

SPECIAL ARTICLE

Intensive medicine in Spain

Steering Committee of the Sociedad Española de Medicina Intensiva, Crítica y Unidades Coronarias (SEMICYUC)¹

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KEYWORDS

Intensive medicine;
Speciality;
Trajectory

Abstract Intensive care medicine is a medical specialty that was officially established in our country in 1978, with a 5-year training program including two years of common core training followed by three years of specific training in an intensive care unit accredited for training. During this 32-year period, intensive care medicine has carried out an intense and varied activity, which has allowed its positioning as an attractive and with future specialty in the hospital setting. This document summarizes the history of the specialty, its current situation, the key role played in the programs of organ donation and transplantation of the National Transplant Organization (after more than 20 years of mutual collaboration), its training activities with the development of the National Plan of Cardiopulmonary Resuscitation, with a trajectory of more than 25 years, its interest in providing care based on quality and safety programs for the severely ill patient. It also describes the development of reference registries due to the need for reliable data on the care process for the most prevalent diseases, such as ischemic heart disease or ICU-acquired infections, based on long-term experience (more than 15 years), which results in the availability of epidemiological information and characteristics of care that may affect the practical patient's care. Moreover, features of its scientific society (SEMICYUC) are reported, an organization that agglutinates the interests of more than 280 ICUs and more than 2700 intensivists, with reference to the journal *Medicina Intensiva*, the official journal of the society and the Panamerican and Iberian Federation of Critical Medicine and Intensive Care Societies. *Medicina Intensiva* is indexed in the Thompson Reuters products of Science Citation Index Expanded (Scisearch®) and *Journal Citation Reports, Science Edition*. The important contribution of the Spanish intensive care medicine to the scientific community is also analyzed, and in relation to the future of intensive care medicine in Spain and in Europe, recommendations are made towards specialization in intensive care medicine incorporating in the training program those competences (knowledge, skills and attitudes) that should be present in an intensivist in Europe and that are extensively fulfilled by the current Spanish training program. The trajectory followed by intensive care medicine in Europe and recently in China, shows the increasing need of intensive care and the progressive recognition of the specialty in economically growing countries, and emphasizes the need of homogenization in the training of future specialists in intensive care medicine globally.

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PALABRAS CLAVE

Medicina intensiva;
Especialidad;
Trayectoria

Medicina intensiva en España

Resumen La medicina intensiva es una especialidad médica creada oficialmente en nuestro país en 1978, con un programa formativo de 5 años, dos troncales y tres de formación, en una unidad de cuidados intensivos, acreditada para la docencia, habiendo desarrollado durante este tiempo, 32 años, una actividad intensa y variada, lo que ha permitido posicionarse como una especialidad atractiva y con futuro en el mundo hospitalario. Este documento resume la historia de la especialidad, su situación actual, su papel determinante y clave en los programas de donación y trasplante de la ONT (tras más de 20 años de colaboración mutua), su actividad formativa con el desarrollo del Plan Nacional de Reanimación Cardiopulmonar, con más de 25 años de trayectoria, su interés por proporcionar una asistencia basada en programas de calidad y seguridad del paciente grave, y describe también el desarrollo de registros de referencia, ante la necesidad de conocer datos en procesos asistenciales prevalentes, como la cardiopatía isquémica, o en las infecciones en las UCI de largo recorrido (más de 15 años), que han permitido disponer de información epidemiológica y de características asistenciales, que pueden incidir en la práctica asistencial. Además, describe las características de su sociedad científica (SEMICYUC), una organización que aglutina los intereses de más de 280 UCI y de más de 2.700 intensivistas, y también hay referencias a la revista *Medicina Intensiva*, revista oficial de la Sociedad y de la Federación Panamericana e Ibérica de Sociedades de Medicina Crítica y Terapia Intensiva. *MEDICINA INTENSIVA* está incluida por Thompson Reuters en el Science Citation Index Expanded (SciSearch®), y en el *Journal Citation Reports, Science Edition*. Se analiza también la importante contribución científica que la medicina intensiva española ha realizado a la comunidad científica, y en relación con su futuro en España y Europa, se apuesta por la especialización mediante la incorporación en el sistema formativo de las competencias (conocimientos, habilidades y actitudes) que debe reunir un intensivista en Europa, y que se cumplen sobradamente en el programa español actualmente vigente. La trayectoria seguida por la medicina intensiva en Europa, y recientemente en China, ilustra la necesidad creciente de los cuidados intensivos y el progresivo reconocimiento de la especialidad en los países en expansión económica, y subraya la necesidad de homogeneizar la formación de los futuros especialistas en medicina intensiva en el mundo.

