Periodicità Trimestrale - ISSN 1877-9344

Volume 5 - Supplemento 1 - Settembre 2011

3

ELSEVIER

SOCIETA' SCIENTIFICA DI MEDICINA INTERNA

FADOI

FEDERAZIONE DELLE ASSOCIAZIONI DEI DIRIGENTI OSPEDALIERI INTERNISTI

Italian Journal of Medicine

Organo Ufficiale della Federazione delle Associazioni dei Dirigenti Ospedalieri Internisti - FADOI

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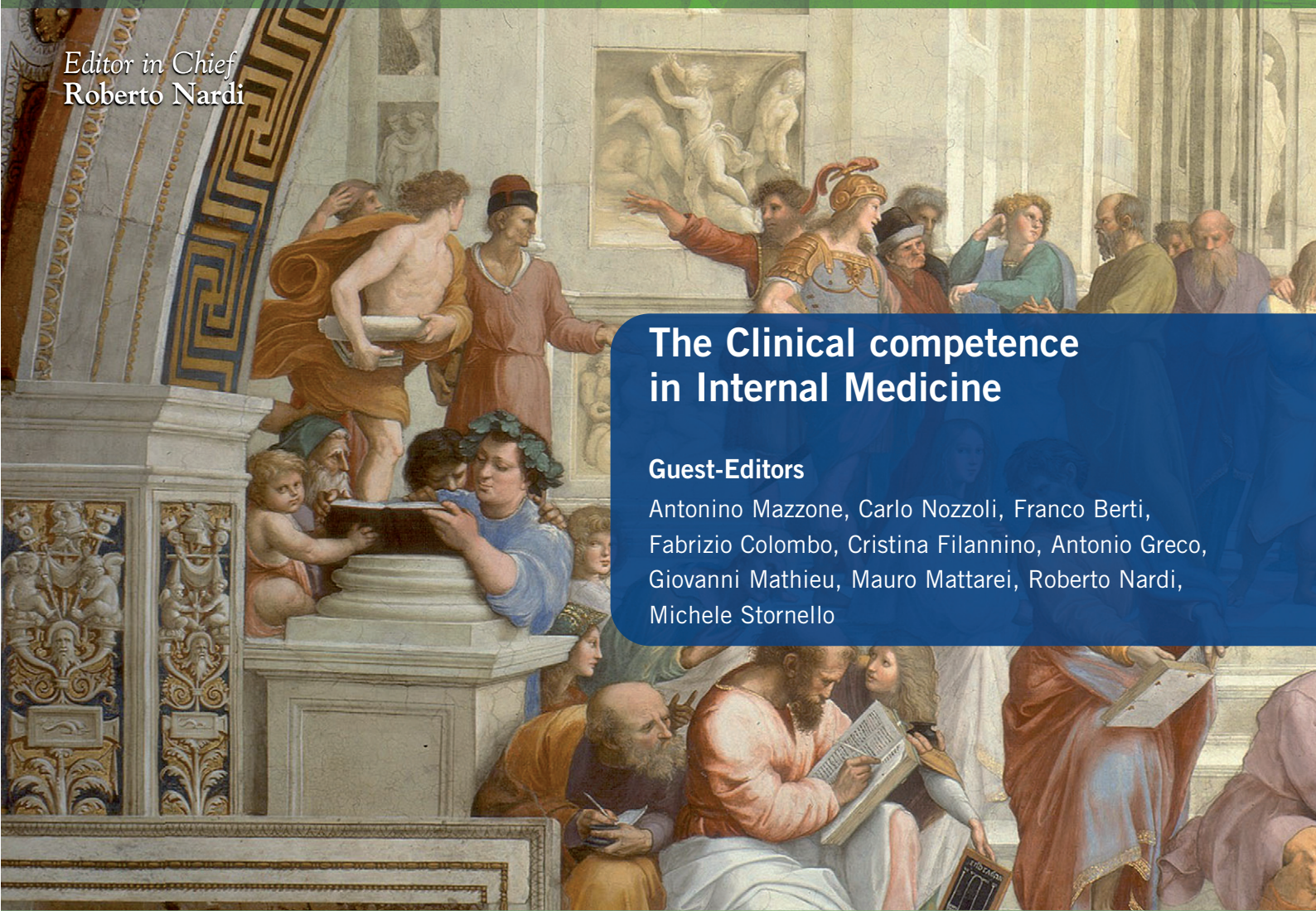

The Clinical competence in Internal Medicine

Guest-Editors

Antonino Mazzone, Carlo Nozzoli, Franco Berti, Fabrizio Colombo, Cristina Filannino, Antonio Greco, Giovanni Mathieu, Mauro Mattarei, Roberto Nardi, Michele Stornello

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XVI CONGRESSO NAZIONALE FADOI
Firenze, 15-18 maggio 2011

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Organo Ufficiale FADOI

SOMMARIO
CONTENTS

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Italian Journal of Medicine (2011) **5S**, S1

Available online at www.sciencedirect.com

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journal homepage: www.elsevier.com/locate/itjm

Abstract

KEYWORDS
Clinical competence;
Internal Medicine;
Standard reference;
Learning-formation;
Curriculum for hospital Internists.

Background

The definition of professional competence is of fundamental importance in the current health context, physicians finding themselves working in an environment in which the rapid obsolescence of technical-scientific knowledge imposes upon them a continuous review of their knowledge and ability. FADOI (*Federazione delle Associazioni dei Dirigenti Ospedalieri Internisti/Federation of the Associations of Hospital Doctors of Internal Medicine in Italy*) has as its main mission that of improving, through training and clinical research, the technical-scientific capacity of hospital internists.

Discussion

"Clinical competence" is the result of technical knowledge, ability, capacity of the professional, managerial, relational and operative qualities of each individual specialist in his/her specific care context. All this presupposes the optimal balancing of several components — knowing, being able to do and being able to be — in a perspective of interaction between doctor and patient, and practical solutions for the resolution of clinical problems. Unfortunately, medical competence cannot, by itself, be guaranteed by academic titles or specialist self-referentiality, nor does it constitute a mere professional ideal.

Results and proposals

FADOI, in collaboration with SDA-Bocconi, has designed a path for the identification of the professional competence of hospital doctors of Internal Medicine in Italy. Our project is proposed as a specific instrument of reference for the definition of the professional capability of hospital specialists in Internal Medicine, upon the data furnished by "Minerva Project", relative to 161,961 Internal Medicine hospital discharge records.

The map of the proposed competences in Internal Medicine is articulated into two distinct parts: one relative to personal organisational/managerial characteristics and another one strictly specialist/professional related. In the evaluation of professional growth, three different levels (basic, optimal, excellent professionalism) were selected. The concept of "distinctive professionalism" was introduced regarding the capacity of being able to carry out a professional activity at a particular level as a function of each pathology considered and when useful to furnish a further sub-specialist response to the specific needs of the health of the patient.

Conclusions

The work carried out in our experience constitutes an indispensable premise, precisely because it is impossible to "credit" or "certify" competence without having first established a standard reference curriculum. The definite axes with the grid proposed of the competences (which — moreover — will have to undergo "*maintenance*" over time) constitute "the fabric" for the establishment of paths of learning-formation, oriented to the acquisition of the key competences of the specialist in Internal Medicine and for the activation of a virtual cycle of improvement of clinical practice. The questions to face in the near future are, substantially, numerous and complex. With additional constructive criticism, integrative proposals and/or emendation and the commitment of everyone stakeholder, together, we will do it.

1877-9344/$ — see front matter
doi:10.1016/j.itjm.2011.08.001

Italian Journal of Medicine (2011) **5S**, S2

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Introduction to clinical competence

FADOI (*Federation of the Associations of Hospital Doctors of Internal Medicine*) has as its fundamental mission that of improving, through training and clinical research, the technical-scientific capacity of hospital internists. Starting from this presupposition, we could not refuse to address the subject, of great current interest, of the evaluation of the professional competence of the chief of medicine. Defining what makes a good doctor is a greatly debated question at the national and the international levels. A scientific association, such as FADOI, has at least three reasons for tackling the verification and professional development of the specialist in Internal Medicine.

- the necessity of guaranteeing quality health services;
- the epidemiological changes, polypathologies, comorbidities, scarce scientific evidence in **real** patients, all challenges for which one needs to be prepared to respond;
- credibility since the medical profession is one which has the privilege of regulating itself, thanks to its own history and professional ethics.

"Clinical competence" is the result of technical knowledge, ability and capacity of the professional, and the managerial, relational and operative qualities of each individual specialist in his/her specific care context. All this presupposes the optimal balancing of several components — knowing, being able to do and being able to be — in a perspective of interaction between doctor and patient, and practical solutions for the resolution of clinical problems. Unfortunately, medical competence cannot, by itself, be guaranteed by academic titles or specialistic self-referentiality nor does it constitute a mere professional ideal. For this reason, the quality of treatment must be defined on the basis of specific indicators. Clinical science and the experience of the doctor must complement each other in managing the actual patient. In fact, experience, scientific knowledge, evidence-based medicine and clinical common sense constitute the basic elements of medical competence today for treating adult, elderly, critical and fragile patients and those with hospital discharges.

In reality, the effort which FADOI (our Scientific Society of Internal Medicine hospital doctors) is making has a double significance for the growth of the professional value of the specialist in Internal Medicine because the creation of an instrument with which to evaluate what the specialist in internal medicine knows will involve, once applied, better comprehension of the formative needs of our doctors and, not of less importance, the availability of a powerful means of planning professional updating.

In undertaking this path with SDA Bocconi, we first established a working group to determine the fundamental items of the required competences, identifying three levels of professionalism (basic, optimal, excellent), which we then compared with a group of professionals involved in our scientific association in order to obtain a shared consensus of the work carried out.

The examination of competence ranged across the different aspects — from human capacities in a general, relational and communicative sense to those more strictly technical-scientific — by means of the analysis of a large number of pathologies and clinical situations, also regarding emergencies and critical patients. The complexity of Internal Medicine has made this path particularly difficult, but we feel that we have laid down the basis for the further development of these topics hoping that this project can also make an important contribution to the entire scientific community.

This project therefore represents the first important step in defining a new role for scientific associations as promoters of development and the continuous monitoring of the individual professionalism of the physician.

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1877-9344/$ — see front matter
doi:10.1016/j.itjm.2011.07.007

Italian Journal of Medicine (2011) 5S, S3—S13

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/itjm

ORIGINAL ARTICLE

Evaluation models and items of clinical competence for the hospital physicians in internal medicine

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Introduction

The question of the definition of professional competence, its evaluation and its development is of fundamental importance in the current health context, physicians finding themselves working in an environment in which the rapid obsolescence of technical-scientific knowledge imposes upon them a continuous review of their knowledge and ability. Frequent organisational and managerial changes require rapid compliance with definitive innovative models, with suitable proactive capacities and sufficient response flexibility on the part of the professionals. An in-depth consideration of professional competence is therefore becoming an inescapable requirement under both clinical and the ethical profiles. Compliance with a path of evaluation of one's own working performance represents an essential moment in the continuing development of competence for the physician and an improved capacity to respond to the needs of citizens.

The Mission of Internal Medicine is aimed at improving the quality and efficacy of diagnostic, therapeutic and medical

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1877-9344/$ — see front matter
doi:10.1016/j.itjm.2011.08.002

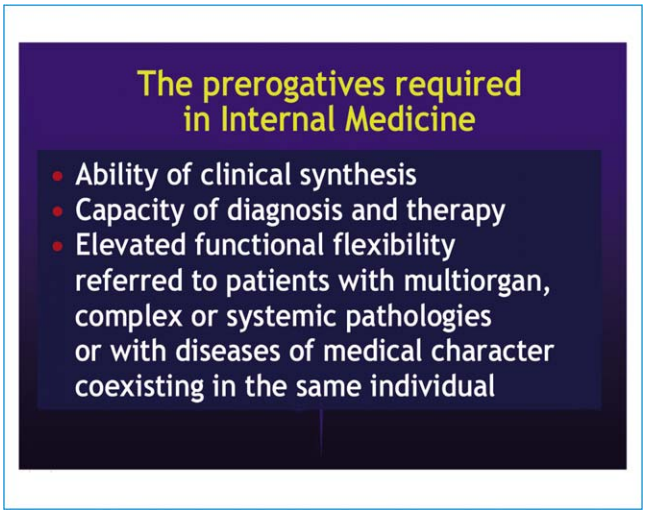

Figure 1 The distinctive prerogatives of Internal Medicine.

institutional services for the adult ill (Fig. 1), guaranteeing the appropriateness of hospital admission and therapy, recognising and treating emergencies so that the hospitalised patient is correctly taken charge of for the definition and management of his/her total course of treatment, until being entrusted to the doctor in charge and/or the network of services. Among the institutional objectives of a scientific association, there is that of representing a "place of culture" in which doctors can develop their own knowledge and their own distinctive competence by means of adhesion to the initiatives proposed in the field of research and the training environment, favouring a comparison between different working experiences and clinical practice, and developing the particular characteristics of the discipline it represents.

Anticipating the requirements which could be imposed by future initiatives of accreditation at a regional or national level — by means of legislative or contractual provisions — orienting itself to already consolidated international experiences, FADOI thought it better to construct an experimental route of monitoring and evaluation of the competence of its members who, voluntarily, desire to move away from specialistic self-referentiality and are willing to test themselves using an especially identified system of indicators and good clinical practice. We are strongly convinced that management of this process by means of the active involvement of scientific associations can not only gather important contributions regarding the definition of the performance indicators but also leave enough space for the development of innovative projects which see the direct participation of whoever is involved in daily doctoring and knows the existing situation. This project, originating from a partnership between FADOI and SDA Bocconi, represents the first important step in defining a new role for scientific associations as promoters of the development and continuous monitoring of individual professionalism of the specialist in internal medicine. The intended objective to be pursued is aimed at clarifying the activities, experiences and competence of specialists in Internal Medicine which are necessary to carry out their role of being able to construct a training path based on the detection of acquired knowledge and technical-scientific ability.

The distinguishing characteristics of Internal Medicine are based on the following elements:

- pluripotency, understood as the capacity of developing and integrating knowledge and multiple competences;
- flexibility, which consists of the capacity to adapt and modify intervention priorities both for the individual patient and in response to the epidemiological necessities of the area;
- functional interdependence, with the knowledge that the case mix of patient load requires reciprocal dependence upon various partners but, at the same time, requires a single "director" for each individual case;
- cost-saving measures, which require efficient management of beds (however, they are less expensive when compared to those in highly specialised centres), with a different turnover determined by the frequent hospitalisation of patients with unresolved problems or those with elevated complexity due to the presence of multiple comorbidities and the interaction of physiopathological, clinical and socio-welfare problems.

The summary of the above-mentioned characteristics is oriented towards a professional in continuous training, conscious of his/her own role in the organisational context, with congruent behaviour, multidimensional capabilities and willing to be evaluated (Fig. 2).

Professional evaluation represents a challenge for "cultural" change, required for those who work in the sphere of the health system (public or private affiliate with the national health service), who accept being "observed in a constructive way" with respect to the role that they have, what they do and what they "should do". It is evident that the process of evaluation has to be characterised by explicit elements which guarantee them objectivity and transparency on the methodology utilised.

The evaluation of competence proposed by FADOI utilises specific reference standards and indicators of a professional nature with the aim of verifying whether the medical director is a "good professional" or sufficiently "expert" in his/her own work, capable of resolving specialistic problems of elevated complexity within his/her field of expertise.

The project is not proposed as an alternative to decisions and instruments typically institutional and/or private regarding the policies of human resources management but it is proposed as a specific instrument of reference for the formation, evaluation and monitoring of the professional capability of hospital specialists in Internal Medicine.

The grid of the "dominions of competence" proposed

The work hypothesis on which the content of "clinical competence" is based is that of defining a grid of evaluation of the competence of the specialist in Internal Medicine with the aim of grading the levels of decisional responsibility and knowledge of the role (useful for achieving a form of institutional accreditation) and of constructing a path of formative progression and professional growth. The final objective is that of outlining paths of professional development suitable for growth in the sphere of the specialistic discipline. To that end, FADOI, in collaboration with SDA Bocconi, has

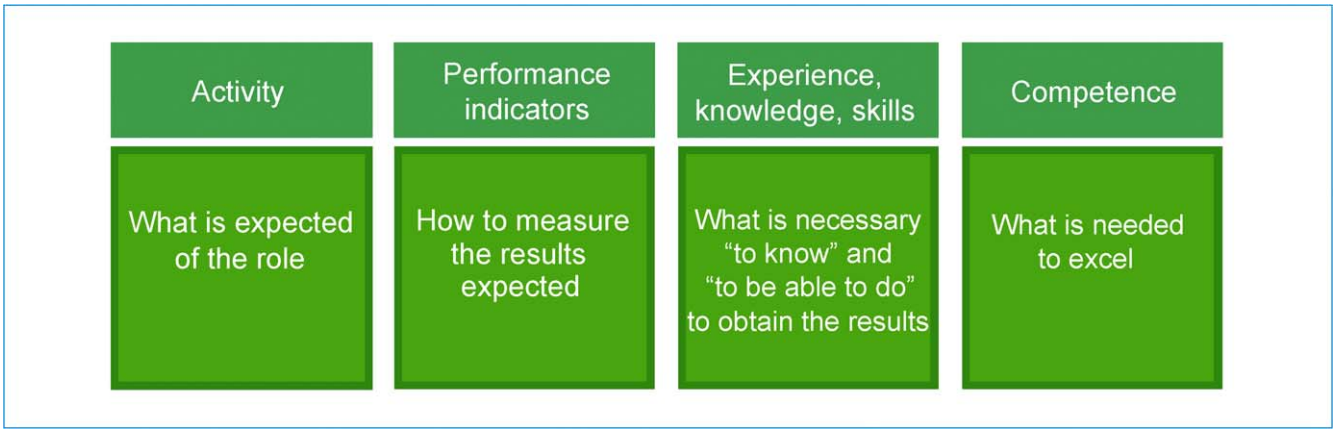

Figure 2 Measurement of the contents of the role of the specialist in Internal Medicine.

designed and realised a path of active interaction with a group of Managers of the Complex Structure of Internal Medicine operating in the entire national territory, for the identification of the professional competence of the hospital directors of internal medicine who want to voluntarily adhere to the project, also with the aim of possible accreditation and/or certification (we refer to the program ''Evaluation of clinical competence in Internal Medicine: integration between professional competence and managerial competence of the evaluators, Monday 14 June 2010, SDA Bocconi, Milan).

The map of the competence characteristic of a specialist in Internal Medicine is articulated in two distinct parts, one strictly specialistic/professional and one organisational/managerial relative to personal characteristics, with the following objectives:

- establishing paths of good clinical practice, verifying, validating and improving the professional competence of managers by means of innovative formative methodologies suitable for favouring professional growth;
- facilitating the work of the hospital managers and the hospital directors of Internal Medicine in clinical and managerial activities with the aim of pursuing appropriate management of the resources in agreement with the objectives within this context.

The contents of the project do not currently regard the professional development of the hospital directors of Internal Medicine of any single structure, single departmental structure or complex structure.

In constructing the grid, for the identification of the various *dominions of competence in Internal Medicine* in the various nosological environments, for the most part, the data furnished by Project Minerva, relative to 130 Complex Operative Units (COU) of Internal Medicine and 161,961 hospital discharge records **(HDRs)** in which the principal pathologies afferent to Internal Medicine Departments, were considered (Fig. 3).

Beginning with this basic epidemiological analysis, the principal pathologies which, for statistical-epidemiological

Project Minerva
130 Internal Nedicine units in Italy
161,961 hospital discharge records relative to 2001-2002

DRG	Diagnosis	No. of cases
127	Cardiac insufficiency and shock	12,956 = 8%
088	Chronic obstructive pulmonary diseases	7,774
014	Specific cerebro-vascular diseases, except TIA	5,830
134	Arterial hypertension	4,858
089	Simple pneumonia and pleurisy, age + 17 years, with complications	4,372
202	Hepatic cirrhosis and alcoholic hepatitis	4,210
395	GR anomalies, age + 17 years, without complications	4,049
294	Diabetes, age + 35 years	4,040
015	TIA and pre-cerebral occlusion	3,725
183	Esophagitis, gastro-enteritis, miscellaneous	3,703
087	Pulmonary edema and respiratory insufficiency	3,077

Wide dispersion of **diagnosis related groups**: 35 different DRG

Figure 3 Project Minerva (Source: Bellis P. In: Medicina interna. Complessità e metodologia. Torino: CSE, 2004).

Table 1 Content of the levels of professionalism proposed.

I	II	III	Distinctive competence
Basic professionalism	**Optimal professionalism**	**Excellent professionalism**	
Corresponds to essential specialistic competence, such as "*core curriculum*", minimum basis for access to work (e.g. necessary to carry out the duties in all operating contexts) in an initial phase aimed at a path of additional formation	Corresponds to the best specialistic competence for managing complex patients, practiced according to defined reference parameters, in a consolidated phase of formative development	Corresponds to specialistic competence far superior to the average, also practiced in an institutional *setting* of high curative intensity, in an advanced phase of formative and didactic development	Corresponds to the specific *additional* competence, practiced in the sphere of Internal Medicine, in which the professional is a reference for the hospital and/or other professionals, also external, in the sphere of a niche and/or sub-specialistic formative development
Requires supervision and additional training	Is competent to carry out the assigned work autonomously without needing supervision	Is competent to train other professionals in Internal Medicine	Is competent to train other professionals in the specific/ sub-specialistic spheres of Internal Medicine

relevance, importance and gestational criticality were considered the most relevant by the working group, were selected with the aim of specifically analysing the required competence.

