http://www.revistanefrologia.com



# Reinventing specialty training of physicians? Principles and challenges

J. Morán-Barrios[1], P. Ruiz de Gauna-Bahillo[2], Miembros de la Junta Directiva de la Sociedad de Educación Médica de Euskadi. www.ehu.es/semde

[1] Medical Teaching Unit. Cruces Hospital. Osakidetza-Basque Health Service. Baracaldo, Biscay, Spain
[2] Department of Theory and History of Education. University of the Basque Country -Euskal Herriko Unibertsitatea. San Sebastian-Donostia, Guipuzkoa, Spain

Nefrologia 2010;30(6):604-12
doi:10.3265/Nefrologia.pre2010.Jul.10559

## ABSTRACT

In a world undergoing constant change, in the era of globalisation, the training of medical professionals should be under constant review so that it can be tailored to meet the needs of this society in transition. This is all the more true at times of economic uncertainty, such as the current conditions, which have a direct impact on health services. Professionals need new Competencies for new times. Over the last decade initiatives have emerged in various Anglo-Saxon countries which have defined a framework of basic Competencies that all medical specialists should demonstrate in their professional practice. In addition to this, we must respond to the creation of the European Higher Education Area which has implications for specialised training. In Spain, training for medical specialists was in need of an overhaul and the recently passed law *(Real Decreto 183/2008)* will allow us to move forward and implement, in medical education, initiatives and innovations required in our medical centres, to respond to the new society and bring us in line with international professional education and practice. The way forward is a Competency-based model for medical education with assessment of these Competencies using simple instruments, validated and accepted by all the stakeholders. The institutions involved (hospitals, medical centres and other health care services) should trial different approaches within the general framework established by the current legislation and be conscious of the duty they have to society as accredited training organisations. Accordingly, they should consolidate their teaching and learning structures and the various different educational roles (Director of Studies, Tutors, and other teaching positions), showing the leadership necessary to allow proper implementation of their training programmes. For this, the Spanish Autonomous Regions must develop their own legislation regulating Medical Specialty Training. So, medical professionals should receive training, based on ethical values, behaviours and attitudes that considers humanistic, scientific and technical factors, developing an understanding of the scientific method; ability to put it into practice; skills to manage complexity and uncertainty; a command of scientific, technical and IT terminology to facilitate independent learning; and a capacity for initiative and teamwork, as well as skills for dealing with people and for making an effective, democratic contribution both within health organisations and in the wider society.

**Key words:** Postgraduate Medical Education. Competency-based Medical Education.

**Correspondence:** Jesús Morán-Barrios
Unidad de Docencia Médica. Hospital de Cruces.
Osakidetza-Servicio Vasco de Salud. Plaza de Cruces, s/n.
48903 Baracaldo. Vizcaya. Spain.
jesusmanuel.moranbarrios@osakidetza.net
jermoso2312@hotmail.com

## *¿Reinventar la formación de médicos especialistas? Principios y retos*

## *RESUMEN*

*En un mundo globalizado y en permanente cambio, la formación de profesionales de la medicina exige una reflexión continua para dar respuesta a esa sociedad en continua transición, máxime cuando se viven momentos económicos tan delicados como el actual que influyen directamente en el mundo sanitario. Los profesionales precisan nuevas competencias para nuevos tiempos. En la última década han surgido iniciativas en distintos países del mundo anglosajón que han definido el marco de competencias básicas necesarias que todo médico y especialista debe demostrar en su práctica profesional. Junto a ello nos encontramos ante el Espacio Europeo de Educación Superior que también influye en nuestra formación especializada. La formación sanitaria especializada en España precisaba un nuevo impulso y el reciente*

*marco regulatorio (Real Decreto 183/2008) nos permitirá avanzar y desarrollar aquellas iniciativas e innovaciones que en educación médica son imprescindibles implantar en los centros sanitarios, para responder a una nueva sociedad y adecuarnos al contexto educativo y de práctica profesional internacional. La formación médica basada en competencias y su evaluación con instrumentos, sencillos, validados y aceptados por todos los agentes implicados en la formación, es el camino a seguir. Las instituciones (centros y servicios asistenciales) deberán desarrollar sus propias experiencias dentro del marco general que proporciona la legislación vigente, y estas instituciones deben ser conscientes del compromiso adquirido con la sociedad a través de la acreditación docente, debiendo, por tanto, consolidar su organización docente y las distintas figuras de los agentes formadores (jefes de estudio, tutores y otras figuras docentes), ejerciendo el necesario liderazgo para el completo desarrollo de los programas formativos. Para ello, es preciso que las Comunidades Autónomas desarrollen sus propias normativas en formación sanitaria especializada. Finalmente, los profesionales de la medicina deben tener una formación basada en: valores éticos, hábitos y actitudes, que abarque aspectos humanísticos, científicos y tecnológicos; un conocimiento y una práctica del método científico, unidos a la gestión de la complejidad y de la incertidumbre; un manejo correcto del lenguaje científico, tecnológico e informático que facilite el aprendizaje autónomo; una capacidad de iniciativa y trabajo en equipo, así como el desarrollo de habilidades para los asuntos personales y para una eficaz participación democrática en la sociedad y en las instituciones sanitarias.*