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Definition

The Spanish National Commission of Intensive Care Medicine defines the specialty of Intensive Care Medicine as the part of the Medicine dedicated to patients with current or potential life-threatening dysfunction of one or more body organs, with possibilities of recovery.

The national commissions of medical specialties, dependent upon the Spanish Ministry of Health, are the advisory organs in the regulation of specialized medical training in Spain, and in awarding of the title of specialist by the Ministry of Education. Each of these national commissions is composed of 11 members, selected from among the reputed professionals and nominated upon proposal by the following organizations: three members designated by the Ministry of Education from among the Professors of the Faculties of Medicine; three members designated by the Ministry of Health from among the medical personnel of the healthcare centers with accredited teaching units; two members in representation of the legally constituted scientific societies, selected from among their respective members; two members in representation of the residents in training belonging to the corresponding medical specialty and chosen by the third year residents in the case of specialties with 5-year

resident training programs and by the second-year residents in the case of those specialties with 3- or 4-year training programs; and a representative of the Spanish General Council of Official Medical Colleges.¹

Activity in Intensive Care Medicine is circumscribed to the Departments of Intensive Care Medicine (DICM), including both polyvalent and single-specialty clinical or surgical Departments, and other areas of the Healthcare System where seriously ill patients requiring integral care are found. As a consequence of the growing social demand for increasingly higher levels of medical care, and of professional developments making it possible to extend patient care beyond the conventional limits, Intensive Care Medicine implies the acquisition of competences which are the sum of knowledge, skills and attitudes representing the last step within a progressively staged critically ill patient care system.²

Historical origin of the specialty

In Spain the first critical patient units were created in the 1970s. The need for specific and continued care of these critical patients was the reason for creating the specialty known as Intensive Care Medicine.

In 1973, a total of 31% of the physicians working in the first Intensive Care Units (ICUs) were specialists in Internal Medicine, 25% were specialized in Cardiology, 16% in Anesthesiology, and 9% in the different areas - fundamentally Pneumology and Surgery. The remaining 19% of these professionals had directly started their work in the Departments of Intensive Care Medicine, without first having gone through any other specialty.

The Spanish Society of Intensive Care Medicine and Coronary Units (*Sociedad Española de Medicina Intensiva y Unidades Coronarias*, SEMIUC) was created in 1974, five years after the inauguration of the first Intensive Care Unit in Spain. Posteriorly, the Society was renamed as the Spanish Society of Intensive and Critical Care Medicine and Coronary Units (*Sociedad Española de Medicina Intensiva, Crítica y Unidades Coronarias*, SEMICYUC), which is how it is known today.

The first number of the journal *MEDICINA INTENSIVA*, the official organ of the SEMICYUC, was published in 1976.³ The SEMICYUC plays a fundamental role as guarantor of the specialty, providing top-level complementary training for specialists and residents, and stimulating and favoring the generation of new specialized scientific knowledge. Among the teaching aspects, mention must be made of the National Cardiopulmonary Resuscitation Plan, created in 1985 within the setting of the SEMICYUC, and which has made it possible to offer training not only for physicians and other health professionals, but also for the general population.⁴

The training of specialized physicians (intern resident physicians; *médicos internos y residentes*, MIR) was formally and legally regulated in 1978, and the range of recognized medical specialties included Intensive Care Medicine. The legal setting only contemplated primary specialties, and there were no options for supra- or sub-specialties. The official MIR training program in Intensive Care Medicine, with a duration of 5 years, clearly defined two periods: an initial period centered on basic medical specialties, and a second specific period of training in Intensive Care Medicine.

Current situation

The Spanish model of Intensive Care Medicine has been positive in a number of ways. From the patient care perspective, the polyvalent model has been effective, as acknowledged by most healthcare management bodies, since in practice a single specialist is able to deal with most of the critical situations seen in hospital during the 24 hours of the day and throughout the year.⁵

This polyvalent character has led intensivists to assume many tasks, extending beyond the limits of the Department of Intensive Care Medicine (DICM). As an example, intensivists have played a notorious role in the national transplant program, in close collaboration with the Spanish National Transplant Organization, for over 20 years, since in most hospitals the transplant coordinator is an intensivist.

