateral teaching

USI has developed competencies (teaching and research) in fields closely related to medicine. These are important assets, especially if you take into account the changing profile of the medical profession and the skills now demanded of doctors. It is worth mentioning:

- E-health
- Health economics
- Health communication

These competencies would enable us, as the Federal Office of Health also hopes, to develop new lines of research, particularly in the field multi-disciplinary care (“Versorgungsforschung”), in which Switzerland is well behind other European countries.

In Ticino, we have seen a consolidation of other training activities in the medical field with potential to strengthen basic training. In particular:

- Medical humanities
- the ESO (European School of Oncology)
- the ESASO (European School for Advanced Studies in Ophthalmology)

4 Timescale for implementation

It will be helpful to reiterate what we said on page 25 of our first report, where we spoke of four project phases. Since the Report of 28 January 2011, the start of courses has been postponed by one year, partly due to delay in our negotiations with UZH. An overview of the timescale is also necessary in order to define the Canton's contribution to the various phases.

- **Phase 1** can be regarded as having come to an end with the presentation of the Report of 28 January 2011 and its acceptance by the Council of State (CdS).
- **Phase 2** (preparatory period 2012-14) – the current phase – is based on the government resolution of 1 March 2011 (attached). It comprises approval of the Report by the CdS, preparation of the Message and discussion, to be followed, we hope, by approval from the Grand Council (GC). At the same time, preparations are in hand for the Agreement with UZH and other universities, the increase in the number of places allocated under the NC, the creation of the constituent bodies at USI, and the definition of procedures for appointing the first members of the teaching staff, as well as the agreement with the EOC, the clinics and doctors in private practice. Obviously, these agreements cannot be ratified and come into force until the GC has given its approval but, to avoid loss of time and to give the GC a clearer picture, they are being prepared beforehand.
- **Phase 3** (BA period: 2014-2017) comprises the allocation of an additional 100 training places to USI (spring 2014) and the beginning of BA training in the contracted faculties (autumn semester 2014/15).

It will be necessary to strengthen the constituent bodies, recruit the first teaching staff and prepare the educational model and teaching programmes.

- **Phase 4** (MA period: 2017-2020) sees the start of MA courses at USI (autumn semester 2017/18), the continuation of BA studies in contracted faculties, and completion of the teaching staff appointment process. It ends with the award of the first MA diplomas and the first students taking the state examination (summer 2020). The application for accreditation will be made during this phase, which should conclude with the award of the first Master diplomas.

5 Institutional aspects

5.1. Constituent Committee and Faculty Council

Phase 2 will see the appointment of a Constituent Committee consisting of members designated by USI and representatives of the clinical structures, UZH, other contracted universities and a federal body.

The task of this Committee will be to prepare for all aspects of phase 3, in particular the procedures for defining the role and competitive selection of teaching staff, the registration of students, collaboration with the faculties, and the arrangements for BA examinations. The Constituent Committee will complete its work at the beginning of the MA training programme by setting up a Faculty Council comprising USI teaching staff and teachers from the contracted faculties.

Without trying to anticipate the decisions of the Constituent Committee, special attention will be paid to the procedure for the competitive selection and appointment of the first teachers. As in the other faculties, it will be necessary to appoint a Committee consisting of USI representatives, the reference faculty and the EOC (or another clinical body). The committee will take into account the clinical and academic competencies of the candidates and, as already emphasized, the procedure will be applied with extreme rigour, because the success of the Master programme will depend very much on the quality of the teaching staff. To avoid misunderstandings, we would like to point out that there will be no automatic recruiting of head physicians active in Ticino who are already performing university teaching functions.

5.2 Agreements with the universities

It will be necessary to stipulate agreements with our reference university (UZH) and the other contracted universities regarding the training of BA students registered at USI and to prepare for working together on the MA programme (teachers recruited on a contract basis, periods of practical work, e-learning, etc.). In particular, it will be necessary to define procedures for cooperation with the universities hosting our students in respect of BA training, and with UZH with regard to the award of the MA diploma.