***Palabras clave:*** *Formación sanitaria especializada. Formación basada en competencias.*

## TRAINING OF PHYSICIANS IN AND FOR A HUMANISED AND FAIRER GLOBALISED WORLD

Can we and should we continue training our residents with the same professional profile of as little as three years ago? What new skills must we introduce and work with in training to make future professionals more responsible and capable of managing universal and growing healthcare demands, with limited resources; professionals who have to continue acquiring knowledge (both scientific and technical) in a globalised world, full of uncertainty that should be moving towards greater equality?

We live in a delicate, historic time due to the major changes that society has experienced in recent years. Our lives revolve around problems occurring elsewhere on the planet, distant each from each other and thousands of kilometres from us. Just three years ago we were far less conscious of the impact that the decisions of others could have on our lives, with consequences (the current economic crisis) that are significant for our society and that will permanently affect the political, sociocultural, and moral environment of all societies. We are seeing the other side of the coin of globalisation; a phenomenon of economic interdependence that has been intensely experienced since the 1990s and that has resulted in the neoliberal politics we see today. Globalisation is taking place in the financial sector, but also effects politics, science, culture, education and healthcare.[1]

In terms of the training of healthcare professionals of any kind we should ask ourselves: For what (world) and for whom (people) are we doing this training? The direction that training institutions (universities, educational centres, and health centres/hospitals) should take is based on the need to humanise society.[2] In this respect, a goal of the process of training professionals must be to encourage a consciousness of universal citizenship, which will facilitate the process of change towards a new understanding of citizenship. Some time ago, organisations such as the World Health Organisation (WHO) recommended that, within the teaching environment and the practice of medicine, measures must be taken to provide education aiming to achieve equitable, efficient and comprehensive care for patients, families and communities, according to the needs and values of their society.

Medical training must undergo certain changes if it is to contribute to the amelioration of some of the deficits resulting from globalisation. The commitment of training institutions must be to enable the training of professionals by and for the community, teaching them about community values of solidarity and empathy, and to be able to put themselves in the shoes of others. This commitment must not be on paper alone, but should manifest itself through training programmes and the actions of teachers. This commitment should focus on training that strengthens, among other aspects, the bonds between different cultures, life-long learning, autonomy and personal and professional responsibility, a universal vision, and, lastly, caring, creative and critical thinking.[1] Training based around competencies and their evaluation allows us to tackle these challenges and commitments.

## THE EUROPEAN AREA AND MEDICAL TRAINING IN A CHANGING SOCIETY

Medical training in Spain is facing new challenges resulting from an important change in the educational scene in Europe: the European Higher Education Area (Bologna Declaration of 1999[3]). A process of convergence has begun that has as its aim to facilitate the mobility of graduates and adapt the content of university studies to social demands. It is an attempt to create a Europe of knowledge (a *knowledge society*, an expression coined by Peter Drucker in 1969,[4] not

linked to the quantity of knowledge but rather to its productivity, that is, its economic impact). The Bologna Declaration states that «A Europe of Knowledge is now widely recognised as an irreplaceable factor for social and human growth and as an indispensable component to consolidate and enrich the European citizenship, capable of giving its citizens the necessary competencies to face the challenges of the new millennium, together with an awareness of shared values and belonging to a common social and cultural space».[3] This does not just involve the mobility students, but also of professionals with the consequent recognition of qualifications, which implies a profound change in medical training models both at the university level as well as in specialty training. In addition, continuously changing social needs require dynamic health systems that must offer safe, effective, efficient, and high quality responses to the needs and expectations of citizens.[5]

The competency profile for health professionals should take into account the need for this responsiveness. Specifically, the profile must continuously be adapted and developed with new competencies, which in turn lead to modifications in learning and evaluation systems. This is important to guarantee, in the case of physicians, a good doctor-patient relationship in which there is a direct influence of demographic, epidemiological, financial, legal, and scientific-technical changes, cultural aspects, ethics and values, and new models of organisation and healthcare management (clinical management), as well as of the media and the culture of consumption.[6] Regarding these changes, A. Jovell and M. Navarro[7] highlight three social phenomena: changes in the labour structure of health professions, the appearance of a new patient/citizen model, and the transformation and increase in the complexity of knowledge management. To that, we must add the collectivisation of the provision of health services as a strategy to guarantee equitable access. The challenge for today's physicians is to know how to respond effectively and efficiently to the needs of the 21st century and to the confidence placed in them by patients.[5]