The efficiency of the polyvalent model in secondary hospitals has allowed intensivists to assume concrete responsibilities such as the implantation of definitive pacemakers or secondary transport of high-risk patients. Mention also should be made of the extension of intensivist activities to the field of urgency and emergency care, which has been introduced in the Autonomous Community of

Andalusia and in isolated hospitals throughout the rest of Spain, with very good results.^{6,7} Lastly, many healthcare managers and planners currently come from Intensive Care Medicine (Table 1).

Departments of Intensive Care Medicine (DICM) are present in practically all hospitals and private centers in Spain at general and district level. The major both university and non-university hospitals and the large private centers have DICM mostly operated by specialists in Intensive Care Medicine.

Organ donor and transplant program

The Spanish donor and transplant model is universally recognized as the most effective in the world for developing a donation system. The rationale that has guided the model from the start is the implantation of a system centered on the adequate organization of all the steps needed to secure organ donation from deceased patients (Fig. 1). Those in charge of managing this process are mainly intensivists. Things could not be done in any other way, considering that organ donation takes place in the context of a patient in which death must be diagnosed, the hemodynamic condition must be kept stable, the family must be contacted, and the entire organ harvesting and transplant process must be organized, etc. These are tasks for which the specialists in Intensive Care Medicine in this country are well prepared (they have been actively and efficiently collaborating with the Spanish National Transplant Organization [NTO] for over 20 years). Moreover, these specialists are supported by the organizational and healthcare structure of the ICUs, which actively participate in the maintenance of potential donors.

In early 2009, of the 224 physicians working as transplant coordinators in the 167 Spanish hospitals authorized for donation practices, a full 79% were intensivists, and this percentage continues to increase year after year. In this same line, four years ago the Spanish NTO and the *Sociedad Española de Medicina Intensiva, Crítica and Unidades Coronarias* (SEMICYUC) reached an agreement whereby all residents in training in Intensive Care Medicine are to complete a specific donation and transplant course, with the inevitable consequence of further strengthening this relationship or link between donation and intensive care.

During the Spanish Presidency of the European Union in 2010, the good results obtained by the NTO have led our model to be evaluated as a reference for the rest of the European countries, and the European Parliament has recently developed a Directive on quality and safety referred to human organs. The purpose of this Directive on transplants is to double the number of donations and guarantee that all transplants carried out in the European Union adhere to the same quality and safety norms. A number of dispositions have a direct bearing upon the competences of the specialists: a) the health professionals implicated in the transplant process must be qualified and are to complete specific training programs (article 43); b) the health professionals also must have a key role in facilitating the required information for donors or their families (article 7); and c) in the case of live donors, selection must be made by "qualified, trained and competent" professionals (article 15.2).⁸

Table 1 Characteristics of the Spanish model of Intensive Care Medicine

Solid training program (5 years, official training period)
 Integral training: effective and efficient: all types of patients
 Traumatism
 Postoperative care
 Coronary
 Clinical
 Close collaboration with clinical-surgical specialties
 High degree of implantation and acceptance within the healthcare system
 High degree of implantation and acceptance on the part of citizens
 Consolidated organizational model: over 30 years
 Care basis of the Spanish National Transplant Organization (20 years of joint collaboration):
 hospital coordinators of donations and transplants (79% intensivists)
 Over 2700 associates
 850 residents currently in training, 172 new intensivists/year
 Relevant scientific production
 Official scientific journal: *MEDICINA INTENSIVA* (indexed)
 Quality indicators
 Ethical code
 Competences profile
 National Cardiopulmonary Resuscitation Plan (25 years)
 Primary medical specialty

National Cardiopulmonary Resuscitation Plan

The current cardiopulmonary resuscitation (CPR) techniques were introduced in medical practice 50 years ago. However, in Spain, as in most European countries, the lack of generalized and protocolized training in this area among

medical students, nursing students and residents in training has caused the application of CPR techniques to be the almost exclusive competence of intensivists, emergency care specialists and anesthetists.

