Tuning

Latin America

Higher Education in Latin America: reflections and perspectives on **Medicine**

Christel Hanne (ed.)

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Tuning Latin America Project

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Tuning: past, present and future
An introduction

Major changes have taken place worldwide in higher education over the last 10 years, although this has been a period of intense reflection particularly for Latin America, insofar as the strengthening of existing bonds between nations has been promoted and the region has started to be considered as being increasingly close. These last 10 years also represent the transition time between Tuning starting out as an initiative that arose as a response to European needs and going on to become a worldwide proposal. Tuning Latin America marks the start of the Tuning internationalisation process. The concern with thinking how to progress towards a shared area for universities while respecting traditions and diversity ceased to be an exclusive concern for Europeans and has become a global need.

It is important to provide the reader of this work with some definitions of Tuning. Firstly, we can say that Tuning is **a network of learning communities**. Tuning may be understood as being a network of interconnected academic and student communities that reflects on issues, engages in debate, designs instruments and compares results. They are experts that have been brought together around a discipline within a spirit of mutual trust. They work in international and intercultural groups and are totally respectful of independence on an institutional, national and regional level, exchanging knowledge and experiences. They develop a common language to problems in higher education to be understood and take part in designing a set of tools that are useful for their work, and which have been devised and produced by other academics. They are able to take part in a platform for reflection and action about higher education - a platform made up of hundreds of communities

from different countries. They are responsible for developing reference points for disciplines that represent a system for designing top quality qualifications which are shared by many. They are open to the possibility of creating networks with many regions of the world within their own field and feel that they are responsible for this task.

Tuning is built on each person that forms part of that community and shares ideas, initiatives and doubts. It is global because it has pursued an approach based on worldwide standards while at the same time remaining both local and regional, respecting the specific features and demands of each context. The recent publication: *Communities of Learning: Networks and the Shaping of Intellectual Identity in Europe, 1100-1500* (Crossley Encanto, 2011) takes all the new ideas into consideration which are developed within a community context, whether of an academic, social or religious nature or simply as a network of friends. The challenge facing Tuning communities is to gain an impact on the development of higher education in its regions. Secondly, Tuning is a **methodology** with well-designed steps and a dynamic outlook that enables different contexts to be adapted. The methodology has a clear aim: to build qualifications which are compatible, comparable, are relevant to society and with top levels of both quality and excellence, while preserving the valuable diversity deriving from the traditions of each country involved. These requirements demand a collaborative methodology based on consensus which is developed by experts from different fields who are representatives of their disciplines, and who have the ability to understand local, national and regional situations.

This methodology has been developed around **three core themes**: the first is the **qualification profile**, the second is the **syllabus** and the third refers to the **trajectories of those who learn**.

The qualification profile enjoys a key position in Tuning. After a lengthy period of reflection and debate within Tuning projects in different regions (Latin America, Africa, Russia), the qualifications profile may be defined as being a combination of forces revolving around four core points:

- The region's needs (from local issues to the international context).
- The meta-profile of the area.

- The taking into consideration of future trends in the profession and society.

- The specific mission of the university.

The question of **social relevance** is essential for the design of profiles. Without doubt, any analysis of the relationship existing between university and society lies at the heart of the matter of relevance in higher education. Tuning's aim is to identify and meet the needs of the production sector, the economy, society as a whole and the needs of each student within a particular area of study – measured by specific social and cultural contexts. With a view to achieving a balance between these different needs, goals and aspirations, Tuning has consulted leading people, key local thinkers and experts from industry, both learned and civil society and working parties that include all those interested. An initial period of this phase of the methodology is linked to general competences. Each thematic area involves the preparation of a list of general competences deemed relevant from the standpoint of the region concerned. This task ends when the group has widely discussed and reached consensus about a selection of specific competences, and the task is also performed with specific competences. Once the means of consultation has been agreed and the process completed, the final stage in this practical exercise involving the search for social relevance refers to an analysis of results. This is done jointly by the group, and special care is taken not to lose any contributions from the different cultural perceptions that might illustrate understanding of the specific reality.

Once lists of the general and specific agreed, consulted and analysed competences had been obtained, a new phase got underway over these last two years that is related to the **development of meta-profiles for the area** under consideration. For Tuning methodology, meta-profiles represent the structures of the areas and combinations of competences (general and specific) that lend identity to the disciplinary area concerned. Meta-profiles are mental constructions that categorise competences in recognisable components and illustrate their inter-relations.

Furthermore, thinking about education means becoming involved in the present, while above all also looking towards the future – thinking about social needs, and anticipating political, economic and cultural

changes. This means also taking into account and trying to foresee the challenges that those future professionals will have to face and the impact that certain profiles of qualifications is likely to have, as designing profiles is basically an exercise that involves looking to the future. Within the present context, designing degree courses takes time in order for them to be planned and developed and their approval obtained. Students need years to achieve results and mature in terms of their learning. Then, once they have finished their degree, they will need to serve, be prepared to act, innovate and transform future societies in which they will find new challenges. Qualification profiles will in turn need to look more to the future than the present. For this reason, it is important to take an element into consideration that should always be taken into account, which are future trends both in terms of the specific field and society in general. This is a sign of quality in design. Tuning Latin America embarked on a methodology so as to incorporate an **analysis of future trends into the design of profiles**. The first step therefore involved the search for a methodology to devise future scenarios following an analysis of the most relevant studies in education by focusing on the changing role of higher educational establishments and trends in educational policies. A methodology was chosen based on in-depth interviews with a dual focus: on the one hand, there were questions that led to the construction of future scenarios on a general society level, their changes and impact. This part needed to serve as a basis for the second part, which dealt specifically with the features of the area in itself, their transformation in general terms in addition to any possible changes in the degree courses themselves that might have tended to disappear, re-emerge or be transformed. The final part sought to anticipate the possible impact on competences based on present coordinates and the driving forces behind change.

There is a final element that has to be taken into account when constructing the profiles, which is linked to the **relationship with the university where the qualification is taught**. The mark and mission of the university must be reflected in the profile of the qualification that is being designed.

The second core theme of the methodology is linked to **syllabuses**, and this is where two very important Tuning components come into play: on the one hand, students' work volume, which has been reflected in an agreement to establish the Latin American Reference Credit (CLAR), and all studies are based on this and, on the other, the intense

reflection process into how to learn, teach and assess competences. Both aspects have been covered in Tuning Latin America.

Lastly, an important area is opened up for future reflection about the **trajectories of those who learn** – a system that proposes focusing on the student leads one to consider how to position oneself from that standpoint so as to be able to interpret and improve the reality in which we find ourselves.

Finally, Tuning is a **project** and as such came into existence with a set of objectives and results and within a particular context. It arose from the needs of the Europe of 1999, and as a result of the challenge laid down by the 1999 Bologna Declaration. Since 2003, Tuning has become a project that goes beyond European borders, in so doing embarking on intense work in Latin America. Two very specific problems faced by the university as a global entity were pinpointed: on the one hand, the need to modernise, reformulate and make syllabuses more flexible in the light of new trends, society's requirements and changing results in a vertiginous world and, on the other, which is linked closely to the first problem, the importance of transcending limits imposed by staff in terms of learning, by providing training that would enable what has been learnt to be recognised beyond institutional local, national and regional borders. The Tuning Latin America project thus emerged which, in its first phase (2004-2007), sought to engage in a debate whose goal was to identify and exchange information and improve collaboration between higher educational establishments, with a view to developing the quality, effectiveness and transparency of qualifications and syllabuses.

This new phase of **Tuning Latin America (2011-2013)** started life on already-fertile terrain – the fruits of the previous phase and in view of the current demand on the part of Latin American universities and governments to facilitate the continuation of the process that had already been embarked on. The aim of the new Tuning phase in the region was to help build a Higher Education Area in Latin America. This challenge takes the form of four very specific central working themes: a deeper understanding of agreements involving **designing meta-profiles and profiles in the 15 thematic areas** included in the project (Administration, Agronomy, Architecture, Law, Education, Nursing, Physics, Geology, History, Information Technology, Civil Engineering, Mathematics, Medicine, Psychology and Chemistry); contributing to **reflections on future scenarios for new professions**; promoting the

joint construction of **methodological strategies in order to develop and assess the training of competences**; and designing **a system of academic reference credits (CLAR-Latin American Reference Credit)** to facilitate recognition of studies in Latin America as a region that can be articulated with systems from other regions.

The Tuning door to the world was Latin America, although this internationalisation of the process wouldn't have gone far if it hadn't been for a group of prestigious academics (230 representatives of Latin American universities), who not only believed in the project, but also used their time and creativity to make it possible from north to south and west to east across the extensive, diverse continent that is Latin America. This was a group of experts in different thematic areas that would go on to study in depth and gain weight in terms of their scope and educational force, and in their commitment to a joint task that history had placed in their hands. Their ideas, experiences and determination paved the way and enabled the results which are embodied in this publication to be achieved.

Yet the Tuning Latin America project was also designed, coordinated and administered by Latin Americans from the region itself, via the committed work carried out by Maida Marty Maleta, Margarethe Macke and Paulina Sierra. This also established a type of *modus operandi*, conduct, appropriation of the idea and of deep respect for how this was going to take shape in the region. When other regions decided to join Tuning, there would henceforth be a local team that would be responsible for considering what to emphasize - specific features, the new elements that would need to be created to meet needs which, even though many of them might have common characteristics within a globalised world, involve dimensions specific to the region, are worthy of major respect and are, in many cases, of major scope and importance.