5.3 Agreement with the RCSU and the SUC

A decision has to be taken on increasing the number of places allocated under the NC procedure and assigned to USI. There also needs to be further evaluation of the legal aspects of continuing MA training at USI for students who have been awarded places on the basis of the aptitude test and assigned to USI. Mindful of the changes under way at federal level, USI and the Department of Education, Culture and Sport (DECS) have written to both the RCSU and the SUC asking to be included in the working groups being set up to consider the various areas of medical training (see attached letters).

5.4 Cooperation with the Federal Office of Public Health

This involves cooperation regarding the general arrangements for medical training, taking into account the Confederation's objectives for family medicine, and the coherence of such training, given the new challenges involved in covering evolving health-care needs.

6 Funding and costs

6.1 Revenues

Forecasts are based on current data regarding UFG contributions, the IAU, fees and revenues from competitive research.

A special agreement will be stipulated with the Canton, with criteria different from the Contract of Services, taking into account the new task being taken on by USI.

Sources of income	Per student (in CHF)	For 210 students (in CHF)	For research (in CHF)
IAU	50,000	10,500,000	
UFG	16,000	3,360,000	
Fees	* 4,000	630,000	
Competitive research			2,200,000
UFG (LPSU) - Research			1,,100,000
Total teaching	70,000	14,490,000	3,300,000
Total teaching and research			17,790,000

Table 2: Income for the three MA years (UFG and IAU)

* A reduced fee of CHF 1,000 is planned for fifth-year students

6.2 Cost forecast

On the basis of the UZH model, we forecast the following costs when the programme is fully operational (with reference to 2012 price and salary levels) for the 3 full years of training (academic year 2019/2020):

Costs	
Tenured teaching staff	2,750,000
Purchase of teaching hours	769,000
Cost of practical teaching	3,600,000
Costs for training in medical practices	288,000
Cost of training candidate physicians	1,155,000
Pay of candidate physicians	630,000
Cost for coaching of Master thesis	525,000
<i>Partial total</i>	<i>9,717,000</i>
Costs of technical, administrative and library staff	971,945
Research	5,500,000
General running costs	6,939,000
Total costs	23,130,000

Table 3: Costs of the Master programme

The difference between income (Table 2) and expenditure (Table 3) is approx. CHF 5.5 million. This amount is the basis for calculating the Canton's regular annual contribution when the programme is fully operational after 2020.

Returning to the considerations of our Report of 28 January 2011, the medical School will concentrate initially on its teaching function. Research would, however, benefit from significant support thanks to

the endowment expected for the departments, the additional support granted to individual departments (CHF 3,300,000 in total) and a contribution of CHF 200,000 per department for the acquisition of projects funded by third parties (ultimately totalling CHF 2,200,000). As already mentioned, there would be no change in the present levels of funding for the IRB, the IOR and the Neurocentro, the three existing research structures. As we have seen with other USI faculties, by increasing the numbers of teachers with tenure, students and research projects it will be possible to significantly increase the volume of scientific research undertaken in the Canton.

Though starting from a different basis of calculation, these forecasts substantially confirm the findings of the Report of 28 January 2011.

Furthermore, the Council of State's Message to the Grand Council of the Canton of Fribourg regarding the creation of the third year of the BA course at that university is correlated with an analytical financial plan for 80 students. Though they acted quite independently and with different parameters, the general figures of their plan confirm the forecasts of this report.

Using the data set out in Table 3, we have been able to extrapolate data for the first two years of the MA programme: 2017/18 (70 students) and 2018/19 (140 students). In the first year of the MA programme, we plan for 6 chairs, in the second 8, with a full complement of 11 when the programme is fully operational. The contributions to research should match the increase in the number of chairs. The costs of practical training take into account the effective cost of teaching in hospitals and in medical practices in the first and third years of the MA course and the costs of the second MA year, which is entirely devoted to practical work. The general costs have been calculated using the same percentages. The total costs are summarized in Table 4 at the end of this section.