In the proposal for the evaluation of professional growth, three different levels in which the acquisition of a higher level presupposes possession of the lower one were selected. The integration and summary of the various levels "*generally*" define the complete path of the specialist in Internal Medicine from which a basic professional can attain an optimal, or excellent, level of professionalism if he "fully" responds to the requisites required for each individual level. The levels of "gradation" considered epitomize elements referring to knowledge, ability and attitude according to the various phases of formative development and classified as in Table 1.

The concept of "*distinctive competence*" was introduced regarding the capacity of being able to carry out a professional activity at a particular level as a function of each pathology considered and when it is useful to furnish a response to the specific needs of the health of the patient. It can be possessed by the physician *in addition to* that required for specialistic functions and refers to the performance of medical sub-specialistic services.

Regarding the *personal characteristics* of the specialist in Internal Medicine, the FADOI working group and SDA Bocconi defined some priorities relative to the various behavioural capacities taken from the competence model of McClelland – 1973 (2) and the concept of competence, understood in the sense of an "*intrinsic individual characteristic casually linked to an efficacious or superior performance of a task or in a situation, and which is measured on the basis of an established criterion*" (3). The capacities selected (emotional, relational, managerial, intellectual and innovative), subdivided into various levels, represent the integrating feature and consolidation of the personality of an individual, capable of predicting behaviour in a wide range of situations and work tasks, causing and predicting, according to standard criteria, the positive or negative results obtainable and/or obtained (Table 2).

In addition to these elements, in the evaluation of "*professionals*", the capacity of the individual physician to adhere to a concept of "professional interdependence" in the total hospital context or "sub-specialistic self-referentiality" should be considered, generally correlated to the formal role of the individual professionals (Fig. 4).

The basic values of teamwork, such as success factors ("*winning team*") for each individual team have to be explicitly shared, in function of the objectives, verifying the performance data on the basis of institutional processes and verification audits of the differences with the aim of reaching institutional objectives (Fig. 5).

Monitoring the differences

The path of consensus for the elaboration of the final grid

The **path** followed for the final proposition of the grid was that of delineating, in Fig. 3 using a Delphi-Rand type method which, recognising the value of the opinion, experience and intuition of the experts, permits the use of available information when there is a lack of univocal full scientific knowledge (4).

The path is based on the presentation, by a committee made up of 10 organisers, of the initial elaboration of the grid to a group of 13 "expert supervisors" who, independently expressed an opinion, integrating or modifying the content of the draft received. After this revision, the grid was presented to the consensus group (24 chiefs of Internal Medicine and 10 young specialists in Internal Medicine, subdivided into three subgroups) who was asked to review, for the part assigned to each group, the entire project with a critical analysis for each individual item, using three possible options: *complete agreement, complete disagreement, alternative version*

Table 2 Selection of the most significant personal characteristics and capacities of each professional level according to the FADOI-SDA BOCCONI working group.

A	B	C
Basic professionalism	**Optimal professionalism**	**Excellent professionalism**
	Area: EMOTIONAL CAPACITY	
Self-control and stress management	Self-control and stress management	Self-control and stress management
	Conflict management	Conflict management
	Area: RELATIONAL CAPACITY	
Availability for interpersonal relationships	**Availability for interpersonal relationships**	**Negotiation**
Group work	Conviction	Public speaking
Conviction	Public speaking	Management of groups and meetings
Public speaking	Management of groups and meetings	Management of human resources
	Leadership	Leadership
	Area: MANAGERIAL CAPACITY	
Planning one's own work	Organisation	Tenacity/realisation
Organising one's own work	Decisiveness	Planning
Operative control	Orientation to results	Organisation
Initiative		Orientation to results
Tenacity/realisation		
Decision making		
	Area: INTELLECTUAL CAPACITY	
Resolution of operative problems	Gathering and data processing	Analysis
Gathering and elaboration of information	Analysis	Problem solving
	Problem solving	Formulation of plans and strategies
	Compilation of reports	
	Area: INNOVATIVE CAPACITY	
Adaptability/flexibility	Propensity for new things	Propensity for new things
Propensity for new things		

(in that case, it was necessary to specify the propositions suggested). The answers obtained by the panel were followed by a detailed analysis of the opinions (*common or divergent points of view*, with the pertinent reasons, with respect to the initial version), an analytic calculation of the sum of the opinions and the shared convergence, and the elaboration of the definitive proposition.

In substance, the fundamental objective was that of sharing the final document within FADOI itself and then to present it to the institutions, the medical-scientific community and the citizens directly concerned.

What remains to be done?

Define the modalitites for evaluating clinical competence

In the clinical environment: the methods and instruments proposed for the evaluation of professional competence are different (Tables 3 and 4). In the majority of cases, the services are measured on the basis of the modality of work, or in reference to the ''process''. Measuring on the basis of treatment, results or volume of activity is more difficult and problematic [1,2].

Apart from the modalities of evaluation that FADOI would like to choose from among the various options available, it must be confirmed that *professional competence is context-dependent*: knowledge, ability, attitude of the specialist in internal medicine are not equal in all operative realities and the abilities required for each individual physician vary on the basis of the characteristics of the health organisation and the clinical context in which one finds him/herself operating. In fact, in large hospitals having the most complete articulation of specialised areas, the modulation of the case mix in departments of internal medicine prevalently tends to exclude patients with marked specialised capabilities, which are, for the most part, entrusted to departments with specific competences, consequently affecting the professional ability of the individual physicians. On the contrary, in small and/or medium-sized hospitals, in the absence of specialised structures, the aptitude required of the specialist in internal

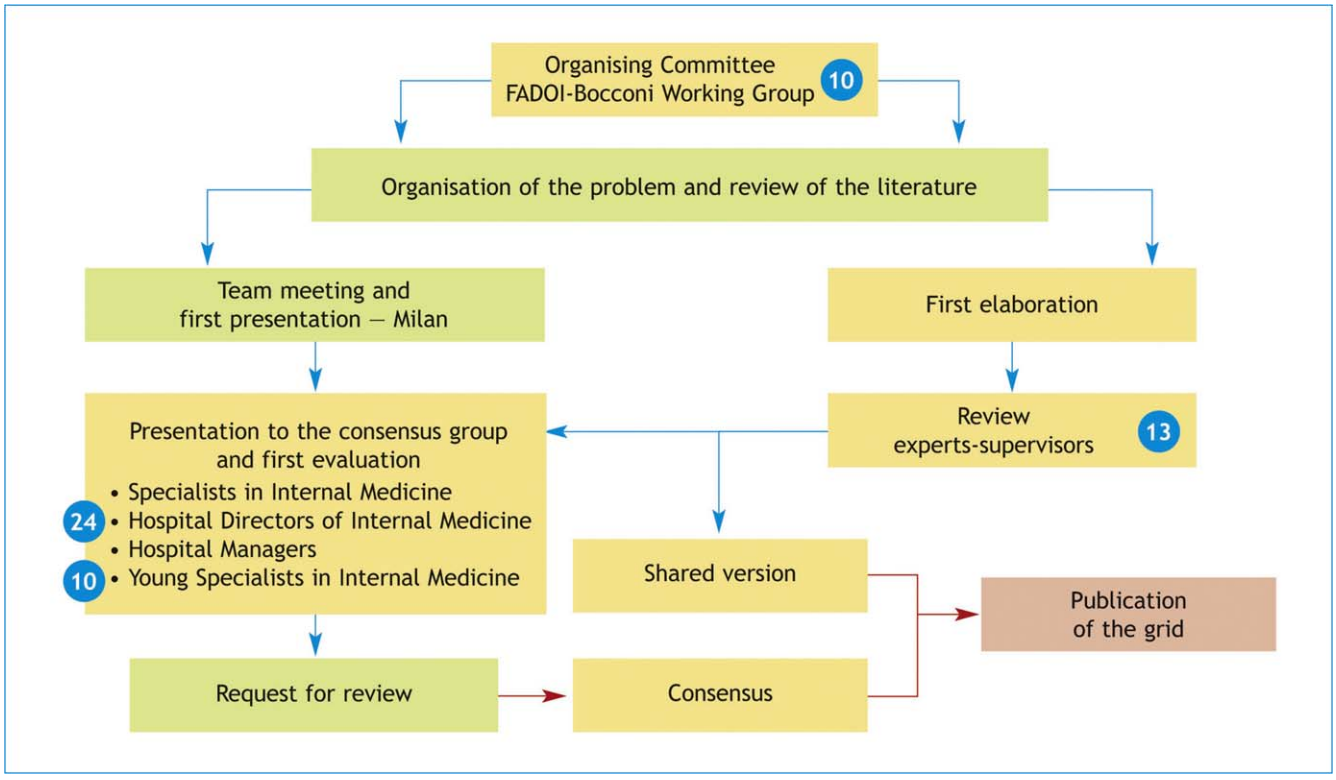

Figure 4 Method applied to the FADOI-Bocconi Project.

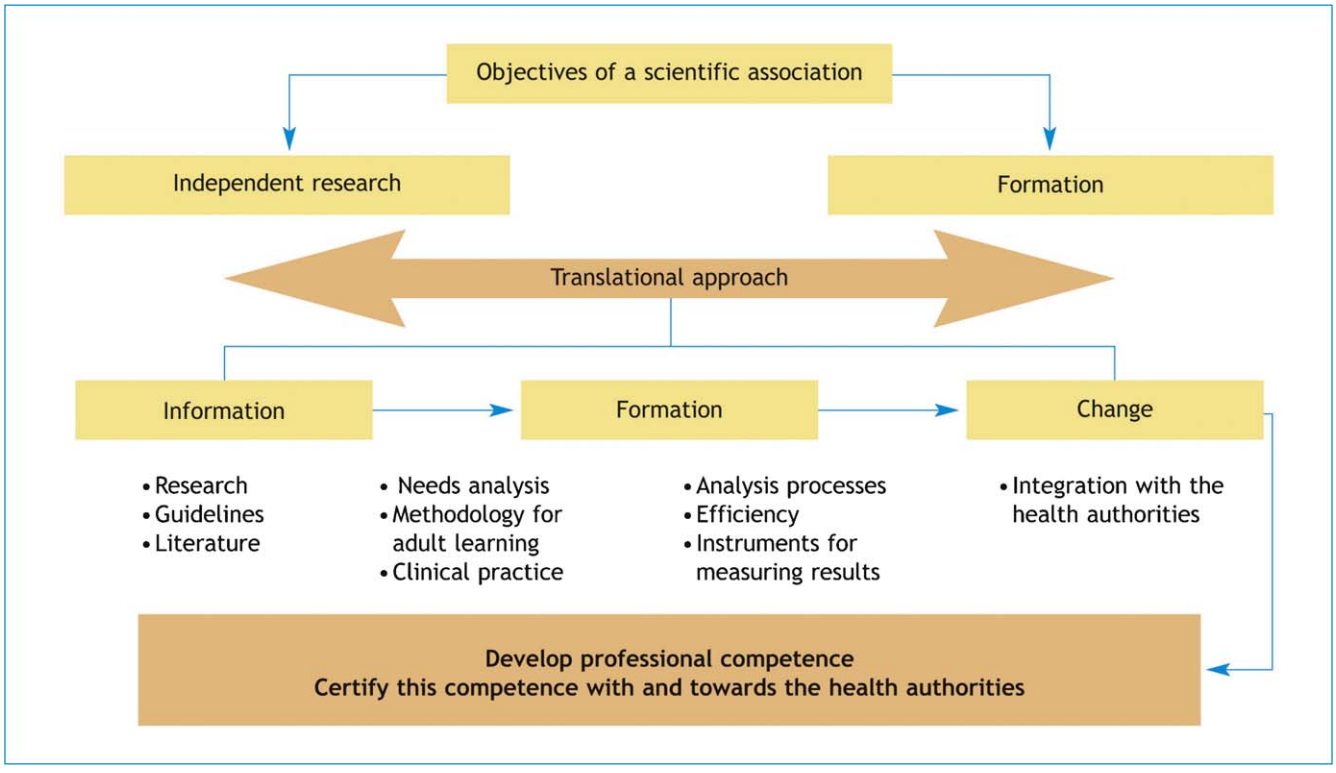

Figure 5 Objectives of a scientific association (Source: Fontanella A. 2010).

Table 3 Basis and evaluation instruments of professional competence.

Basis of evalutation	Notes	Instruments of evalutation
Results (outcome)	Evaluation is problematic; too many factors influence the results and the outcome of the treatment of the patient, especially if complicated	• *Hospital charts* • *Administrative data* • *Diaries/registers* • *Direct observation*
Process/subprocess of treatment[a]	Adherence of the physician to the guidelines and/or diagnostic therapeutic paths defined as standard of assistance in the process/subprocess of patient treatment is evaluated	
Volume of activity	The procedures carried out are evaluated	

Source: Norcini 2003 [3].

[a] **Process/sub-process**: a process can be defined as a set of activities, organised among themselves as a temporal logic (that is by phases), with the aim of transforming specific input (materials, information, resources, etc.) into output (products, results). Describing the work activity as processes permits understanding their dynamic dimension, namely, their happening in time. A sub-process can be defined as a subset of phases/activities internal to the more general process.

medicine can be extended to specialistic competence otherwise not available at this site. It follows that the formulation of the portfolio (with evaluation of individual professional competence) will have to be adapted to the organisational context and its characteristics. The path of professional development of the individual medical director will have to refer to these differences and the dishomogeneity present in the National Health Service so as to contextualise the evaluating actions in a manner consistent with the specific existing reality. Also for this reason, it will be indispensable to program and realise extended experimentation of the system for evaluating clinical competence in different organisational realities located all over the national territory with the aim of verifying the applicability and utility of the proposed system in the field.

Defining the path of professional development congruent to the formative objectives

One of the ''reasons to exist'' of a Scientific Association is that of providing efficacious ''training'', useful for developing professional competence (Fig. 6).

The ''grid'' proposed, *if nothing else*, has the implicit advantage of defining the formative objectives of the hospital specialist in internal medicine. The details are explicit, according to a modulation which can proceed for the different *items* both in different nosological spheres (the ''lines'' in the grid) and for differentiated increasing specialised levels (the ''columns''). The best didactic

Table 4 Modality of evalutation of professional competence (from [4—15]).

Written evaluation test (evalutation of knowledge)	Evaluation in the field by a supervisor
• Multiple-choice quiz (true-false) • The best of 5 multiple-choice quizzes • Pairing of multiple options • Written test • Composition (editing, dissertation) allows the evaluation of knowledge but also the capacity of analysis, synthesis, written expresssion • *Key feature problems* • Self-evaluation by means of a *check list* or semiquantative questionnaires	• ***Relational and cognitive testing***: ○ resoluton and discussion of clinical cases, review of research, ○ review of clinical incidents, didactic capacity ○ exploring the clinical reasoning regatrding a patient ○ evaluating the capacity for communication and interaction in a professional group • ***Body language testing***: direct observation of carrying out procedures: ○ to evaluate the knowledge, practical and procedural ability and the attitude of the physician in interaction with the patient • ***Relational testing***: *role play* ○ to evaluate the management of nervous tension, reactivity and capacity of adaptation. ○ **Direct observation** at the ''*bed-side*'' or with simulation at a distance/video or with control of the process of assistance and treatment by means of the use of: ○ evaluation grids ○ check lists ○ ''*blueprint*'' *assessment* ○ Macro-microsimulation- *skill trainer*

Table 4 (*Continued*)

Written evaluation test (evalutation of knowledge)	Evaluation in the field by a supervisor
Practical testing (evaluation of ability): Some of the methods proposed	
○ OCSE (Objective Structured Clinical Examination)[a] ○ OSPE; OSVE, OSTE, OSLER, etc. ○ PACES [16]	
Evaluation of:	**Instruments**
Knowledge	• Multiple choice questionnaires (MCQ) • *Essays* • Short answers • OCSE
Ability (skills) — case management	• Direct observation • Audit • Case reviews or *Case Based Discussion* • Simulation • DOPS [17]: *Directly Observed Procedural Skills*[b] • Procedure-based Assessment • Portfolio [18,19] of individual competence • Mini-CEX [20]: *Mini Clinical Evaluation Exercise*[c]
Attitude	• Supervision and reporting • Structured *Peer review* or *Peer Assessment Tool* • Observation-direct or videotaped • Perceived quality

[a] The *Objective Structured Clinical Examination* (OSCE) is a method of approach for objective evaluation — planned and structured — of clinical competence with its various components. It is actually an organising scheme which permits the evaluation of various abilities but means of standardised and objective testing. OSCE was founded in 1975 by Ronald Harden of the Scottish University of Dundee. Over the years, numerous studies carried out in many countries have confirmed the objectivity, validity and reliability of this method in evaluating the clinical competence of students studying for a degree in medicine. OSCE was then developed, in particular, in those countries in which training was at an advanced level (Canada, United States, England, Australia, South Africa). With modified versions, it then spread to other health professions such as nurses, physiotherapists, dieticians and radiological technicians. It consists of a set of tests (stations) which must be passed by the candidate who, at each station, has to demonstrate what he is capable of doing, faced with a simulated patient or situation, rather than responding to theoretical questions. In OSCE, the evaluation criteria are predefined for each of the stations to pass, corresponding to specific clinical competence and the opinions are expressed, referring to specific evaluation grids, prepared in advance, ad hoc, according to the performance which has to be explored. In OSCE, therefore, some phases preliminary to the evaluation process itself are necessary: a) the definition of the *core competences* to be evaluated; b) the design and development of the testing (stations) and c) the planning and organisation of the stations. The number of stations is **related** to the competence to be evaluated, having a range from a minimum of 10 to a maximum of 25 stations. The time available for the candidate is usually pre-established and limited, a maximum of 10 minutes for the more complex tests, on the basis of the fact that, in real situations, time is always limited. Other instruments of evaluation were added to the OSCE which were, in fact, variants of this: OSLER: *objective structured long examination record*; OSPE: *objective structured practical examination*; OSVE: *objective structured video examination*; OSTE: *objective structured teaching evaluation*; OSPRE: *objective structured performance-related examination*; OSSE: *objective structured selection exam*.

[b] Direct observation of procedural competence (DOPS) is the observation and evaluation of a procedural ability carried out on a real patient. Procedural competence (technical or practical abilities) evaluated on the basis of DOPS vary from those which are relatively simple and common (such as taking a blood sample) to those which are more complex (e.g. endoscopic retrograde colangiopancreatography). The evaluation is carried out by an expert physician utilising a list of items and definite tasks, with a *rating* scale (e.g. *below expectations, 1-2; borderline, 3; within expectations, 4; above expectations, 5-6*).

[c] The portfolio is an instrument prevalently proposed **for nurses**. It consists of the collection of statementswhich demonstrates the continuous acquisition of ability, knowledge, attitude, comprehension and results obtained. In it, evidence, usually written, regarding the learning process, attesting to the achievement of objectives of personal and professional development are collected. It includes not only the *curriculum vitae*, but also a grid of self-evaluation to pursue and/or maintain professional competence.

instruments, the strategies and the operative contexts with which to implement the teaching/learning experiences will have to be defined (didactic lessons, face-to-face lessons with debates between the learner and the experts, round tables with debates, technical demonstrations, discussion of problems or didactic cases, films, questionnaires, didactic cases, stimulus flashes, direct execution (simulations) of practical or technical activity on the part of the participants, *role playing*, work in small groups, etc.).

Defining the path of validation and certification

The process of evaluation is integrated with other elements, represented by validation, accreditation and certification (Table 5).