These teaching shortcomings contribute to the poor results in the management of cardiorespiratory arrest in

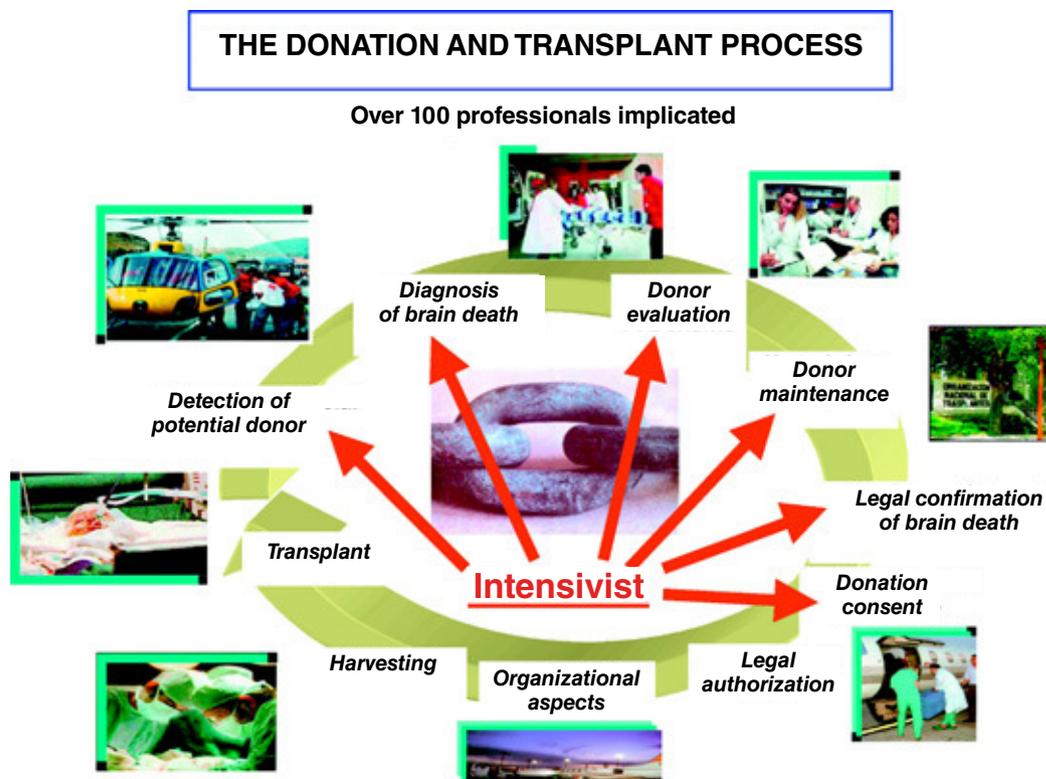


Figure 1 The role of Intensive Care Medicine in donation and transplant.

most hospitals, with the exception of those cases that occur in the areas of Intensive Care Medicine, resuscitation or surgery, since in the rest of the Departments such situations are unlikely to be dealt with within the required timelines, considering that only a minority of the physicians and nursing personnel are trained in this field.

The situation is even more dramatic in the out-hospital setting, where unexpected cardiac arrest is a great problem, with a poor survival rate. The statistical data and evidence that these figures can be improved suggest that a priority public health concern should be to improve the emergency resources, with optimization of the “aid chain”. An essential element for such improvement is the training of health personnel in the techniques and principles of CPR.

In 1983, the SEMICYUC, aware of the need to impulse and diffuse CPR techniques, launched a CPR training plan within the context of the I National Plan, recognized by the Ministry of Health as being of healthcare interest, and which in 1990 received the “*El Médico*” prize for the best continued or ongoing training course.

Development began in November 1985 with the start of an ongoing training course in which 1800 physicians were enrolled. The theoretical contents of the course were developed with the collaboration of 67 specialists of Intensive Care Medicine from 15 hospitals, and comprised 12 teaching units of the first *Advanced CPR Manual* (presently in its fourth edition). The teaching resources were standardized, including simulations, and a set of slides were developed for the theory classes.

In Spain this plan represented a hallmark in continued or ongoing training, since for the first time the new technologies were being applied for training purposes in large groups of healthcare professionals.

The development of the National CPR Plan of the SEMICYUC (NCPRP) contributed to establish the bases for training in CPR in Spain, producing the teaching tools and infrastructures needed for sustained training in resuscitation practices, but particularly helping to increase awareness among professionals and citizens of the need to create integral emergency care Departments with a view to avoiding premature deaths, permanent sequelae and needless costs for society.

A model for the training of Advanced Life Support (ALS) instructors was developed in 1988 with the purpose of consolidating the educational system and extending the teaching of CPR techniques through a structured training chain.