There is another pillar on this path which should be mentioned: the coordinators of the thematic areas (César Esquetini Cáceres-Coordinator of the Area of Administration; Jovita Antonieta Miranda Barrios-Coordinator of the Area of Agronomy; Samuel Ricardo Vélez González-Coordinator of the Area of Architecture; Loussia Musse Felix-Coordinator of the Area of Law; Ana María Montaño López-Coordinator of the Area of Education; Luz Angélica Muñoz González-Coordinator of the Area of Nursing; Armando Fernández Guillermet-Coordinator of the Area of Physics; Iván Soto-Coordinator of the

Area of Geology; Darío Campos Rodríguez-Coordinator of the Area of History; José Lino Contreras Véliz-Coordinator of the Area of Information Technology; Alba Maritza Guerrero Spínola-Coordinator of the Area of Civil Engineering; María José Arroyo Paniagua-Coordinator of the Area of Mathematics; Christel Hanne-Coordinator of the Area of Medicine; Diego Efrén Rodríguez Cárdenas-Coordinator of the Area of Psychology; and Gustavo Pedraza Aboytes-Coordinator of the Area of Chemistry). These academics, chosen according to the thematic groups to which they belonged, were the driving forces behind the building of bridges and strengthening of links between the project's Management Committee of which they formed a part and their thematic groups which they always held in high regard, respected and felt proud to represent. Likewise, they enabled there to be valuable articulation between the different areas, showing great ability to admire and listen to the specific elements attached to each discipline in order to incorporate, take on board, learn and develop each contribution – the bridges between the dream and the reality. Because they had to carve new paths in many cases to make the ideas possible, design new approaches in the actual language of the area and the considerations proposed, and to ensure that the group would think about them from the standpoint of the specific nature of each discipline. Following group construction, the process always requires a solid framework based on generosity and rigour. In this respect, the coordinators were able to ensure that the project would achieve specific successful results.

Apart from the contribution made by the 15 thematic areas, Tuning Latin America has also been accompanied by a further two transversal groups: the Social Innovation group (coordinated by Aurelio Villa) and the 18 National Tuning Centres. The former created new dimensions that enabled debates to be enriched and an area for future reflection on thematic areas to be opened up. Without doubt, this new area of work will give rise to innovative perspectives to enable those involved to continue thinking about top quality higher education that is connected to the social needs of any given context.

The second transversal group about which one should recognise the major role played comprises the National Tuning Centres – an area of representatives from the highest authorities of university policies from each of the 18 countries in the region. These centres accompanied the project right from the outset, supported and opened up the reality of their national contexts to the needs or possibilities developed by Tuning, understood them, engaged in dialogue with others, disseminated them

and constituted reference points when seeking genuine anchors and possible goals. The National Centres have been a contribution from Latin America to the Tuning project, insofar as they have contextualised debates by assuming and adapting the results to local times and needs.

We find ourselves coming to the end of a phase of intense work. The results envisaged over the course of the project have succeeded all expectations. The fruits of this effort and commitment take the form of the reflections on the area of Medicine that will be provided below. This process comes to an end in view of the challenge faced in continuing to make our educational structures more dynamic, encouraging mobility and meeting points within Latin America, while at the same time building the bridges required with other regions on the planet.

This is the challenge facing Tuning in Latin America.

July 2013

Pablo Beneitone, Julia González and *Robert Wagenaar*

1

Introduction to the Area of Medicine

Medical practice commenced in Latin America during the 15th century along with Spanish colonisation, the first medical schools appearing in response to the needs of the people and in particular the viceroyalties. One of their main objectives was to regulate activity for the profession. Throughout the various countries of the region, many such schools still in existence today started out as state universities with ties to the government and the church, and it was only recently in the mid-20th century that the first private Higher Educational Establishments were created.

It is also generally acknowledged that a particular characteristic of medical practice in Latin America is that it has had to live side by side with, and complement, the beliefs, customs and values of the indigenous peoples, which has added an extra challenge to the education of future doctors.

For the most part and down through time, the traditional concept of the teaching of medicine has been embedded in a paternalistic society, with limited and elitist entry to higher education, the one and only source of knowledge. The curricular structure of medical training still runs largely along strict traditional lines, with "watertight" subject areas divided into stages: Basic, Pre-Clinical, Clinical and Internship or Professional Practice.

Current global trends in higher education, especially the Bologna Declaration of 1999, stimulate change and innovation, with a tendency towards student-centred training based on generic and specific

competences, with the integration of basic sciences and clinical practice and with greater weight afforded to competences in the area of humanities.

The recent change in paradigm towards a more holistic view of healthcare has thus rendered it necessary to create a profile of a doctor who seeks not only to treat illness (diagnosis, treatment, rehabilitation and palliative care) but first and foremost to prevent it from arising and to promote healthy lifestyles in individuals and communities, all within the ethical context of professional practice.

An approximate map of the area of medicine in Latin America was drawn up as part of the Tuning Latin America project.

This map was produced from information provided by representatives from the 14 countries making up the group of the subject area of Medicine in the first phase of the project. However, it also offers a general overview of the area of Medicine throughout the whole of Latin America.

The variables which were taken into account were as follows:

1. *Nomenclature of medical qualifications*

There is a wide variety of official names given in different countries to qualified medical practitioners: Doctor (Argentina, Bolivia, Brazil); Doctor-surgeon (Chile, Colombia, Guatemala, Peru and Venezuela); General Doctor (Ecuador); General Integrated Community Doctor (Venezuela); Doctor of Medicine (El Salvador, Dominican Republic and Uruguay); Doctor of Medicine and Surgery (Honduras and Panama).

2. *Professions to which entry is gained by qualifying in medicine*

In all of the countries, qualification in medicine allows entry to general medical practice and to postgraduate studies.

3. *Length of study*

A degree course in medicine takes 6-7 years in most of the countries; 5 in certain faculties in Panama and 8 in El Salvador, Honduras and

Uruguay. In some countries, students are required to do Compulsory Social Service (usually for 1 year) as part of their studies, and in others it is a prerequisite for professional practice as a doctor or for entry to postgraduate studies.

4. *Entry quotas and types of entry*

Certain faculties establish a fixed number of entries according to their capacity, whereas others admit all candidates. Yearly quotas therefore vary immensely, from 30 to 4,000 students.

The various requirements considered are: secondary school certification, Bachelor's degree, the Common Basic Course (Argentina, El Salvador), entry course (Argentina), a pre-medical placement level course (Venezuela), State Examination for Further Education (Colombia), Examination for Admission to Further Education (Ecuador), and a national examination administered by a university (Chile).

In those cases where a fixed and limited entry quota has been established, various selection procedures are in use: high academic performance in previous studies; general or specific tests set by the university or faculty (which may include exams of various kinds, interviews, psychological and sensory motor tests) and which may be preceded by a preparatory training course (Panama). In Venezuela the Office of Planning for the University Sector assigns 30% of the quotas. Certain faculties apply special admission procedures based on agreements reached with university unions (Venezuela) or special considerations afforded to particular groups such as indigenous peoples (Venezuela, Colombia) or outstanding athletes and artists (Chile, Venezuela).

Graduation

Two countries have a graduation exam at a nationwide level: Chile and Colombia. Panama and Peru have also established one, although it has yet to be officially brought into effect.

2

Meta-profile (preparation, process and contrasting)

The meta-profile of the medical graduate from Latin American universities was drawn up during the second phase of the project. However, it was built around discussions and teamwork among medical professionals participating in the first phase, in the course of which a list was made of specific competences for qualification in medicine. These were in turn validated by academics, students, graduates and employers by means of surveys in which they were asked about the degree to which they regarded each competence as being important and the extent to which it is achieved in medical education.

In the first stage of work on the area of medicine, a consensus was reached in the identification of 63 common specific competences for qualification in medicine in the Latin American context, along with the creation of a matrix with the characteristics of all the medical degrees in Latin America. Taking this as a basis (Tuning II), in the second stage the 63 specific competences were winnowed down to 8 in order to create a meta-profile of doctors graduating in medicine from Latin American universities.

The first meta-profile agreed upon was as follows:

The general practitioner graduating in medicine from the universities of Latin America is an all-round professional with scientific, ethical and humanistic training. They understand the health-illness continuum in terms of the factors determining health and take actions seeking the 21 promotion, prevention, attention, rehabilitation and palliative

care of individuals and communities at the levels and in the capacities required by their country, in accordance with the epidemiological profile and the scientific evidence available. They participate effectively in the healthcare system and in society, seeking quality of care.

The specific competences agreed upon were:

1. Carries out clinical practice.
2. Provides emergency medical attention.
3. Communicates well in professional practice.
4. Uses evidence in clinical practice.
5. Uses data and technology effectively within a medical context.
6. Applies ethical and legal principles in the practice of medicine.
7. Works effectively within the healthcare systems.
8. Understands the health-illness continuum in terms of the determining factors of health.

Representatives from each participating country were then consulted about their perception of the contrast between the agreed meta-profile and the profile in their own country, highlighting any discrepancies, as shown in the following table:

Meta-profile of doctors qualifying in medicine from Latin American universities	Differential factors (emphasis on or presence of thematic areas) in the profiles of medical graduates in each participating country, according to representatives
The general practitioner graduating in medicine from the universities of Latin America is an all-round professional with scientific, ethical and humanistic training. They understand the health-illness continuum in terms of the factors determining health and take action in seeking the promotion, prevention, attention, rehabilitation and palliative care of individuals and communities at the levels and in the capacities required by their country, in accordance with the epidemiological profile and the scientific evidence available. They participate effectively in the healthcare system and in society, seeking quality of care	Argentina: the cost-effectiveness relationship, human rights and continuous learning
	Chile: emphasis on primary and secondary level
	Peru: citizenship training, construction as human beings, transformation of society, leadership, vocation for services, differences in the people receiving care, effective use of healthcare resources, interdisciplinary work, contributions to knowledge.
	Venezuela: solutions to healthcare problems and needs, independent and creative work, holistic community medicine, attention to communities, participation in healthcare measures in catastrophic situations, role training of technical personnel (state programme).
	Mexico: second language, cultural diversity, applications of information technology, ethical and regulatory principles, patient safety, collaborative work in emergency situations, respect for alternative medicines and lifelong learning.
	Colombia: critical thinking, research competences, national and international mobility, ongoing updating, social outreach, participation in health policies, teamwork, applications of science in health, legal responsibility and critical appraisal of the various determining factors in health.
	Honduras: education in healthcare and management of health resources.
	Panama: capacity for teaching and research.
	Guatemala: management, research and social service.
	Bolivia: research and internationalisation.
	Ecuador: community outreach and respect for traditional lore.
	El Salvador: no significant differences.
	Summary: continuous education, administration of resources, leadership, alternative and traditional medicine, research, management, critical analysis, knowledge of healthcare systems and internationalisation.