It is necessary to distinguish certification from evaluation of the results. Evaluation is the expression of a judgment

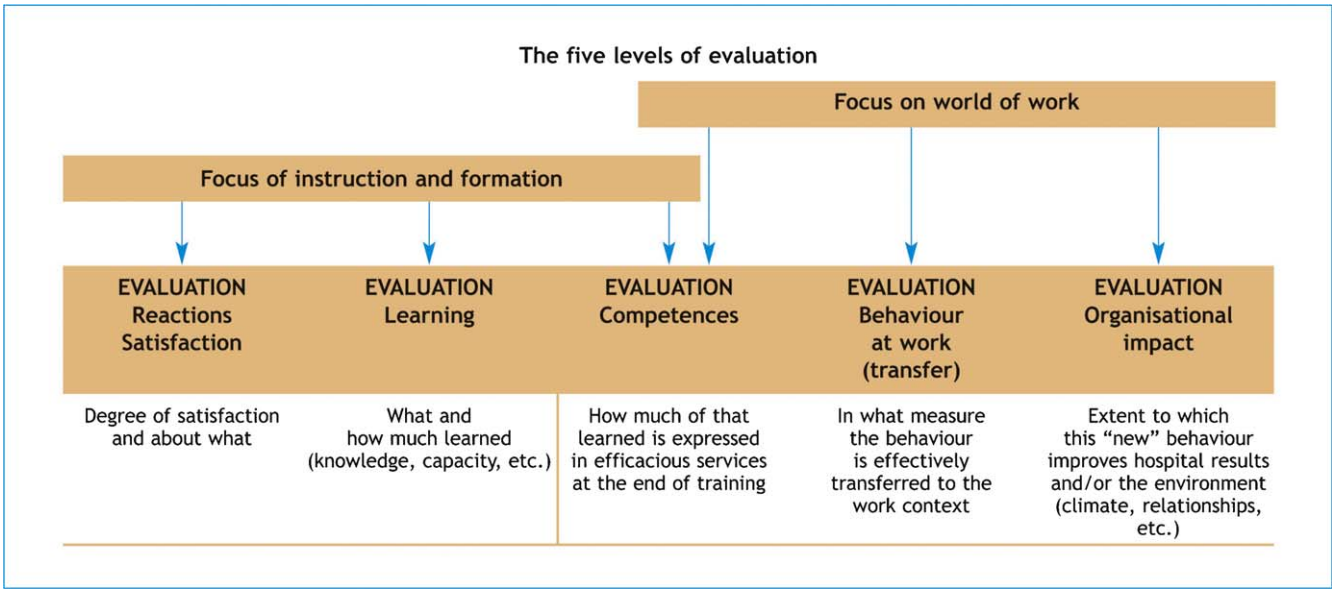

Figure 6 The levels of evalutation.

founded on elements furnished by the verification process which, in turn, is founded on the results of various measurements. Therefore, evaluation represents the result of a complex itinerary. Instead, certification of a competence is the representation of the intentional know how and efficacy reached by the professional described in relation to the context. The affirmation of the competences, expressed in the portfolio, therefore constitutes an added value with respect to individual evaluation. Certification is important since it is useful in defining how much and how to mobilise and make the most of one's knowledge, capacity and personal resources in order to respond efficaciously (finding an positive point of equilibrium between oneself and the organisation) to questions, expectations and requirements which the work context expresses. FADOI, as a scientific association accredited as a *training provider*, can even now exercise a significant role in the development of the learning and medical-scientific knowledge of the internist; at the same time, it can also be involved by the institutional bodies in accreditation of the different processes of evaluation, validation and certification, with evident advantages for the individual professional but also for the quality of the formation and the improvement of the institutional context (Table 6).

Unresolved problems and conclusions

It is evident that the work carried out in the last few months constitutes an indispensable premise, exactly because it is impossible to "credit" or "certify" competence without having first constructed a standard reference curriculum. The definite axes with the grid proposed of the competences (which — moreover — will have to undergo "*maintenance*" over time) constitute "the fabric" for the construction of paths of learning-formation, oriented to the acquisition of the key competences of the specialist in internal medicine and for the activation of a virtual circle of improvement of clinical practice.

Until now, the work carried out is therefore only partial and exclusively represents the beginning of a long and

Table 5 Processes of verfication of professional knowledge.

Evaluation	Process through which the attribution of a judgment of value is reached with respect to the competences acquired, possessed, practised
Validation	Process through which the experience arrived at by the professional is reconstructed, documented and described in terms of competence and then compared to institutionally-defined professional standards
Accreditation	Process through which an agency or a public or private institution "enables" a person to demonstrate that he/she possesses the competences declared, namely taking a qualifying exam in front of a commission
Certification	Process through which the competences acquired by a person in a formal, informal or non-formal context are verified by means of specific tests, relating to professional standards, institutionally defined and recognised publically: • aimed at the recognition of formative and professional credits usable in many contexts at the national level • results of a path of "validation" on the part of an agency called to recognise the "credits" presented legally and socially • reached following verification on the part of an expert commission

Table 6 The convenience levels of a professional evaluation process.

	Advantages of an evaluation path
For the patient	• transparency • objective elements of evaluation • overcoming self-referentiality
For the individual doctor	• better identification and exploitation of one's professional competence • self-analysis of one's strong and weak points of additional formative/professional development • overcoming self-referentiality • elaboration of a congruent and realistic professional project, oriented to specific objectives • (re)motivation, (re)orientation, increate self-esteem/trust (*empowerment*) • reinforcement to transfer of the competence acquired (mobility) • additional development of one's competence (méta-cognition) • improvement of the quality of the curriculum
For training	• qualitative improvement of the offer and transparency of the training • increase in the efficiency and efficacy of the training offered • personalisation/individualisation/modulation of the formative intervention/participation • recognition of credits (also for additional "modules")
For the Health Service and the Association	• exploitation of human resources and better knowledge of people • better professional quality guaranteed to citizens and transparency • optimisation of career management • greater efficacy/efficiency in selection/incentive processes • facilitation of change • facilitation of adaptation of people to organisational evolution • selection of formative investments

complex path. It is necessary to put *experimentation of the evaluative model* into actual practice in the organisational structures with the aim of verifying the applicability "in vivo", perfecting the instruments utilised and correcting eventual errors or omissions.

However, the commitment to overcome any possible discrepancy between "evaluation of competence" and "programming for competence" remains. The next challenges awaiting us regard some still ongoing problems on which it will be necessary, as was done for the sharing of the grid of the competences, to find the widest consensus, both inside FADOI and with other institutional interlocutors. There are numerous ongoing problems which remain, such as, for example:

1. willingness (or not) of access to evaluation/certification;
2. practical modalities of evaluation;
3. degrees of learning/certification;
4. minimum standards required for certification
5. levels of certification
6. methods of certification of competence;
7. identification of the certifiers;
8. legal value of certification;
9. when to certify and with what deadline;
10. implications for the development of the career path for the specialist in internal medicine.

The questions to face in the near future are, substantially, numerous and complex. With additional constructive criticism, integrative proposals and/or emendation and the commitment of everyone, together, we will do it.

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Legend of abbreviations and acronyms

ABCD-ABCD2: Age, Blood pressure, Clinical features, Duration of symptoms and Diabetes
ABI (o ABPI) Index: Ankle Brachial (Pressure) Index
ABPM: Ambulatory blood pressure monitoring
ACD: Anaemia of chronic disease
ACE: Angiotensin converting enzyme
AchEls: Acetylcholine-esterases
ACLS: Advanced cardiovascular life support
ACR: Albumin-creatinine ratio
ACS: Acute coronary syndrome
AD: Alzheimer's disease
ADH: Antidiuretic hormone
ADL: Activity of daily living
ALP: Alkaline phosphatase
ADR: Adverse drug reaction
AF: Atrial fibrillation
AH: Arterial hypertension
AMA: Anti-mitochondrial antibodies
AMI: Acute myocardial infarction
ANA: Antinuclear antibodies
AP: Acute pancreatitis
AP: Arterial pressure
APACHE: Acute physiology and chronic health evaluation
APR-DRG: All Patient Refined Diagnosis Related Groups
APS: Acute physiology score
ARDS: Acute respiratory distress syndrome
ARI: Acute renal insufficiency
ASA: American Society of Anesthesiologists
AVPU: Alert, Vocal, Pain, Unresponsive
BAP: Bone-specific alkaline phosphatase
BAL: Bronco-alveolar lavage
BEE: Basal Energy Expenditure
BISAP: Bedside index for severity in acute pancreatitis
BMD: Bone mineral density
BMI: Body Mass Index
BNP: Brain Matriuretic Peptide
BODE (index): Body-Mass Index, Airflow Obstruction, Dyspnea, Exercise Capacity Index
BOOP: Bronchiolitis obliterans organizing pneumonia
BSA: Bedside swallowing assessment
BTS: British Thoracic Society
CAD: Coronary artery disease
CAM: Confusion Assessment Method
CAP: Community-acquired pneumonia
CIN: Contrast-induced nephropathy
CIRS: Cumulative Illness Rating Scale
CD SHOCK: Cardioverter-Defibrillator shock
CHA2-DS2-VASc: Congestive heart failure, Hypertension, Age $\geq$75 years (doubled), Diabetes mellitus, Stroke (doubled), Vascular disease, Age 65—74 years, Sex category
CKD-EPI: Chronic Kidney Disease Epidemiology Collaboration
CJD: Creutzfeldt-Jacob disease
CME: Continuing Medical Education
CNS: Central nervous system
CNS: Canadian Neurological Score
CSS: Canadian stroke scale
COPD: Chronic obstructive pulmonary disease
CP: Chronic pancreatitis
CRI: Chronic renal insufficiency
CRP: C-reactive protein
CS: Cardiogenic shock
CSF: Cerebrospinal fluid
CT: Computed tomography
CUS: Compression ultrasonography
CV: Cardiovascular
CVC: Central vein catheter
CVP: Central venous pressure
DEXA: Dual energy X-ray absorptiometry
DFO: Deferoxamine
DIC Score: Disseminated Intravascular Coagulation Score
DKA: Diabetic Ketacidosis
DM: Diabetes mellitus
DNI: Diabetic Neuropathy Index
DOPS: Direct Observation of Procedural Skills
DRS: Delirium Rating Scale
DSI: Delirium symptom interview
DSM: Diagnostic and Statistical Manual of Mental Disorders
DVT: Deep venous thrombosis
DXA: Dual-energy X-ray Absorbiometry
EAL: Essential assistance levels

1877-9344/$ — see front matter
doi:10.1016/j.itjm.2011.07.009

EBM: Evidence based medicine
ECF: Extracellular corporeal fluid
ECG: Electrocardiogram
EGDS: Esophagogastroduodenoscopy
Ehra: European Heart Rhythm Association
EBM: Evidence-based medicine
EEG: Electroencephalogram
EFIM: European Federation of Internal Medicine
EH: Essential hypertension
EHRA: European Heart Rhythm Association
EH: Essential hypertension
EPA: Acute pulmonary edema
EPO: Eritropoietine
ERCP: Endoscopic retrograde cholangiopancreatography
ETOH: Alcohol and alcohol abuse
EUS: Endoscopic ultrasonography
EWSS: Early Warning Scoring System
FEV1: Forced expiratory volume in the 1st second
FIM: Functional Independency Measurement scale
Fine Port for CAP: Fine.Port criteria for Community acquired pneumonia
FRAX: (WHO) Fracture Risk Assessment Tool
FUO: Fever of unknown origin
GFR: Glomerular filtration rate
GCS: Glasgow Coma Scale
G-CSF: Granulocyte-colony stimulating factor
GFV: Glomerular filtration velocity
GM-CSF: Granulocyte-macrophage colony stimulating factor
GOLD: Global Initiative for Chronic Obstructive Lung Disease
GRACE: Global Registry of Acute Coronary Events
HAS-BLED: Hypertension, Abnormal renal/liver function, Stroke, Bleeding history or predisposition, Labile international normalized ratio, Elderly (>65 years), Drugs/alcohol concomitantly
Hb: Haemoglobin
HBSAg: Hepatitis B surface antigen
HBV: Hepatitis B virus
HCV: Hepatitis C virus
HDR: Hospital discharge record
HHS: Non-ketotic hyperosmolarity
HLA: Human leukocyte antigen
HIT: Heparin induced thrombocytopenia
HIV: Human Immunodeficiency Virus
HSC: Haemopoietic stem cells
HSS: Hyperosmolar hyperglycaemic syndrome
HVPG: Hepatic venous portal gradient
IADL: Instrumental activity of daily living
IBD: Inflammatory bowel disease
ICD: Implantable cardioverter-defibrillator
ICD: International Classification of Diseases
ICF: Intracellular corporeal fluid
IMT: Intima-medial thickness
INR: International Normalised Ratio
IPSS: International Prognostic Scoring System
IVC: Inferior vena cava
LACS: Lacunar stroke
LES: Lupus eritematoso sistemico
LKM: Liver-kidney microsomal antibodies
LOD: Logistic Organ Dysfunction system
LVAD: Left ventricular assist device
LVEF: Left ventricular ejection fraction
MAOI: Monoamine oxidase inhibitors
MAP: Mean arterial pressure
MARDS: Montgomery-Åsberg Depression Rating Scale
MCD: Mild cognitive dysfunction
MCID: Minimal clinically important difference
MCQ: Multiple choice questionnaire
MCT: Medium chain triglycerides
MDAS: Memorial Delirium Assessment Scale
MDE: Multidimensional evaluation
MDRD: Modification of diet in renal disease
MDS: Mielodysplastic syndrome
MEVS: Maximum expiratory volume in 1st second
MEWS: Modified early warning score
MID: Multi-infarct dementia
MINI-CEX: Mini Clinical Evaluation Exercise
MINI-PAT: Mini-Peer Assessment Tool
MID: Minimally important difference
MMS: Mini Mental state
MNA: Mini nutritional assessment
MOF: Multiple organ failure
MPM: Mortality prediction model
MRCP: Magnetic resonance cholangiopancreatography
MRCP-UK: Membership of the del Royal College of Physicians
MRX: Morphometric Radiography
MSF: Multi-Source Feedback
MUST: Malnutrition screening tool
MXA: Morphometric X-ray Absorptiometry
NARI: Noradrenaline reuptake inhibitor
NASSA: Noradrenergic and specific serotoninergic antidepressants
NIEC: North Italian Endoscopic Club
NIH: National Institutes of Health
NIHSS: NIH Stroke Scale
NIV: Non-invasive ventilation
NKF-KDOQI: US National Kidney Foundation Kidney Disease Outcomes Quality Initiative
NMR: Nuclear magnetic resonance
NRI: Nutritional Risk Index
NRS: Nutritional Risk Screening
NSAIDS: Non-steroid anti-inflammatory drugs
NSF: Nephrogenic systemic fibrosis
NSRI: Noradrenaline and seratonin reuptake inhibitor
NSTEMI: Non-ST segment elevation myocardial infarction
NYHA: New York Heart Association
OAT: Oral anticoagulant therapy
OBRI: Outpatient bleeding risk index
OCSP: Oxfordshire Community Stroke Project
OPG: Osteoprotegerin (or OCIF: osteoclastogenesis inhibitory factor)
O.P.Q.R.S.T.: O = *Onset* P = *Provokes*; Q = *Quality*; R = *Radiates*; S = *Severity*
OSCE: Objective Structured Clinical Examination
OSLER: Objective structured long examination record
OSPE: Objective structured practical examination
OSVE: Objective structured video examination
OSPRE: Objective structured performance-related examination
OSSE: Objective structured selection exam
OSTE: Objective structured teaching evaluation
OSVE: Objective structured video examination
OTI: Orotracheal intubation
OU: Operative Unit
PACCS: Partial anterior circulation stroke

PACES: Practical assessment of clinical examination skills
PACS: Partial anterior circulation stroke
PAD: Peripheral arterial disease
PAI: Percutaneous acetic acid injection
PAPs: Pulmonary arterial pressure
PBC: Primary biliary cirrhosis
PCR: Polymerase chain reaction
PDS: Progressive Deterioration Scale
PEI: Pancreatic exocrine insufficiency
PEEP: Positive end-expiratory pressure
PEG: Percutaneous endoscopic gastrotomy
PEM: Protein energy malnutrition
PET: Positron emission tomography
PICC: Peripherally inserted central catheter
PICO Method: Patient, Intervention, Comparison, Outcome
PICP: Procollagen type I C-terminal peptide
PINP: Procollagen type I N-terminal propeptide
POCS: Posterior circulation stroke
PM: Pacemaker
P.Q.R.S.T.: P = *Provokes*; Q = *Quality*; R = *Radiates*; S = *Severity*
PSC: Primary sclerosing cholangitis
PSI: Physiology stability index
PST: Papilla sphincterotomy
PTH: Parathyroid hormone
PURSUIT: Platelet glycoprotein IIb/IIIa in unstable angina: Receptor suppression using Integrilin
PVC: Premature ventricular contractions
QCT: Quantitative Computed Tomography
QUS: Quantitative Ultrasonography
RANK: Receptor Activator of Nuclear Factor κ B (TRANCE Receptor)
RANKL: Receptor activator of nuclear factor kappa-B ligand
RDNR: Recommended daily nutritional requirements
RF: Radiofrequency
RFI: Renal Failure Index
r-HU EPO: Recombinant erthyropoietin
SAPS: Simplified Acute Physiological Score
SAT: Supra-aortic trunks
SAPS: Simplified Acute Physiology Score
SCA: Sudden cardiac arrest
SH: Secondary hypertension
SERMs: Selective estrogen receptor modulators
SIADH: Syndrome of inappropriate antidiuretic hormone
SIRS: Systemic inflammatory response syndrome
SLE: Systemic lupus erythematosus
SMA: Smooth muscle antibody
SOFA: Sepsis-related Organ failure assessment;
SPECT: Single photon emission computed tomography
SPREAD: Stroke prevention and educational awareness diffusion
SSRI: Selective serotonin reuptake inhibitor
SSS: Scandinavian Stroke Scale
STEMI: ST segment elevation myocardial infarction
TAB: Team assessment behaviour
TACE: Transarterial chemoembolisation
TACS: Total anterior circulation stroke
TAE: Transarterial embolisation
TAP: Trypsin activation peptide
TAPSE: Tricuspid annular plane systolic excursion
TEE: Transesophageal ecocardiography
TEN: Total enteral nutrition
TPN: Total parenteral nutrition
TIA: Transient ischemic attack
TIMI: Thrombolysis in myocardial infarction
TIPS: Trans-jugular Intrahepatic Porto-systemic Shunt
TISS: Therapeutic intervention scoring system
TPH: Thromboembolic pulmonary hypertension
VD: Vascular dementia
VEMS: Virtual Expert Mass Spectometrist
VINDICATE: Vascular, Infections, Nutrition, Drugs, Injury, Cardiac, Autoimmune, Tumors, Endocrine
VTE: Venous thromboembolism
WFNS: World Federation of Neurological Surgeons
WHO: World Health Organisation
WHVPG: Wedged hepatic venous portal gradient
WPSS: WHO classification-based Prognostic Scoring System

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- APACHE III Physiologic Subscore
- CRITICAL CARE
- New Simplified Acute Physiology Score (SAPS II)
- Organ Failure Score
- The Omega Score
- The Rapid Acute Physiology Score (RAPS)
- The Sepsis-related Organ Failure Assessment (SOFA) Score
- TISS-28

Cardiovascular

- The National Registry of Myocardial Infarction Non-ST Elevation (NRMI NSTE) Risk Model for Mortality
- TIMI Risk Score in Patients with Unstable Angina or Non-ST Elevation Myocardial Infarction

Hepato-biliary pancreas

- The Child-Pugh Score for Grading Hepatic Cirrhosis
- CT Severity Index (Balthazar Score) in Acute Pancreatitis
- Glasgow Prognostic Criteria in Acute Pancreatitis (Imrie Criteria)

Gastro-intestinal

- The Rockall Risk Scoring System in Upper Gastrointestinal Bleeding

Neurology

- Clinical Examination Scale Following Acute Cerebral Infarction (NIH Stroke Scale, NIHSS)
- Glasgow Coma Scale
- Modified NIH Stroke Scale
- Rankin's Clinical Signs Associated with Poor Outcome After Stroke
- The Scandinavian Neurological Stroke Scale (SSS)

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Bed side training

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to make decisions in a global manner: questioning and examining patients, reasoning as to what they present with, not omitting the psychodynamic aspects and emotions, explicit and also implicit willingness, actual needs, socio-economic and familial context, possible comorbidities, functional limitations or cognitive dysfunctions and alterations of the emotional sphere • Knowing how to utilise the methods of evidence-based medicine (EBM) • Knowing how to identify the difference between guidelines and diagnostic-therapeutic paths	• Knowing how to carry out both inductive and deductive methods of clinical reasoning • Knowing the entire path of evidence-based practise, guidelines, clinical governance, audit • Critically evaluating protocols and knowing how to apply them to the actual patient • Knowing how to distinguish statistical significance from clinical relevance • Knowing the limits of EBM in Internal Medicine and its integration with clinical experience	• Innovating and implementing protocols • Knowing how to describe the process of Health Technology Assessment and its instruments • Critically evaluating a study protocol • Applying EBM to actual patients using the PICO method (patient, intervention, comparison, outcome) • Conducting a clinical audit	• Possessing a specific professional competence-certified according to excellence criteria - to be made available — as an added value — to the local hospital, in the interest of the patient • Knowing how to identify and research the MID (minimally important difference) or MCID (minimal clinically important difference) in clinical trials

Individual behaviour

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing the objectives of the hospital and participating in the facilitation of pursuing the above when negotiated and shared • Having the awareness, that in team work, in the hospital context: - the competence and excellence of the technico-operative acts which have to guide individual behaviour are reversed in group behaviour: - the objective of everyone is not that of managing personally but of acting so that the entire group manages to reach the objects of the hospital; - the lack of active personal participation towards the hospital objectives will be evaluated in meritocratic terms with reference to reward systems and/or sanctions • Knowing how to demonstrate the avoidance of certain behaviour in the local organisational context	• Participating in the pursuit of the negotiated and shared objectives, with the capacity of supplying information to the working group • Knowing how to demonstrate, in an organisational context, the capacity of constructive criticism aimed at reaching shared objectives, congruent with those of the hospital in which he/she works • Knowing how to identify a relationship of openness, explicitness and trust, comparison-competition on the hypotheses • Actively participating in the pursuit of the negotiated objectives and strategies • Knowing how to propose hypotheses of solution with respect to the criticality represented	• Knowing how to participate in team work in terms of: - Recognition of interdependence with ''others''; - plurality of interaction and integration; - perception of reciprocal necessity; - systematic orientation for exchange and collaboration • Knowing how to facilitate, in an organisational context and considering different opinions, the attainment of shared objectives, congruent with those of the hospital • Knowing how to create alliances and synergies, manage and know how to overcome resistance and opposition • Documenting the attainment of objectives	• Knowing how to pursue the shared objectives of the hospital