The first edition of the *Basic Life Support Instructors Teaching Manual* was published in 1997, following the lines used for the training of Advanced Life Support instructors, but placing special emphasis on those aspects related to Basic Life Support (BLS).

In its over 25-year history, the National CPR Plan has grown and become consolidated; over 120,000 health professionals and 25,000 non-healthcare students have been enrolled in its courses.

Advanced CPR is taught on a protocolized basis throughout the country, and over 3500 ALS and BLS instructors ensure the continued training of this discipline. Likewise, the SEMICYUC, as founding partner, has actively contributed to the creation of the Spanish CPR Council in 1999.

Quality and safety programs for the critical patient

The SEMICYUC considers healthcare quality, and particularly safety, to be one of its main elements for intervention.

In 2005 a series of quality indicators were published, regarded as being of key relevance for the different processes involved in the care of critical patients⁹ (Fig. 2). A total of 120 quality indicators were established, covering all the areas and dimensions of Intensive Care Medicine. Of these indicators, 20 were considered to be sufficiently important to warrant their monitorization in all ICUs, together with other indicators dependent upon the case-mix of patients.

The most commonly monitored indicators were related to safety and effectiveness. A prospective, observational cohort study was carried out in 80 hospitals during a period of three months. Evaluation was made of compliance with 5 essential indicators in all those patients meeting the criteria established by the manual. Although the degree of follow-up or monitorization of the variables was high in most of the hospitals, room for improved compliance was also identified in most cases.¹⁰

A map has recently been published of 27 indicators for assessing the quality of care of patients with acute coronary syndrome.¹¹

At present, the SEMICYUC is participating in the Safety Task Force, led by the European Society of Intensive Care Medicine (ESICM) for the development of a set of quality and safety indicators.

The SEMICYUC, sponsored by the Quality Agency of the Ministry of Health, has carried out a “Study of incidents and adverse events in Intensive Care Medicine. Safety and risk in the critical patient” (SYREC), designed to estimate the incidence of adverse events, classify such events, and assess their impact and the possibilities for avoiding them.

The probability of suffering at least one safety-related incident due to the simple fact of being admitted to the ICU is 62%. On the day of the study, 1.22 incidents per admitted patient were recorded. The median incident rate in the study was 5.89/100 patients/hour. The SYREC study revealed a high individual risk of incidents among critical patients.

Many such incidents are related to the medication, equipment and devices used, nursing care, accidental withdrawal of tubes and catheters or of artificial airways or mechanical ventilators. Although most incidents cause no patient damage, a significant number can effectively cause damage or even lead to patient death. Most of these incidents are considered to be avoidable.¹²

The “Bacteremia Zero” project is another example of the implication of the SEMICYUC in patient safety. This project, developed by the Quality Agency of the Ministry of Health and carried out by the SEMICYUC, aims to reduce the rate of local infections and bacteremias associated with central venous catheters in all Spanish ICUs.

The registries of the SEMICYUC

The activity focused on the critical patient has led to the development of many registries involving the voluntary and altruistic participation of numerous professionals. Many of



Figure 2 Critical patient safety and risk project.

them have helped to describe healthcare processes (acute coronary syndrome, mechanical ventilation, nutrition, diagnosis and treatment of different infections) and/or concrete activities (weaning, nosocomial pneumonia, bacteremias, influenza A, heart surgery, adverse effects) and have contributed to consolidate knowledge of Intensive Care Medicine, as reflected in many national and international publications. Some of these registries have been continuously maintained since their creation in the early 1990s, including the “National nosocomial infection vigilance study” (ENVIN) and the “Analysis of delays in the diagnosis of acute myocardial infarction” (ARIAM).

ENVIN registry

The ENVIN registry was developed in the setting of the Infectious Diseases Working Group in the year 1994. Its aim was and remains the registry of infections related to the use of medical devices during patient stay in the ICU. To this effect a database was created that has evolved over the years. At present, data collection is carried out using the ENVIN-HELICS software application, accessed on the internet (<http://hws.vhebron.net/envin-helics/>). Access is open and free (using an individual code), following identification and registry of the supervisors of each ICU. Participation in the registry is voluntary, and data collection is longitudinal and prospective. From its creation, the incorporation of ICUs has increased, and in 2009 data from 147 such Units were recorded. There is also a simplified version of the program allowing the inclusion only of patients with some of the controlled infections (simplified ENVIN-HELICS) - this making it possible for an increasing number of ICUs to perform

continuous registry of their infections. Each year a national report is prepared and distributed among the participating ICUs, and can be consulted in PDF format from the registry website and Society website (<http://www.semicruc.org/>). The report includes the names of all the participating hospitals, the supervisors of the program in each ICU, and the collaborators of each year. The information relating to the national data is presented annually at national and international congresses in our specialty, and is also submitted to the European HELICS registry. In the last year an audit has been added to the registry with a view to evaluating the quality of the information included.