In order to fulfil one of the objectives of the «review of the generic and specific competences, the creation of a proposed meta-profile agreed across all of the participating countries, the presentation of each country's perspective on the meta-profile and the creation of a map of profiles of qualification in Latin America», the representatives

of the participating countries were asked to expand on the information provided with regard to the profiles of medical degree programmes in their respective countries and the way in which they differed from the meta-profile agreed by the Tuning Medicine working party.

To this end, a matrix was created containing a detailed enumeration of the profiles according to country and/or some or all of the medical degree programmes in each country. The reason for this was that not all of the countries have an agreed profile, while on the other hand not all of the representatives submitted all of the profiles from their country.

Although a wide range of formats of qualification profiles could be seen, it can also be seen that there is broad alignment with the agreed meta-profile for Latin America as a whole, with such aspects standing out as the training of general practitioners with emphasis on primary care.

With these details to hand, a meeting was held of the representatives of the participating countries, in order to review what had previously been agreed using the following methodology so as to create the definitive meta-profile:

1. The participants identified the qualification profiles of the most important medical programmes in their country (including the university they represented). Some countries identified all of the qualification profiles for medicine existing in their country.

2. These were compared with the meta-profile designed so far, and in each case it was established whether or not they were congruent, and if not, what elements were different in each country.

   The elements identified were:

   - Second language (indigenous languages, English, other languages).
   - Interpersonal healthcare education.
   - International mobility.
   - Legal aspects of professional practice *(legal medicine).*

- Multiculturalism.
- Alternative medicine.
- Humanisation of medical intervention.
- Leadership and agency in social change.
- Inclusion of the family.
- Teamwork.
- New approaches in medicine (molecular aspects of medicine).
- Capacity for administration and management.
- Research.
- Environmental conservation.
- Adaptation to different kinds of work.
- Entrepreneurial spirit.
- Learning to learn (preparation for lifelong learning).
- IT systems in healthcare.
- Emergency care.
- Natural disasters.

3. The differential elements were identified which were common to most of the programmes and yet not included in the initial profile.

4. Agreement was reached as to which of the differential elements should form part of the revised version of the meta-profile. Priority was given to the following aspects:

    - Basic skills in a second language (English).
    - National and international context.

- Legal aspects of professional practice.
- Multiculturalism.
- Individual, family and community.
- Working in a team.
- Capacity for administration and management.
- Learning to learn (preparation for lifelong learning).

5. Finally, the initial meta-profile was adjusted accordingly.

The reformulated meta-profile agreed upon was as follows:

The general practitioner graduating in medicine from the universities of Latin America is an all-round professional with scientific, ethical and humanistic training and social responsibility. They have basic skills in a second language and engage in continuing professional development.

They understand the health-illness continuum in terms of the factors determining health and take action in seeking the promotion, prevention, attention, rehabilitation and palliative care of individuals, families and communities in all their cultural diversity at both a national and international level, in accordance with the epidemiological profile and the scientific evidence available. They work well in teams, participating effectively in the healthcare system, in accordance with the prevailing legal framework, by means of communication with the patient, their family, the healthcare team and in society, seeking quality of care.

The specific competences previously agreed upon were retained.

Conclusions of the creation of the meta-profile

As previously mentioned, after a process of diagnosis, contrasting, discussion and agreement a common meta-profile was reached by the Latin American countries, highlighting aspects such as the training of general practitioners with emphasis on primary health care.

3

Future scenarios for the Area of Medicine

Within the framework of the development of the Tuning Latin America project, and with the aim of proposing a system of analysis for anticipating new professions emerging in society and the competences they will require, the following section deals with the review and summary of reports submitted by the representatives of the medical programmes of the Latin American countries participating in the project.

This document seeks to draw together the various different perspectives of the area of Medicine with regard to future scenarios, and includes: 1. A brief profile of the interviewees, 2. Characterisation of the future scenarios considered, 3. Professions that can be envisaged in each scenario, 4. Competences required by these professions and 5. Other relevant comments concerning the future.

3.1. Profile of the interviewees

The people interviewed included medical professionals who are known and respected in their areas of specialisation both at national and international level, along with people from other professions. The profiles included were as follows:

- Directors in education (Rectors and vice-rectors of universities, deans of faculties of medicine and health sciences and directors of medical training programmes).

- Directors and members of collegiate medical groups (National and international associations of medical specialists, national medical colleges).
- Directors and members of National Academies (of Medicine, of Languages).
- Directors and members of national and international associations of medical education.
- Directors and members of national and Latin American organisations of faculties of medicine.
- Members of governmental accreditation bodies monitoring quality in education and members of national and international commissions related to the accreditation of quality in education.
- Specialists in clinical and surgical specialties and sub-specialities[1].
- Researchers[2].
- Experts in bioethics, members of medical ethics tribunals and ethical research committees.
- Healthcare economists, experts in public healthcare and in public healthcare policies.
- Members of international organisations (PAHO, WHO, UNESCO).
- Directors and managers of public and private hospitals, including university hospitals.
- Politicians (members of parliament).
- Teachers of undergraduate and graduate studies.

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[1] Some of the medical specialties and sub-specialties of the interviewees were as follows: paediatrics, neonatal care, internal medicine, family medicine, endocrinology, gastroenterology, general surgery, paediatric surgery, hepatology and liver transplantation, breast and soft tissue surgery, infectious diseases, neuroscience, genetics, pathology, toxicology and bioethics.

[2] Some of the research areas of the interviewees were: medical education, neuroscience, bioethics, public healthcare, healthcare economics and genetics.

Professionals from other areas included the following: managers of companies, lawyers, experts in international relations, writers and sociologists.

3.2. Characterisation of the future scenarios considered

Numerous documents have dealt with the main trends that humanity will be faced with during the 21st century, of which the outstanding ones are UNESCO's 10 mega-trends *(*UNESCO, 2000): radical transformation of society, extreme polarisation, threats to peace and human rights, challenges arising from demographic shifts, increasing deterioration of the environment, an increase in the "digital gap", dehumanised globalisation, greater prominence of women, cultural and digital diversity, and the "farming" of man by man.

The interviewees identified overall the following future scenarios with regard to society as a whole and medicine in particular: demographic, environmental, socio-political and economic, technological, research and education, healthcare.

The demographic scenario

An inversion of the population pyramid is envisaged, with an increasingly ageing population still employable and productive, with a capacity to learn and keep learning, and which takes part in social decision-making. An initial period of overpopulation is foreseen as a result of an increase in life expectancy, followed later on by a decrease in the birth rate. Given that there will be fewer young people with jobs relative to older adults, there will be problems with the viability of pension schemes.

Some of the experts interviewed believe that inter-generational tensions will arise, with young people being indifferent to family values and caring little about care for the elderly, with the consequent risk that the latter could become marginalised and mistreated. The generation gap will become ever wider and increasingly difficult to deal with.

The environmental scenario

A consumerist and utilitarian economic model holds sway, preying upon everything around it and failing to respect the interests of future generations, causing worsening environmental problems such as global warming, desertification, shortage of water and pollution. All of these pose a threat to the survival of humanity and other species on earth. Climate change will also bring with it the rise of tropical diseases in places where they have not hitherto existed.

There will be an increase in global awareness of climate-related and ecological concerns, and of the risk of the destruction of the planet and its environment. For this reason, support will be given to initiatives and strategies geared towards avoiding current excesses with regard to natural resources, waste production, excessive consumption of energy and drinkable water, and deforestation, etc.

The response to such problems must come through ethical behaviour at an individual, social and governmental level, along with the development of friendly technologies offering sustainable development.

The socio-political and economic scenario

There will be increasing numbers of shanty towns, impoverished areas and slums, both urban and suburban, and deepening concerns arising from the migration of young people from rural areas to urban ones in search of better opportunities. This is due to excessive government centralisation in dealing with social problems, and the impoverishment of the agricultural and fishing sectors, partly because of economic policies favouring imports and failing to protect food security in Latin America. There will also be migration from poor countries to richer ones.

The concentration of population in urban areas will be accompanied by severe limitations on the ability of people to adequately cover their basic needs. Added to this will be conflict arising from the fact that living side by side there will be communities with marked differences in race, gender, political and religious convictions, and ease of access to those things which cover basic needs.

There will be a resurgence of intolerance, xenophobia, racism and discrimination. We will also see the globalisation of terrorism and organised crime, the rise of illegal war economies and the spread of violence into schools and society in general.

Increasing social inequality will bring about poverty, violence, delinquency, drug trafficking and corruption with the consequent rise in injuries caused by violence, gunshot wounds, mental illness, infectious diseases and drug addiction, and a greater number of disabled people. Socially, we will see rising levels of violence associated with lack of access to education, work and housing. These factors will be critical in the struggle to maintain peace, tolerance and justice interpreted in terms of fairness. On top of all this, there will be diseases brought about as a result of migration, which will appear in previously unexpected geographical areas or re-emerge in those areas from which they were thought to have been eradicated. The ongoing process of globalisation in communications, trade, economics and politics will lead to the establishment of regional economic blocs.

Migratory trends arising from the need to find training, work, and social reproduction will continue, along with those occasioned by conflict and economic hardship. Other problems will also become global – hunger, poverty and food shortages. In the area of medicine, this process of globalisation will play out as a transnationalisation of the profession.