- passive - irreducible - sharing minimal synergy with the explicit objectives shared by "opposition" without purpose • Knowing how to propose a discussion on criticality • Actively participating in discussion on negotiated objectives and strategies			

Autonomy at work

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Having passed the initial period, demonstrating autonomy in carrying out activities indicated by one's job description • Being autonomous in carrying out the activity indicated, even if with supervision in the management of complex cases	• Carrying out specific tasks with the need for supervision • Knowing how to point out organisational criticality on the basis of the specific professional and the possible hypotheses of solution	• Training other professionals to carry out a specific task • Knowing how to identify the elements of strength and weakness of a project	• Evaluating the collaborators in an organisational context • Possessing a professionalism recognised at the national level • Possessing a professionalism recognised at the international level

Preparation of general assistance and treatment

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Obtaining and managing the anamnestic data and useful information in the history of the patient • Orienting the diagnostic-therapeutic course on the basis of anamnestic data • Describing the active/underlying comorbidities and problems • Recognising the principal physiopathological mechanisms underlying the clinical picture identified • Formulating diagnostic hypotheses and differential diagnoses • Interpreting and evaluating clinical, laboratory and instrumental data • Determining the most frequent prognoses and serious pathologies in internal medicine	• Autonomously carrying out consultation in other departments • Autonomously managing patients in other departments (orthopaedics, surgery, etc.) • Establishing clinical priorities according to the comorbidities • Deciding the diagnostic course appropriate for the patient (also cost/benefit) according to emerging hypotheses • Formulating diagnostic hypotheses and differential diagnoses also in patients with multiple pathologies and in complex patients • Interpreting and clinically evaluating the clinical laboratory and instrumental data, also in patients with multiple pathologies and in complex patients	• Planning management of the patient on the basis of the prognosis • Planning management of the patient on the basis of the MDE (multidimensional evaluation) • Planning "off-label" therapies in a motivated manner congruent with the laws in force • Identifying patients who require specific health education for a better participation in managing their illness • Managing protected and difficult discharges • Formalising and planning the criteria which regulate the relationships between the various specialities and internal transfers	

• Proposing appropriate therapy (also cost/benefit) on the basis of available knowledge and efficiency tests • Furnishing necessary information and communicating the notes of health education, also with the aim of obtaining informed consent • Communicating the clinical elements necessary to insure continuous assistance, according to clear and comprehensible modalities • Transferring diagnostic-therapeutic information to the specialist in internal medicine when necessary • Managing the patient for treatment of acute and/or chronic acute illnesses	• Determining the most frequent diagnoses and serious pathologies in internal medicine, also for patients with multiple pathologies and complex patients. • Remodelling the diagnostic therapeutic path on the basis of new data to identify the factors conditioning the prognosis • Carrying out a multidimensional evaluation (MDE) • Personalising the appropriate therapy and verifying the congruity also on the basis of the MDE and internal medicine pathologies in patients with multiple pathologies and complex patients • Involving the patient and/or family members in managing the process of the treatment • Communicating, according to clear and comprehensible modalities, the clinical elements necessary to insure institutional continuity, even in the most complex cases, both for clinical and social problems • Communicating diagnostic-therapeutic information to the specialist where necessary, also in situations which are not the competence of the specialist in internal medicine • Managing patients for: - the treatment of acute and/or chronic acute illnesses and different and complex syndromes - palliative treatment - perioperative treatment • Planning the management of patients for the treatment of illnesses from admission to discharge and institutional continuity		

Complex Patient

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Stratifying the risks and selecting the main points • Defining the priorities and hierarchy of needs • Utilising the instruments of evaluation of functional dependence • Selecting the treatment objectives and the appropriate pharmacological therapy • Defining which institutional setting is desirable for the patient • Making decisions even in situations of uncertainty • Utilising ''evidence-based'' tests of efficacy for the actual patient • Recognising the presence of a pathology which requires isolation of the patient	• Carrying out a multidimensional evaluation (MDE) in different institutional settings: - in hospital - in the doctor's office (consultations) - in the follow-up regarding institutional continuity - in post-acute departments - in residential structures - in other departments/services • Knowing how to recognise the different dominions of the complexity and differentiate the concepts of - clinical complexity - institutional nursing complexity - management complexity • Utilising instruments for evaluating comorbidities • Programming stratification of the intensity of treatment in relation to the multidimensional evaluation • Programming stratification of the intensity of treatment in relation to the prognostic stratification • Utilising the instruments of evaluation of fragility • Utilising '*evidence-based*' tests of efficacy for the actual patient • Defining the possible prognostic future of the patient on the basis of the decisions taken • Carrying out prognostic stratification		

Frail Patient

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to describe the phenotype of a ''fragile'' patient • Knowing how to differentiate a ''robust'' patient from a ''fragile'' patient	• Knowing how to use at least one of the principal methods of evaluation of the fragile patient • Knowing how to identify the clinical criteria of the evaluation of sarcopenia	• Participating in programs of ''*disease-case management*'' in the hospital belonging to this program	• Directly carrying out procedures for the evaluation of sarcopenia (impedancemetry, DEXA (dual energy X-ray absorptiometry), measuring physical performance, speed gait, etc.)

• Making decisions on the basis of a prognostic-functional evaluation of the patient • Knowing how to identify and classify the patient at risk for repeated hospital admission, ''frequent user'', the patient at risk for ''difficult discharge'' • Knowing how to plan discharge right from the moment of admission to hospital	• Knowing how to identify the path of protected discharge on the basis of multidimensional evaluation • Describing the prognostic elements predictive of unfavourable results after discharge from hospital		

Critical Patient

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Evaluating, managing and treating the acute, unstable critical patient • Oxygen therapy with goggles and Venturi mask according to guidelines • Proposing the laboratory and instrumental testing necessary in an emergency, urgency, extended urgency and ordinary conditions, according to appropriate criteria • Knowing how to differentiate the intensity of treatment necessary • Recognising significant changes in the condition of the patient and making opportune consequent decisions • Knowing how to carry out ACLS (advanced cardiac life support) • Having the competence of carrying out oxygen therapy and using a Venturi mask • Having basic competence for using a defibrillator monitor and external PM (pacemaker) • Having BLS-D (basic life support-defibrillation) certification • Obtaining informed consent for the diagnostic-therapeutic and institutional procedures necessary • Obtaining, if available, patient instructions as to reanimation procedures	• Proposing the testing necessary for the eventual negative evolution of the clinical picture • Knowing how to use telemetry when available • Programming actions connected to the change of patient status • Managing the initial phases of principal haematological emergencies while waiting for transfer or specialistic consultation	• Knowing, applying and implementing the instruments of evaluation of the critical patient in various nosological spheres such as, e.g. - Ehrenwerth classification per transfer of patients - APACHE II-III ASA (Acute and chronic health evacuation-American Society of Anesthesiologists) - SAPS II-III (Simplified Acute Physiology Score) - OMEGA score, APS (Acute Physiology Score), EWSS (Early Warning Scoring System) - TISS (Therapeutic intervention scoring system), McCabe - SOFA (Sepsis-related organ failure assessment) - LOD (Logistic organ Dysfunction System), ASA - MPM (Mortality prediction model) - PSI (Physiology stability index) - AVPU (alert, vocal, pain, unresponsive)-GCS (Glasgow Coma Scale)-MMS (Mini Mental State) - NYHA (New York Heart Association)-KILLIP-LOWN - TIMI (Thrombolysis in Myocardial Infarction) score - BTS (British Thoracic Society)-FINE PORT for CAP (community-acquired pneumonia)	• Knowing how to use the rhino-pharingeal cannula and extra-glottic protection (EGP), e.g. laryngeal tube alternatively to orotracheal intubation (OTI) • Knowing how to carry out OTI • Knowing how to carry out ALS (advanced life support) • Know how to carry out ATLS (advanced trauma life support) • Know how to carry out ACLS

		- Kelly-Matthay scale for neurological state during respiratory insufficiency - O.P.Q.R.S.T. (onset, provokes, quality, radiates, severity) for thoracic pain - Banks, Agarwall, Pitchumoni, Ranson, IMRIE, Glasgow, Atlanta, Salles, Balthazar criteria for acute pancreatitis - ROCKALL SCORE for digestive haemorrhage - CLASSI ACS (acute coronoary syndrome) for haemorrhagic shock - CIRS (critical incident reporting system), CHARLSON for comorbidity - NIHSS (National Institutes of Health Stroke Scale), CNS (Canadian Neurological Score), SSS (Scandanavian Stroke Scale), BSA (bedside swallowing assessment), BARTHEL, RANKIN, FIM (functional independency measurement scale), SPREAD (stroke prevention and educational awareness diffusion) for stroke - WFNS (World Federation of Neurological Surgeons) score - Hunt-Hess score for subarachnoid haemorrhage - WELLS criteria for DVT /Deep Venous Thrombosis) - CHILD-TURCOTTE-PUGH score for hepatic insufficiency - Trey-Davidson score for hepatic encephalopathy - DIC (Disseminated Intravascular Coagulation) score for disseminated intravascular coagulation - EHRA (European Heart Rhythm Association) AF (atrial fibrillation) score, CHA2-DS2-VASc score, OBRI (Outpatient bleeding risk index), HAS-BLED bleeding risk score (Hypertension, Abnormal renal/liver function, Stroke, Bleeding history or predisposition, Labile international normalized ratio, Elderly (>65 years), Drugs/alcohol concomitantly)		

		for evaluation of the patient and thrombotic/haemorrhagic risk in the course of atrial fibrillation, etc. • Explaining (teaching) the tests correlated to the signs and symptoms predictive of a negative evolution • Alert the medical staff assisting the patient (nurse/ resident) regarding the signs/symptoms and testing predictive of a negative evolution	

Unstable Critical Patient

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Utilising monitoring systems of basic parameters • Knowing how to carry out diagnosis and therapy in situations of urgency/ emergency: APE (acute pulmonary edema), SCA (sudden cardiac arrest), serious arrhythmias, ventilo-respiratory insufficiency, carbonarcotic coma, diabetic ketoacidosis and hyperosmolar syndrome, hypoglycaemic coma and tacidaemia, electrolytic disturbances, hepatic coma, digestive haemorrhage, acute pancreatitis, sepsis, stroke, shock, delirium, syncope, convulsive crises, malignant hyperthermia, transfusional reactions, drug and/or pharmaceutical overdose, acute renal insufficiency, haemorrhagic syndromes, acute haematological syndromes, acute painful syndromes, psychoses, acute thoracic and abdominal pain syndromes, MOF (multiple organ failure), etc. • Carrying out severity, risk and prognostic stratification evaluation in different pathologies of the acute critical patient	• Knowing how to evaluate non-invasive multiparametric monitoring of the patient • Knowledgably utilising the principal severity indices/scores of the critical patient	• Using the Boussignac valve, C-PAP and Bi-level • Knowing, applying and implementing the instruments of evaluation of the critical patient in various nosological spheres such as, e.g. - Ehrenwerth classificaton per transfer of patients - APACHE II-III - ASA - SAPS II-III - OMEGA, APS, EWSS - TISS, McCabe - SOFA - LOD, ASA - MPM - NYHA-KILLIP-LOWN - TIMI score - BTS-FINE PORT for CAP - Kelly-Matthay scale for neurological state during respiratory insufficiency - O.P.Q.R.S.T. for thoracic pain - Banks, Agarwall, Pitchumoni, Ranson, IMRIE, Glasgow, Atlanta, Salles, Balthazar criteria for acute pancreatitis	• Capacity of carrying out OTI (orotracheal intubation) • Capacity of managing invasive ventilation • Knowing how to manage the critical area

• Utilising the instruments of severity, risk and prognostic stratification evaluation in different pathologies of the critically acute patient (MEWS (mosified early warning score), NIHSS, Glasgow, ABCD (Age,blood pressure, clinical ffeatures, duration of symptoms and diabetes), Apache, etc.)		- ROCKALL SCORE for digestive haemorrhage - CLASSI ACS for haemorrhagic shock - CIRS, CHARLSON for comorbidity - nihss, cns, sss, bsa, barthel, rankin, fim, SPread for stroke - WFNS score - Hunt-Hess score for subarachnoid haemorrhage - WELLS criteria for TVP - CHILD-TURCOTTE-PUGH score for hepatic insufficiency - Trey-Davidson score for hepatic encephalopathy - DIC score for disseminated intravascular coagulation - EHRA AF score, CHA2-DS2-VASc score, OBRI, HAS-BLED bleeding risk score for evaluation of the patient and thrombotic/haemorrhagic risk in the course of atrial fibrillation, etc. • Knowing how to carry out bedside internistic ecography (abdomen, heart, vessels) • Knowing how to insert a central vein catheter (CVC)	

Acute Coronary NSTEMI Syndrome

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing the etiopathogenetic and physiopathological aspects • Knowing how to recognise the ECGrafic signs of ischemia, lesions and necrosis • Obtaining a complete anamnesis (including pharmacological) and carrying out an objective exam aimed at possible etiological pictures • Know the modalities, symptoms and signs of atypical presentation of IMA (internal mammary artery)/SCA • Recognising the principal differential diagnoses, such as non-ischemic cardiac (e.g. pericarditis) or non-cardiac (esophageal spasm) pathologies	• Knowing how to evaluate, in an appropriate way in clinical practice, the significance (and limits) of the different biomarkers of myocardial damage • Knowing how to apply the O.P.Q.R.S.T. method for the evaluation of thoracic pain • Knowing how to utilise the classification of the Canadian Society of Cardiology in 4 stages of gravity of the angor • Knowing and applying the risk scores for identifying patients with a serious prognosis • Organising assistance for patients at high risk for sudden death	• Participating in initiatives of improvement of quality for efficacious prevention, early recognition and AUDIT reduction, andportfolio of possible complications • Knowing how to carry out thrombolysis in indicated cases • Periodic reporting of the updating of the scientific literature on the topic • Coordinating/participating in a multidisciplinary team involved in the management of SCA/NSTEMI (non-ST-elevation myocardial infarction)	• Carrying out an echo-cardiogram for the evaluation of total and segmentary kinesis

• Insuring adequate venous access and carrying out haemodynamic stabilisation manoeuvres where necessary • Requesting diagnostic and monitoring evaluation tests • Knowing the procedures for diagnosis and and the methodology for treatment of possible complications and antiaggregating and anticoagulating treatment • Carrying out electric shock treatment (DC shock) for malignant hyperkinetic arrhythmia • Knowing the mechanism of action and the indications of the medications to use • Recognising the clinical conditions which make immediate transfer into intensive or haemodynamic care necessary, interacting with the respective medical specialist (e.g. cardiogenic shock) • Knowing how to manage the infusion of nitrates and dopamine • Planning discharges favouring institutional continuity • Recognising the signs and symptoms indicative of instability of the clinical picture • Recognising the clinical conditions of stabilisation and the possible discharge of the patient and/or transfer to another institutional setting • Communicating the etiological aspects, prognosis, diagnostic and therapeutic indications, and follow-up programs to the patients and their families, requesting informed consent	• Knowing how to identify high risk patients and, of these, evaluate, on the basis of total clinical conditions, those on whom to begin coronary revascularisation procedures • Carrying out a clinico-laboratory and imaging technique synthesis in order to formulate a comprehensive treatment plan • Evaluating the advantages/ disadvantages relative to pharmacological and invasive treatments • Carrying out a prognostic risk stratification by means of knowledge of specific scores (TIMI-GRACE (Global Registry of Acute Coronary Events)-PURSUIT (Platelet glycoprotein IIb/IIIa in Unstable angina: Receptor Suppression Using Integrilin) • Planning discharges favouring institutional continuity	• Actually coordinating/participating in the writing of guidelines and institutional paths in order to render efficient and efficacious assistance to patients with SCA/NSTEMI	

Cardiac Arrhythmia

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to carry out diagnostic evaluation (reading of an ECG) • Knowing how to identify the most common (e.g. atrial fibrillation) and non-complex arrhythmias • Identifying and recognising the modalities of clinical presentation of the most common arrythymias, obtaining a specific anamnesis and carrying out an objective test (with particular attention to haemodynamic stability) • Knowing anti-arrythymic medications, according to the Vaughan-Williams classification, and their mechanism of action • The capacity of carrying out electric defibrillation in emergency/urgency situations • Requesting appropriate exams for the evaluation of arrythmias (including Holter ECG, telemetry, etc.) • Carrying out a prognostic evaluation of arrhythmic risk (ECG characteristics, cardiac conditions and comorbidities), identifying the level of treatment required • Knowing the medications, metabolic conditions and comorbidities which can set off arrhythmias • Knowing how to carry out pharmacological therapy to reduce cardiac frequency during AF (atrial fibrillation or other supraventricular hyperkinetic arrhythmias in haemodynamically stable patients • Knowing how to recognise patients candidates for a PM (pacemaker) • Early recognition of high risk arrhythmias which require urgent specialistic intervention	• Knowing the Lown classification of arrythymias • Knowing how to recognise, according to the EHRA criteria, the severity of symptoms in case of atrial fibrillation • Knowing how to prescribe therapy for the most common cardiac arrhythmias, even in the most complex cases, and in multipathological and multitreated patients • Knowing how to utilise telemetry in subintensive areas, when available • Knowing how to recognise patients who need a cardiologist for the management of complex arrhythmias • Knowing how to identify the patients who are capable of managing "*pill in the pocket*" therapy • Knowing how to manage pharmacological therapy for a patient who presents torsade de pointe (paroxysmal ventricular tachycardia) • Communicating the diagnosis, prognosis and treatment plan after discharge to the patient and family members, giving information regarding medications and procedures to put into effect	• Knowing how to interpret the most complex tracings of an ECG (electrocardiogram) • Knowing how to use a defibrillator with a trans-thoracic PM (pacemaker) • Knowing how to recognise patients who are candidates for left atrial electric ablation	• Know how to interpret 24h and/or 7 day Holter ECG • Knowing how to carry out ALS (advanced life support) • Knowing how to carry out elective electric cardio-version • Know how to recognise patients who are candidates for surgical ablation • Know how to apply a temporary PM

• Knowing the mechanisms of action, indications and contraindications of anti-arrhythmic medications • Choosing the therapeutic protocol of the principal cardiac arrhythmias according to evidence-based medicine • Communicating the diagnosis, prognosis and treatment plan after discharge to the patient and family members, giving information regarding medications and procedures to put into effect • Activating a multidisciplinary and multiprofessional approach, according the the logic of *disease management* in order to facilitate discharge and improve the quality of life • Utilising the evidence-based recommendations for diagnosis, therapy and monitoring of the principal cardiac arrhythmias			

Heart Failure

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing the risk factors for heart failure; knowing how to apply and use the Killip classification • Knowing stratification • Knowing diagnostic criteria and how to reach a differential diagnosis • Recognising the underlying aetiology • Identifying precipitating factors • Putting the patient under the care of the respective medical specialist for the management of advanced or refractory cardiopathy • Evaluating the presence of comorbidities and their clinical-prognostic significance • Utilising the scores of prognostic stratification • Prescribing therapy to slow the progression of cardiopathy	• Managing refractory heart failure • Imposing a monitoring and follow-up program, according to the protocol of disease management • Knowing the indicators of good clinical practice • Prescribing therapy to slow the progression of cardiopathy • Selecting patients to propose coronarography • Selecting patients to propose aortic contra-pulsation in a subintensive area • Selecting patients to propose the application of an LVAD (*left ventricular assist device*) • Management of refractory CS • Selecting patients to propose the implant of a bi-ventricular PM for cardiac resynchronisation	• Knowing how to carry out a basic trans-thoracic ecography • Acquisition of other diagnostic and therapeutic instrumental techniques (impedancemetry, BNP (Brain matiuretic peptide), etc.) • Have ACLS (Advance cardiovascular life support) certification • Knowing how to carry out NIV • Selecting potential candidates for myocardiac biopsy	• Knowing how to carry out a TEE (trans-esophagheal echocardiography) • Managing ultra-filtration

• Evaluating the indications and contraindications for non-invasive ventilation with positive PEEP (Positive end-expiratory pressure) • Recognising the indications for the use of NIV (non-invasive ventilation) techniques in the acute patient • Recognising the indications for therapy for obstructive apnee • Planning the discharge of patients with CS and writing an adequate letter of discharge • Knowing how to manage assistance to terminal patients	• Selecting patients to propose haemofiltration • Carrying out non-invasive ventilation with positive PEEP • Selecting patients to propose an ICD (Implantable cardioverter-defibrillator) for secondary prevention • Selecting patients who could be potential candidates for a heart transplant		