ARIAM registry

Since March 1994, a group of hospital physicians of the area of Intensive Care Medicine of Andalusia, followed by the rapid incorporation of other Autonomous Communities across Spain, have been analyzing medical care delays in acute myocardial infarction. This initiative gave rise to the so-called ARIAM group (Analysis of delays in the diagnosis of acute myocardial infarction), a project which in its beginnings pursued the following objectives: *a*) to quantify the delay in administering fibrinolytic treatment and assess the phase in the management of acute coronary syndrome (ACS) in which such treatment is provided; *b*) to compare the data obtained among the different participating hospitals; *c*) to implement (on the basis of the data obtained) measures for improvement and design specific interventions for improving medical care; and *d*) to design a common system for the evaluation of healthcare quality in ACS, and a common definition of quality indicators quality standards.

As a result of this initiative, and based on the cycle of management improvement in ACS, the project in 1996 was awarded the "Golden Helix" prize for quality improvement in European healthcare. In these years, over 90 hospitals of the Spanish National Public Healthcare Network have voluntarily joined the project.

The ARIAM group has generated a database with over 100,000 cases of ACS, and has been satisfactorily evaluated by audits from independent entities (*Agencia Andaluza de Evaluación*, IBM, etc.). The ARIAM group remains up to date, adapting to the changes in terminology (current reference to ACS as ACS with ST-segment elevation or ACS without ST-segment elevation), new technologies applied to treatment (percutaneous transluminal coronary angioplasty (PTCA) with stent placement) and new myocardial necrosis (troponins) and heart failure markers (natriuretic peptides, BNP and NT-proBNP), that have redefined the concept of myocardial infarction and revolutionized the diagnosis and follow-up of ischemic heart disease. The data collection software and automatized exploitation of the information obtained have evolved in parallel, now making it possible not only to offer physicians caring for ACS patients a cooperative computerized system to draw updated healthcare information on ACS, but also to provide the clinicians directly implicated with tools for process quality control, advanced clinical management and statistics in the local setting, and cooperative advanced clinical management.

Since 2005, the ARIAM registry has been incorporated as a registry of the SEMICYUC, within the Cardiological Intensive Care Working Group (GTCIC). For the past three years, the registry of cases is made with an annual cutoff interval of three months, though many DICM voluntarily conduct a continuous case registry. The data in turn are presented each year at the GTCIC meeting, and a monograph is prepared, including a list of the investigators in each hospital.

Recently, the ARIAM investigators have defined and published the quality indicators in ACS, and the general scientific and evolutive production of the registry can be consulted at: www.ariam.org.

The current Departments of Intensive Care Medicine in Spain

Departments of Intensive Care Medicine (DICM) are present in practically all hospitals and private centers in Spain at general and district level. The major both university and non-university hospitals and the large private centers have DICM mostly operated by specialists in Intensive Care Medicine.

It is estimated that in the year 2010 there were 300 registered DICM, with a total of about 3500 beds, and a DICM size of between 12-18 beds (range 8-40). The mentioned total number of beds dedicated to the care of critical patients are assigned annually to approximately 240,000 patients, with a mortality rate of about 11%. The university hospitals have the largest number of beds assigned to critical care, and the majority (90%) of these Departments of Intensive Care Medicine are public. The type of patients attended is varied: clinical, surgical, traumatologic and

coronary. In some Autonomous Communities such as Andalusia, the emergency services are directly dependent upon the DICM.

The number and professional category of the personnel in turn vary according to the number of beds in the DICM and the category of the hospital. The nursing personnel, with specific training in Intensive Care, constitute a very important part of the human and professional resources of the DICM. There is usually one nurse for every 2-3 Intensive Care beds, with a distribution of three shifts a day. The nurses are directed by a supervisor hierarchically dependent upon Nursing Management, and in some cases upon the Director or Head of the DICM. Lastly, all DICM have additional staff members such as administrative personnel, clinical auxiliary personnel and (in some centers) specialized technicians. The medical personnel of the DICM is structured on a hierarchical basis in most centers, with the following professional categories: Head of Department, Clinical Chief and Staff Physician.