There will be increasingly deep divides along religious lines, with confrontations between east and west. We will see a resurgence of theocracy, along with increasing confrontation between cultures with different values, principles and beliefs, and persisting zones of conflict in those geographical regions where cultures collide.

It is possible that national or regional societies will gradually disappear as a great globalised society forms - a world with few geographical borders, or at least with large "regional countries" or blocs within which particular interests will be of little importance. There will be continual realignment of states and borders, with nations as we know them tending to disappear with the consequent loss of the concept of nationality. A certain regionalism will remain, however, as can currently be seen in the separatist aspirations of Catalonia, Scotland and Quebec. The definition of a people may be more than a matter of borders.

We will also see a revaluing of ancient thought, expressed in Latin America as the rediscovery of pre-Columbian languages every bit as powerful as Spanish or Portuguese.

Current economic models will persist, backed by right- and left-wing ideologies alternating like the swing of a pendulum. The crisis of the European welfare state, and the collapse of a world hitherto dominated by two great superpowers, is giving way to a new world order, from which it is expected that a more open and inclusive model will emerge, characterised by "transversal globalisation". Paper money may disappear as the predominant form of payment.

Mega-economies such as those of China and India will change the geopolitical map of the world. Geopolitical dominance will be a matter not of military might but of control over food and water supplies.

Economic downturns are expected because of high speculation and a tendency to attach too great an economic importance to Asian societies. The cost of living will keep on rising, leading to a severe fall in birth rate as a means of cutting costs, although only among the middle and upper classes. Households will tend to have three generations living together side by side. We will see a growing economic crisis whose complexity in all senses will require governments to adopt more comprehensive and effective public policies.

Women will play an increasingly prominent part in society and this will have especially important repercussions in professions related to healthcare.

Prevailing paradigms – whether political, economic, social or cultural – will have to change if we are to avoid a worsening of the current crisis both in developed and developing countries. A renewed humanism will be required, empowering citizens everywhere to take their corresponding part in societies which are healthy, equitable, stable, peaceful and progressive, living in peace at all levels and thus ensuring a socially effective world for self-fulfilment, both for individuals and the organisations they belong to.

The ordinary citizen will be more empowered, with greater participation in the taking of decisions at a sector level (education, healthcare, the environment and politics), partly facilitated by developments in communications technology. Current forums for debate (governmental

spaces such as parliament and senate) will be superseded and will lose their prestige. In the field of healthcare this trend will be seen in changes in the relationship between doctor and patient, to the extent that the latter will be increasingly well-informed and aware of their rights.

There is likely to be a re-evaluation of languages and the boundaries of their use. The individual who can only communicate in one language will be considered illiterate and anyone wanting an opportunity will need to speak several languages, presumably one of them being Mandarin.

The technological scenario

Society will become increasingly dependent upon technology of various kinds.

Technology, through the generation of largely superfluous and unnecessary material goods within a consumerist society, is constantly tightening its grip on power, heedless of its social and environmental impact on the pretext that these are neutral. The challenge for a science which produces technological goods and services will be to fulfil its ethical obligations, reconnecting itself with culture and liberating itself from market-driven goals. The challenge will be one of how best to make use of these technologies, which must be respectful of the environment and of human health, at a cost which makes them accessible to most of the population, especially in the area of healthcare. At the same time, the rate of technological change will create tensions with regard to the speed with which legislation can keep pace, leading to problems of access and control, which in turn will make it necessary to establish intermediate regulatory bodies such as committees of bioethics and advisory boards, etc.

The dizzying speed of technological development will have an impact on all areas of human life. It is difficult to foresee exactly how things will develop, but the changes are likely be orientated towards making everyday life more comfortable and lightening the load of certain manual and intellectual labours. Some human activities will disappear and be increasingly replaced by technology designed to cut costs, eliminate error, and increase the rate of production.

There are likely to be such advances in virtual reality and Internet connection speeds to the extent that in many areas of work it would be unnecessary to leave the home, or at least one's home town. This would have a fundamental impact on the way in which cities function, and on the lifestyle of people living in them. The tendency towards the virtual would of course also lead to the dehumanisation of many aspects of life through lack of direct personal contact between human beings, at least as far as work is concerned. The influence of technology may lead to a marked "technification" of interpersonal relationships, with the risk of extreme individualism in such a way that we become ever colder in our interactions and society becomes increasingly desensitised to the sufferings of others.

Thanks to communications and information technology, however, there will be a democratisation of knowledge, with the growth of social networks which will make societies less susceptible to domination by autarchic systems.

In the field of healthcare, there will be a change in the custodianship of health data, which will become increasingly accessible to the patient with the spread of computerised and unified systems for clinical histories. We will also see a trend towards telemedicine and IT-based healthcare training.

As for education, in a scenario of renewed humanism, training and education will have to abandon the hierarchical teaching structures of old and take up interactive forms of training and learning. It is a question of humanising knowledge, the management of knowledge and the results of knowledge.

The research and education scenarios

Scientific activity will continue to expand, more because of the opportunities it promises than due to any true vocation on the part of most of those who call themselves researchers, for whom scientific knowledge will continue to be no more than a *means* for earning a living. They will certainly contribute to scientific and technological progress, as well as to sub-sub-specialisation, to the point where science is paradoxically worked on alone in a globalised world.

For the scientists of this century, in the words of Hector Croxatto, "the pressure to raise funds for their projects, and the pressure to publish in order to validate their work in the eyes of the scientific community and their competitors, will turn them into mere data-hunting machines, for whom the concept of truth will end up being reduced to what is verifiable, rather than that telltale trace of beauty in which, by virtue of a divine gift, we humans can participate." For many contemporary scientists the order of values and priorities is: 1) Get hold of as many resources as you can; 2) Publish as much as possible so as to guarantee new resources; 3) Carry out research which will provide results making it possible to publish the work.

Unfortunately it is into this atmosphere and mindset that we bring young people who are training to be scientists, and those with no other experience of science end up either accepting it and imitating it, or rejecting it and continuing their search in areas where they feel less constrained. This new century will need a transformation of the objectives of science and of its methods (Roblero, 1995).

Science as a *way* of life, involving the whole being of the person who loves endlessly searching, will remain the preserve of a few who understand that their *raison d'être* is to contribute to progress: "This progress is neither wellbeing nor peace, nor is it rest, nor is it even virtue - it is essentially a power, it is awareness of all one is and all one can be" (Teilhard de Chardin, 2002).

It seems probable that although both approaches to life and science will continue to exist side by side in the near future, the first will eventually eclipse the second.

There will be a transitional period - but a transition to where, and towards what? From the multi-methodological to the multidisciplinary; from the multidisciplinary to the interdisciplinary; from the interdisciplinary to the transdisciplinary. Transdiscipline, rather than a superdiscipline, is a different way of looking at the world – a more systemic and holistic way. It is *macrometanoia*, the great rebirth, *without which we cannot reach a proper understanding of man and nature*. Unless this transformation is brought about, we will continue to cause harm to man and nature (Baumgartner 1993).

There will be a period of transition characterised by crisis, in which there will be a shift towards an interdisciplinary model of the production of

knowledge, opening a window onto a more holistic view of the world. Scientists working in this way will ask themselves not what they can do but what they should do, because otherwise there is a distancing of researchers from the problems of the world, an isolating of the institutions - mostly universities - from the society that sustains them, and an inability to provide solutions to the problems suffered by most of humanity.

Transdisciplinarianism will force universities to transform their *raison d'être* (as forums for reflection upon and understanding of the problems afflicting humanity), the departmentalised organisational structures which characterise them, and their programmes and the hermeneutics upon which they are based. Universities must aim not merely to produce experts in given fields but to develop their students as people.

> «The University is, first and foremost, a common understanding in the purpose of carrying forward a certain task … the understanding of a way of carrying out that task together … understanding each other implies, from the outset, the primordial act of humanity in man, which is to empathise with one's fellow man. The University is a spiritual community to the extent that it brings together individuals who, recognising themselves above all as moral beings, come together in the experience of rational communication in pursuit of knowledge.»[3] (Millas, 1981).

If the university does not achieve this transformation and make a qualitative leap which goes beyond the instrumental nature of current teaching, then it will continue to contribute nothing to the true formation of human beings and will instead cause future generations to create a hypercompetitive society, ever more individualistic and materialistic and less capable of showing humanity and solidarity, which will in turn increase the existing risk of an environmentally degraded and overpopulated planet on which two thirds of humanity cannot meet their basic needs.

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[3] Jorge Millas. Open letter to students on renouncing his post at the Universidad Austral de Chile. Valdivia, 1981.

There is currently a trend towards the homogenisation of the universities within each country or region of the world. This makes it possible to share visions, goals, strategies and even programmes. It also allows for the homogenisation of credits and contents, and facilitates the mobility of students and teacher-researchers, and it evens out the discrepancies of knowledge that might otherwise exist between programmes from different countries. It stimulates collaborative work and strategies for communication, allowing barriers to be broken down and distances to be overcome. However, there also exists the risk that not only will its benefits become widespread, but also its drawbacks. This adds to the crisis perceived by students, by society and, more belatedly, by teachers.

The university needs to transform itself into a space within which there is dialogue between students and the academic body, from which there can emerge a new idea of the university as a place which nurtures the yearning for fulfilment and happiness. If this does not happen, its *raison d'être* will be imposed from the outside. It will have lost its essence and succumbed to outside intervention.

Mankind has reached a point in its evolution at which *we know a great deal because we accumulate information, but we understand little*. Knowledge has increased exponentially, and yet we are beginning to suspect that this might not be sufficient. *Knowing* is only one route. The other, the road less travelled, is that of *understanding*. We can *know* all about love, but we will only *understand* love when we fall in love Max-Neef, 2005).

