

Instruction in emergency medicine at university schools of medicine: the current situation in Spain

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Objective: To analyze instruction given in emergency medicine in the medical school programs at Spanish universities.

Methods: The curricula published by Spanish medical schools were consulted to determine whether or not they offered a course on emergency medicine. If one was listed, the content of the syllabus was analyzed. The search was conducted on each university's website. Unclear or missing data were checked by e-mailing or telephoning the instructors.

Results: Twenty-two of the 28 medical school programs studied have at least 1 course specifically focusing on emergency medicine, although in most cases the subject is an elective and only lasts 4 months. The number of credits offered is similar to that of other courses lasting the same amount of time. The number of credits and the scope and content of the syllabi vary considerably, as do the methods of assessing student performance. In general, the courses do not follow the recommendations of the Spanish Society of Emergency Medicine (SEMES).

Conclusions: Instruction in emergency medicine is commonly offered in Spanish universities, although the courses are usually listed as electives. The approach to instruction varies greatly from university to university. The syllabi of these undergraduate courses generally do not follow SEMES recommendations. [Emergencias 2010;22:21-27]

Key words: Emergency health services. Education, medical, undergraduate.

Introduction

Medical emergencies are a group of symptoms and illnesses that require urgent attention because of their seriousness or their intolerance. The resulting demand for care is high and increasing. Due to the potential severity and need for speedy medical response, trained personnel are required. However, the teaching of emergency medicine (EM) as a specific discipline in our country is not regulated during the degree course or after completion. The main cause of this absence of regulation is the lack of recognition of this discipline as a medical specialty. To date, emergencies and therefore EM teaching have been understood in a vertical way, i.e. as part of the different diseases that at some point may require urgent attention. However, real learning about the concept of EM requires specific, structured and comprehensive training, covering triage, cardio-pulmonary resus-

citation, initial assessment and emergency treatment until discharge or referral to other professionals of the health system, and includes all levels of emergency care, both pre-hospital and hospital care¹.

Recently, and increasingly, Spanish medical schools have begun to introduce EM into their teaching curricula. This study aims to analyze the current teaching situation of this discipline in our medical schools.

Method

We analyzed the available curricula on the websites of various medical schools in Spain. We sought to identify any subject specifically dealing with EM material. When identified, we analyzed the following characteristics: degree of requirement (core, compulsory, optional, free elective

credit), duration (annual, quarterly), cycle and / or course in which the subject was taught, theoretical and practical credits achieved on passing the subject, department responsible, existence of preset and published program, scope and content of program, type of assessment and how long the subject had been taught. We compared the available data with the recommendations of the Spanish Society of Emergency Medicine (SEMES) on the teaching of EM during the degree course (Table 1). For missing/insufficient data we contacted the person responsible for the course up to 3 times by phone or email whenever the contact information was available on the institutional webpage. We excluded subjects only dealing with a single aspect of EM (Cardiopulmonary resuscitation, multiple injuries). The study was conducted during the 2008-2009 academic year. Websites where the information was obtained are shown in Table 2.

Descriptive analysis was performed (frequency, percentage and median) using the statistical package SPSS 16.0. For comparisons we used Chi square test, and *p* values of <0.05 were considered significant.

Results

Thirty-three of the 74 Spanish universities have a Faculty of Medicine. However, only 28 were included in the present study: the other five are newly established faculties (Girona, Pompeu Fabra, Rey Juan Carlos, Internacional de Catalunya, Europea de Madrid), and although ME is a subject in some of their curricula, the subject is part of the second cycle and these faculties only offer the first cycle as yet.

Of the 28 faculties, 22 (79%) teach the subject of EM (Table 2). This subject is not currently taught at any private university, but is part of the curriculum of two of the previously mentioned recently created institutions as well as in the future curriculum at the University of Navarra. The presence of ME in medical school curricula is recent, less than 10 years in 69% of cases (data only available for 76% of cases). Six of the schools surveyed offered more than one EM subject, the difference being in content and the department responsible (medical versus surgical), the degree of requirement (compulsory / optional / elective credits), or in the teaching unit where they are taught.