Sociedad Española de Medicina Intensiva, Crítica y Unidades Coronarias

The Spanish Society of Intensive and Critical Care Medicine and Coronary Units (*Sociedad Española de Medicina Intensiva, Crítica y Unidades Coronarias*, SEMICYUC) was created in 1974, and was initially composed of physicians from different areas with the common objective of improving the care of critical patients. At present, most of the 2700 members of the Society are specialists in Intensive Care Medicine.

The organization of the SEMICYUC comprises a 10-member Steering Committee, a scientific committee, 13 working groups and 14 Autonomous Community and territorial or regional societies. The SEMICYUC in turn manages the journal *MEDICINA INTENSIVA*, the National Cardiopulmonary Resuscitation Plan and the Spanish Critical Patient Foundation (FECC). The SEMICYUC is a founding member of the Pan-American and Iberian Federation of Critical Care Medicine and Intensive Therapy Societies (FEPIMCTI), and member of the World Federation of Societies of Intensive and Critical Care Medicine (WFSICCM).

The fundamental scientific event is the organization of the National Congress of the specialty, held each year for over 35 years. The Congress has a duration of three days, with the presentation of about 500 communications, and the participation of approximately 1000 physicians. In addition, the SEMICYUC each year organizes the sessions for residents in training and offers aids and scholarships for stays in both national and foreign hospitals, as well as grants for research projects and participation in congresses. The working groups of the SEMICYUC also organize annual meetings centered on monographic topics such as for example infectious diseases, bioethics and Cardiology. There is close collaboration with the Spanish Society of Intensive Care Nursing and Coronary Units (*Sociedad Española de Enfermería Intensiva y Unidades Coronarias*, SEEIUC), not only in the organization of the annual Congress, but also in the elaboration of the scientific program of the Congress, with joint activities, and in the development of the different work and research projects

proposed by the different working groups. Nursing in Intensive Care Medicine is a crucial and determinant element for reaching the standards of excellence in terms of healthcare quality and safety which the SEMICYUC and the SEIUC have defined in the care of critical patients in this country.

The journal *Medicina Intensiva*

MEDICINA INTENSIVA is the official journal of the SEMICYUC and currently also the organ for expression of the Pan-American and Iberian Federation of Critical Care Medicine and Intensive Therapy Societies (FEPIMCTI).

The journal has been published uninterruptedly since the year 1976. Its aim is to promote the improvement of knowledge among specialists in Intensive Care Medicine and in other related specialties (Cardiology, Anesthesia, infectious diseases, etc.), based on the publication of original research in the field of Critical Care Medicine.

The collective scientific activity of the SEMICYUC and of its working groups is presented through the publication of the Consensus Conferences of the SEMICYUC and of the recommendations of its working groups, frequently done in collaboration with other scientific societies.

The manuscripts submitted to *MEDICINA INTENSIVA* are subjected to peer review. At present, *MEDICINA INTENSIVA* publishes 10 numbers or issues a year and is registered in the international EMBASE/Excerpta Medica literature database.

Recently, *MEDICINA INTENSIVA* has been included by Thompson Reuters in the Science Citation Index Expanded (Scisearch®), and in the *Journal Citation Reports, Science Edition* from the first number of the year 2008.

Scientific contribution to Intensive Care Medicine

The *SCImago Journal & Country Rank* is a portal including the journals and scientific indicators developed from the information contained in the Scopus database (Elsevier BV). These indicators can be used to evaluate and analyze the scientific contribution of any country or medical specialty. In this sense [Figure 3] and [Figure 4], based on data collected up until 2007, shows the scientific production of different countries in relation to the different medical specialties. As can be seen, in the area of Critical Care Medicine, Spain ranks fifth in scientific production with respect to other countries (Fig. 3); all other specialties rank lower on the list, and on comparing the global scientific production of all the specialties, Spain is seen to be the eighth ranking country on the list (Fig. 4).