Therefore, "the simple idea that a competent professional is one who possesses the knowledge and abilities that can lead to success in a specific profession is out of date. This idea has been replaced by the understanding that professional competency is a complex phenomenon which expresses the potential of individuals to direct their actions in the exercise of their profession with initiative, flexibility and autonomy, in diverse scenarios, based on the integration of knowledge, skills, motives and values, and is demonstrated by efficient, ethical, and socially committed professional work. It is necessary to eliminate fear of the unknown and join in the adventure of change from within; innovate and comprehend the new reality; and face up to the future and understand our role in this reality» (Pilar Martínez Clarés). Today's training of tomorrow's specialists means providing the competencies necessary to confront the uncertainties of future clinical practice, and appropriately manage future changes in society and within the medical profession itself (the areas of specialisation and collaboration between them, for example), as well as identifying and understanding the role of the physician among the various stakeholders that influence the profession of medicine (the state/governments, health organisations/corporations, the health technology and pharmaceutical industry, citizens and other health professionals[8,9]).

It is within this context of ever greater and more complex transformations that competency-based training (CBT) emerges to enable the better adaptation and development of individuals,[10] in this case, physicians. CBT focuses on learning and not on teaching, and on reaching specific objectives, i.e., on the results of learning, integrating knowledge and knowing how to do, be and act.[11]

## THE RESIDENCY SYSTEM (SPECIALISED HEALTH TRAINING), NEW CHALLENGES AND OPPORTUNITIES

Training medical specialists involves the gradual integration of recent graduates in medicine into the care activities of a health centre or hospital with growing responsibility and decreasing supervision over time. Is it possible to carry out this professional training without having the tools and resources necessary to guarantee that this integration is appropriately planned and supervised, and that the final result (a competent medical specialist) is the consequence of completing a programme designed to meet current healthcare demands?[12]

The Spanish system for medical graduate training, known as the MIR, was born in the 1960s as a result of the "*Seminario de Hospitales*" (a meeting bringing together representatives of major hospitals from across Spain: Hospital de la Santa Creu i Sant Pau, Clínica Puerta de Hierro, Hospital Marqués de Valdecilla, Fundación Jiménez Díaz, Hospital de Basurto, and Hospital General de Asturias ).[13] It is based on learning on-the-job and has been one of the most important drivers of the modernisation of medical practice in Spain. The system, as regulated in 1984, has a strong state structure controlled from the Spanish Ministry of Health and Social Policy.[14] The following characteristics of the system should be highlighted: the accreditation of healthcare centres and teaching units (clinical departments), whose guarantee of quality training is monitored through regular audits; a universal entrance exam; and the definition and classification of specialties and associated programmes, as regulated by the corresponding National Specialty Commissions and a National Council. However, there are considerable weaknesses in the way in which the system is put into practice within healthcare institutions. The Order on

Teaching Commissions of 1995,[15] which regulates their powers and operation, as well as those of the directors of studies and tutors (educational supervisors), has not been thoroughly implemented and the evaluation system it proposed, the one currently operating, is more a system of certification of completion of a series of rotations or placements in certain care units, than a true training and assessment of competencies. A study by the National Commission on Nephrology revealed some of these weaknesses in the training of specialists, from irregular allocation of human and material resources within teaching units, to failures to fulfil teaching objectives and the role of mentoring (tutor), run on a voluntary basis, being little recognised.[16] With the new law, Real Decreto 183/2008,[17] the entire National Health System has had a great opportunity to develop and improve the system for specialised medical training, providing the framework for competency training and assessment, addressing, among other points, the challenges of multi-professional units, and a controversial but fundamental issue, the core curriculum. You must first be a doctor and only then a specialist.

However, as noted by J. Cobo-Reinoso, the mere passing of legislation does not guarantee its successful implementation;[18] this author highlights the elements that should comprise a residency programme for it to be both effective: *1)* the definition of a training programme consistent with training objectives; *2)* establishment of monitoring protocols*; 3)* adequate communication with tutors; *4)* a comprehensive assessment system, essentially educational, and more demanding; and *5)* quality control by the Teaching Commission. This is not possible without funding and a definitive consolidation of healthcare organisations, educational structures and training agents (directors of studies, tutors, trainers and other teaching staff), and, in Spain, this is the responsibility of the regional governments.

## PROFESSIONAL COMPETENCIES

M.O. Bunk defines competence as behaviour resulting from a set of attitudes, skills, abilities, knowledge and values that people use to deal with specific situations related to their life and profession.[19] It is, in short, the effective ability to successfully carry out a clearly specified work activity. Professional competence is not a measure of the probability of success in the execution of a profession; it is a real and demonstrated ability that can be evaluated based on results.