Returning to the time phases for implementation, the financial needs to be covered by cantonal contributions could evolve as follows:

Phase 2 (2012/14): The Government Resolution provides for funding of CHF 600,000, only a small part of which had been used at the end of 2012. This sum could therefore be sufficient until the autumn of 2014, when the BA courses begin.

Phase 3 (2014/2017): we need to forecast the costs of the Constituent Council and the other institutional activities, and the costs of preparing the student teaching programme: an increase from CHF 0.5 million to CHF 0.9 million might be reasonable, making a total for the three years of CHF 2 million.

Phase 4 (2017/2020): On the basis of our forecasts, we should be able to count on CHF 3.3 million each year for the first two years of the MA programme, and CHF 5.4 million for the final year, when the programme is fully operational. This should be a reasonable amount for subsequent years, with the funding included in the Contract of Services.

Where the regular cantonal contribution is concerned, it is possible to make the following forecasts:

- In the current financial plan (2011/2014), no contribution is required over and above the CHF 600,000 provided for in the Government Resolution of 1 March 2011.

- For the 2015/18 financial plan, we need to cover three BA years and the first MA year: a total for the four-year period of CHF 5.4 million (i.e. for the academic years 2014/15, 2015/16, 2016/17 and 2017/18).
- For the 2019/2022 financial plan: CHF 3.1 million for the second MA year and subsequently CHF 5.4 million per annum when the programme is fully operational, making a total of CHF 19.3 million (i.e. for the academic years 2018/19, 2019/20, 2020/21 and 2012/22).

As stated previously, these forecasts are based on 2012 prices, so they do not take into account any subsequent increase in the cost of living.

Summing up, the situation is as follows:

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
<i>Costs</i>	0.5	0.63	0.83	10	15	23
<i>Cantonal contribution</i>	0.5	0.63	0.83	3.5	3.1	5.4

Table 4: financial plan 2014/20

Given the difficulties in making forecasts about the structure of the BA programme, we have not included amounts for the period 2014/17 in respect of BA training at contracted universities. If it is USI that collects the federal (UFG) and intercantonal (IAU) contributions, an annual amount will need to be included, either as a cost item or as an item of expenditure, with a likely neutral result for the Canton.

7 Logistics: forecast of facilities required

7.1 USI facilities

There are already plans to devote the following areas to MA training on the new USI campus at Lugano-Viganello:

- Two 70-80-seat lecture theatres for 1st and 3rd year MA lessons (occupied predominantly in the mornings)
- Four 35-seat rooms for practical courses and seminars
- Rooms for small-group seminars
- Offices for teaching staff and assistants
- Offices for the Dean and his staff

The planned facilities on the USI Lugano-Viganello campus are sufficient for all teaching activities not delivered in EOC hospitals and other clinical structures. For practical reasons and for the sake of economy, it would be pointless to spread the theoretical teaching over a number of sites. The costs of these facilities (amortization and interest payments) are included in the financial forecasts (Table 3, general costs).

7.2 Facilities: EOC and other clinical structures

In these structures, it will be necessary to provide space for practical training:

- Rooms for small-group courses (max. 15 students): approx. 20 rooms in all, spread over the various training institutions
- Offices for new teaching staff performing clinical activities: approx. 10 offices
- Offices for the new heads of clinic: c. 10 offices with 2/3 workplaces
- New areas for basic research: planned for the new IRB (c. 6,000 sq.m. of additional space)

As stated previously, under the new hospital funding regime the cost (amortization and interest payments) of teaching and research facilities is borne in full by the basic training budget. The costs of these facilities are included in the financial forecasts (Table 3, general costs).