Stroke

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Carrying out general physical examination • Reaching a differential diagnosis • Carrying out neurological tests • Carrying out support therapy when the use of thrombolysis is excluded • Evaluating and monitoring vital parameters • Knowing the investigations necessary for identifying emboligenic sources • Knowing the inclusion and exclusion criteria for thrombolysis • Defining the necessary postures • Evaluating and managing risks and complications • Defining treatment according to guidelines • Correctly and opportunely interacting with other specialists • Knowing how to manage assistance to terminal patients	• Utilising the evaluation scales for stroke (e.g. Cincinnati pre-hospital scale, GCS, NIH Stroke Scale, 5-NIHSS, Canadian Neurological Scale, Scandinavian Stroke Scale, Rankin, Barthel, Greenfield comorbidity index, etc.) • Knowing how to clinically differentiate an ischemic from a haemorrhagic stroke • Knowing how to carry out the diagnosis of the site of an ischemic stroke, according to the OCSP (Oxfordshire Community Stroke Project) criteria • Carrying out prognostic stratification on the basis of the site of the lesion (CT, PACS (partial anterior circulation stroke), PDS (progressive deterioration scale), LACS (lacunar stroke)), according to mortality and functional dependence • Prescribing the necessary aids and assistance	• Knowing how to interpret and discuss neuroradiological data (CT (computed tomography), brain and trunk NMR (nuclear magnetic resonance) • Carrying out peripheral thrombolysis (when authorised)	• Carrying out echocolordoppler SAT • Carrying out transcranial ecodoppler • Knowing how to read an EEG

Brain Ischemia

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify a TIA • Knowing how to interpret an ECG • Knowing how to recognise the conditions which can be confused with a TIA (transient ischemic attack): - EPILEPTIC CRISES - SYNCOPES - LIPOTHYMY - HAEMICRANIA WITH AURA - MENIERE'S SYMPTOM - TRANSITORY GLOBAL AMNESIA - PERIODIC PARALYSIS WITH DISKALIEMIA - HYPOGLYCAEMIC CRISES - NARCOLEPSY - CATALEPSY - SENSORY DISORDER - HYPERVENTILATION - HYSTERIA - CEREBRAL HAEMORRHAGES - SUBDURAL HAEMATOMA - CEREBRAL NEOPLASIAS • Knowing how to propose a complete diagnostic procedure • Knowing how to propose the most appropriate antiaggregant therapy (individual or in association) • Knowing how to propose OAT (oral anticoagulant therapy) when indicated and appropriate • Knowing how to intervene on risk factors and associated comorbidities	• Knowing how to carry out prognostic risk for stroke stratification at 7 days, according to the Rothwell et al. ABCD and ABCD2 score • Knowing how to plan the timing of the necessary tests on the basis of calculated risk for stroke (low, medium, high)	• Knowing how to propose critical intervention for early disobstruction in the presence of carotid stenosis • Knowing how to interpret and discuss neuroradiological data (CT, brain and trunk NMR) • Knowing how to send patients with suspected patency of the oval foramen who are candidates for transcatheter closure to a specialist • Knowing how to select patients with patency of the oval foramen who are candidates for transcatheter closure	• Knowing how to carry out an echodoppler of the epiaortic vessels • Knowing how to carry out ecocardiography

COPD — Chronic obstructive pulmonary Disease

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Recognising the stratification of the illness according to the most accredited guidelines GOLD (Global Initiative for Chronic Obstructive Lung Disease) • Knowing how to modulate basic chromic therapy on the basis of stratification of the severity of the illness • Diagnosing and treating acute recurrences • Knowing how to differentiate the patients to propose for intensive therapy treatment • Identify the indications and contraindications for NIV (non-invasive ventilation)	• Knowing how to evaluate FEV-1 (forced expiratory volume in the 1st second) • Knowing how to identify the conditions of non-reversible obstruction of the airways • Considering comorbidities in the prognosis and therapy • Knowing how to apply the Kelly-Matthay Scale to evaluate the neurological state • Carrying out, when possible, functional tests such as, for example, the Six minute walking test	• Knowing how to evaluate the percentage value of post-broncodilator VEMS (Virtual Expert Mass Spectometrist) with respect to the theoretical value • Knowing how to utilise the instruments available for evaluating state of health and quality of life in COPD (e.g. St. George Respiratory Questionnaire) • Knowing how to evaluate the BODE (Body-Mass Index, Airflow Obstruction, Dyspnea, Exercise Capacity) index for the prognostic stratification of patients and evaluation of the probability of hospitalisation	• Knowing how to carry out spirometry, by measuring lung volume, diffusion of CO and haematic gases • Knowing how to manage NIV in COPD with respiratory insufficiency in the indicated cases • Knowing how to carry out OTI and knowing the relative indications • Knowing how to manage invasive ventilation

Community pneumonia

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Carrying out prognostic stratification and evaluation of severity • Choosing the most appropriate specific and empiric antibiotic therapy on the basis of the institutional setting, and the age and condition of the patient: - Outpatient $<$ 40 yrs of age, immunocompetent - Patient $<$ 60 yrs of age, immunocompetent or with comcomitant pathologies - Patient $>$ 60 yrs of age or with comcomitant pathologies - Hospitalised patient - Patient in critical condition - Patient with structural pulmonary illnesses - Patient allergic to penicillin - Suspected aspiration	• Knowing how to opportunely carry out ''switching'' of therapy	• Knowing how to interpret the results of bronchoalveolar lavage (BAL) • Knowing how to evaluate and manage cases of possible BOOP-Broncholitis obliterans-organzing pneumonia	• Knowing how to carry out OTI • Knowing how to manage invasive ventilation • Knowing how to carry out BAL

• Selecting necessary and adequate cultural tests • Choosing the most appropriate specific and empiric antibiotic therapy for the common and critical patient • Carrying out monitoring and indications for follow-up			

Nosocomial pneumonia

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Carrying out prognostic stratification and evaluation of severity • Knowing how to opportunely carry out ''switching'' of therapy • Choosing the most appropriate specific and empiric antibiotic therapy on the basis of the institutional setting, and the age and condition of the patient: - Outpatient $<$ 40 yrs of age, immunocompetent - Patient $<$ 60 yrs of age, immunocompetent or with comcomitant pathologies - Patient $>$ 60 yrs of age or with comcomitant pathologies - Hospitalised patient - Patient in critical condition - Patient with structural pulmonary illnesses - Patient allergic to penicillin - Suspected aspiration • Selecting necessary and adequate cultural tests • Knowing how to carry out OTI • Choosing the most appropriate specific and empiric antibiotic therapy • Carrying out monitoring and indications for follow-up	• Choose the most appropriate aimed and empiric antibiotic therapy in critical patients	• Know how to interpret the results of bronchoalveolar lavage (BAL)	• Know how to carry out bronchoalveolar lavage (BAL) • Know how to manage invasive ventilation

Anaemia

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify anaemia in a patient, the classify the anaemia and its most frequent epidemiological causes • Knowing how to differentiate siderpenic anaemia from anaemia from chronic illness (ACD-anaemia of chronic disease) • Knowing how to identify comorbidities and important factors in determinism/ prognosis of anaemia • Managing admission and discharge of patients • Knowing the diagnostic testing necessary for the basic study of anaemia • Knowing how to carry out martial therapy (evaluation of iron requirement, martial state, absolute and/or functional lack of iron possible excess, evaluation of reserves, modalities of supplementation, etc.) • Knowing how to evaluate and manage the possible adverse complications/ reactions, ABO incompatibility correlated to haemotransfusion • Efficient utilisation of blood and haemoderivatives • Knowing how to manage the blood transfusion unit and the relative modalities on the basis of professional responsibility • Knowing how to manage assistance to terminal patients	• Knowing the most up-to-date indications and guidelines on the modalities for the prescription and administration of medications requiring specific procedures (e.g. antifungal, antiviral, monoclonal antibodies • Knowing how to select patients who are able to undergo EPO therapy • Directing patients to one of the following specialistic areas: lymphomas, leukaemia, multiple myeloma, myeloproliferative diseases, halogenic and autologous transplants, innovative cellular therapies • Treatment in internal medicine treatment, even in more complex cases and in multipathological patients • Diagnostic picture, even in more complex cases and in multipathological patients • Knowing how to differentiate the different forms available and the respective posologies of iron - oral formulation: ferrous fumarate, gluconate, sulphate, long-acting sulphate - Iv/im formulation: ferrous dextran, ferrous sucrose • Knowing how to interpret the results of lymphocyte typification • Knowing how to manage anaemia with the diagnostic hypothesis of myelodysplasia	• Knowing how to administer growth factors for the mobilisation of CSE and cellular reconstruction • Management of the following pathologies and complications: lymphomas, leukaemia, multiple myeloma, myeloproliferative diseases, halogenic and autologous transplants, innovative cellular therapies	• Reference for opinions on the management of complex and/or controversial cases in the sphere of one of the following specialistic areas: - lymphomas - leukaemia - multiple myeloma - myeloproliferative diseases - halogenic and autologous transplant - post-transplant immunosuppressive therapy • Evaluation of "*donor versus recipient*" chimerism after bone marrow transplant as a possibility of modulating post-transplant immunosuppressive therapy • Administration of high-dose chemotherapy and conditioning regimens • Knowing the indications for transplant for different pathologies • Knowing the methods of HLA typification methods • Knowing how to manage the modalities of infusion of peripheral/bone marrow stem cells

Myelodysplastic syndromes

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Know how to identify Myelodysplastic syndromes (MDS), their epidemiology, and primitive and secondary forms	• Knowing how to identify "isolated" anaemia of MDS, its characteristics, excluding possible secondary causes	• Knowing how to carry out bone marrow needle aspiration • Knowing how to quantify the percentage of blastic marrow cells	• Knowing how to select patients who are candidates for allogeneic bone marrow transplant

• Knowing the modalities of presentation of a Myelodysplastic syndrome • Knowing the indications for transfusional support (transfusion of erythrocytes and platelets) • Knowing the mechanism of action of recombinant erythropoietin (r-HU EPO) and therapeutic protocol (of attack and maintenance) • Know the indications and limits of the use of G-CSF and GM-CSF growth factors	• Knowing how to identify ''isolated'' platelet disorder of MDS, its characteristics, excluding possible secondary causes • Knowing how to diagnose Myelodysplastic syndromes on the basis of the diagnostic criteria of the Working Conference of Vienna on MDS: 1) ''indispensible'' criteria a) prolonged mono-or plurilinear cytopenia (^{3}6 mos) b) exclusion of other causes 2) ''decisive'' criteria a) mono-or plurilinear morphological dysplasia (evaluation on aspirated bone marrow) in at least 10% of cells (^{3} 15% for ring-shaped sideroblasts b) specific cytogenic anomalies • Knowing how to identify ''isolated'' leucopoenia of MDS (Myelodysplastic syndrome), its characteristics, excluding possible secondary causes • Knowing how to evaluate the entity of martial excess with direct and indirect methods	• Knowing the ''5q syndrome'' • Knowing the modality of iron chelation with deferoxamine (DFO), deferipron (L1), deferasirox and the therapeutic objectives on the basis of ferritin values	• Know how to evaluate the morphological anomalies in bone marrow preparations which are characteristic of diseritropoiesis (megaloblastosis, excess of E1-E2 precursors, nuclear fragmentations, internuclear bridges, chromatinic irregularities, cytoplasmatic vacuoles, ring-shaped sideroblasts), disgranulopoiesis (alterations of nuclear lobulatin, absence of granules in the cytoplasm, Pelger pseudoanomaly and dismegacariocytopoiesis (presence of micromegakaryocytes, small binucleate megakaryocytes, single non-lobate nucleus or multinuclearity • Knowing how to carry out a bone biopsy • Knowing the prognostic IPSS system (International Prognostic Scoring System) which, on the basis of the percentage of blastic marrow cells, the karyotypical characteristics and the number of peripheral cytopenia, attributes a risk score for each patient, with the identification of 4 principal classes (low risk, intermediate-1, intermediate-2 and high) • Knowing how to interpret the cytogenic study carried out on medullary blood, with evaluation of the risk classes: a) favourable, b) intermediate, c) unfavourable • Knowing the ''*WHO classification-based Prognostic Scoring System*'' (WPSS), which takes into account, the WHO classification, of the cytogenetics according to IPSS and transfusional requirements with the identification of 5 risk subgroups: very low, low, intermediate, high, very high • Knowing lenalidomide and its appropriate indications for MDS and possible collateral effects • Know azacitidine and methylating drugs, their appropriate indications for MDS and possible collateral effects

Venous thromboembolism

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify patients with suspected pulmonary embolism and/or TVP and knowing how to give indications for the various diagnostic methods (ecography, angio CT, pulmonary scintigraphy, arteriography) • Antithrombotic prophylaxis in surgical patients • Antithrombotic prophylaxis in orthopaedics Choosing unfractionated thrombolytic or heparin therapy in an emergency • Stratifying the risk for VTE (venous thromboembolism) in all hospitalised patients and implementing the prophylactic treatment indicated (medications, mechanical means and/or deambulation to reduce the risk for VTE • Determining the level of treatment required by the patient including the choice of a specific plan of anticoagulant therapy (medication, dose, target and duration), the eventual positioning of a vena cava filter and the eventual necessity of urgent treatment, such as thrombolytic therapy or invasive treatment (surgical embolectomy) • Antithrombolytic prophylaxis in medical patients • Choosing non-fractionated heparin or low molecular weight heparin, recognising the possible adverse effects • Predicting and treating the factors which complicate VTE or its treatment, such as cardiopulmonary insufficiency, bleeding and/or the lack of an anticoagulant response • Knowing how to manage infusion therapy with non-fractionated heparin • Antithrombolytic prophylaxis in obese patients	• Implement and manage fast circuits (''fast track'') for rapid access of the patient to ultrasonography for the diagnosis of venous thromboembolism • Antithrombotic prophylaxis in neurosurgery • Antithrombotic prophylaxis in pregnancy • Antithrombotic prophylaxis in fragile elderly people, long-term care and in oncological patients	• Manage the follow-up of oral anticoagulant therapy-OAT-over time • Know how to choose patients who are able to undergo positioning of a vena cava filter	• Manage the activity of venous ecography for VTE Manage the screening laboratory for VTE

• Knowing how to manage the check-up and therapy of platelet disorders from heparin (HIT-heparin-induced thrombocytopenia) • Choosing therapy with fondaparinux • Antithrombolytic prophylaxis in renal insufficiency • Choosing therapy with dicoumarol in the patients who are unsuitable candidates for OAT • Recognising platelet disorders from heparin (HIT) • Knowing how to correctly begin and manage the first phases of OAT and be able to choose alternative protocols in the case of absolute contraindication to anticoagulant therapy • Indicating the check-up and follow-up modalities • Indicating the modalities for follow-up, check-up and know how to furnish the patient with all the information necessary to prevent risk for interaction of the OAT with food and medication. • Knowing how to furnish indications for prevention • Knowing how to advise the patient on the behaviour to follow in cases of bleeding or small surgical interventions • Knowing how to carry out correct diagnostic/prognostic stratification of a pulmonary embolism and select, on the basis of this, the most appropriate therapy			

Diabetes mellitus

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Classifying the diabetes (DM) and explaining the physiopathological process which leads to hyperglycaemia, diabetic ketoacidosis (DKA) and non-ketotic hyperosmolarity (HHS) • Knowing the diagnostic criteria of diabetes, the classification and the ''pre-diabetic'' form • Knowing how to diagnose and treat diabetes ketoacidosis (DKA) and non-ketotic hyperosmolarity (HHS) • Carrying out a complete anamnesis with research of symptoms suggestive of an acute co-pathology which can influence glycaemic control, outpatient check-up of glycaemia, compliance with the therapy and social influences which can influence glycaemic control • Knowing how to evaluate the factors which influence the onset and control of diabetes • Carrying out an objective exam able to identify the precipitating causes of hyperglycaemia, DKA and HHS • Knowing how to evaluate the diagnostic and prognostic significance of hyperglycaemia when patient is admitted to hospital • Knowing how to manage infusion insulin therapy in critical patients • Identifying the glycaemic objective in the hospital patient and the rationale for strict control of glycaemia on morbidity and mortality • Facilitating the discharge plan for the hospital patient • Explaining the mechanism of action, indications and contraindications of the medications used for diabetes	• Screening of sensory-motor multineuropathy (Diabetic Neuropathy Index-DNI) • Ability to prescribe diagnostic-therapeutic protocols for the diabetic patient • Carrying out and interpreting tests for vegetative neuropathy • Facilitating the discharge plan of the hospital patient • Utilising, from the moment of admission, a multidisciplinary approach which can include a nurse, dietician, anti-diabetic centre and social services • Explaining the objectives of discharge and passage to safe treatment	• Knowing how to carry out screening, gestational diabetic diagnosis and management of diabetes in pregnancy • Organising, coordinating or participating in the development of guidelines and protocols for the optimisation of glycaemic control in hospital patients in various situations (patients with an ordinary hospital stay, and surgical and critical patients) • Organising, coordinating and participating in the development of guidelines and protocols for standardisation of the evaluation and treatment of DKA and HHS • Organising, coordinating or participating in the development of guidelines and protocols to develop the quality and efficacy of diabetes management with a multidisciplinary approach	• Knowing how to carry out examination of the ocular fundus with recognition of background or advanced retinopathy • Participating in a multidisciplinary team expert in treatment for diabetic foot

• Knowing the different types of currently used insulin, human regulatory insulin and analogous rapid action insulin, modalities of use, pharmacological characteristics (time of onset of action, maximum effect and duration of action) • Documenting a therapeutic plan and discharge instructions interacting with the physician responsible for the outpatient follow-up and eventual documentation with CAD (coronary artery disease) • Being able to choose quickly when to undertake insulin therapy in type 2 diabetic patients • Knowing how to manage water content and the electrolytic alterations caused by DKA and HHS • Regulating the pharmacological therapy in order to reach optimal glycaemic control, minimising collateral effects • Recognising and treating hypoglycaemia • Recognising the indications for evaluation by a specialist • Communicating with patients and family members to explain the history and prognosis of DM, possible long-term complications, prevention strategies, treatment objectives, adverse effects, diet, discharge plan, importance of glycaemic control and treatment of CV (cardiovascular) risk factors			

Management of patients with peripheral arteriopathy of the lower limbs (PAD = peripheral arteriopathy disease)

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Identifying patients at risk for PAD • Carrying out an objective exam with complete evaluation of peripheral pulse and eventual vascular murmurs • Knowing the natural history of the disease and its evolution • Knowing the stratification of PAD according to Fontaine	• Knowing the degrees and categories of Rutherford for staging the illness • Carrying out an ABI (Ankle brachial (pressure) index) index • Knowing and applying the Wagner and Texas University classifications for the stratification of vascular skin ulcers • Evaluating the results of the ABI index	• Identifying patients who are candidates for possible endovascular treatment	• Carrying out transcutaneous ossimetry • Carrying out AAII arterial echocolourDoppler • Carrying out a detailed training program for physical exercise (PAD AAII rehabilitation)

• Evaluating the risk factors which can cause AAII (arti inferiori) critical ischemia • Evaluating the results of angio CT • Recognising acute ischemia of the inferior limbs • Recognising critical chronic ischemia of the lower limbs • Early recognition of acute ischemia of the inferior limbs • Sending the patient to a specialist rapidly to evaluate carrying out revascularisation, thrombectomy, thrombolysis, etc. • Carrying out a differential diagnosis between the possible causes of trophic ulcers to the AAII • Evaluating the comorbidities (prevalently cardio-vascular) and the priorities correlated to them, identifying the patients at risk for CIN	• Knowing how to evaluate the results of arteriography • Evaluating the results of angio CT • Evaluating the results of angio MR • Early recognition of critical chronic ischemia of the lower limbs • Carrying out prostanoid/endoprost therapy • Identifying patients who are candidates for possible revascularisation treatment • Knowing how to evaluate global operative risk		

Management of patients with acute renal insufficiency - ARI

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Defining the clinical significance of prerenal, intrinsic and postrenal ARI, identifying, by means of a complete anamnesis (clinico-pharmacological), the factors which may have precipitated the ARI • Knowing the signs and symptoms of prerenal, intrinsic and postrenal ARI • Carrying out an objective examination to determine eventual water retention and identify eventual comorbidities causing ARI • Knowing the causes of prerenal, intrinsic and postrenal ARI • Knowing how to evaluate the diagnostic examinations and interpretations useful for studying ARI (urine, urinary sediment, protein urinary excretion, serologic and renal *imaging* evaluations)	• Knowing how to evaluate the RFI (Renal Failure Index) on the basis of data of urinary sodium in m/Eq/L, urinary creatinine in mg/dL and creatinemia in mg/dL • Prescribing an appropriate nutritional plan and coordinating proper metabolic intervention • Recognising when to consult a nephrologist and/or urologist • Monitoring water and electrolytic equilibrium • Starting prevention measures which include modifications in diet and posological adjustment of the medications used for the comorbidities • Adjusting the dose of medication to the and the velocity of excretion	• Program and manage a multidisciplinary approach which can include a nurse, dietician, pharmacist to identify patients who can benefit from early haemodialytic treatment • Communicate with patients and family members to explain the diagnostic procedures, their use and the potential collateral effects of the medications used • Know how to identify and manage patients at risk for nephrogenic systemic fibrosis (NSF)	• Carry out peritoneal dialysis • Provide for the preparation of vascular access for haemodialysis