By the same token, we can only understand when what is learnt forms part of our life. Understanding is not an act of the intellect but of the whole being. Today, the effort to keep ourselves up to date in knowledge is so exhausting that it can lead to boredom and weariness – but a weariness which is not of the intellect but of the whole being Millas, 1978).

We must overcome the «bewilderment of almost all modern spirits, who spend their lives running frantically here and there, not for love of their destination but in search of who knows what» (Unamuno 1959), a condition closer to desperation than to happiness.

In accordance with identified goals, research will be carried out directed towards the solving of problems threatening life on earth such as

sustainable development, environmental pollution, global warming, clean technology, misuse of resources, economic analysis, genetics, bioinformatics, food security, clean and renewable energy, and other areas.

It will be the century of biological investigation; in healthcare, research will be geared towards the development of reliable and cost-effective technology, based among other things on knowledge of the human genome, with reduced research time and a preponderance of developments in the area of diagnosis over those in therapy. There will be changes in the business model for the development of medicines and technology, which will be geared towards markets which are increasingly specific according to the genetic variability of individuals.

Unfortunately, the research which gets published in medical journals will be devalued in poor countries because of the interests which, it is increasingly realised, lie behind them.

Medical education, above and beyond the changes which it must undergo because of scientific and technological progress, will have to transform its efforts in the humanistic training of students, in motivating them in order to develop the capacity for understanding and for autonomous behaviour, in harmony with the needs of the environment in which they will practise their profession. Master's degrees and PhDs in Medicine will have to become re-orientated towards the development of aspects which enrich and complement the professional practice of doctors.

The healthcare scenario

The practice of the medical profession has undergone radical change over the last few decades, as a result of the confluence of a variety of tensions, foremost amongst which are changes in the following: the relationship between the citizen and the state, as regards the protection afforded by healthcare (the socialisation of medicine and the medicalisation of society), systems of healthcare (the emergence of the economic paradigm, with rising healthcare costs and shortage of resources, faced with the unlimited needs of the patients), the doctor-patient relationship (governed by the principle of autonomy and with a third party payer as intermediary, with the consequences for ethical and legal responsibility that this implies) and the ever-faster production

of knowledge. At the same time, the nature of the contract between the medical profession and society is being questioned, owing amongst other things to the dehumanisation and "technification" of patient care[1] and to inadequate management of the conflict of interests in the principal-agent relationship (evident in the relationship with the pharmaceutical industry and in the handling of adverse events).

Along with scientific and technological advances, there will be an increasingly significant process of epidemiological transition, characterised amongst other things by the ageing of the population, which will give rise to an increase in the number of people afflicted by chronic non-contagious incapacitating diseases (cancer, type II diabetes, cardiovascular diseases and others). This will mean a greater load of incapacity and disease, with greater demand for comprehensive care and rising costs. This will create an asymmetrical relationship between supply and demand in services, a need to take decisions based on criteria of quality of life and cost benefit, and the redesign of healthcare systems and their products and services. There will be a greater demand for institutions such as day care centres for the elderly, centres dedicated to the care of the disabled, and collective residential homes with backup teams of healthcare professionals. Along with this there will be a tendency towards care provided by non-medical personnel such as nurses and healthcare technicians, especially as regards primary care.

At the same time, we will see renewed outbreaks or the re-emergence of viral and bacterial infectious diseases, and an increase in mental illness, particularly depression and the cognitive deterioration associated with ageing.

There will be a raised awareness in society of matters related to the quality of life, especially with regard to healthcare. This will manifest itself in a concern that therapeutic intervention, the treatment of disease and care for the dying should be truly beneficial. The most highly-developed products and services will be those related to prevention, especially in the field of vaccine-preventable diseases, and chronic non-transmissible diseases such as cancer, obesity, arterial hypertension and diabetes. The great challenge will be to persuade people to make healthy lifestyle choices and take full advantage of preventive and health-promoting services.

Health will be redefined as an optimum state of self-fulfilment and well-being within the constraints imposed by functional limitations and

disabilities. Everyone will try to enjoy life despite illness. Being clinically diagnosed with something will be less important than learning how best to live with it.

Medicine will undergo an enormous change. It has already been transformed, in the words of bioethicist Mario Bunge, into a form of biotechnology, and public healthcare into a social technology. It must remain wary of losing its nature as an art, a science and a profession and must not allow itself to be converted into a corporate industry.

In medical practice, we will see an increase in self-diagnosis and changes in susceptibility to disease, in lifestyles, in healthy lifestyles and in healthcare.

Perfective medicine will gain ground, with ever greater capacity for intervention due to technological advances, as in the case of genetic perfectionism, which will lead to major debate on the subject of the ethical conflicts raised by the question of where the limits should lie in interventions on the human genome.

We will see a continual rise in healthcare costs, associated with problems in the financial sustainability of healthcare systems. This is in part linked to a speculative commercial approach, which will have repercussions for healthcare as a basic right. Governments will find themselves forced to take unpopular decisions with regard to social security and what it covers, and we will see the transformation of healthcare systems. New alternatives will arise based on a profound reflection concerning the objectives of medicine and the limits to which we must go as far as prolonging life and "medicalising" the human being are concerned. These alternatives will have to be geared towards the search for ways of sharing limited resources fairly and avoiding pointless and unnecessary expense which produces no real benefit for human beings or society – in other words, not wasting resources but making optimum use of them *(Harvard Business Review.* http://hbr.org/web/extras/insight-center/health-care/).

Healthcare costs will continue to rise, especially in emerging economies such as China and India, and in Latin America and Brazil, which will become large markets for healthcare companies.

New forms of medical practice will also emerge: precision, molecular, regenerative, reparative, and replacement medicine. In the next few

years we will see a fall in the cost of genome decoding from 25,000 to 1,000 dollars, which will lead to a greater understanding of the molecular basis of diseases, and to the development of new therapies, albeit accompanied by problems associated with the protection of personal data and equality of access to these healthcare services (op. cit.).

As new discoveries are made, diseases will be reclassified and great ethical debates will ensue concerning the use of new technologies in molecular and genomic medicine, as a result of the capacity for intervention at the most fundamental levels of life.

Thanks to technological advances, medicine will continue to tend towards specialisation. However, primary care and the handling of problems related to the health-illness continuum will require an inter- and transdisciplinary approach, and also teamwork in which the doctor will be one among other team members each with a specific role.

There will be a restructuring of public policies based on family healthcare, with online care systems which, with a capacity for instant reference and the incorporation of the principles of "second opinion", "telemedicine" and "virtual consultation", will resolve many cases. This will require a closer relationship between healthcare work and good professional practice, with national healthcare policies and with the capacity of governments in order to establish integrated systems at a nationwide level.

Training in technology and IT will be essential, geared towards the incorporation of new tools in routine clinical practice, and seeking greater benefit and less inconvenience for patients. New problems will nevertheless emerge from the depersonalisation and dehumanisation of medicine, and it will be necessary to reflect deeply upon medical procedures in the face of new problems confronting society in health-illness terms.

There will be an increase in "medical tourism" in the use of healthcare services, in which cost and quality will be combined.

In medical education and training, there will be a need in the various programmes for the establishment of credit systems and flexibility allowing for early specialisation and global mobility. There will be a certain jockeying for position between countries for the procurement

of specialised resources, which will bring with it great pressure brought to bear upon systems for the regulation of qualifications and the quality standards according to which they are awarded, as well as improvements in the overall parameters of training.

3.3. Professions envisaged in each scenario

According to the scenarios identified, the following professions are envisaged:

The demographic scenario

The increase in the population of older adults will have an impact upon training strategies at both undergraduate and post-graduate level in the healthcare professions, especially in medicine. The size of the challenges posed by this segment of the population goes beyond the remit of specialists in geriatrics and gerontology. This will be a worldwide problem, calling for greater capacity on the part of general practitioners, nurses and other healthcare workers.

There will be an urgent need for the training of doctors specialising in primary care, and of family doctors, who will transform the strategies of care provision and who can operate as consultants *in situ* for each basic healthcare team or unit, in such a way as to cope with the anticipated avalanche of chronic illnesses.

The socio-political and economic scenario

The rise of settlements characterised by extreme poverty, plus the ongoing phenomenon of external and internal migration, will require a refocusing of preventive healthcare in order to confront delinquency, truancy and domestic violence. A preventive approach will become increasingly essential in the area of mental health, as will the role played by public health specialists ("*salubristas*"), owing to the positive impact they can have on the health of populations and communities.

The problem of violence will require changes in orthopaedic care networks and emergency aid, and also for recovery care, rehabilitation and the return to work.

In the same way, infectologists, the network of consultant internists, and family doctors will need specialist training in the detection of re-emerging diseases, whether those associated with globalisation and migration or those arising from increased resistance to antimicrobials. It will become commonplace within in the next few decades for certain diseases such as AIDS to be treated by general practitioners.

The technological scenario

There will be a need for professionals who are capable of developing clean, eco-friendly technologies which are also safe, easy to use and which bring beneficial results at low cost.

Given the democratisation of knowledge and the avalanche of information which differs from the scientific evidence on which it is supposedly based, there will be a need for epidemiologists and managers of information who can interpret and select whatever information is useful for decision-making purposes in healthcare.

The research and education scenario

It is essential that scientists be trained with a solid ethical basis, in such a way that they are willing to do *what should be done, rather than what can be done or is considered desirable*. This "what should be done" includes their participation in interdisciplinary teams convened to address great problems. In the field of biomedicine, it is they who will be the pioneers who will make it possible for breakthroughs in science to be transformed into effective cures. We will need professionals who are capable of establishing a productive dialogue with other areas of knowledge and who, through transdisciplinary endeavour, can find solutions to the major problems facing humanity, such as global warming and environmental pollution, clean energy, healthcare problems such as chronic illnesses and infectious diseases, the supply of healthy and sufficient food, etc.