The start of the competency movement can be traced back to a paper published in 1973 by David McClelland, who asserted that not only aspects such as knowledge and skills, but also feelings, beliefs, attitudes and behaviours can predict high work performance.[20] We are referring to empathy, intuition, integrity, perception of reality, the spirit of community, self-confidence, flexibility, and the domain of the individual. These concepts are fully applicable to the world of healthcare and indeed are today recognised as being fundamental aspects of the competencies of a medical practitioner. A Gual *et al*[9] agree with this, stating that for the future we require: physicians who adopt a critical approach, who are communicative and empathetic, individually and socially responsible, make decisions which are good for the patient and the health care system, leaders of the health team, competent, effective and safe, honest and reliable, committed to patients and the organisation; physicians who treat patients, not diseases. In summary, the competencies of a professional combine knowledge (Know), skills and abilities (know-how), attitudes and behaviours (how to act), and values and beliefs (how to be).

Faced with the aforementioned changes and challenges of the 21st century, academic and health organisations in various countries began to define basic competencies for physicians in the 1990s and early 2000s including: Tomorrow's Doctor[21] and Scottish Doctor[22] (UK), CanMEDS Roles[23,24] (Canada), the Outcome Project of the Accreditation Council for Graduate Medical Education[25,26] (USA) and the Institute for International Medical Education (IIME) in New York[27] (Table 1). The competency domains defined in these models are perfectly applicable to any specialty. Specifically, CanMEDS and the Outcome Project define what all residents must demonstrate upon completing their training. Along these lines, in 2008 the Medical Teaching Unit at Cruces Hospital (in its Competency-based Postgraduate Medical Education [CBPME] project, which started in 2004)[28] defined its model of «Being a Physician/Medical Professional» (Teaching Vision[29]) for all specialties of the centre, based on the model of the IIME, and incorporating concepts from the Outcome Project, CanMEDS and the American Board of Medical Specialties.[30] Table 2 summarises the model «Being a Physician/Medical Professional at Cruces Hospital», which is to be the foundation of our competency evaluation system.

These approaches do not mean that doctors, to date, have not been trained in such competencies; the difference is that in the CBPME project they are made explicit, and those competencies necessary to address changing social and healthcare needs are emphasised.[31] Working with such a model facilitates the development and adaptation of the learning process (learning objectives derived from the competencies, activities, specific tasks, training plans, schedules, methodologies and teaching resources) and the implementation of a final competency assessment (outcome-based assessment). To bring about the changes required, it is very important that all professionals adopt the same approach and language, a task that will take time.

**Table 1.** Model of competency domains

| CanMEDs | Outcome Project (ACGME) | IIEM New York | Being a Physician/Professional at Hospital de Cruces |
|---|---|---|---|
| 1. Expert Physician | 1. Professionalism | 1. Professional values, attitudes, behaviour and ethics | 1. Professionalism: professional values, attitudes, behaviour and ethics |
| 2. Communicator | 2. Interpersonal and Communication Skills | 2. Communication skills | 2. Clinical skills (clinical patient care expert) |
| 3. Collaborator | 3. Medical Knowledge | 3. Scientific fundamentals of medicine | 3. Communication |
| 4. Manager | 4. Patient Care | 4. Clinical skills | 4. Scientific fundamentals of medicine (knowledge) |
| 5. Health advisor | 5. Practice based on the Health System context | 5. Public health, health systems | 5. Public health, health systems (health promoter, manager of resources) |
| 6. Scholar | 6. Clinical practice based on learning and improvement [a] | 6. Information management | 6. Critical analysis and research. Self-training |
| 7. Professional | | 7. Critical analysis, self-training and research | 7. Information management |

[a] The competency domain of the ACGME model: "Professional practice based on learning and improvement" is broken down into two parts, in the IIEM model: "Critical analysis, self-training and research" and "Information management".

## THE EDUCATIONAL PROCESS IN THE CONTEXT OF THE WORKPLACE AND THE ROLE OF INSTITUTIONS IN PROFESSIONALISATION

Training in the workplace professionalises the resident by developing their understanding of the knowledge, skills, abilities, attitudes and values that are present, these days, in the medical profession. However, it can also de-professionalise, as it is difficult to implement educational practices in each and every care setting in which residents train. The workload and other factors associated with healthcare organisations and their