Of the 29 subjects recorded, most were optional or free choice (79%) and of quarterly dura-

Table 1. Summary of SEMES recommendations on the teaching of Emergency Medicine during the degree course

Compulsory subject
Second cycle 5-6th year
Number of credits (total / theoretical / practical): 7/3/4
From initial demand (event) to ED discharge
Practical attendance of 1-2 months in multipurpose ED (in-hospital and out-of-hospital)
Theoretical topics recommended (0.1 credits per subject):
– Comprehensive emergency systems. Severity rating
– Chest pain
– Dyspnea. Acute respiratory failure
– Multiple injuries
– Hypotension. Shock
– Acute Abdominal Pain
– Altered level of consciousness
– Seizure. Headache. Stroke
– Syncope. Instability. Dizziness
– Febrile syndrome. Management of infection in the ED
– Differential aspects in paediatrics, geriatrics, immigrants
– CPR
– Diabetes-related emergencies
– Arrhythmias
– Hemorrhagic diathesis
– Heart failure. Pulmonary edema. Hypertensive crisis
– Ophthalmological and ENT emergencies
– Most common bleeding emergencies
– Poisoning
– Self-destructive behaviour. Agitation
Practical seminars:
– Triage. Medical transport
– Monitoring. Oxygen therapy
– Basic and advanced CPR
– Mobilization of the injured. Removing the helmet
– Airway management. Endotracheal intubation
– Venous catheterization. Infusion Systems
– Multiple injuries
– Sutures

CPR: Cardiopulmonary resuscitation. ED: Emergency Department.

tion (93%) (Table 2), so that generally they fail to meet the SEMES recommendation of giving the subject compulsory status. The median number of credits obtained for passing is 5 (minimum 2, maximum 9) and in most cases 4.5, similar to the number of credits for passing other optional subjects or compulsory subjects of the same duration, but much less than the 7 recommended by SEMES. The number of theory credits is similar to the number of practical credits. The overall number or type of credits offered (theory or practice) bears no relation to the compulsory nature of the subject (*p* = 0.56, *p* = 0.0735, *p* = 0.141 respectively).

Except for one free elective credit, the subject is taught in the second cycle (4-6th year), as recommended by SEMES, and in half of these cases, it can be chosen during the second cycle.

The program explaining the characteristics of the subject is available on the website of the teaching centre in 79% of cases. It varies considerably in both length and content. The number of theoretical issues range from 4 to 27, and the

Table 2. General characteristics of the subject Emergency Medicine (EM) in different medical schools in Spain