The future of Intensive Care Medicine in Spain and Europe

The recent publication of the legislation relating to the regulation of healthcare professions (*Ley de Ordenación de las Profesiones Sanitarias*) of November 2003,¹³ and its future development, must constitute the basis for restructuring specialization in Intensive Care Medicine, in accordance with the trunical concept. The European COBATRICE project¹⁴ aims to define the minimum required competences, skills and knowledge for intensivists in Europe. These characteristics are clearly covered by the 5-year training program in Intensive Care Medicine currently in force in Spain.

The primary specialty of Intensive Care Medicine does not aim to have exclusive competences in the care of



Figure 3 Position of Spain in global world medical publications.

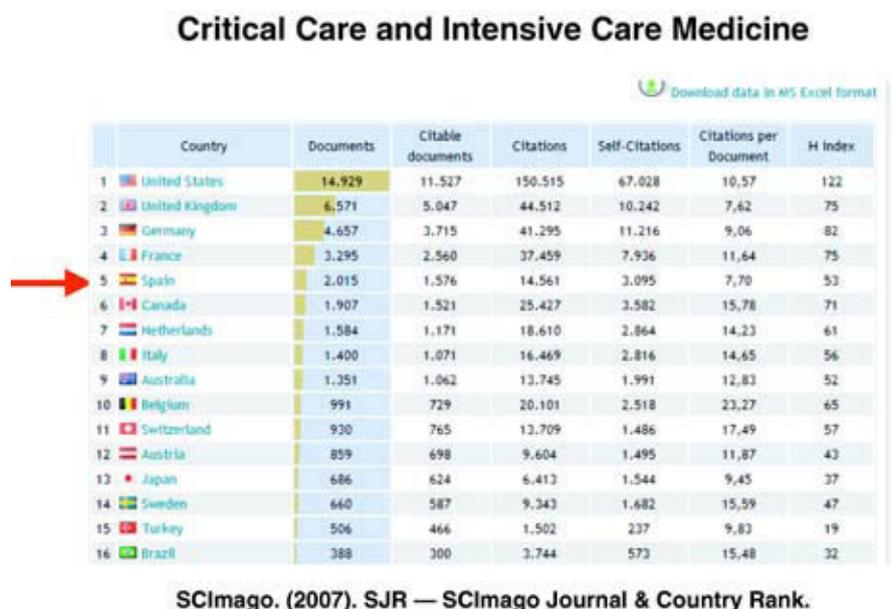


Figure 4 Ranking of Spain among the global world publications, according to the number of medical publications in Intensive Care Medicine.

critical patients. Rather, the objective is to ensure correct practice in this field by correctly trained specialists with exclusive dedication to these activities, and attempting to adapt the training and patient care resources to a policy of economical and social sustainability. This model now has accumulated 30 years of experience and is acknowledged internationally.¹⁵

The current training system in Intensive Care Medicine in Spain, through the competences, skills and knowledge acquired by the physicians in training, allows homologation with the European recommendations for offering optimum care of critically ill patients.

In this same sense, in the last few years, important steps have been taken in Europe towards definition of the knowledge, skills and competences inherent to Intensive Care Medicine,¹⁶ and it seems feasible to establish consensus over a series of universal competences independently of the training routes or channels employed.¹⁷ However, the advances in this field have not yet given rise to a homogeneous training program within the European Union.^{18,19}

Two recent editorials, one published by the editorial board of *The Lancet*²⁰ and the other by the President and Vice-President of the ESICM,²¹ have pointed to the need for increased formal recognition of Intensive Care Medicine as a specialty.

The international trajectory of Intensive Care Medicine, which recently has been recognized as a primary specialty in China,²² reflects the growing need for intensive care and the progressive recognition of the specialty in countries with expanding economies, while also stressing the need to increase and improve the training of these specialists throughout the world.

Conclusions

In sum, from the origins of Intensive Care Medicine, over 50 years ago, to date, a long road has been traveled, and many things have changed. Intensive Care Medicine was created in response to concrete problems, and was developed in the context of technological advances. However, in its coming of age, what defines the specialty is its doctrinal principle and body of knowledge rather than any concrete technology or setting.

The demand for Intensive Care has grown rapidly due to different reasons, in both developed and in developing countries, and in both settings it must be provided based on criteria of effectiveness, efficiency and equity. In any case, Intensive Care Medicine today plays a key role in the management of many patients. The treatment of critical patients must be led by specialists in Intensive Care Medicine with accredited specific training and a series of professional competences demonstrating their adequate qualification. The present and future are characterized by challenges that must be dealt with, and by opportunities for development of the specialty in accordance to the needs of the population.

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