• Communicating with patients and family members to explain the objectives of the treatment and the therapeutic measures to be continued at home • Indicating which clinical, laboratory and imaging exams to request for a correct picture of ARI • Communicating with patients and family members to explain the diagnostic procedures, their use and the potential collateral effects of the medications used • Knowing the electrolytic imbalances which occur in the course of ARI and knowing how to correct them • Calculating the correct glomerular filtrate for the correct adjustment of the posologies of the medications to be administered • Identifying the patients at risk for ARI and instituting the correct measures to avoid it • Knowing how to identify and manage patients at risk for nephropathy using contrast-induced nephropathy, also on the basis of the CIN (contrast-induced nephropathy) risk score • Identifying and treating the factors which can complicate the course of ARI, including arterial pressure and infections • Utilising the recommendations of EBM, and the protocols and risk stratification for the treatment of ARI • Knowing the indications and contraindications of suitable medications for the treatment of ARI • Knowing the indications for haemodialytic treatment	• Knowing which methods of iodate and non-iodate contrast mediums to avoid; recognising and avoiding nephrotoxic agents and, if necessary, knowing how to monitor renal function and the dosage of useful medications		

Management of patients with chronic renal insufficiency - CRI

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Rapid recognition of the presence of CRI; calculating the clearance of creatinine by means of the most current formula (Cockfort.Gault, MDRD (modification of diet in renal disease), CKD-Epi (chronic kidney disease epidemiology collaboration)) to estimate the FG Vol (fasting glucose volume), but also to recognise the limits of the formulas utilised • Knowing the modalities for evaluating proteinuria • Systematically searching for CRI in patients at risk: type 1 or 2 diabetes mellitus, arterial hypertension, CV illnesses (ischemic cardiopathy, heart failure, peripheral arteriopathy,cerebro-vascular disease), structural illness of the urinary tract (nephrolythiasis, prostatic hypertrophy, etc.), systemic diseases with possible renal involvement (e.g. systemic lupus erythematous (SLE), multiple myeloma), family-inherited history of renal illness • Evaluating the most appropriate antihypertensive medications for CRI • Knowing how to recognise patients at risk for drug dependent nephrotoxic damage • Monitoring renal therapy during treatment with ACE (angiotensin converting enzyme) inhibitors and Sartani • Recognising patients with CRI, anaemia and prognostically important comorbidities • Knowing how to manage the pharmacological therapy (non-use, intervals of drug administration, checking for possible adverse reactions) in relation to renal function (NSAIDS (non-steroid anti-inflammatory drugs), antibiotics, heparin, etc.)	• Knowing the stratification of the IRC according to the U.S. National Kidney Foundation Kidney Disease Outcomes Quality initiative (NKF-KDOQI) • Using the ACR ratio (albumin-creatinine ratio) correctly to identify proteinuria • Autonomously proposing the diagnostic protocol for diagnosing ischemic nephropathy • Knowing the pharmacokinetics of the principal medications for CRI • Knowing how to identify and manage patients at risk for nephrogenic systemic fibrosis (NSF)	• Evaluating urinary sediment • Evaluating the presence of a possible stenosis of the renal artery using diagnostic ecography and echocolourdoppler • Knowing how to predict possible recovery of renal function in the presence of ischemic nephropathy • Know the limits and indications for revascularisation • Predicting possible recovery of renal function in the presence of CIN • Evaluating asymptomatic urinary alterations • Evaluating and treating alterations of the calcium and phosphorous metabolism in patients with CRI • Managing renal osteodystrophy in adults with CRI	• Carrying out peritoneal dialysis • Evaluating asymmetry of renal volume using diagnostic ecography and echocolourdoppler • Providing for the preparation of vascular access for haemodialysis • Evaluating the presence of a possible stenosis of the renal artery using diagnostic ecography and echocolourdoppler • Managing haemodialysis in an emergency situation and/or in za critical area

• Identifying patients with anaemia and CRI who are candidates for therapy with EPO (eritropoietine) • Managing multitherapy and the possible pharmacological interactions regarding a possible nephrotoxic risk • Carrying out martial therapy (evaluation of need for iron, of the martial state, absolute and/or functional lack of iron, possible excess, evaluation of reserves, supplementation modalities, etc.) • Suspecting the presence of arterioschlerotic ischemic nephropathy • Identifying patients with suspected secondary arterial hypertension • Knowing how to identify and manage patients at risk for nephropathy by contrast-induced nephropathy, also on the basis of the CIN risk score • Utilising statins during the course of CRI • Know the prevention protocols of CIN • Selecting patients with CRI to go to a nephrologist for evaluation and specialistic treatment			

Management of patients with hydro-electrolytic imbalances - hyponatraemia

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing the distribution of intra-extracellular corporeal fluid (ICF-ECF) and the concept of plasmatic iso-hypo-hyperosmolality • Knowing how to identify the concepts of depletion of ECF, extra-cellular dehyration, intra-cellular hyperhydration, intra-cellular dehydration • Knowing how the quantity of sodium changes in various solutions (physiological solution 0.9%: 154 mEq/litre, hypertonic solution 3%: 513 mEq/litre; hypertonic solution 5%: 860 mEq/litre; hypotonic solution 0.45%: 77 mEq/litre) and use them appropriately	• Knowing how to recognise true hyponatraemia from ''pseudo-hyponatraemia'' • Knowing how to clinically differentiate between the forms of ''acute'' hyponatraemia and rapid onset (decrease in serum sodium of more than 1mEq/litre/hour) from those having a more gradual onset • Knowing the factors which influence sodiuria and urinary osmolality (U_{Na} and U_{osm}) • Knowing the importance of determining sodiuria (U_{Na} more than 20 mEq/litre) in cases of renal leak	• Knowing how to evaluate the presence of edema of the papilla (papillary stasis) • Knowing how to utilise the receptor antagonists of arginine vasopressin for the intravenous treatment of hypo-hypervolaemic natraemia in hospitalised patients (Vaprisol, knowing the posology, contraindications, pharmacological interactions and the possible ADR (adverse drug reaction)	• Managing haemo-filtration

• Knowing how to identify the concept of "free water" • Knowing how to identify the concept of "osmolarity" and apply the formulas to calculate plasmatic osmolarity • Know how to identify the concept of "effective blood volume" and knowing the physiopathology of the modifications of blood volume • Knowing the physiopathology of osmoregulation and regulation of circulating volume • Knowing how to identify hypotonic-isovolaemic hyponatraemia • Knowing how to distinguish between real lack of total sodium from a condition of water excess with normal total sodium from a situation of sodium excess with a greater excess of water • Knowing how to describe the possible causes of ECF depletion (renal and extrarenal loss) • Knowing how to identify hyponatraemia • Knowing how to differentiate the various forms of hyponatraemia: 1) hypertonic 2) isotonic 3) hypotonic: 3a. hypervolaemic 3b. isovolaemic 3c. hypovolaemic • Knowing the possible causes of hyponatraemia • Knowing the modalities of clinical presentation of hyponatraemia on the basis of the values of serum sodium (mEq/l) • Knowing the clinical signs of water intoxication • Knowing the clinical signs of dehydration • Knowing the causes of inappropriate secretion of ADH (antidiuretic hormone) (SIADH-syndrome of inappropriate antidiuretic hormone) and the possible therapeutic options	• Knowing how to calculate the quantity of sodium to infuse, using Adrogué's formula • Knowing how to differentiate rapid onset hyponatraemia from the "chronic" forms • Knowing how to set up therapy for hypotonic-hypervolaemic hyponatraemia • Knowing how to calculate the quantity of sodium multiplying the plasmatic sodium deficit (mEq/l) by the total corporeal water (litres) • Knowing how to evaluate the time of infusion and the velocity of correction • Know how to formulate therapy for hypotonic-hypervolaemic hyponatraemia • Knowing how to choose a suitable type of solution (hypertonic saline 3%) in the presence of convulsions or other acute neurological symptoms • Knowing how to recognise the picture of pontine myelinolysis following errors in the correction of sera sodium • Know how to manage hyponatraemia ARI • Know how to manage hyponatraemia in CRI		

• Knowing the causes of hypoaldosteronism and the possible therapeutic options • Managing hyponatraemia in an emergency			

Management of patients with hydro-electrolytic imbalances - hypernatraemia

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify hypernatraemia • Knowing how to recognise and manage the comorbidites/causes underlying hypernatraemia • Knowing how to manage the therapy for hypernatraemia in case of depletion of the effective circulating volume • Knowing how to identify the concepts of hypertonic osmolarity and cellular dehydration • Knowing how to describe the causes of hypernatraemia from water loss • Knowing how to differentiate hyperosmolar coma from other types of coma • Knowing how to describe the causes of hypernatraemia from hypotonic sodium loss (ECF depletion) • Knowing the formulas to manage hypernatraemia • Knowing how to describe the causes of hypernatraemia from hypotonic sodium and potassium loss • Knowing how to describe the causes of hypernatraemia from an excess of sodium infusion • Knowing the characteristics of the solutions to infuse in case of hypernatraemia • Knowing how to describe the characteristics of patients at greatest risk for hypernatraemia • Recognising the clinical manifestations of hypernatraemia • Managing hypernatraemia in an emergency	• Knowing the consequences and the adaptive responses to hypernatraemia on the CNS • Knowing how to manage correction of water deficit • Knowing how to manage therapy for hypernatraemia in case of depletion of the effective circulating volume • Knowing the formulas to correct water deficit • Knowing how to differentiate hypernatraemia from renal loss from that having extrarenal causes on the basis of U_{Na} and U_{osm}	• Knowing how to manage therapy for hypernatraemia in the presence of normal effective circulating volume • Knowing how to manage therapy for hypernatraemia in the presence of elevated effective circulating volume	

Management of patients with hydro-electrolytic imbalances — hypokalaemia			
Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify hypopotassaemia • Knowing the causes of pseudo-hypopotassaemia • Knowing the factors able to influence potassaemia • Recognising the ECG-graphic signs of hypopotassaemia on the basis of levels of kalemia • Knowing the possibilities of supplying nutrients and the principal sources • Knowing how to manage infusion therapy with potassium supplements on the basis of products based on the concentrated potassium salts available, such as, e.g. 1. potassium chloride 2mEq/ml vial 10ml 2. potassium lactate 2mEq/ml vial 10ml 3. potassium phosphate 2mEq/ml vial 10ml 4. K-IV1mEq/ml phial 10ml (potassium aspartate) 5. K-IV 3mEq/ml phial 10ml (potassium aspartate) • Knowing the causes of hypopotassaemia. • Knowing the symptoms and signs of hypopotassaemia • Knowing the effects of acidosis and alkalosis on serum potassium • Knowing the actions of the kidney on homeostasis of serum potassium, and the factors involved in the excretion of potassium • Managing hypopotassaemia in an emergency		• Knowing how to make an in-depth etiological diagnosis of hypopotassaemia on the basis of acid/base equilibrium (alkalosis/acidosis) and KU (Keggin unit) less than or greater than 25 mEq/day • Knowing how to correlate potassaemia measured using the pH of the patient • Knowing how to recognise refractory cases of hypopotassaemia (associated with hypomagnesium plasma levels/ hypomagnesaemia) • Knowing how to differentiate Gitelman's syndrome (familial hypokalemia-hypomagnesaemia with metabolic alkalosis in association with significant hypomagnesaemia and a decrease in calcium urinary secretion) from other forms (e.g. Bartter type 3)	

Management of patients with hydro-electrolytic imbalances — hyperkalaemia

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify hyperpotassaemia and its causes • Knowing the factors able to influence potassiaemia • Knowing the effects of acidosis on serum potassium • Knowing how to manage emergencies and acute hyperpotassaemia, with kalemia $>$ 6.5 mEq/l • Knowing the actions of the kidney on homeostasis of serum potassium • Knowing the factors involved in the excretion of potassium • Knowing how to manage the initial medical treatment for hyperpotassaemia	• Knowing the causes of ''pseudo-hyperpotassaemia • Recognising the ECG-graphic signs of hyperpotassaemia on the basis of kalemia levels	• Knowing how to manage tumour lysis syndrome	• Providing for the preparation of vascular access for haemodialysis • Managing haemodialysis in an emergency situation and/or in a critical area

Management of patients with hydro-electrolytic imbalances — hypomagnesaemia

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing the physiopathology of magnesium, its balance (absorption, excretion), daily need (RDNR) and its concentration in nutrients and its principal sources • Knowing how to identify hypomagnesaemia and its causes • Knowing how to identify the iatrogenic causes of increased urinary loss of Mg • Knowing the symptoms and signs of hypomagnesaemia • Knowing how to manage emergencies with magnesaemia $<$ 1.2 md/dl: tetany, malignant arrythymias, convulsions	• Knowing how to utilise infusions of MgSO4	• Knowing how to diagnose Gitelman's syndrome (see above: hypopotassemia)	

Management of patients with hydro-electrolytic imbalances — hypermagnesaemia

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing the physiopathology of magnesium, its balance (absorption, excretion), daily need (RDNR-recommended daily nutritional requirements) and its concentration in nutrients and its principal sources • Knowing how to identify hypermagnesaemia and its causes • Knowing the symptoms and signs of hypermagnesaemia	• Knowing how to diagnose Gitelman's syndrome (see above: hypopotassemia • Knowing how to utilise iv infusion of calcium to antagonise respiratory depression while waiting for haemodialysis	• Knowing how to manage therapy for serious intoxication from Mg with circulatory and respiratory support	

Management of patients with hydro-electrolytic imbalances — hypophosphoraemia

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing the physiopathology of phosphorus, its balance (absorption, excretion), daily need (RDNR) and its concentration in nutrients and its principal sources • Knowing how to identify hypophosphataemia and its causes • Knowing the clinical manifestations and consequences of hypophosphataemia on the mitochrondrial metabolism, the oxidative phosphorylation and the dissociation of haemoglobin	• Knowing how to manage the therapy for acute hypophosphataemia • Knowing how to manage the therapy for chronic hypophosphataemia		

Management of patients with hydro-electrolytic imbalances — hyperphosphoraemia

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing the physiopathology of phosphorus, its balance (absorption, excretion), the factors regulating intestinal absorption, daily need (RDNR) and its concentration in nutrients and its principal sources • Identifying hyperphosphataemia and knowing its causes • Differentiating the acute forms from the chronic forms	• Knowing the causes of ''pseudo-hyperphosphataemia'' from haemolysis • Knowing how to treat hypocalcaemic tetanic crises from acute hyperphosphataemia • Knowing how to identify dietetic restrictions and therapy with P chelating agents	• Identifying and calculating the product of solubility between Ca+ and P • Knowing how to manage tumour lysis syndrome	

• Knowing the clinical manifestations and consequences of hyperphosphataemia on the myocardium and the cardiac valves (arrythymias and valvulopathies), vessels (digital gangrene), intestine, kidney (worsening of interstitial damage and function)			

Management of patients with alterations of the acid/base equilibrium

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify acid, base, buffer • Indicating the possible causes of increase in or loss of H^+ • Identifying haematic pH and its normal values, hydrogen ionic concentration and its normal values, the concepts of acidaemia and alkalaemia, the CO_2/HCO_3^-ratio, the concept of acidosis and alkalosis • Describing the consequences of acidaemia $<$ 7.38 on the organism • Describing the buffers (bicarbonates, phosphates, protein, haemoglobin (Hb)) • Describing the consequences of alkalaemia $>$ 7.42 on the organism • Describing the normal process of secretion of CO_2 (ventilation, diffusion, perfusion) • Recognising the symptoms and clinical signs of a state of acidosis • Describing the role of the respiratory system and the kidney in the acid-base equilibrium • Recognising the symptoms and clinical signs of a state of alkalosis • Identifying the concept of anionic gap and its determinants (anions-cations) • Identifying the concept of ''expected compensation'' (or ''predicted'') • Classifying acidosis and alkalosis on the basis of pH, HCO_3^-, pCO_2 levels	• Describing the significance of Henderson's equation and the Henderson-Hasselbach variant • Knowing how to calculate the ''expected compensation'' (or ''predicted'') • Knowing how to calculate the bicarbonates necessary to obtain clinical compensation • Knowing how to calculate the alkalisers necessary to obtain clinical compensation		

• Identifying the concept of compensated/ uncompensated acidosis and alkalosis • Knowing the indications and contraindications for the use of bicarbonates • Knowing the indications and contraindications for the use of other alkalisers			

Management of patients with alterations of the acid/base equilibrium — metabolic acidosis

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify metabolic acidosis • Knowing the principal causes of metabolic acidosis • Knowing how to manage ketoacidotic diabetic coma • Knowing how to identify the concept of lactic acidosis and lactacidaemia • Knowing how to recognise mixed pictures	• Knowing how to manage the principal causes of metabolic acidosis, such as e.g. - uremic acidosis from advanced CRI - diabetic ketoacidosis - lactic acidosis - intoxication from methyl alcohol, paraldehyde, ethylene, salicylate - alcoholic ketoacidosis - overdose of iron • Knowing how to manage therapy with sodium bicarbonate • Knowing how to differentiate patients who are candidates for conservative therapy from those who require intensive/nephrological/dialytic intervention • Knowing how to manage hyperlactacidaemia and lactic acidosis	• Knowing how to classify the forms of metabolic acidosis with a normal anionic gap - light-moderate CRI - gastrointestinal loss of HCO3 (acute profuse diarrhoea) - type 1 distal renal tubular acidosis - type II proximal renal tubular acidosis - dilutional acidosis - treatment of diabetic distal renal tubular acidosis • Knowing the causes of hyperlactacidaemia and lactic acidosis according to Cohen and Woods	

Management of patients with alterations of the acid/base equilibrium — respiratory acidosis

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify respiratory acidosis • Knowing how to differentiate the patients who are candidates for non-invasive therapy from those who require intensive treatment • Knowing the principal causes of respiratory acidosis	• Knowing how to differentiate the patients who are candidates for non-invasive therapy from those who require intensive treatment • Knowing how to apply the Kelly-Matthay Scale to evaluate the neurological state of patients with respiratory insufficiency	• Knowing how to carry out NIV (non-invasive ventilation)	• Knowing how to apply an extra-glottic devices • Knowing how to carry out orotracheal intubation • Knowing how to manage a ventilator

• Know how to arrange the allocation of the patient (best place for treatment) on the basis of pH values and state of awareness - > 7.35 - 7.35-7.30 - < 7.35, vigilant patient - < 7.25 and/or alteration of neurological state • Knowing how to recognise mixed pictures			

Management of patients with alterations of the acid/base equilibrium — metabolic alkalosis

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify the concept of metabolic alkalosis • Knowing how to manage the therapy (inhibiting acid loss, restoring extracellular volume with NaCl solutions, reintegrating hypopotassaemia/hypokalemia • Knowing the principal causes of metabolic alkalosis • Knowing how to recognise mixed pictures			

Management of patients with alterations of the acid/base equilibrium — respiratory alkalosis

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify respiratory alkalosis • Knowing the principal causes of respiratory alkalosis	• Knowing how to treat the underlying causes • Knowing how to manage re-breathing		

Management of hospital patients with malnutrition

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify malnutrition, undernutrition • Knowing the consequences of fasting and undernutrition • Knowing how to carry out rapid selection of patients at risk for malnutrition and know the screening tests	• Knowing how to differentiate decline/decay, kwashiorkor, lack of micronutrients, PEM (protein energy malnutrition) • Know how to use screening tests: - MUST (Malnutrition screening tool): community	• Knowing how to apply the Nutritional Risk Index (NRI = (1.489 x serum albumin (g/L) + 41.7 x (current weight/normal weight) • Knowing how to calculate the BEE (Basal Energy Expenditure) with the Harris-Benedict equation	• Knowing how to carry out specific functional tests: - muscular function (dynamometry, etc.) - respiratory muscular function (spirometry, etc.) - mood and mental function (mood score, etc.)