Faculty Website address	No.	Name of subject	Subject type	Duration	Credits (T/P)*
Cádiz www.uca.es/centro/1C04/	2	EM and disasters Intensive care and EM	optional optional	quarterly quarterly	5 (3/2) 5 (3.5/1.5)
Córdoba www.uco.es/organiza/centros/medicina/	1	EM	free choice	quarterly	4.5 (2/2.5)
Granada www.ugr.es/~facmed/	2	Medical-surgical emergencies Introduction to emergencies	optional free choice	quarterly quarterly	5 (2.5/2.5) 2 (0/2)
Málaga www.medicina.uma.es/	1	Intensive care medicine and Medical emergencies	compulsory	quarterly	4.5 (2.5/2)
Sevilla www.medicina.us.es/	2	EM and surgery Initial procedures in out-of-hospital health emergencies	compulsory free choice	quarterly quarterly	4.5 (3/1.5) 3 (1.5/1.5)
Zaragoza www.unizar.es/centros/fmediz/	1	EM and intensive care medicine	optional	quarterly	6 (3/3)
Oviedo www.uniovi.es/medicina/presentacion.htm	2	Surgical emergencies, EM	optional optional	quarterly quarterly	4.5 (2.5/2) 5 (2.5/2.5)
Las Palmas www.ulpgc.es/index.php?pagina=ccs&ver=inicio	1	EM	compulsory	annual	5 (2.5/2.5)
Cantabria www.unican.es/Centros/medicina/	1	EM	compulsory	quarterly	7 (3/4)
Salamanca campus.usal.es/~medicina/	1	EM	optional	quarterly	4 (2/2)
Valladolid www.med.uva.es/	1	Emergencies in medicine	optional	quarterly	4.5 (2/2.5)
Barcelona www.ub.edu/medicina/	2	Key points in care of the emergency patient Emergency practice	optional free choice	quarterly quarterly	6 (5/1) 6 (0/6)
Autónoma Barcelona www.uam.es/centros/medicina/					
– UD Vall d'Hebron	1	EM	optional	quarterly	4.5
– UD Can Ruti	1	EM	optional	quarterly	4.5 (1.5/3)
– UD Sant Pau	1	EM	optional	quarterly	4.5 (1.5/3)
Lleida www.medicina.udl.cat/	1	Emergency and intensive care medicine	optional	quarterly	4
Rovira i Virgili, Reus (Tarragona) www.fmcs.urv.cat/	1	EM	optional	quarterly	7.5 (3/4.5)
Extremadura www.unex.es/unex/centros_uex/centros/medicina/	1	Anaesthesiology, resuscitation and clinical emergencies	compulsory	annual	9 (4/5)
Santiago de Compostela www.usc.es/facmo/	1	Medicine and clinical emergencies	optional	quarterly	4.5 (3/1.5)
Complutense Madrid www.ucm.es/centros/webs/fmed/	1	Emergencies in medicine	free choice	quarterly	9 (3/6)
Autónoma Madrid www.uam.es/centros/medicina/	1	CPR and basic emergency procedures	optional	quarterly	4.5
País Vasco www.medikuntza-odontologia.ehu.es/p247-home/es/	1	EM	compulsory	quarterly	5 (2/3)
Miguel Hernández Elche (Alicante) www.umh.es/frame.asp?url=centros	1	EM	optional	quarterly	5 (2/3)
Valencia centros.uv.es/mio/castellano/	1	Medical emergencies	optional	quarterly	6 (0.5/5.5)

*T/P: theoretical / practical.

topics covered are very diverse, largely with a syndromic focus (83%). In general, there is a tendency to go into depth in those topics associated with the department responsible for the subject.

None of the theoretical programs totally comply with the SEMES recommendations (Figures 1 and 2). Cardiopulmonary resuscitation (CRP) is the most prevalent in the programs available, but is not part of all the programs. Besides this subject, only dyspnea and chest pain form part of more than 75% of the subject matter in the different programs, and the latter is generally viewed as acute coronary syndrome. In contrast,

the various programs offer many other topics not specifically recommended by SEMES. This is the case with hypertension and hypertensive emergencies (with heart failure as a separate item), and with burns and external agent injuries, covered by 50% of the programs.

The practical program ranges from 4 hours of clinical skills workshops to 48 hours mandatory clinical practice in EDs. In two cases the practical program involves a voluntary rotation of 120 hours in an emergency department without specifying EM topics. None of the programs fully meet SEMES recommendations in terms of ED hours