**Table 2.** Physicians/Professionals at Cruces Hospital (2008)

| **Summary of the basic concepts of each competency domain. All residents will have and be able to demonstrate:** |
|---|
| 1. PROFESSIONAL ATTITUDES/VALUES (PROFESSIONALISM): Show integrity, accept responsibility, and complete tasks. Work within the limits of their abilities; ask for help when needed. Show respect and interest in the patients and their families. Be punctual and comply with work schedule. |
| 2. PATIENT CARE AND CLINICAL SKILLS: Obtain a medical history and complete physical examination; request diagnostic tests as necessary and integrate the information to carry out a correct differential diagnosis. Create an appropriate treatment plan. Show skills in the performance of technical procedures for their level. |
| 3. COMMUNICATION: Communicate effectively with patients and families, with other members of the work team and with the rest of the healthcare staff. |
| 4. MEDICAL KNOWLEDGE: Keep their clinical knowledge up to date. Ask pertinent questions. Use their knowledge and analytical thinking to solve clinical problems. Demonstrate appropriate clinical judgment. |
| 5. PRACTICE BASED IN THE HEALTH SYSTEM CONTEXT (PUBLIC HEALTH AND HEALTH SYSTEM): Make rational use of health resources. Work to guarantee patient safety and identify the reasons for errors; follow clinical practice guidelines (protocols). |
| 6. PRACTICE BASED ON CONTINUOUS LEARNING AND IMPROVEMENT (CRITICAL ANALYSIS, SELF-TRAINING): Critically assess scientific literature and use available scientific evidence for patient care. Self-evaluate their clinical practice and change behaviour. Facilitate and collaborate in the learning of colleagues. |
| 7. INFORMATION MANAGEMENT: Find, interpret, and appropriately apply clinical and scientific information. |

management do not facilitate interaction between tutors and residents. Though the residents should not forget that they are primarily responsible for their own training and must be proactive, this climate occasionally leads tutors and staff to forget their teaching role and that the residents are professionals in training. Institutions must guarantee: *1)* the exercise of leadership from senior and middle management (directors of studies, heads of department, tutors); *2)* the planning and development of a teaching strategy, with the involvement of all relevant parties (tutors and staff), facilitating decision-making and accountability, including on the part of residents; *3)* the resources (structural, material, financial and organisational); *4)* the development of programmes integrated into the care system in accordance with a defined profile of medical specialist; and *5)* the qualitative and quantitative measurement of results. It is within this scheme that the tutor is essential as a manager of a programme of specialisation within the teaching strategy of the centre. Duties and training tasks should be specified in the training programme contracts of the centres and in the portfolio of services of teaching units. This is a reflection of the duty they have to society as accredited teaching institutions.[12]

Therefore, the objective is to provide a professional with: *1)* broad and essential training, based on ethical values, behaviours and attitudes and that encompasses humanistic, scientific and technical aspects; *2)* an understanding of the scientific method and ability to put it into practice, and to manage complexity and uncertainty; *3)* a command of scientific language and skills enabling the proper use of computer technology, to facilitate independent learning; and *4)* sufficient experience in the field of interpersonal relations to encourage initiative and teamwork, and the development of skills for personal relations and for effective democratic participation in society.[32] To achieve this goal, healthcare centres and teaching units (clinical departments) should be aware that there must be consistency in the training process, taking into account the three stages of the teaching/learning cycle: before, during and after. *Before* provides for the social environment of the specialty, the skills to be developed by level, the role of the tutor, the resident, the other trainers and the institution. *During* (interaction) includes training contexts, how learning will be enhanced in each of the contexts; specific, joint and individual tasks; methodological strategies; and ongoing or formative evaluation. *After,* involves evaluation of the learning of the resident, tutor performance, the development of the training process, the programme, the trainers and other agents of the support structure.[32] The tutor, as the pivotal figure in this complex process, with a high level of social responsibility, must acquire and develop certain teaching competencies.[33]

## EVALUATION WITHIN THE TRAINING PROCESS

### Concepts and general principles

Rigorous and transferable evaluation is the great unmet challenge in the specialised training system, and it will never be possible if all training agents (not just the tutors) are not sure what to evaluate, i.e., if there is not a clearly defined programme with competencies to be achieved[34] (a professional profile, of the nephrologist in our case) and with instruments accepted throughout the institution. The evaluation (the *after*) is a moral obligation to society, the institution, and the resident (it is their right, for the purpose of guiding and supporting them in their learning, and in the acquisition and improvement of their competencies). Evaluation forms part of a complex training process and should be well defined a priori. Indeed, it is also a process in itself that generates data through assessment applying reference criteria, and this information is used to make judgments and decisions. These decisions can take many forms, but can be categorised under two broad types: a qualifying decision, a sanction, pass/fail, with no possibility of rectification, except by undergoing a new evaluation process (this type is called a *summative* assessment) and another type which can use the same instruments but is based on results. This latter type of evaluation allows the candidate to understand their strengths and weaknesses and create plans for improvement (it is known as *formative* assessment). Both demand an equal degree of rigor in their procedure and documentation. In the current training system, we must move away from the ingrained cultural concept of "pass/fail", and thoroughly develop formative assessment. It should be realised that an evaluation process tends to fail if the following questions have not been clearly answered beforehand:[34] Which competencies are to be evaluated?. How? (with what instruments?). Why evaluate? (what is the objective?). When? By whom? With what resources?, and is there collaboration across the entire team?. Therefore, every evaluation should conform to the following principles:[35] it should be; *1)* appropriate to the purpose (why?); *2)* based on the program content (what?); *3)* use methods selected in terms of validity, reliability and feasibility (based on the best available evidence); *4)* have standardised, transparent and public documentation and methods; *5)* provide important and positive feedback (educational evaluation); *6)* be overseen by evaluators with demonstrated ability and willingness to collaborate (who?); *7)* allow for lay people to assess or examine areas in which they are competent (e.g., communication, professionalism); *8)* receive sufficient resources, and *9)* have a comprehensive system of quality assurance. The evaluation should not be limited to the resident but rather must embrace the programme, process, structure and training agents, as the key to improvement.