In the field of healthcare, this will be the century of biology and its related professions, especially genetics.

The healthcare scenario

The epidemiological profile envisaged means that we will need professionals who are capable of dealing with the consequences of chronic illnesses and with injuries caused by violence and accidents. In this respect, professions and specialties related to both physical and mental rehabilitation will have an important role to play.

Given the problems arising from the interaction between life and technology, the crisis of the healthcare systems, the "technification" of medical practice, the decreasing income of healthcare professionals and the dual role of doctor and researcher, amongst other things, there will be a need for a more thorough grounding in medical ethics based on the following aspects: the understanding that medical practice has one objective - meeting the healthcare needs of individuals and populations - as a vocation and not as a means of gaining economic and social power; the need to value the people who make up the healthcare team (where other professionals and healthcare technicians are involved, as well as the patient and their family); and the understanding of the real needs of the society in which one lives in terms of fairness and justice.

The education and training of healthcare professionals must be tailored to the new taxonomies in the classification of illnesses as determined by molecular knowledge of their aetiology. This implies changes in the hitherto departmentalised organisation of hospitals according to surgical specialities, towards patient-centred organisation and on the pathologies they suffer from, with the formation of institutions where interdisciplinary teams afford holistic care to sick individuals.

We will need professionals who are experts in managing the information obtained from the results of patient care, which in part is currently carried out by clinical epidemiologists, in such a way as to provide evidence on which diagnostic and therapeutic decisions can be based. Systematised algorithms will have to be developed, so as to allow medical practice to be based on decision trees. There will also be a need for professionals who can constantly evaluate new technology, not only from the point of view of its effectiveness but also in terms of cost-benefit analysis.

As there will be a tendency towards the standardisation of medical interventions, many of these will be transferred to other professions or technical fields. All of the above considerations, plus demographic

tendencies, will make it necessary to create new occupational categories between doctor and nurse, as indeed are already appearing in some countries – such as medical technician, medical assistant, hospital doctor, care manager, care coordinator – in order to provide the clinical, administrative, communicative and interpersonal skills required.

The super-specialisation of doctors and the almost total absence in some countries of "general practitioners" or "family doctors" leads to a situation in which patients move back and forth from one specialist to another, few of whom really "see" the person they are treating. This is already beginning to cause a certain unease and indignation in society, which will eventually lead to a rebirth of the general practitioner as the great missing link.

Given that 80% of health problems can be treated at the level of primary care, we need to make an inventory of human resources in terms of quantity, geographical distribution and the competences necessary for their intervention, and analyse the health-illness continuum in terms of the social, economic, political, environmental, educational, psychological and behavioural factors involved, in order to establish holistic ways of dealing with it in multi-disciplinarian teams. We need to train up new generations of healthcare workers within this paradigm; we also need to train people to value health education, the promotion of health and the prevention of illness, and not merely to rely on the treatment of illness or rehabilitation. Along with this we will need doctors trained in primary care, family doctors and general practitioners who have a holistic overview of the patient as a human being and an increased capacity to intervene both in individual and collective instances in the twin areas of healthcare and of education about health.

Doctors must be able to form part of multi-disciplinary teams made up of all the various healthcare professionals and technicians.

Limitations in healthcare coverage, as well as increased costs owing to technology and to market models of a utilitarian nature, will bring about a deterioration of health conditions in our countries and a deepening of social divides, which will lead healthcare professionals to leave the field for more lucrative sectors. And yet at the same time, there will be a need for doctors who are capable of planning, implementing, overseeing and improving healthcare policies.

Doctors will have to think and act in terms of the "medical economy", meaning that not only will they have to provide a good diagnosis, but also indicate therapeutic measures which are appropriate to the patient's real-life circumstances and which they are therefore able to implement.

Other areas which are considered essential to better development are: preventive medicine, geriatrics, public healthcare, healthcare administration, rheumatology, orthopaedic surgery, mental healthcare, physical medicine and rehabilitation, emergency medicine, bioethics, genetic diagnosis, organ transplantation, oncology, biotechnology, biomedical engineering, biomaterial engineering, medical robotics, bioinformatics, medical counselling (focusing on a return to compassion in medical practice), medical informatics, nanotechnology and nanopharmacology, ecopathology, biopharmacology and virtual medicine.

3.4. Competences required by emergent professions

What follows is a list of some of the emergent skills required for the medical profession, although what is emphasised above all else is the capacity to anticipate future changes.

- Capacity for adaptation and intervention in the health-illness continuum during the epidemiological and technological transition, understanding this as a social, historical and cultural phenomenon. This requires knowledge not only of aspects of the biological and exact sciences, but also of the human and social sciences – in other words, of humanities such as anthropology, ethics, sociology, history, law, philosophy, psychology and communications, etc.

- Ability to act in accordance with scientific evidence, which implies lifelong learning, management of IT and analysis of published findings.

- Ethical capacity both as a citizen and as a professional. The former implies respect for the environment and responsible consideration for future generations; the latter requires efficiency, self-control, autonomy and altruism.

- Ability to communicate well and work in a team. This includes fluency in languages other than one's native tongue.
- Capacity for critical thought.
- Ability to understand the fundamental principles of physics, mathematics, IT and molecular biology; ability to understand the molecular mechanisms of illnesses and how to intervene accordingly.
- Ability to integrate basic, clinical, communicative and ethical knowledge.
- Ability to interact within the doctor-patient framework with people who are increasingly well-informed, independent and aware of their rights.
- Ability to respect personal and cultural differences.
- Ability to understand the public dimension of healthcare in urban areas, thus facilitating intervention in matters related to violence and the abuse of psychoactive substances; ability to carry out epidemiological analyses so as to properly inform interventions in the health-illness continuum.
- Ability to intervene in healthcare problems, both collective and individual, and to be effective with high specialisation in their respective branches.
- Ability to act appropriately in large-scale catastrophes.
- Ability to manage the quality of intervention according to the interpretation of its results and the efficient use of healthcare resources.
- Ability to manage and direct the mobility of patients and of healthy citizens throughout the system.
- Capacity for leadership in society, in communities and within the healthcare sector, and for coordination and interaction in multi-sectorial fields.
- Ability to assess and select technology in a cost-effective manner.
- Ability to interact in the political arena, and knowledge of public healthcare policies.

3.5. Other relevant comments about the future

The experts also commented on certain unlikely scenarios, whether desirable or not:

A desirable but unlikely scenario is outlined as follows

Increased awareness regarding the destruction of the planet would lead to a reordering of the way in which society works, geared towards respect for the planet, the everyday use of non-harmful energy sources such as solar or wind energy, the conservation of nature, animals and water, and the avoidance of excessive mass consumption and the consequent production of inorganic waste. Such a reordering would also raise the possibility of self-sustaining, planet-friendly innovation and increasing opportunities for work by means of which people could guarantee their own subsistence whilst at the same time contributing to putting a halt to the destruction of the environment. In this scenario, consumerism would out of necessity have to disappear, and human beings would instead return to the land as their source of sustenance, and to a less industrialised lifestyle.

The universities would heed the call of society and would, over time, react and return to their role as the social seats of reason and reflection, thus contributing to clear vision when meeting the great challenges facing humanity. They would stop being reactionary and compliant institutions and would once more be free and assertive. This, in reality, is more a hope than a possibility.

Medical care would be humanised on all fronts, from healthcare professionals to patients and their families.

The healthcare sector would be depoliticised, with professionalisation of the key managerial posts in healthcare, especially with regard to governing roles, where a social focus would prevail, ensuring healthcare as a human right to which there would be guaranteed universal access.

The healthcare network would be restructured, with major developments in primary care.

Bioethics committees would be numerous enough and independent enough to promote research aiming to improve healthcare.

The control and regulation of schools and faculties for the training of human resources in healthcare would focus on how best to ensure quality of service, and hospitals and health centres would be restructured as organisations of knowledge.

An ethical awareness would develop in society, tending towards care for the environment, equality of access to wealth at a global and regional level, and greater tolerance of differences.

Increased life expectancy would give rise to new situations and problems in the field of medicine.

An unlikely and undesirable scenario would be characterised by

A new world war.

The appearance of new epidemics.

The collapse of the healthcare system, along with the failure of preventive measures and of public healthcare policies, when confronted by rampant increases in chronic degenerative pathologies and a scarcity of resources with which to combat them.

Increasing public discontent with the healthcare system and the professionals who work within it, with ever greater litigation related to medical practice.

Deepening inequality and corruption.

4

Teaching, learning and assessment strategies for generic and specific competences

In the sphere of *education,* competence is understood as an assessable combination of interrelated knowledge, attitudes, values and skills which allow an individual to act upon some aspect of personal, social, natural or symbolic reality and which involve reflecting upon the learning process itself.

In the world of the *workplace,* competence is understood as the ability to achieve a goal in any given work situation. Competence is the social construction of whatever acquired skills are significant for productive effort in specific professional situations according to defined standards.

Competence must not therefore be regarded as something purely oriented towards knowing, as distinct from doing.

Generic competences describe transversal behaviours associated with common endeavours, regardless of the variety of working contexts, spheres of professional activity or disciplines in which they are applied. Such things are the ability to analyse, interpret, organise, carry out research, communicate, teach and plan ahead, etc.

Specific competences describe knowledge, skills and behaviour of a technical-disciplinary nature, linked to a certain language or productive function. They are professional competences which guarantee that work undertaken professionally will be responsibly carried out as such.

The combination of generic and specific competences integrated into a curricular plan comprises and determines the qualification profile corresponding to the minimum competences a person must have on finishing their studies in order to engage in professional practice (CINDA *(Inter-University Development Centre),* 2004).

The thematic group for medicine in the TUNING AL 2011-2014 project agreed to work together on one of the generic competences, which is also identified as a specific one – "ability to communicate or connect".