8 Impact of the Master in Medicine on the Canton's hospital system

Practically all medical disciplines are practised in Canton Ticino, including the highly specialized ones. They are, however, scattered throughout the canton and divided between many public and private institutions which is a complicating factor in the management of the Master in Medicine programme. Given good organization, it should be possible to overcome this difficulty, at least initially. Moreover, even the Medical Faculty of the University of Zurich has to deal with a score of hospitals ("Lehrspitäler") spread over a number of cantons (St Gallen, Graubunden, Thurgau, Aargau, Lucerne and Glarus). In Canton Ticino, the lack of a specialized centre of reference may be a disadvantage. Recently, however, independently of the MMS, the process of centralizing specializations has been accelerated, following an initiative of the National Conference of Health Managers in the field of highly specialized medicine (HSM)

We would repeat again that, by virtue of the provisions of Art. 49, 3b) of the Federal Law on Health Insurance (KVG) the costs of research and university teaching cannot form part of the flat-rate amounts for hospital care. In the provisional budgets set out in point 6, all these expenses, including the cost of investment, have been charged entirely to USI, therefore they will have no impact at all on the base rates of the public and private hospitals involved in the management of the Master programme.

9 Communication measures/Collateral measures

On Thursday afternoons, starting in the spring of 2013, we plan to organize a series of meetings to discuss the topic of medical training in the wider field of public health. These afternoons could also serve to develop the competencies already present at USI and in the region:

- Health economics
- Health communication
- E-learning and the use of new technologies
- Training models in Europe (Careum, Federal Office of Health)

10 SWOT analysis

The project, though ambitious and demanding, is feasible subject to the conditions referred to in the introduction, provided the competencies present in Ticino are fully committed. There are, however,

some significant weaknesses to be dealt with. Similarly, alongside the real opportunities, the project is not without risks. For the sake of transparency, in the attached table (SWOT analysis) we have taken into consideration all the strengths and weaknesses as well as the opportunities and threats.

Strengths	Weaknesses
<ul style="list-style-type: none"> • The completeness of the Canton's offer of health services • Its centres of reference (IOSI, CCT, Neurocentro, IRB) • The concentration of public hospital services in the EOC • The presence of a nucleus of habilitated doctors • Experience in post-graduate training (64 FMH certificates) • The important role of research in TI (300 peer-reviewed publications) • The training of medical students in EOC hospitals • The EOC Clinical Trial Unit • USI competencies in sectors relating to medicine • The other training centres in Ticino (ESO, ESASO, ESMO); DSANUSPSI • GPs active in basic and post-graduate training • OMTC initiatives in promoting family medicine 	<ul style="list-style-type: none"> • The critical mass of patients • Services scattered over many institutions • The small size of clinical structures • The shortage of teaching hospitals ("Lehrspitaeler") • The limited experience of clinical structures in providing basic training • The presence of clinical structures without training and research activities • The coverage of training in sub-disciplines and psychiatry • The gap between the habilitated doctors available and those needed • Clinical research insufficiently integrated and coordinated • Limitations in facilities
Opportunities	Threats
<ul style="list-style-type: none"> • A contribution to solving the problem of the shortage of doctors • Strengthening of USI in scientific disciplines • An increase in the social and economic impact of university activities • Spin-off for the industrial fabric • An important influx of federal financial resources • The development of clinical, training and research resources • Improvement in the quality of treatment (virtuous circle of research, training, assistance) • A strengthening of the Canton's market-place in health • Head-physician positions made more attractive • A reduction in dependence on foreign doctors • The possibility of introducing a master course in nursing • The possibility of establishing an institute of family medicine 	<ul style="list-style-type: none"> • Management of the NC unfavourable to USI • Financial risks in the event of a shortfall of students • The accreditation procedures • The difficulties involved in reconciling patient care and student training • The interest of hospitals, clinics, institutes, OMTC in the project • The interest of doctors in the project • The organizational rigidity of the clinical structures • The possibilities for recruiting teaching staff • Potential conflicts between USI and hospitals in the selection of teaching staff/head physicians • Dependence on the reference university • The cost of the project

For the Working Group, the Chairman

Piero Martinoli

Lugano, 21 December 2012

Study Group for the Master in Human Medicine

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- Albino Zraggen, General Secretary of USI
- Prof. Piero Martinoli, President of USI

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Appendices

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