## What to evaluate and how to assess the competencies of a professional

Evaluation of residents has, as its objective, to improve and facilitate the development of knowledge, skills, abilities, attitudes and values. To achieve this objective will require ongoing assessment of the resident in their acquisition of knowledge, skills and attitudes, and monitoring of the successes or failures of the design and operation of the training programmes. The assessment of professional competence involves various dimensions that are reflected in actions:[22] *1)* what the doctor is able to do: technical intelligences (clinical competencies and skills), *2)* how the doctor approaches their practice: intellectual (basic knowledge), emotional (attitude), the creative and analytical (reasoning) intelligences, and *3)* the doctor as a professional: personal intelligences (values, ethics, professionalism). There are many validated tools and methods to assess each of these areas, which when combined, allow us to judge the competence of a professional. A description of these and their application is beyond the scope of this article, and there are excellent reviews on the subject.[36,37] A particularly useful document is the Toolbox (Outcome Project, ACGME[38]), which describes each instrument well, its underlying concept, psychometric qualities, utility, validity and reliability. Based on that document and grouping competencies into seven domains, as described in Table 2, the potential assessment tools for each domain would be:

1. *Professional values, attitudes, behaviour and ethics:* Multiple source feedback (MSF),[39] commonly used in the private sector, patient point of view, and objective structured clinical examination (OSCE).[40]

2. *Clinical skills (clinical healthcare expert):* standardised patients, simulations, OSCE, clinical evaluation by direct observation of clinical practice in the workplace (Mini-CEX - Mini-Clinical Evaluation Exercise, DOPs - Directly Observed Procedural Skills[41,42]), questionnaires, case studies, clinical records, audits, peer reviews, quality indicators, reports, and portfolios.[43] In relation to this, Cruces Hospital is developing its own model of reflective logbook/report to form the basis of future portfolios.[44,45] Note, however, in terms of the clinical evaluation tests by direct observation, they have been developed in the Anglo-Saxon world to deal with a concern that Norcini highlights in his article,[41] that the trainees are seldom observed, so the circumstances in our environment may be different.

3. *Scientific foundations of medicine (medical knowledge):* testing all types of knowledge, multiple-choice questions (MCQs), extended-matching items (EMIs),[46] structured cases, simulations and models.

4. *Communication:* patient opinions, MSF, standardised patients, and OSCE.

5. *Public health systems (health promoter and manager of resources):* MSF, questionnaires, and patient opinions.

6. *Information management:* computer simulations, and cases.

7. *Critical analysis and research, and self-directed learning:* portfolios, reflective reports, and standardised cases.

To evaluate the competencies of a professional many dimensions must be considered, it being necessary to extrapolate from partial data to arrive at a complete picture. Nevertheless, we should start with very simple, inexpensive instruments, accepted and understood by all clinical staff and the resident, and that provide added value to our Postgraduate Medical Education system.

## CONCLUSION

Specialised training based on competencies is the answer to a globalised world in permanent change. To take this forward, medical centres and services should develop their own projects, as allowed for within the existing regulatory framework. Health institutions should be aware of their duty to society given their accreditation as teaching bodies. However, if they are to exert effective leadership in the development of training programmes it is essential that structural, organisational and human resources are made available. In Spain, this is already provided for in current legislation, and the regional governments are responsible for implementing and developing this infrastructure without further delay.

### Acknowledgements

Acknowledgements to Pilar Martínez Clarés, Professor in the Department of Diagnostic and Research Methods applied to Education, Faculty of Education (University of Murcia) for her personal contribution to the content of this text, to the Tutors of the Competency Assessment Group (Andima Basterretxea, Elena Bereziartua, Milagros Iriberri and Agustín Martínez-Berriochoa) and to Mª Jesús González-García, secretary of the Medical Teaching Unit at Cruces Hospital.