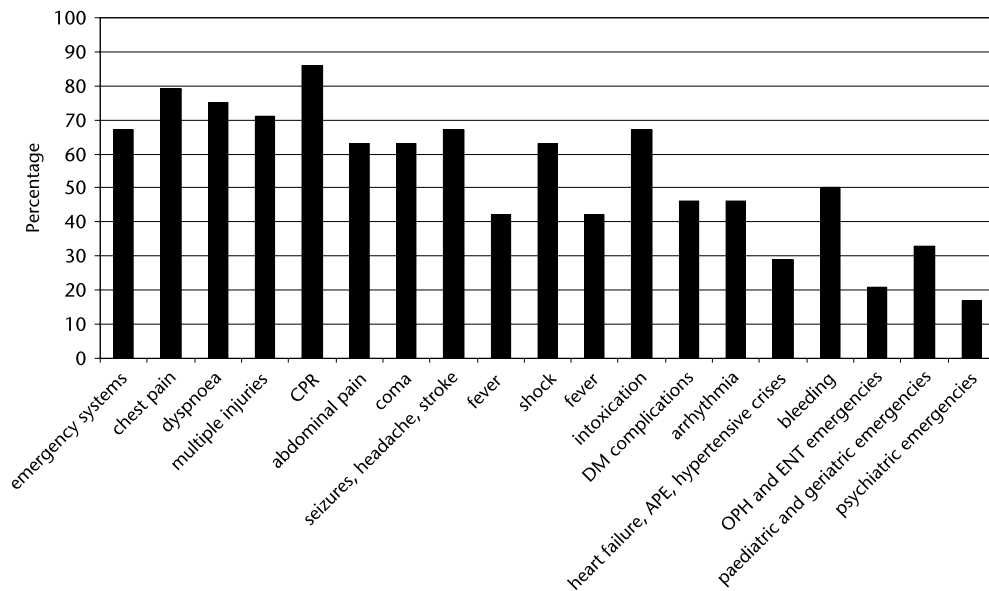


Figure 1. Prevalence of various theoretical topics recommended by SEMES in Emergency Medicine subjects taught in Spanish medical schools. CPR: cardiopulmonary resuscitation; DM: diabetes mellitus; APE: acute pulmonary edema; OPH: ophthalmological emergencies; ENT: ear, nose and throat emergencies.

(only fulfilled in the two cases cited) and EM subject agreement. Although some of the topics are the same, the only one appearing in more than 50% of the programs is CRP (67% of programs, Figures 2 and 3). No topic other than those proposed by SEMES is offered in more than one medical school.

The examination system is highly variable. The requirement for passing the subject ranges from mere class attendance (21%) to a theoretical and practical test in addition to compulsory class attendance (21%), with intermediate requirements in the rest (57%).

Discussion

The present study shows that the greater part of Spanish medical schools consider EM an independent discipline worthy of inclusion in their curricula. Indeed, the number of medical schools teaching this subject has doubled in the last 7 years². However, in most cases it is an optional subject; in other words, not considered important enough to be taught to all medical students. Also striking is the different emphasis placed on the discipline by the various faculties; EM may be a compulsory annual subject or not even included in the curriculum. This difference probably reflects the current state of EDs. On the one hand, there is growing importance attached to emergency situa-

tions, both from the media^{3,4} and from the public administration, with different programs of ED support, usually in winter, and the increasing mention of emergency services on the agenda and promises of politicians⁵. Hospital ED services have also gained importance, and many structural reforms have been implemented and/or personnel employed⁶. Furthermore, articles on physicians and emergency issues in scientific journals have increased exponentially⁷. However, the organization of hospital and out-of-hospital EDs is still heterogeneous, the relationship with hospitals or other departments is varied, and the long-awaited creation of the specialty of EM remains to be implemented. Presumably, recognition and establishment of EM as a medical specialty will entail greater homogeneity and standardization in undergraduate teaching of the subject, as has happened in the U.S. and some European Union countries (UK, Ireland) where the specialty is recognized⁸.

The demand for care by the emergency services is one of the highest in healthcare, but the physicians staffing them, fixed or contingent, never formally specialize in this discipline but in more or less related disciplines, and, in most cases have not received specific EM training, not even at medical school. This lack of training^{9,10} has been supplemented by further training outside the framework of the degree by many postgraduate courses and masters in EM. In recent years institutionalized training in the degree course seems to