• Knowing how to carry out a specific anamnesis • Knowing how to calculate the BMI and evaluate the results (in excess and in deficit) • Knowing how to recognise the clinical signs of malnutrition on the basis of the deficit of individual macro/ micronutrients/vitamins, etc. • Knowing how to research and interpret laboratory data for the evaluation of malnutrition • Knowing the underlying ethical aspects of the topic of artificial nutrition	- NRS (Nutritional Risk Screening): hospitalised patients - MNA (Mini Nutritional Assessment): elderly people • Knowing how to carry out a 24h/7day alimentary anamnesis • Knowing how to calculate water requirement • Knowing how to classify dysphagia and give indications regarding type and modality of alimentation • Knowing how to carry out the *water swallow test* (3 spoons and a glass) and evaluate the dysphagia according to levels of severity • Knowing how to evaluate anthropometric data for a clinical-prognostic judgment • Planning a program of assistance • Planning diet therapy on the basis of the basic pathology • Selecting the patients who require artificial nutritional support • Selecting the patients who are candidates for alimentation with a nasogastric probe • Prescribing enteral artificial nutrition • Selecting the patients who are candidates for PEG (percutaneous endoscopic gastrotomy)	• Knowing how to calculate and prescribe the daily caloric requirement subdivided by marcronutrients • Knowing how to calculate and prescribe the vitamin requirement • Prescribing and managing PEG • Knowing how to recognise the pathological conditions requiring an increased caloric, water, proteic, micronutrient (vitamin, oligoelement, electrolyte) requirement • Knowing the indications of MCT (medium chain triglycerides) and branched aminoacids • Prscribe parenteral nutrition • Manage the follow-up of patients on TEN-TPN (total enteral nutrition-total parenteral nutrition)	• Knowing how to insert a CVC (central venous catheter) for total parenteral nutrition

Management of hospital patients with nodular pathologies of the thyroid

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Classify the problems from a diagnostic point of view	• Managing the problems together with other specialists • Knowing how to identify the most suitable therapeutic solutions • Knowing how to identify patients who are candidates for surgery	• Managing the diagnostic path autonomously	• Carrying out echo-ultrasonographic investigations directly • Carrying out echo-ultrasonographic and bioptic investigations directly • Carrying out some therapeutic techniques, such as alcoholisation, ablative therapy with laser or thermofrequency

Management of hospital patients with thyroid dysfunction

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to classify the problems from a diagnostic point of view and formulate standard therapy	• Interpreting "ambiguous" laboratory pictures	• Formulating and managing unusual treatments for particular situations • Managing patients thyroidectomised for thyroid neoplasias	• Managing Basedowian ophthalmopathy

Management of hospital patients with hepatic cirrhosis

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify hepatic cirrhosis, its various forms, underlying causes, portal hypertension and its physiopathology • Routinely using the Child-Turcotte-Pugh score • Recognising the general characteristics of the cirrhotic patient from a clinical-semeiological point of view: muscular hypotrophy, palmar erythema, spider nevi, caput medusa, flapping tremor • Knowing how to carry out screening of the possible etiopathogenesis of cirrhosis: ET_OH (alcohol and alcohol abuse) dependent, post viral HCV (hepatitis C virus), HBSAg (hepatitis B surface antigen), occult HBV (hepatitis B virus) mocromatosic (hyperferritinemia, percentage of saturation of transferrin), autoimmune (autoantibodies, hypergammaglobuminaemia), M. Wilson (deficit of ceruloplasmin and hypercupremia, from deficit of alpha 1 antitrypsin, post-NASH, post-iatrogen (antituberculotic)	• Knowing how to manage portal hypertension and the esophageal varices complicated by bleeding with pharmacological therapy: glypressin, somatostatin, octreotide • Knowing how to evaluate the significance of measurements such as autoantibodies: - antinuclear (ANA) - smooth muscle (SMA) - liver-kidney microsomal (LKM) - anti-mitochondrial (AMA) and genetic tests (C282 Y // H 63 D) • Knowing how to carry out screening of sensory-motor polyneuropathy • Knowing how to carry out therapy for primary biliary cirrhosis (PBC) and primary schlerosing cholangitis (PSC) • Knowing how to manage refractory ascites • Organising and managing direct haemodialysis outpatient follow-up • Facilitating the discharge plan immediately from the start of the hospitalisation	• Utilising the METAVIR fibrosis score and Ishak Index • Giving indications for a transjugular intrahepatic portosystemic shunt (TIPS) • Knowing how to carry out the positioning of a Sengstaken-Blakemore probe as a buffer measure before a new attempt at endoscopic therapy or a radiological portosystemic derivative operation (TIPS) or surgery • Organising, coordinating or participating in the development of guidelines and protocols for the prevention of neoplastic disease in the cirrhotic patient	• Carrying out fine needle aspiration and/or echo-guided microbiopsies and/or ablations with ecography • Carrying out hepatic ecography with contrast medium • Carrying out emergency/elective endoscopic exams • Knowing how to manage antiviral therapies • Managing a varicose haemorrhage with sclerosis/ligature • Carrying out the follow-up of liver transplanted patients • Choosing and formulating interventional radiological therapy by TIPS positioning in untreatable ascites or in the recurrence of bleeding in the upper digestive tract • Knowing how to manage bleeding from varicose haemorrhage with early TIPS if HVPG (hepato poral venous gas) $>$ 20 mmHg or high clinical risk • Determining the timing for sending the patient for liver transplantation • Clinical choice between the known options of treatment for evolutive hepatic neoplastic diseases such as:

• Clinically differentiating compensated from uncompensated cirrhosis by semeiological evidence of endoabdominal effusion and/or right hydrothorax, scrotal edema and bilateral lower limb edema • Managing the possible complications of uncompensated cirrhosis such as: recurrent encephalopathy, type 1 and 2 hepatorenal syndrome, spontaneous bacterial peritonitis, electrolytic disequilibrium (hypoatraemia, hypopotassemia), relapsing right hydrothorax (thoracentesis and/or proposition of pleural talc), hepatopulmonary syndrome, primary liver cancer • Knowing how to carry out programming outpatient follow-up by carrying out biochemical tests quarterly (including the termination of alphaphetoprotein) and abdominal ecography semi-annually for the prevention of primary hepatic neoplasias • Recognising the proteic synthesis deficit of the cirrhotic organ with evidence of hypoalbuminaemia, hypocholesterolaemia, hypotransferrinaemia, hypoprothrombinaemia or increase in the INR (International Normalised Ratio) • Formulating diuretic and osmolar therapy which does not negatively affect renal function and the activity of the superior neurological sphere • Documenting the therapeutic plan and the discharge instructions, interacting with the physician responsible for the outpatient/hospital follow-up and/or the family doctor • Carrying out evacuative and exploratory paracentesis • Knowing the precipitating factors of decompensation in the cirrhotic patient such as diuretics, dehydration, sepsis, alcohol, etc.			PEI (pancreatic exocrine insufficiency) (alcoholisation), PAI (percutaneous acetic acid injection), TACE (transarterial chemoembolisation), TAE (transarterial embolisation), laser therapy, RF (radiofrequency), radioactive 131/ transarterial LIPIODOL

Management of hospital patients with gastrointestinal bleeding

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing the etiopathogenetic and physiopathological aspects • Obtaining a specific anamnesis (including pharmacological) and carrying out an objective exam aimed at possible etiological pictures • Knowing the principal differential diagnoses regarding bleeding in the upper and lower GI tract • Requesting diagnostic and monitoring evaluation tests • Knowing how to carry out insertion manoeuvre of a nasal-gastric probe • Recognising the patients at high risk for complications and who require aggressive therapeutic intervention • Knowing the mechanism of action and the indications for the medications to use • Giving indications for transfusional support and its repetition • Recognising the clinical conditions which make specialistic consultation necessary, interacting with the respective medical specialist • Insuring adequate venous access and being able to carry out the manoeuvres of haemodynamic stabilisation where necessary • Giving indications for insertion of a nasal-gastric probe and carrying out gastric lavage • Planning discharge, favouring institutional continuity • Recognising the signs and symptoms indicative of instability of the clinical picture • Recognising the clinical conditions of stability and of possible discharge of the patient and/or transfer to another institutional setting • Activating preventive measures to avoid episodes of GI bleeding or possible recurrences	• Organising assistance for patients with the greatest risk for with recurring episodes of GI bleeding • Proposing risk scores to identify the patients with a serious prognosis • Evaluating the advantages/ disadvantages relative to medical-pharmacological, endoscopic and surgical treatment • Procedures for diagnosis and methodologies of treatment of possible accompanying coagulopathies • Carrying out a clinico-laboratory and imaging technique synthesis in order to formulate a comprehensive treatment plan (pharmacological, nutritional, endoscopic and surgical) • Activating a multidisciplinary approach involving specialist and specialised staff • Knowing the indications (occult gastrointestinal bleeding with EGDS (esophagogastroduodenoscopy) and negative colonoscopy, Crohn's disease, NSAID **(**Non-steroid anti-inflammatory drug**)** polyps of the small intestine, neoplastic pathology, chronic diarrhoea of unknown origin) and the contraindications of the application of a videocapsule (occlusion or pseudo-occlusion of the alimentary tract, notable stenosis of the gastrointestinal tract, pregnancy, past major abdominal surgery (relative), intestinal motor pathology, swallowing, Zenker's diverticulum)	• Knowing how to classify congestive gastropathy according to NIEC (North Italian Endoscopic Club) • Knowing how to classify esophageal/ gastric varices according to NIEC (North Italian Endoscopic Club) and Sarin • Knowing how to identify haemorrhagic risk on the basis of some elements, such as: - WHVPG $<$ 10-12 mm Hg (Wedged hepatic venous portal gradient - size of the varices - esophagitis - red signs - haematocysts - varice on varice - stage of the cirrhosis - recent NSAID bleeding • Coordinating/participating in a multidisciplinary team ivolved in the management of GI bleeding • Knowing how to carry out the positioning of a Sengstaken-Blakemore probe as a buffer measure before a new attempt of endoscopic therapy, or a derivative porto-systemic radiological (TIPS) or surgical intervention • Actively coordinating/participating in the writing of guidelines and institutional paths to render assistance to patients with GI bleeding efficient and efficacious • Participate in initiatives to improve the quality of efficacious prevention, early recognition and reduction of possible complications • Periodic reporting of the updating of the scientific literature on the topic	• Carrying out manoeuvres of digestive endoscopy, also urgently, for the treatment of acute GI bleeding • Managing a varicose haemorrhage with sclerosis/ligature • Knowing how to manage bleeding from a varicose haemorrhage with early TIPS if WHVPG > 20 mmHG or other high clinical risk

Management of patients with acute pancreatitis (AP)

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Classifying AP on a prognostic and etiological basis • Knowing the physiopathology of hyperamylasaemia/lipasaemia, SIRS, MOF and sterile and infected pancreatic necrosis • Carrying out a complete anamnesis with research of symptoms and relevant signs for a differential diagnosis • Knowing the causes of non-pancreatic hyperamylasaemia • Knowing and managing biliary AP (hematic indices, carrying out ultrasound, MRCP (Magnetic resonance cholangiopancreatograph), ERCP (Endoscopic retrograde cholangiopancreatography) +PST (Papilla sphincterotomy)) • Carrying out an objective exam able to identify the prognostic signs of severity (plural effusion, tachycardia, hypertension, mental confusion, etc.) • Knowing the indications for the management of Intensive Care Units • Knowing the clinical conditions which make specialistic consultation necessary, interacting with the respective medical specialist • Knowing the mechanism of action and indications, contraindications of the medications used (i.v. fluids, gabexate mesylate, octreotide/somatostatin, antibiotics)	• Knowing the essential signs of severity (pleural effusion, renal insufficiency, elevation of PCR (polymerase chain reaction), etc.) • Knowing the significance of phlegmon, sterile and infected necrosis, pancreatic cysts and pseudocysts, and identifying cases of hereditary AP • Knowing the trigger role of trypsinogen • Learning the role of cytokines, antiproteases, macrophages • Diagnosing the occult causes of AP (biliary microlithiasis, Oddi dyskinaesia, tumours, congenital alterations (pancreas divisum), etc.), medications • Identifying macroamylasaemia with amylase/creatinine ratio • Knowing chronic benign pancreatic hyperamylasaemia • Knowing the risk factors of post-ERCP AP • Knowing the role and significance of the dynamic US/MR secretin test • Defining the composition of the diet • Knowing the pharmacokinetics of the principal medications for the treatment of AP	• Learning and applying the Atlante, Ranson, Glasgow and APACE II criteria and the BISAP (bedside index) • Understanding the variations over time of pancreatic enzymes and the PCR • Knowing the role and significance of the dynamic US/MR secretin test • Using other severity indices (IL-6, TAP (Trypsin Activation Peptide), procalcitonin, etc.) • Knowing the criteria of Balthazar for the classification of AP, according to CT alterations. Managing ARDS (Acute respiratory distress syndrome), septic necrosis, nutritional support by means of enteral nutrition	• Practicing fine needle aspiration of fluid collections and correlated exams • Managing the critical patient in a specialised unit

Management of patients with chronic pancreatitis (CP)

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Classifying CP on an etiological basis • Differentiating the recurring form from AP • Recognising the signs of advanced disease (diabetes, steatorrhea) • Knowing the parenchymal anatopathological alterations, including pancreatic cysts and pseudocysts • Knowing the physiological processes which lead to steatorrhea and diabetes • Obtaining a complete anamnesis searching for risk factors, symptoms and relevant signs in order to make a differential diagnosis • Recognising and managing obstructive and autoimmune alcoholic CP • Carrying out an objective exam able to identify signs of malabsorption and complications • Recognising the clinical conditions which make specialistic consultation necessary, interacting with the respective medical specialist • Knowing the mechanism of action, indications and contraindications of the medications used (analgesics, pancreatic extracts, octreotide/somatostatin, antidiabetic) • Explaining to the patient and family members the prognosis of CP, possible short- and long-term complications, strategies to prevent recurrences, treatment objectives, their adverse effects, diet, discharge plan, treatment of risk factors	• Knowing the mechanisms of pancreatic damage from alcohol, tobacco and obstruction, and the processes of autoimmunity • Knowing the formulations of the medications for treating steatorrhea • Optimally managing secondary diabetes, avoiding hypoglycaemia • Measuring the quality of life of the patient with CP and promoting improvement through counselling • Investigating the occult causes of CP (biliary microlithiasis, Oddi dyskinaesia, tumours, congenital alterations (pancreas divisum), etc.) • Recognising "painless" CP (evaluation of blood levels, US, CT, EUS, MRCP, functional tests) • Knowing the significance of the tubeless test • Knowing therapeutic endoscopic procedures (stent, PST, stone removal, etc.) • Interpreting the results of diagnostic imaging (ultrasonography, spiral CT, MRCP, etc.) • Knowing the various surgical techniques and their indications • Choosing the composition of a diet for the CP patient	• Diagnosing all the minor forms (autoimmune CP, tropical CP, hereditary CP) • Recognising the forms of secondary pancreatic insufficiency (from diabetes, IBD (Inflammatory bowel disease), celiac disease, endocrinopathy, etc.) • Knowing the role of trypsinogen, antoproteases, the genetic polymorphism of CFTR (Cystic fibrosis transmembrane conductance regulator) mutations, endoluminal digestion of lipids, liposoluble vitamins, proteins and saccharides • Interpreting chronic pancreatic hypermilasaemia • Knowing the role and significance of the dynamic US/MR secretin test • Knowing the breath test with tagged liquids • Knowing the fecal tests for the diagnosis of steatorrhea • Giving the differential diagnosis of pancreatic cystic formations • Managing abdominal pain with analgesics and knowing the indications for neurolytic therapy	• Carrying out fine needle aspiration of pseudocysts and correlated exams

Fever of unknown origin - FUO

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to document the course of fever, including the capacity to verify *factitious* fever • Knowing how to identify FUO • Knowing the possible underlying etiologies for the various forms of FUO (classic, nosocomial, neutropenic and HIV(human immune deficiency virus)-associated) • Recognising the possible causes of FUO • Knowing how to recognise the conditions of immune impairment • Obtain an accurate anamnesis, aimed at the etiological diagnosis of FUO • Carry out an adequate physical exam in the case of an FUO • Proposing carrying out cultural exams (blood culture and especially urine culture) early, at admittance to hospital, before starting antibiotic therapy • Planning first level investigations for the diagnosis of FUO • Appropriately proposing second level diagnostic investigations for the etiological diagnosis of FUO	• Defining FUO in the various forms described (classic, nosocomial, neutropenic and HIV-associated) • Involving the patient and family members in the diagnostic challenge of FUO, with a systematic, gradual and progressive approach of the necessary diagnostic investigations • Classifying the possible diseases underlying FUO in travellers returning from tropical countries • Eventually appropriately involving the other specialists necessary for managing the patient, since the multiplicity of causes of FUO often requires a multidisciplinary approach (laboratory, haematologist, rheumatologist, pneumologist, infectious diseases, neurologist, surgeon, etc.) • Recognising the possible conditions correlated to reactivation of a tubercular process or to latent tuberculosis • Knowing how to recognise suspected cases of acute meningitis • Knowing how to recognise suspected cases of acute/subacute encephalitis • Recognising the causes of FUO associated with splenomegaly • Recognising the causes of FUO associated with neutropenia • Knowing how to interpret the study of lymphocytic subpopulations • Knowing how to correlate the requirements of diagnostic imaging (thoracic CT, abdominal (including the pelvis), abdominal-pelvic CTwith contrast medium, scintigraphy with radio-Gallio 67 scan, scintigraphy with indium-labelled leucocytes, scintigraphy with Tc 99m, NMR, PET-CT scan, transthoracic or transesophageal echocardiography, echocolourdoppler) in patients with FUO with other possible underlying diagnoses		• Directly carry out transthoracic echocardiography • Directly carry out echosonographic investigations for a first level approach to FUO (privilege) • Directly carry out an osteo-medullary biopsy

Management of Patients with Sepsis

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing the etiopathological and physiopathological aspects • Obtaining a complete anamnesis (including pharmacological) and carrying out an objective exam specific for possible etiological pictures • Managing treatment with dobutamine • Recognising the principal differential diagnoses, such as SIRS, severe SEPSIS, SEPTIC SHOCK • Requesting tests for diagnostic and monitoring evaluation • Carrying out a prognostic risk stratification by means of knowledge of specific scores (SOFA-Sepsis-related organ failure assessment) • Knowing the mechanism of action and the indications of the medications to use • Knowing the clinical conditions which make immediate transfer to intensive or haemodynamic care necessary, interacting with the relative medical specialist (e.g. septic shock) • Knowing the principles and techniques of oxygenation of the patient • Calculating the ratio between PaO2 and FiO2 and knowing the significance of the relative cut-off points • Insuring adequate vein access and knowing the principles for the restoration of correct blood volume • Managing therapy normalise the metabolic parameters (transfusions of concentrated red blood cells, eventual treatment with dobutamine • Knowing the metabolic parameters of sepsis and the prognostic significance of the laboratory exams (e.g. lactic acidemia, procalcitonin) • Planning discharge, favouring institutional continuity	• Evaluating the relative advantages/ disadvantages relative to pharmacological and invasive treatment • Rapidly identifying patients with septic shock and treating them in an aggressive manner while they are hospitalised in intensive care units. Evaluating cardiorespiratory stability and implementing an aggressive restoration of liquids, maintaining patent airways and circulation support • Concluding the correction of hypovolaemia. Knowing the risk scores in order to identify the patients with a severe prognosis (e.g. SOFA) • Knowing the procedures for diagnosis and the methodologies for treating possible complications • Making a clinico-laboratory and imaging technique synthesis in order to formulate a complete diagnostic plan aimed at specific complications	• Supporting, coordinating and participating in the development and promotion of guidelines and paths which facilitate an efficacious and rapid evaluation and treatment of patients with sepsis • Actively coordinating/participating in local implementation of guidelines and institutional paths in order to render assistance to patients with sepsis efficient and efficacious • Participating in initiatives for the improvement of the quality of efficacious prevention, early recognition and reduction of possible complications • Periodic reporting of the updating of the scientific literature on the topic	• Inserting and managing the use of PICC and Midline venous catheters

• Recognising the signs and symptoms indicative of instability of the clinical picture • Comprehensively managing the medication for sepsis together with eventual other medications for specific chronic pathologies of the patient • Knowing the principles and technique for searching for pathogens • Knowing the principles, techniques and checks which permit correct suspension of the antibiotic therapy • Recognising the clinical conditions of stability and possible discharge of the patient and/or transfer to another institutional setting • Communicating to the patient and family members the etiological aspect, the prognosis, the diagnostic and therapeutic indications and the follow-up program, requesting the relative informed consent			

Management of Patients with depression

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify depression with a simple anamnestic approach • Knowing how to recognise the symptoms of depression with their corresponding levels of severity: - subthreshold depression symptoms - light depression - moderate depression - severe psychotic-associated depression symptoms • Knowing how to carry out a complete evaluation of the duration of the symptoms and illnesses and/or associated disabilities • Knowing how to recognise depressed patients on the basis of the socio-economic context and associated comorbidities	• Knowing how to identify the symptoms of depression with the following severity levels: - subthreshold depression symptoms - light depression - moderate depression - severe psychotic-associated depression symptoms • Knowing how to consider possible underlying metabolic causes in the depressed adult patient (calcium or magnesium alteration) • Knowing how to classify depression disturbances according to the DSM IV (Diagnostic and Statistical manual of Mental Disorders) and the ICD-10 (International classification of Diseases)	• Knowing and applying the MARDS Scale (Montgomery-Åsberg Depression Rating Scale) for identifying patients at risk for suicide • Knowing how to recognise a pseudo-depressive condition of dementia • Knowing how to describe the mechanisms of action of the following medications: - tricyclics and their derivatives - MAOI (Monoamine oxidase inhibitors - SSRI (Selective serotonin reuptake inhibitor) - NARI (Noradrenaline reuptake inhibitor) - NSRI (Noradrenaline and seratonin reuptake inhibitor) (venlafaxin; Alpha 2 antagonists (mirtazapine) - NASSA (Noradrenergic and specific serotoninergic antidepressants)	

• Knowing how to recognise patients with chronic illnesses potentially causing and/or caused by depression • Knowing how to recognise the cases which can be treated without a psychiatrist • Knowing how to recognise the cases which have to be sent to a psychiatrist	• Knowing how to recognise patients at risk (and vice versa in protective conditions) of self-injurious and suicidal acts	- Others: Trazodone, Nefazodone, Miansein St. John's Wort, S. Adenosylmethionine (SAME), amisulpride	