This agreement was based on the implicit and explicit importance of this competence both within medical practice and outside it.

Generic Competence	Specific Competence
Capacity for oral and written communication	**Ability to communicate in professional practice** *Sub-competences:* • Ability to communicate effectively through speaking, writing and non-verbal means, taking into account the diversity and constraints of situations which may cause difficulties of communication with patients, their families, healthcare workers and the community. • Ability to convey the nature and severity of the ailment. • Ability to obtain informed consent where applicable.

The ability to communicate in the field of healthcare, and especially in medicine, involves being able to "connect" with the patient and their family, as well as being able to identify, understand and talk through healthcare problems with the patient and their family, thus helping them to understand, take decisions and act accordingly.

The ability to communicate in medicine is therefore an essential skill for a doctor, taking a skill to be a sequence of intended actions which can be voluntarily repeated, requiring opportunities for practice, acquisition and reinforcement of this competence.

Communicative skill implies a series of communicative actions or behaviour on the part of the person facilitating the acquisition of this competence. This includes knowing how to listen and ask, inform and negotiate, receive and deliver, together with an attitude of empathy and appropriate verbal and body language – eye contact, smiling, greeting, not interrupting, not judging, etc.

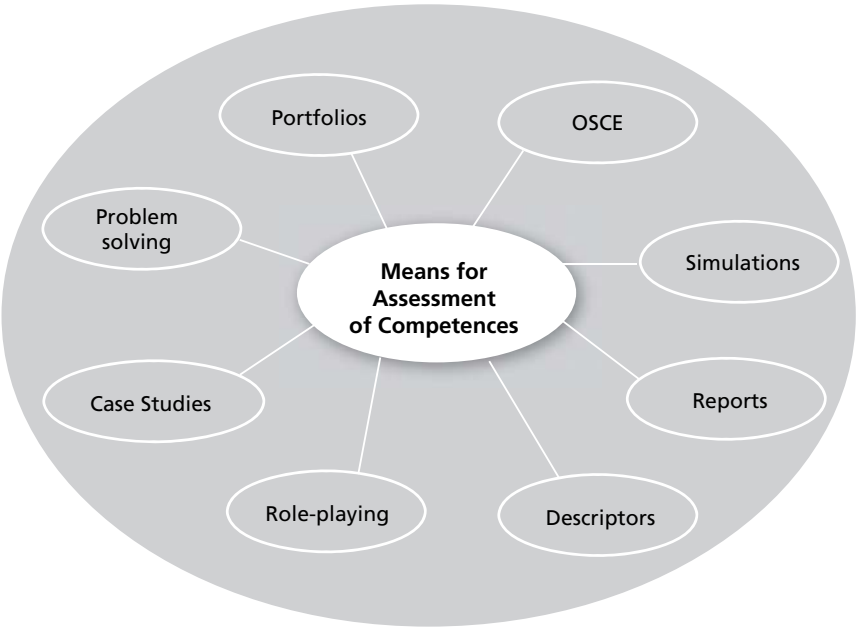
Along similar lines, with regard to the communication of medical administrative procedures, the universal appearance of informed consent as an obligatory prerequisite in the context of the duties and rights of patients has made it necessary to include activities related to this specific competence within the framework of medical training.

As for school teaching or university training in competences, especially in the education of doctors and other healthcare professionals, this should serve as a means of developing the capital of human resources, in order to train their combination and mobilisation (interviews, simulations, case studies, internships and supervised practical work, etc.).

Professionalisation includes training, but adds the organisation of "work situations" so as to learn thoroughly the ins and outs of competences in which the person brings a set of personal resources to bear upon the situation – knowledge, skills, experience, personal qualities, values, etc. – and other resources around them such as professional networks, databases, experts etc., the aim of which is to find a solution to professional challenges. Reflection upon action taken is an essential component of the ongoing learning process which is a cornerstone of professional training.

The role of medical educators in an educational model based on competences is that of the facilitator of learning, who bears in mind the expectations and needs of the students, prioritises realistic situations, and who is the living embodiment of medical know-how for the "apprentice" student.

The different situations of learning or teaching also require appropriate and specific means of assessment in order to measure objectively the achievement of competences. The ones most widely used in the field of medicine are shown in Figure 1:



In the case of communicative competence, the most widely used assessment tools are, according to various authors, simulations, OSCE, role-playing and descriptors.

Taking all of the above factors into account, and with the aim of assessing the presence, assimilation, development and evaluation of the achievement of the communicative competences in medical degree programmes in the universities taking part in this project, two models for the analysis of medical degrees were defined:

a) *Model of analysis according to subject areas/courses/modules*

1. Each participating university reviewed its programme.

2. It was identified which subject areas/courses/modules of the programme developed the selected generic and specific competence – "capacity for communication".

3. The level of development of the competence in the given subject area/course/module was ascertained, labelling it relative to declared pass standard as Low, Medium or High.

4. Once the subject areas/courses/modules and the level had been identified, in each of them the desired learning results were specified.

   Example:

   Competence: Ability to communicate the nature and severity of the ailment

   Subject area: Clinical Medicine II.

   Learning results:

   a) Can inform the patient about the nature of their illness.

   b) Can clearly explain to the patient and their family the treatment to be followed.

   Level of development of the competence: Medium.

5. After identifying the learning results for each subject area, the strategies and activities by means of which these would be taught and learnt were specified, along with the tools to be used for assessment.

6. This analysis was carried out for each subject area/course/module identified as "contributing" to the development and attainment of the competence in question.

7. Once the analysis of the selected competence had been carried out, a report on the strategies of teaching, learning and assessment was drawn up, bringing together the most important aspects identified.

b) *Holistic model of analysis*

1. Each participating university reviewed its programme.

2. Subject areas/modules/courses were not worked on as such, but an analysis was carried out of the way in which the competence in question is developed throughout the programme.

3. The scope of the communicative competence was described and its level of development was specified.

4. Learning results were identified and listed in detail, specifying the strategies and activities used in the teaching and learning of those results, along with the tools to be used for assessment.

5. Once the analysis of the selected competence had been carried out, a report on the strategies for teaching, learning and assessment was drawn up, outlining the most important aspects identified.

The reports obtained by institution and by country were distributed in workshops, some of them being summarised in the table that follows, showing specifically the strategies for teaching and learning and those for assessment.

Ctry	University	Teaching-learning strategies	Assessment strategies
Bolivia	Universidad Católica Boliviana San Pablo	Interview in outlying suburbs of the city to draw up a diagnosis of healthcare provision. Carry out clinical case studies in hospitals. Information given to the patient and their family. Role plays. Debates.	Review of reports. Review of clinical case studies. Practical exams with simulated patients. Portfolio. Report of family study. Peer assessment. Assessment by healthcare team. Testimonials. Direct observation.
Chile	Universidad Austral de Chile	Oral presentations. Simulated interviews. Role plays. Participation in plenary sessions and debates. Interviews of patients with tutor. Presentations in seminars, meetings, plenary sessions and symposiums. Field visits. Handling of medical paperwork. TBL (Task-Based Learning). Portfolios. Blogs.	Guidelines for comparison and observation. Self- and co-assessment. Oral examinations. Exams assessing clinical work. Guidelines for comparison. Reports on field visits. Assessment of portfolios. Descriptors. OSCE (objective structured clinical exam).
Colombia	Universidad Colegio Mayor Nuestra Señora del Rosario	Participates in plenary sessions. Writes and presents a script. Produces short text (e-portfolio). Reads, analyses and discusses the clinical history of a patient. Writes and presents a script communicating the results of the analysis of data by means of explanations and justifications. Produces a good anamnesis of a patient. Explains to a patient or their guardian about the process of informed consent. Produces a practical guide for the handling of a patient with a particular pathology. Workshop with simulated patient to be interviewed by the student. Writes a summary of the guide. Writes a text justifying and making the case for the central decisions taken as regards the handling of the case. Produces a practical guide for the reading of diagnostic help. Carries out clinical rotations.	OSCE. Mini OSCE. Direct observation of skills displayed in procedures. Short-answer questions based on problems. Best short answer. 360-degree assessment in the workplace. Discussion of cases.

Ctry	University	Teaching-learning strategies	Assessment strategies
Honduras	Universidad Nacional Autónoma de Honduras	Text analysis, translation exercises, reading and writing [English], presentations, discussions, seminars, forums, reading and discussion groups, social communication techniques (forum, round table, panel, debate, workshop, seminar), supervised practice with an integrated teaching strategy, argumentation-based dialogues, scripting, forum, field work, group dynamics, visits to healthcare centres, simulated practice, seminars, presentations, reviewed practice, demonstration, clinical simulation, equivalent practice, discussion of cases, case studies, tutorials, equivalent practice, seminar, equivalent practice, supervised practice, clinical simulation, group discussion, interview in the community, sociodrama, discussion in committees of prevention and control of infections, supervised practice in ward, in outpatients and emergency consultancy, argumentation-based dialogue, visits to wards, outpatients consultancy, hospitalisation, community practice, use of slides with images, anatomo-clinical discussion, observation, oral and written description, inspection and examination, social communication techniques (forum, round table, panel, debate, workshop, seminar), community visit.	Exposés, descriptors, checklist, testimonials, diary, report on research bibliography, group work, study guides, reports, essays, design of proposals and projects, review of bibliography, case studies, medical histories, progress notes, interview in community, discussion of articles and topics, presentation of cases, daily practice with checklist, final practical exam, practice (presentation of cases, discussion, clinical treatment and progress), writing of a final report of activities, practical oral exam.
Mexico	Universidad of Guadalajara	• Case study (simulations). • Work in groups. • Field work. • Supervised clinical practice. • Task-based learning. • Project. • Exposé. • Role plays. • Exposé. • Case study (simulations). • Work in groups. • Field work.	• OSCE. • Direct observation (checklist, rating scale). • Portfolio or blog (Record of clinical histories). • Essay. • Assessment of work in groups. • Peer assessment.