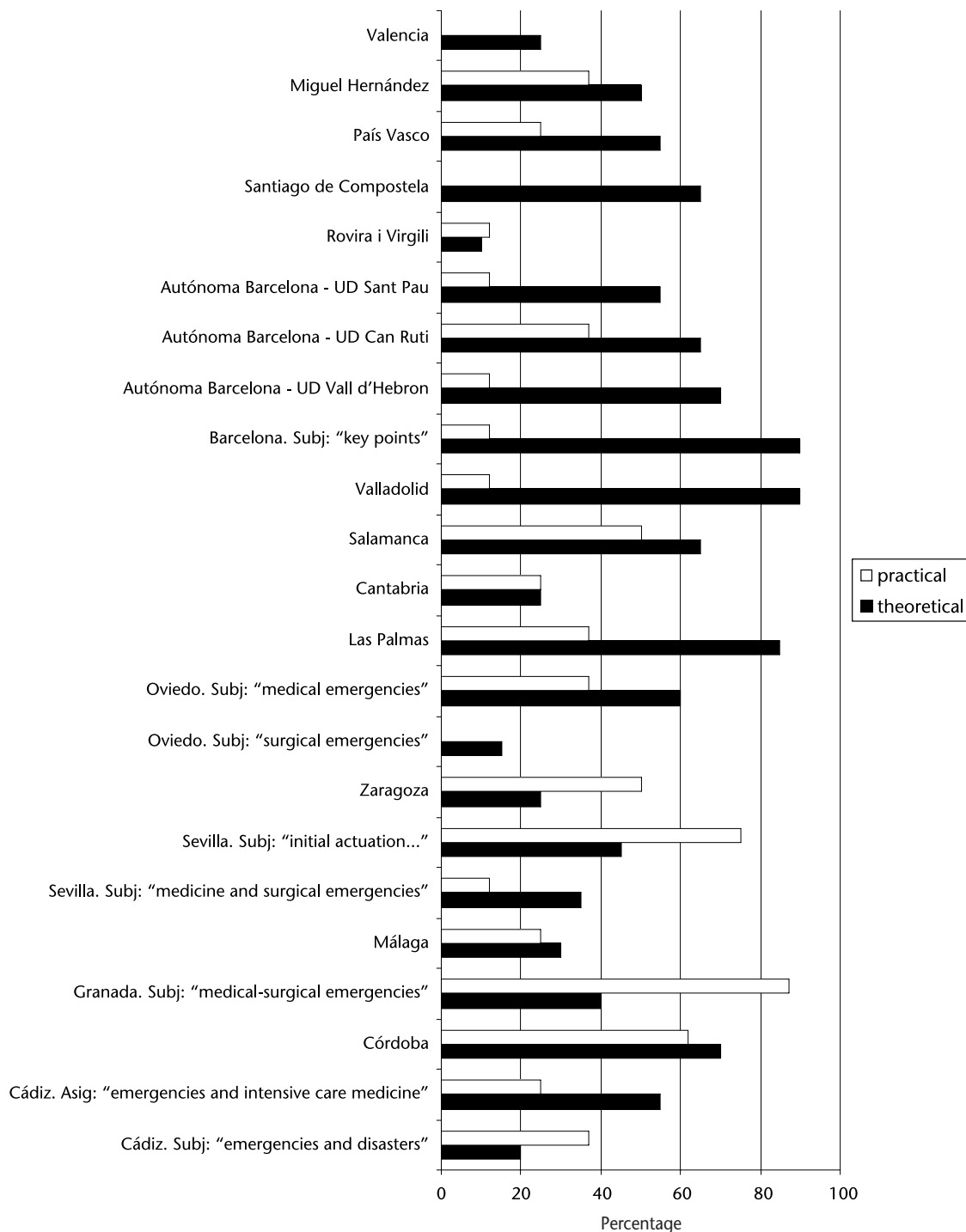


Figure 2. Degree of correlation between the contents of EM subjects and SEMES recommendations.
Subj: Subject.

be emerging. The experience obtained, although limited, seems positive, as shown by certain studies on satisfaction^{11,12}, but EM examination for the moment is insufficient. Moreover, in the absence of a recognised specialty of EM, training in this discipline is varied in content, time devoted to it

and knowledge requirements. There is an additional problem, due to the transversality of EM topics, of sometimes causing conflict with other disciplines. But the reality is that, despite this potential conflict, including post-graduate students and specifically during residency, training in EM is