Management of Patients with delirium

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to identify delirium according to DSM IV 7 (Diagnostic and Statistical manual of Mental Disorders) • Knowing the etiopatho-genetic and physiopathological of delirium and formulating basic therapy • Knowing how to identify the causes of delirium according to an etiological approach, e.g.: "VINDICATE": *Vascular, Infections, Nutrition, Drugs, Injury, Cardiac, Autoimmune, Tumours, Endocrine* • Knowing how to obtain a complete anamnesis (including pharmacological) and carrying out an objective exam aimed at possible etiological pictures • Recognising the principal predisposing conditions (dementia, pharmacological therapy, systemic illnesses, postoperative, etc.) • Knowing which diagnostic evaluation and monitoring tests to request • Knowing how to stratify prognostic risk by means of knowledge of specific scores (Confusion Assessment Method (CAM)) • Knowing the mechanism of action and the indications of the medications to use • Knowing how to recognise the clinical conditions of stabilisation and possible discharge of the patient and/or transfer to another institutional setting	• Knowing how to identify and correct the causes of postoperative delirium: perisurgical cerebral hypoxia, arterial hypotension, surgical stress, use of narcotic drugs with anticholinergic activity, postsurgical pain, hydro-electrolytic alterations • Knowing how to propose and apply risk scores to identify patients at high risk • Evaluating the relative advantages/disadvantages of treatment • Knowing the procedures for diagnosing and the methodologies of treatment for the possible complications of delirium • Knowing how to carry out a clinico-laboratory and imaging technique synthesis in order to formulate a comprehensive treatment plan • Knowing how to activate measures for the prevention of delirium: avoiding, as much as possible, the use of at-risk medications [antidepressive tricyclics-type nortriptyline, barbiturates, benzodiazepine, antihistamines, spasmolytics, anti-Parkinson, antidiarrhoeal (difenossilate), muscle relaxants, codeine, digitalis, meperidine narcotics, morphine, prednisone, third generation cephalosporins]; maintain good hydration, avoiding hypoxia, treating acute pathologies rapidly, utilising orientation techniques (Reality orientation), correcting sensory deficits, keeping the environment well-lit and quiet	• Knowing how to describe the environmental characteristics which increase the risk for dementia • Coordinating/participating in a multidisciplinary team involved in managing delirium • Coordinating/participating reactively in writing guidelines and institutional paths to render assistance to patients with delirium efficient and efficacious • Participating in initiatives to improve the quality of efficacious prevention, and the early recognition and reduction of possible complications • Periodic reporting of the updating of the scientific literature on the topic • Knowing and suggesting the use of more adequate instruments for the evaluation of delirium in various institutional settings (Confusion Assessment Method (CAM), Delirium Rating Scale (DRS), Delirium Symptom Interview (DSI), Memorial Delirium Assessment Scale (MDAS) • Knowing how to organise assistance to patients at greater risk for developing delirium	

Cognitive dysfunction - dementia

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to describe dementia and its various manifestations - Alzheimer's Disease (AD) - Vascular ischemic (VD) or multi-infarct dementia (MID) - Degenerative non-Alzheimer's dementia - frontotemporal dementia - Lewy body dementia and normal pressure hydrocephalus • Knowing how to conduct an initial clinical evaluation: - specific anamnesis - physical and neurological exam - evaluation of social condition - evaluation of functional status - evaluation of mental state • Evaluation of pathologies and medications • Knowing how to differentiate the various clinico-instrumental characteristics of the most frequent forms of dementia • Knowing how to classify dementia according to its etiology • Knowing how to exclude the presence of delirium or depression • Knowing how to identify mild cognitive dysfunction (MCD) • Knowing how to propose a useful and appropriate diagnostic instrumental protocol for diagnostic purposes (laboratory exams, cardiovascular exams, CT, NMR, PET, SPECT, etc.) • Knowing how to select patients to be sent to ''Specialised Centres''	• Knowing how to apply the criteria for diagnosing Alzheimer's Disease • Knowing how to apply the criteria for diagnosing vascular dementia • Knowing how to apply the criteria for clinically diagnosing frontotemporal dementia and recognising its clinical profile • Knowing how to evaluate the risk for conversion of MCD to dementia • Knowing how to evaluate anamnestic/ mnemonic impairment and the type of memory impairment • Knowing how to evaluate the presence of cognitive deficits, such as: - aphasia-language disorders - apraxia - agnosia - deficit of critical thought and the capacity to criticise • Knowing how to evaluate the functional state (ADL (Activity of daily living)-IADL (Instrumental Activity of Daily Living) • Knowing how to apply the Geriatric Depression Scale • Knowing how to recognise cases of ''curable dementia'' (e.g. normal pressure hydrocephalus)	• Knowing how to carry out a Clock Drawing Test for the screening of dementia • Knowing how to evaluate CSF markers (Creutzfeldt-Jakob syndrome-CJD): - neuronal protein 14.3.3 - very elevated level of Tau protein - decrease in Aβ level (42) Alzheimer's Disease: - decrease in Aβ level (42) - increase in Tau protein levels - Tau-hyperphosphorylate proposed as the best CSF marker with respect to total Tau • Knowing how to evaluate the characteristics of the results of cerebral neuroimaging associated with vascular dementia • Knowing how to manage therapy with inhibitors of: acetylcholine-esterases (Ach-Els), such as donezepil, rivastigmine, galantamin	• Knowing how to carry out a neuro-psychological evaluation • Knowing how to carry out the follow-up of a patient in the context/in collaboration with ''Specialised Centres''

Pain

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing types of pain • Knowing and utilising pain scales in relation to the type of patient • Knowing the WHO scale of pain therapy • Managing pain therapy • Managing the adverse reactions of the collateral effects correlated to pain therapy	• Knowing how to also utilise non-verbal expression scales (e.g. in adult demented patients) • Managing pain also in more complex cases and in those with resistant pain • Modulating therapy with opioids • Knowing and managing interactions of pain medications with the medications most commonly used for elderly people • Knowing and managing the criteria of conversion for opioids • Knowing when to call pain specialists for consultation		

Osteoporosis

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Knowing how to classify patients at risk for osteoporosis on the basis of age, sex (male or female), post-menopausal age, race, familial anamnesis, physiology, alimentation, physical activity, sun exposure, medications, etc. • Knowing how to administer questions for self-evaluation of the patient at risk for osteoporosis • Knowing the minimum requirement of nutritional intake of calcium and vitamin D in pregnancy, in adults and in elderly people • Knowing the medications potentially able to cause osteoporosis • Knowing how to request first level laboratory exams • Knowing how to recognise cases of factitious hypocalcaemia • Knowing how to appropriately identify patients who are candidates for densitometry according to LEA	• Knowing how to describe the differences between primary and secondary osteoporosis and recognise the comorbidities which are possible causes of osteroporosis • Knowing the physiological implications of Vitamin D hypovitaminosis • Knowing how to request second level laboratory exams • Knowing how to recognise the utility and limits of bone turnover markers - of formation § alkaline phosphatase (ALP) § Bone-specific alkaline phosphatise (BAP) § Osteocalcin § Procollagen type I C-terminal peptide (PICP) § Procollagen type I N-terminal propeptide - of reabsorption § total alkaline phosphatase (ALP) § Bone-specific alkaline phosphatise (BAP)	• Knowing the physiopathological implications correlated to the RANK/ RANKL/OPG Systems - Receptor for the Activation of Nuclear factor Kb expressed by pre-osteoclasts - RANK-L (Ligand) expressed by OPG osteoblasts produced by osteoblasts • Knowing how to use the FRAX (Who fracture Risk Assessment Tool) for calculating the risk for fractures based on age, BMI and BMD and on the 7 dichotomous risk factors: preceding fractures from fragility, family history of fractures, corticosteroid therapy, rheumatoid arthritis, cigarette smoking, excessive consumption of alcohol, presence of conditions which induce bone demineralisation • Knowing how to calculate the risk factor of fracture using the defragmentation algorithm • Knowing how to evaluate DXA (Dual-energy X.ray Absorptiometry)	• Knowing how to carry out QUS • Knowing how to carry out DXA • Knowing how to prescribe an orthopaedic corset • Knowing how to recognise patients who are candidates for vertebroplasty using an injection of polymethylmethacrylate

	§ Osteocalcin § Procollagen type I C-terminal peptide (PICP) § Procollagen type I N-terminal propeptide • Knowing the indication for and effects of strontium ranelate • Knowing how to evaluate morphometry on the entire column (T4-L4) according to the semiquantitative morpho-vertebral method of Genant • Knowing how to interpret the data of densitometry on the basis of the T score • Knowing how to recognise patients **worthy of/deserving** treatment on the basis of: - BMD (bone mineral density) + age + other risk factors - past vertebral fracture - steroid therapy • Knowing the best treatment on the basis of: - diagnosis of secondary forms - correction of modifiable risk factors - Alimentation and physical exercise - Sun exposure - Intake of Vitamin D + calcium + necessity of specific medications • Knowing the various biphosphonates (zolendronate, alendronate, ibandronate, risedronate, etidronate, clodronate, pamidronate, neridronate), the indications, relative dosage, ways of administration and collateral effects • Knowing the indications and effects of SERMs • Knowing the indications and effects of teriparatide and the PTH (parathyroid hormone) • Knowing how to identify *non-responder* patients after anti-reabsorptive therapy (alendronate, risedronate, raloxifene) for at least one year	• Knowing how to evaluate QUS (Quantitative Ultrasonography) • Knowing how to evaluate QCT (Quantitative Computed Tomography) • Knowing how to differentiate Morphometric Radiography (MRX) from morphometric assorbimetry (MXA), with the respective advantages and possible sources of error • Knowing the differential pharmacological characteristics of the various forms of Vit. D on the market (cholecalciferol, dihydro-tachysterol, calcifediol, a-calcidiol) • Knowing how to recognise and treat idiopathic hypercalciuria, with increased excretion of urinary calcium (>4mg/kg/day), detectable in two different determinations, in the absence of systemic pathologies or treatment (hyperthyroidism, sarcoidosis, intoxication from Vit.D, etc.) • Selecting patients at risk for dental problems (osteonecrosis, aseptic necrosis, osteomyelitis, odontogenic abscesses, gingival hypertrophy/ gingivitis, loss of teeth, etc.) of patients in or eligible for therapy • Knowing how to manage osteodystrophy in CRI patients	

Arterial hypertension (AH)

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Classifying arterial hypertension (AH) according to international guidelines and according to the physiopathological fundamentals of essential hypertension (EH) and secondary hypertension (SH) • Obtaining a complete anamnesis, searching for symptoms suggestive of the comorbidities which can influence blood pressure control, compliance with the therapy and the prognosis • Investigating social conditions which can influence blood pressure control • Interpreting and evaluating modifiable (salt, alcohol, life style, etc.) and non-modifiable (familiarity, age, sex, etc.) pre-disposing factors, clinical presentation, laboratory reports, basic exams to carry out and their interpretation • Carrying out an objective exam able to identify the estimates of a possible secondary hypertension (cushingoid aspect, hypothyroidism, excessive development of the thorax, etc.) • Identifying the blood pressure objective in the hospitalised patient, the prognostic stratification and the rationale of a strict control of the arterial pressure (AP) on morbidity and mortality • Facilitating a discharge plan for the hospitalised patient • Utilising basic instrumental diagnostics according to guidelines: ECG, first level diagnostic screening for secondary hypertension and for organ damage, and the evaluation of cardiovascular risk according to	• Interpreting the principal tests, also second level, for secondary hypertension • Carrying out the screening and/or diagnosis of particular types of hypertension (pregnancy, elderly people, young people, cardiopathic, nephropathic, critical phase) • Appropriately utilising instrumental diagnostics according to guidelines: ECG, echodoppler sat arterial echodoppler, second level diagnostic tests for secondary hypertension • Utilising, from the moment of admission, a multidisciplinary approach which can include a nurse, dietician and psychologist • Recognising the indications for a second level specialistic evaluation	• Carrying out the principal tests, also second level, for secondary hypertension • Promoting the formation of a multidisciplinary team, expert in treating AH (perioperative hypertension, in elderly people, in young peole, in pregnancy, diabetes, gestational diabetes, hypertensive crises, nephropathy, cardiopathy, etc.) • Organising, coordinating and participating in the development of guidelines and protocols for the standardisation of the evaluation and treatment of AH • Organising, coordinating and participating in the development of guidelines and protocols for optimisation of the control of AP in various situations (perioperative, stroke, decompensation, pregnancy, critical phase, endocrinopathies) • Organising, coordinating and participating in the development of guidelines and protocols for promoting quality/efficacy of the management of AH with a multidisciplinary approach • Organising educational groups managed by the specialist and the nurse, adequately prepared to manage, with the active participation of the patient, problems with treatment, diet and other related problems	• Knowing how to carry out exams for the ocular fundus and evaluating hypertensive retinopathy according to the Keith-Wagener-Barker classification • Managing and/or carrying out dynamic readings of AP (ABPM-ambulatory blood pressure monitoring), echocardiogram, echodoppler sat • Carrying out instrumental exams, hormonal dosage, and very specific stimulation and suppression tests, renal vessel echodoppler, intra-arterial readings

ministerial tables • Documenting a therapeutic plan and instructions for discharge, interacting with the physician responsible for outpatient follow-up and developing protocols for eventual return to the Hypertension Centre • Explaining the objectives of a discharge and passage to careful follow-up treatment • Choosing appropriate antihypertensive therapy, also in relation to cost/ benefit, diet and life style • Regulating pharmacological therapy to reach optimal blood pressure control, minimising the collateral effects • Explaining the mechanism of action, indications and contraindications of the medications used for AH • Recognising and treating hypertensive crises • Recognising the indications for a second level specialistic evaluation • Explaining the history and prognosis of AH to the patient and family members, possible long-term complications and prevention strategies, treatment objectives, adverse effects, diet, discharge plan, importance of checking arterial pressure and possible self-measurement at home after brief training of the patient and family members, and treatment of CV risk factors			

Technical-professional aspects and abilities (general and specific)			
Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Carrying out blood sampling and venous cannulation • Carrying out arterial sampling • Thoracentesis • Paracentesis • Blood culture • Urine culture • Positioning of a vescical catheter • Positioning of a naso-gastric probe • Electrocardiography • Basic diagnostic interpretation of ECG (differentiation of atrial and ventricular arrhythmias)	• Positioning of a vescical catheter (semirigid), also in more complex cases • Arthrocentesis • Thoracentesis, also in more complex cases (slight effusion, sac-like collections) • Paracentesis, also in more complex cases, pain management, sterile procedures • Knowing how to carry out diagnostic interpretation, also in complex tracings	• Venous catheter cannulation with PICC (peripherally Inserted Central Catheter) and midline • Training professionals	• Ocular fundus • Rachicentesis • Administering intrarachidian treatment • Carry out and interpreting a Holter ECG • Stress test

Ultrasonography

Basic professionalism	Optimal professionalism
• Knowing the principles of the methodology and formation of ecographic images • Knowing the limits of methodology, semantics and artefacts • Knowing normal ecographic anatomy of organs which can be studied with ultrasound • Knowing the principal applications of emergency and elective ecography • Knowing the principles and applications of Doppler and echo-colour-doppler • Knowing how to recognise: - pleural effusion - abdominal effusion - pericardial effusion with early signs of cardiac tamponade - abdominal aortic aneurysm - I.V.C. (inferior vena cava) dilatation - capacity of evaluating CVP (central venous pressure) indirectly utilizing the AP (arterial pressure) of the inferior vena cava and it respiratory variations - capacity of recognising the presence of distension of the jugular veins - capacity of recognising the presence of EPA (acute pulmonary edema) - pulmonary interstitiopathy - urinary retention - hydronephrosis - renal calculi - splenomegalia - gallbladder hydrops - gallstones - obstructive jaundice - pneumothorax - capacity of recognising the presence of pneumothorax with lung point • Knowing how to carry out: - ultrasound-guided paracentesis - ultrasound-guided toracentesis - venous trunk/femoro-iliac compression ultrasonagraphy	• Acquisition of the following competences, acquired with at least 120 h dedicated to theoretic diagnostics (20h), practical experience (100h) and execution with reporting of at least 250 ecographies • Evaluation of the volume and thickness of the cardiac chambers • Capacity of measuring the dimensions of the aortic root-left chambers, left ventricular thickness, fractional shortening (FS) • Capacity of evaluating the systolic function of the left ventricle (ejection fraction (EF), mean arterial pressures (MAPs), E-septum distance, etc.) • Right chamber dimensions, tricuspid annular plane systolic excursion (TAPSE) • Evaluation of ''the maximum'' of the regional kinetic alterations, in the various short and long axis projections • Evaluation of the EF Vsx (contraction of the left ventricle) • Evaluation of valve function by means of echocolourdoppler • Morphological M-Mode and aortic two-dimensional valve (sclerosis, calcifications) and mitral valve (calcifications, fibrosis, myxomatous degeneration, prolapse) evaluation • Semiquantitative mitral regurgitation (/4+) and identification of mitral stenosis • Velocity or maximum aortic gradient and semiquantitative evaluation of an eventual regurgitation (/4+) • Qualitative evaluation of an eventual tricuspidal regurgitation (/4+) and estimate of PAPs (pulmonary arterial pressure) • Capacity of evaluating the atrio-pulmonary gradient of shortening • Diagnosis of acute and chronic pulmonary heart disease • Capacity of identifying signs of hypertensive cardiopathy, various patterns of ventricular hypertrophy (eccentric, concentric, remodelling) and the principal cardiomyopathies • Identification of valve vegetation • Evaluation of the echo patterns and volumes of the abdominal parenchyma • Evaluation of intra- and extra-parenchymal focal lesions • Evaluation of the volume and thyroid echo pattern • Evaluation of lymphoadenomegaly • Ecocolourdoppler of the supra-aortic trunks (SATs) • Recognising normal and pathological pictures: common carotid, external, internal, vertebral, subclavian, ophthalmic • Measuring IMT (intima-medial thickness) • Placque/Stenosis: - ecographic characterisation of the plaque, quantification of the degree of stenosis - occlusion - dissection - spinal steal - obliterating arteriopathy of the AAII - measurement using the Windsor index - knowing normal and pathological Doppler pictures

	- quantification of the degree of stenosis - endocardial cushion defect (ECD) of the aorta and iliac, common femoral artery, superficial, deep, popliteal, tibial-peroneal trunk,posterior tibial, peroneal, anterior tibial, pedicle - aneurysmatic pathology: location, dimensions, complications - post-catherisation arterial pseudoaneurysms - complete venous ecocolourdoppler for the AAII (vena cava, iliac, common femur, superficial, deep, popliteal, subpopliteal: bigeminal, solear, peroneal, anterior and posterior tibial), CCUS (complete compression ultrasonography, suprapopliteal and subpopliteal veins) - ecocolourdoppler evaluation of peripheral arterial stenosis - knowing the techniques of echoguided cannulation of a peripheral vessel (basal or central (jugular and/or femoral)

Managing clinical records

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Complete and legible compilation of the family and personal anamnesis, past pathological anamnesis (with particular attention to previous hospitalisations and their reasons), future pathological anamnesis of the temporal evolution of the signs/symptoms in act, with careful evaluation of the differential diagnosis and degree of urgency or emergency • Using the checklist in closing the clinical records • Complete compilation of what was observed with the general objective clinical exam and the various organs/ systems • Complete and legible compilation of the clinical diary and the treatment prescribed • Management of informed consent when carrying out diagnostic exams and therapeutic treatments • Correct and complete compilation of HDRs (hospital discharge records) • Recognition of the presence of a pathology requiring isolation of the patient	• Using the checklist in closing the clinical records • Proposing actions aimed at improving the hospital and completing the clinical records, capacity of synthesis and elevated epicrises		• Using APR-DRGs (All Patient Refined Diagnosis Related Groups) • Controlling and verifying the clinical records of patients with particularly complex and interdisciplinary pathologies

Degree of interaction in hospital

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Normal activity with hospital staff (colleagues, nurses, etc.) of one's Operative Unit (O.U.) and the Administration	• A correct DRG (Diagnosis Related Group) and closing of the clinical record • Visits- opinions of the the other O.U.s, comparison of clinical and diagnostic relationships with the staff of the other hospital O.U.s and diagnostic services • Operative collaboration with other O.U.s, both of one's hospital and of other hospitals		

Degree of complexity in relationships with other interlocutors external to the hospital

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Family doctors, external specialists, regional physicians, pharmaceutical representatives		• Collaborating on research projects, experimentation and multicentric studies	• Promoting, directing and coordinating research projects • Collaborating with scientific associations, regional or state offices

Scientific didactic activity

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Participating in scientific abstracts/case reports	• Contributing to the efficacious formation of students, colleagues, patients and other people involved in the sector of health assistance • Exercising the function of a tutor for students/younger learners • Participating in scientific publications/ original articles		• Professor in university and non-university schools, and CME (Continuing Medical Education) training courses • Publishing in national and international journals, being the first author

Research

Basic professionalism	Optimal professionalism	Excellent professionalism	Distinctive professionalism
• Participating in research studies	• Coordinating observational studies and clinical trials		• Promoting research studies • Participating in international research studies