Ctry	University	Teaching-learning strategies	Assessment strategies
Panama	Universidad Latina de Panama	Discussion of the meaning of technical and scientific terminology used in medicine técnicos científico y discu in face-to-face classes. Discussion of the vocabulary of general culture in face-to-face classes. Participates in classroom dialogues based on socio-dramas playing different roles (doctor, patient, family member, member of the public) under the supervision of a teacher. Participates efficiently in simulated scenarios characterised by: • The doctor addressing the patient. • The doctor addressing family members. • The doctor addressing members of the public in a city.	*Formative:* In each of the sessions attended, incorporating appropriate feedback. *Peer assessment:* amongst members of the group in each of the sessions, in order that each receives feedback from their classmates. *Summative:* in accordance with the following indicators: 3.1. Uses terminology correctly from the technical point of view: 3.2. Shows conceptual mastery of the vocabulary employed. 3.3. Shows ability to select vocabulary appropriate to each interlocutor. 3.4. Uses body language and facial expression in such a way as to complement and facilitate communication with the interlocutor.

Ctry	University	Teaching-learning strategies	Assessment strategies
Peru	Universidad Peruana Cayetano Heredia	The students prepare presentations on matters having some impact on their health. The information is presented to their classmates and discussed with them. The students have to carry out a participative communal diagnosis in the community to which they are assigned. This diagnosis is made by means of discussion sessions with community leaders and must be presented both orally and in written form to the community and to the teachers. On completion of the diagnosis they have to make proposals for improvements to the situation and discuss these with the community leaders, after which they agree as to which are to be acted upon. The students discuss in small groups the anatomical and physiological explanations of clinical cases and situations they have previously been tasked with. The students are presented with problems involving ethical dilemmas. They have to outline their opinions about them and take part in ideas exchanges with their classmates and teachers. The students have to prepare a research project based on a topic of their choice. They prepare a document in which they describe and analyse the existing state of affairs in the area under investigation and they are expected to outline and justify their lines of research. Both externs and interns have to compile clinical case histories of the patients under their care in hospitals and day centres. They must also interact with patients, their families and healthcare teams whilst attending to them. The students interview patients and compile their clinical case histories. They subsequently sub mit this information to their teachers and classmates and discuss possible diagnoses and treatments.	After each presentation there is feedback and grading of each presenting group according to clarity and use of Powerpoint. The discussion sessions are assessed along with the spoken and written reports. Students are assessed on the presentation of their ideas and explanations, as well as their contribution to the group dynamic in the ideas exchange. Participation must be clear, concise and opportune, and must respect the rights of all to participate. The document presented by each student or group of students (up to three) is reviewed by the teachers/tutors and returned with notes and recommendations. The final project is graded. The histories compiled are reviewed, corrected and graded by the teachers/tutors. The assessment criteria include requirements that the information must be thorough and accurate, and that it be presented clearly and efficiently. The tutors supervise, correct and grade communication with patients, their families and the healthcare teams.

Lastly we include as an example of best practice the following account of role-playing on the medical course at the Universidad Austral in Chile as a teaching/learning and assessment strategy for the communicative competence:

«The doctor-patient interview, or interview at the health centre, is an important tool in health care - perhaps *the* most important. Good diagnosis and treatment ultimately depend on the degree to which an empathic relationship is established, whereby bonds of trust are created between the consulting patient and the doctor receiving or attending to them.

In the subject known as «Introduction to Medical Studies», targeted at first-year students in their first term, one of the aims is to familiarise them with the scenarios in which their professional future is likely to be played out, and to provide them right from the start with skills which will help them to develop important competences, one of these being good doctor-patient communication.

The change in educational paradigm from a teacher-centred approach to a student-centred one is also seen in the model of the interview, which has shifted from the purely biomedical to the bio-psycho-social, thus requiring training in interviewing skills which cannot be gained through pure theory and which must therefore involve the use of interactive methodologies such as role-playing, also used in areas such as counselling, communication, marketing and selling, etc.

It is this kind of methodology that students pinpoint as being the most useful element of the learning process.

Aims:

1. To acquire the basic communicative skills and competences needed for successful healthcare interviews with a bio-psycho-social approach.

2. To acquire basic skills and competences in counselling and support, and to know how to apply them.

3. To recognise and make use of personal skills, thus stimulating and reinforcing the self-esteem and self-image of the student.

Methodology:

In this role play focusing on "training" for interviews, the activity begins with a teacher explaining the theory of interviewing in

healthcare and communication (10-15 minutes), after which the group is divided up into three smaller groups of equal size each led by a clinical teacher/tutor, who explains the methodology to the group and asks for two volunteers - one to play the role of the doctor and the other the role of the patient who has come in for consultation.

Subsequently, the "student-patient" is taken aside while the rest of the group are setting up the scene, and is given simple instructions as to why the patient has come in to consult the doctor.

The "student-doctor" is given no further instructions, thus forcing them to consider carefully the theoretical concepts outlined at the start of the session.

During the activity, the "student-observers" who disagree with the approach taken by the "student-doctor" can ask the tutor to let them take over the role themselves. The "student-patient" remains the same throughout.

The tutor, depending on how the activity develops, interrupts the interview, asking the various parties involved for their opinions, and assessing and discussing their perceptions, sensations, verbal language, non-verbal language, posture, things done right, things done wrong and personal qualities, etc.

Depending on what comes up, the tutor draws attention to or focuses on certain things, or corrects or disregards a given situation. It should be noted that this positive feedback is provided not only by the tutor but by classmates too, and most importantly, by the interviewer and interviewee themselves.

Time permitting, a number of such role plays are performed in succession.

In the following class, students are tasked with conducting a real interview with a person of their choice in accordance with what they have learnt from the role play. This is then jointly analysed by the group in a circle, referring back to the initial theoretical input and the role play exercises in the previous class.

For both the simulated activity and the real one, there is tutor assessment, self-assessment and peer assessment.

In the final assessment of the subject, this activity is one of those rated most highly by students.

5

Student workload from the Medicine perspective

One of the fundamental aims of the project is to facilitate the mobility of students and professionals. The concept of academic credits is central to any system seeking to promote mobility and transparency, and is related to student workload (Paganini, http://www.unican.es/NR/rdonlyres/04594170-0315-4C5B-B3DF-FEC24DOCCBEA/0/doc4.pdf).

The project has also recognised that the concept of credits linked to actual measured workload is a fundamental tool in ensuring that programmes of study meet standards which are optimum for learning.

In order to carry out this analysis of how student workload can best be measured, it is important to consider certain characteristics of medical training, such as the following:

- An average duration of 7 years (ranging from 6 to 8, depending on length of internship).
- Graduate profiles are similar to those in the rest of the world.
- There is a perception of a fairly high level of non-contact workload for students. There is a need for an objective way of assessing this aspect of academic study.
- Medical programmes feature a high percentage of practical activities, especially within the clinical context.

- Courses end with internships of one or two years, during which there is supervised clinical practice in which the student acts as a future professional and therefore works at least 44 hours a week, as well as doing shift work which varies in frequency from one country or university to another. In the case of European countries or some other Latin American countries, this happens after doctors have qualified, but is a requirement for full professional practice or access to postgraduate courses.

- Within this context, the academic workload was measured in 17 institutions, mainly consulting students in their third year of study.

Results

1. Estimates were as follows regarding the total number of hours (taking into account both contact and non-contact activities) which students and teachers estimated as necessary to pass a given subject in one semester: teachers 606 hours and students 807 hours, the overall average, once all areas and countries consulted are taken into account, being 623 hours.

2. On being asked to estimate the average number of hours per week, the teachers' response was 59 and the students' 58, there clearly being far less discrepancy of perception in this case.

These results are very general as they covered periods ranging from 3 to 60 weeks, apart from differences in the subject areas analysed. However, on reviewing the results and taking into account the time needed for meals, travel, personal hygiene, rest and sleep, it was felt that the workload should not exceed an average of 55 hours per week.

As regards the implementation of a credit transfer system, certain difficulties arise owing to some of the characteristics mentioned previously, chief among which is resistance to change on the part of the teaching fraternity, especially those teaching healthcare professionals. The idea of linking the value of the credit to the work done by the student rather than that of the teachers in face-to-face teaching seems to be one that is alien to, and hard to accept, for the directors and administrators of many educational establishments. The eagerness of

many teachers to maximise the amount of learning activity going on in their subjects is also a factor which makes the process more difficult, whilst at the same time making it all the more necessary to develop strategies whereby the student workload, in terms of hours needed in the various courses, can be logged and analysed. There is, moreover, a generally patronising attitude towards a student-centred approach to teaching. It is also argued that healthcare professionals have always worked with the concept of "competences". This makes it easier for the idea to take root that there is a need to plan how these are learnt and assessed.

The fact that a common minimum profile has been agreed upon in terms of competences and content has made it easier for some universities to introduce innovations in programmes according to the country's needs.

In the case of medicine, moreover, as there are similarities in terms of graduate profiles and length of study, it has been easier to learn from the experiences of other countries, as is the case with the identification of competences, the application of learning and assessment strategies, and the distribution of academic credits.

The main challenges are related to:

- Teaching what is necessary to fulfil the agreed graduate profile.
- Making the relationship between contact and non-contact elements more flexible.
- Safeguarding the time needed for general training.

In practical terms, one of the main difficulties is how to assign credits to the activities of the intern whose contact time amounts to around 50 hours a week for 46 weeks of the year.

6

General conclusions

From the combined work of academic doctors in a range of universities in various Latin American countries, a common graduate profile was agreed upon, including generic and specific competences, and an outline of teaching-learning and assessment strategies appropriate to a competence-based curriculum.

There was discussion of, and reflection upon, future scenarios for medicine, although the main achievement was the building of a community based on cooperation between countries and universities.

7

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