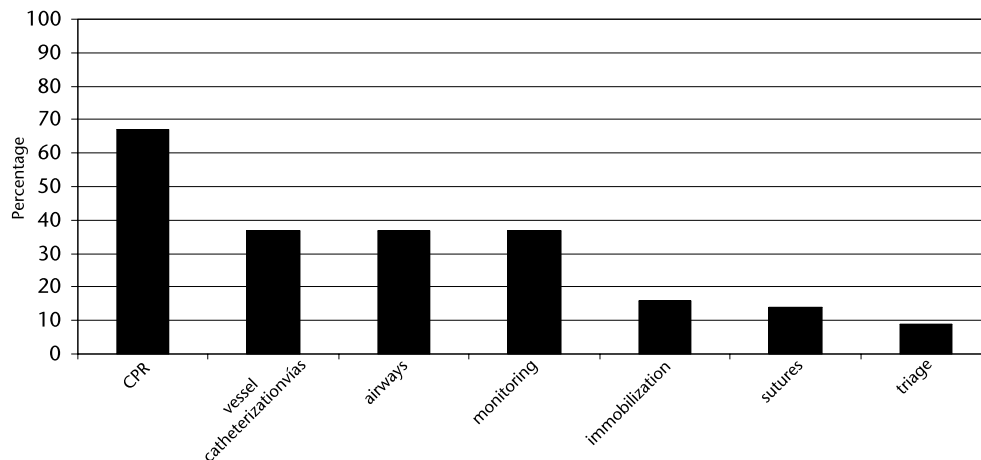


Figure 3. Degree of prevalence of various practical topics recommended by the SEMES in Emergency Medicine subjects taught in Spanish medical schools. CPR: Cardiopulmonary resuscitation.

considered important, since rotation in ED services is mandatory in most medical and surgical specialties¹³⁻¹⁶.

In 2002, SEMES made an effort to regulate the teaching of EM, both during the degree course and as a future specialization². This second part has not yet had the opportunity of being applied. Regarding the former, each teaching centre has its own criteria, ignoring the SEMES recommendations. The type of subject, their compulsory status, and the credits awarded probably do not depend on those responsible for each subject, but the specific contents of the program and the distribution of hours do. Undoubtedly, disseminating the recommendations is necessary, but the enormous differences between these and some programs and the fact that some items not recommended by SEMES repeatedly appear in the various programs suggest that consensus and update of these recommendations is required.

The data obtained via the Internet could not be corroborated in all cases. This may be a limitation for the conclusions of the study, since we can not be sure that the web-pages were updated in all cases. To try to avoid this bias we repeatedly reviewed the information sources from the beginning to the end of the academic year (last accessed in May 2009).

Since 10 years ago when Alonso Juárez noted the lack of specialty status and the absence of EM teaching at the undergraduate level¹⁷, Spanish medical schools have made significant efforts, albeit insufficient, to correct this deficit in their teaching plans. From now on, we need to complete this initial training, but this will not be possible until EM is considered a transversal discipline worthy of medical specialty status.

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La enseñanza de la Medicina de Urgencias y Emergencias en las facultades de medicina españolas: situación actual

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Objetivo: Analizar la enseñanza de las urgencias y emergencias en las distintas facultades de medicina de las universidades españolas.

Métodos: Se consultaron los planes de estudio de las facultades de medicina de España para averiguar la existencia o no de una asignatura específica de Medicina de Urgencias y Emergencias (MUE), y en caso afirmativo, analizar distintos ítems relacionados con la misma. La consulta se realizó a través de la página web de cada centro, y los datos dudosos o que faltaban se confirmaron por correo electrónico o teléfono con los responsables de las asignaturas.

Resultados: Veintidós de las 28 facultades españolas de medicina tienen en su plan de estudios al menos una asignatura destinada únicamente a la enseñanza de la MUE, que en la mayoría de casos es una asignatura optativa cuatrimestral. El número de créditos ofrecidos es similar al de otras asignaturas de la misma duración, pero tanto el número de créditos como la extensión y contenidos del programa y el sistema de evaluación son muy variables y, en general, no se adaptan a las recomendaciones de la Sociedad Española de Medicina de Urgencias y Emergencias (SEMES).

Conclusiones: La enseñanza de la MUE es frecuente en las universidades españolas, aunque en la mayoría de los casos no es obligatoria. Existe una gran heterogeneidad en el sistema de enseñanza de la asignatura entre las distintas facultades. Los programas de grado existentes en general no siguen las recomendaciones de la SEMES. [Emergencias 2010;22:21-27]

Palabras clave: Medicina de urgencias y emergencias. Enseñanza facultad de medicina.