## REFERENCES

1. Ruiz de Gauna P. La formación médica en una sociedad globalizada. In: Fonseca M, Ruiz de Gauna P (eds.). Avances en Educación Médica: Retos presentes para futuros profesionales de las ciencias de la salud. Oral presentation at the I SEMDE Congress, 22-25 June 2004. Bilbao: Basque Society for Medical Education (SEMDE), 2005;2:21.http://www.ehu.es/SEMDE/archivos_pdf/avances_ed_medica.pdf
2. Mardones JM. Educar para una sociedad más humana: la educación

ante la economía y la cultura. Retos educativos para la próxima década en la Unión Europea y sus implicaciones organizativas: VII Interuniversity Congress on the Organisation of Educational Institutions (VII CIOIE). San Sebastián, 4-6 July 2002;81-96.
3. The Bologna Declaration of 19 June 1999. http:// www.bologna-bergen2005.no/Docs/00-Main_doc/990719BOLOGNA_DECLARATION.PDF
4. Stein G. Peter Drucker (I). Hacia una biografía intelectual. In: Instituto Empresa y Humanismo (Cuadernos Empresa y Humanismo n.º 73). http://www.unav.es/empresayhumanismo/publicaciones/cuadernos/catalogo07.htm
5. White Paper on the Health Care Professions in Catalonia (Libro Blanco de las profesiones sanitarias de Cataluña). Department of Health and Social Security of the Catalan Regional Government B-18.688-2003; p. 69.
6. Jovell A. El futuro de la profesión médica. Josep Laporte Library Foundation, 2001. http://www.fbjoseplaporte.org/docs/repositori/070517121543.pdf
7. Jovell A, Navarro M. La profesión médica en la encrucijada: hacia un nuevo modelo de gobierno corporativo y contrato social (2006). http://www.fbjoseplaporte.org/docs/repositori/070727130419.pdf
8. Ser Médico, hoy. Retos del nuevo profesionalismo médico en España. Report of the Medical Education Foundation (FEM) for the General Council of the Colleges of Physicians (CGCOM) . Madrid 2006 http://www.educacionmedica.net/sec/serMedico 2006.pdf
9. Gual A, Oriol-Bosch A, Pardell H. El Médico del futuro (Physician for the future). Med Clin (Barc) 2010;134:363-8.
10. Martínez-Clares P, Martínez-Juarez M, Muñoz-Cantero JM. Formación basada en competencias en educación sanitaria: aproximaciones a enfoques y modelos de competencia. RELIEVE 2008;14(2):1-23. http://www.uv.es/RELIEVE
11. Echeverría B. Gestión de la competencia de Acción Profesional. Revista de Investigación Educativa 2002;20(1):7-43.
12. Morán Barrios J. ¿Es necesaria y compatible la existencia del tutor de médicos residentes dentro de nuestras estructuras asistenciales? Educ Med 2003;6(3):10-1.
13. Sistema Español de Formación Especializada. Evolución, Situación actual y Perspectivas de futuro (ref 713/000155). In: Meeting of the Committee for Health and Social Security on 30 June 1992, Official Record of the Spanish Senate: commission no. 190,1992.
14. Real Decreto 127/1984, of 11 January, regulating specialised medical training and the recognition of medical specialist. (in effect until 22 February 2008). BOE no. 26 of 31/1/1984;2524-8.
15. Orden de 22 June 1995 regulating the Teaching Committees (Comisiones de Docencia) and systems of evaluation used in the training of medical and pharmaceutical specialists. http://www.boe.es/boe/dias/1995/06/30/pdfs/A19793-19799.pdf
16. Quereda C, on behalf of the Spanish National Commission for the Specialty of Nephrology (Ortega F, Martín de Francisco A. L., Matesanz R, Alcázar R, Sanz Boix A, Bernis C, Abaigar P, Sánchez Casajús A, Mérida E, García Pérez MA). Algunos aspectos de la situación de la formación de especialistas de Nefrología en España. Nefrologia 2008;28(3):263-271.
17. Real Decreto 183/2008, of 8 February, identifying and classifying specialties in the Health Sciences and specifying certain characteristics of the system for specialist health training. http://www.msc.es/profesionales/formacion/docs/realDecreto183_2008.pdf
18. Cobo-Reinoso J. La difícil transición de licenciado a especialista. Educ Med 2009;12(Supl 3):S45-S50.
19. Bunk GP. Teaching Competence in Initial and Continuing Vocational Training in the Federal Republic of Germany. Vocat Train Eur J 1994;1:8-14.
20. McClelland D. Testing for Competence rather than for Intelligence. Am Psychol 1973;28(1):1-14.
21. Tomorrow´s Doctor. http://www.gmc-uk.org/education/undergraduate/tomorrows_doctors.asp
22. The Scottish Doctor Project 2000. http://www.scottishdoctor.org/resources/scotdoc1.pdf
23. CanMEDS 2000 Project: Extract from the Societal Needs Working Group Report. Medical Teacher 2000;22(6):549-54, and the CanMEDS 2005 Framework. http://rcpsc.medical.org/canmeds/bestpractices/framework_e.pdf
24. Frank JR, Danoff D. The CanMEDS initiative: implementing an outcomes-based framework of physician competencies. Medical Teacher 2007;29(7):642-7.
25. An Introduction to Competency-based Residency Education. ©2006 ACGME. A product of the ACGME Outcome Project, 2006; http://www.acgme.org/outcome/comp/compCPRL.asp
26. Swing SR. The ACGME outcome Project: retrospective and prospective. Medical Teacher 2007;29:648-54.
27. Institute for International Medical Education, Core Committee. Global Minimum Essential Requirements in Medical Education. Medical Teacher 2002;24:130-5.
28. Morán Barrios J. Competencia profesional de médicos especialistas y modelo de gestión de la formación médica especializada basado en la experiencia del Hospital de Cruces. In: Fonseca M, Ruiz de Gauna P (eds.). Avances en Educación Médica: Retos presentes para futuros profesionales de las ciencias de la salud. Oral presentation at the I SEMDE Congress, 22-25 June 2004. Bilbao: Basque Society for Medical Education (SEMDE), 2005;9:83. http://www.ehu.es/SEMDE/archivos_pdf/avances_ed_medica.pdf
29. Morán Barrios J. Ser Médico. http://www.hospitalcruces.com/documentos/actividad Docente/VISION_DOCENTE-SER_MEDICO.pdf
30. American Board Medical Specialties. MOC Competencies and Criteria:http://www.abms.org/Maintenance_of_Certification/ABMS_MOC.aspx
31. Morán Barrios J. La Formación basada en competencias debe de introducirse también en la Formación Especializada (interview). DPM 2010;3(1):37-40. http://www.idepro.es/dpm/v3_n1/DPM3_1.pdf
32. Fonseca M, Ruiz de Gauna P. Formación médica especializada: formar en competencias para incidir en el perfil del professional que necesita la sociedad y la sanidad del siglo XXI. In: Perspectivas para el Cambio en la Formación y la Práctica Médica, pp. 67-71. Bilbao, 26-27 October 2006: II Congress of the Basque Society for Medical Education (SEMDE). http://www.ehu.es/SEMDE/publi.htm
33. Saura Llamas J. Cómo puede convertirse un tutor en un docente efectivo. Aten Primaria 2007;39(3):151-5.
34. Morán Barrios J. Estrategias e instrumentos de evaluación del residente. Valladolid, 8 and 9 October 2008: Oral presentation at a Meeting of Tutors in Specialised Health Training in de Castilla y León. http://www.ehu.es/SEMDE/publi.htm

35. A working paper from the Postgraduate Medical Education Training Board. Principles for an assessment system for postgraduate medical training, 14 September 2004. http://www.ecompendium.nhs.uk/PMETB-principles-forassessment-systems.asp
36. Epstein RM. Assessment in Medical Education. N Engl J Med 2007;356:387-96.
37. Wass V, Van der Vleuten C, Shatzer J, Jones R. Assessment of clinical competence. Lancet 2001;357:945-9.
38. ACGME Outcome project. Toolbox of assessment methods: http://www.acgme.org/Outcome/assess/Toolbox.pdf
39. Whitehouse A, Hassell A, Bullock A, Wood L, Wall D. 360 degree assessment (multisource feedback) of UK trainee doctors: Field testing of team assessment of behaviours (TAB). Medical Teacher 2007;29(2- 3):171-6.
40. Martínez Carretero JM. Los métodos de evaluación de la competencia profesional: la evaluación clínica objetiva estructurada (ECOE). Educ Med 2005;8(Supl 2):S18-S22.
41. Norcini J, Burch V. Workplace-based assessment as an educational tool: AMEE Guide No. 31. Medical Teacher 2007;29(9-10):855-71.
42. Norcini J. The Mini Clinical Evaluation Exercise (mini-CEX). Clinical Teacher 2005;2(1):25-30.
43. Snadden D, Thomas M. The use of portfolio learning in medical education. Medical Teacher 1998;20(3):192-9.
44. Morán J, Fernández F, Lorenzo M, Sharluyan A. Memoria de Formación del Médico Residente (MFMIR). Aproximación al portafolio docente. Educ Med 2005;8(3):159. (I-8).
45. Morán J, Carballo G, Ruiz de Gauna P. Contenido reflexivo de la memoria de formación MIR del Hospital de Cruces. Bases del portafolio formativo. Educ Med 2007;10(3):169. D-6.
46. Case SM, Swanson DB. Extended-matching items: A practical alternative to free-response questions. Teaching and Learning in Medicine 1993;5(2):107-15.

Sent for Review: 22 Jun 2010 | Accepted: 22 Jul. 2010