LETTERS TO THE EDITOR

Community-acquired pneumonia in an emergency department: experience with 608 cases

Sir,

Following the article by Llorens *et al.*[1] on community-acquired pneumonia (CAP) and the editorial by Renaud and Santin[2] recently published in EMERGENCIES, we would like to present our own experience[3].

We included 608 patients with CAP according to standard clinical and radiologic criteria, all over 18 years and admitted to hospital after assessment in the emergency department (ED). The study period was 18 months (October 2005-April 2007). We excluded patients admitted to the intensive care unit, immunocompromised patients and those with empyema. Mean age was 70.7 (± 15 years standard deviation), 391 were male (64.3%). With respect to prognostic classification, about 50% corresponded to low-risk groups (I-II Fine 20%, Fine III 31%) and 42% were classified as Fine IV. We performed at least one diagnostic test (antigen, sputum and/or blood culture) in 95% of cases, and three tests in 23%. In 46%, high probability microbiological diagnosis was obtained (antigen and/or blood culture) and intermediate probability in 9% (isolation in sputum culture only). *Streptococcus pneumoniae* was the most frequently isolated etiologic agent (273/608, 45%). About 70% of patients (n = 419) were admitted to a conventional hospital department (respiratory medicine, infectious diseases or internal medicine) and the remainder (n = 189) were admitted to our ED short-stay unit (SSU) according to the assessment made by the ED physician in each case. More than 80% of the ED SSU patients were classified as CAP Fine III and IV, with a different distribution to the conventional hospital departments, especially as regards low-risk groups (Table 1). Compared with conventional hospital units, the mean age was higher in ED SSU patients (77.0 vs 67.9 years) and these patients had significantly shorter average stay (3.4 ± 1.54 vs 7.9 ± 6.1 days). Overall mortality was 2.6%, without differences between the ED SSU and conventional units (2.65% vs 2.63% respectively); this rate was within the expected range when stratified by risk group.

Our results, as in the study Llorens *et al.*[1], show the efficacy and safety of the ED SSU in the management of CAP, the relatively high percentage of low-risk patients (Fine I-III), and the variability in the number of diagnostic tests performed. Since the publication of the study of Fine *et al.*[4] in 1997, we have had an appropriate tool to assess prognosis, as well as clinical guidelines to facilitate decision making[5] and data in the literature on the safety of CAP outpatient care[6]. However, our experience, which corroborates the results of Llorens *et al.*[1], indicates that the use of an ED SSU optimizes the rate of admissions and reduces the number of diagnostic tests to be performed, according to cost/benefit criteria.

Table 1. Hospital Unit admitting Fine classified CAP patients

	Conventional Unit* N = 419 n (%)	ED SSU N = 189 n (%)
PSI I-II	99 (23.6)	26 (13.7)
PSI III	107 (25.5)	81 (42.8)
PSI IV	176 (42)	79 (41.7)
PSI V	37 (8.8)	3 (1.6)

*Departments of Pneumology, Infectious Diseases and Internal Medicine. ED SSU: Emergency Department Short-Stay Unit, PSI: Pneumonia Severity Index.

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The role of accident and emergency departments in organ donation

Sir,

We consider most interesting the article by Dr. Matesanz in this journal on the role that accident and emergency departments should play in organ donation[1]. We would just like to offer a small clarification with regard to out-of-hospital emergency services. In this article the author refers to brain death as the main source of current organ donation, but other sources identify this as non-heart-beating donation. In recent years in the Community of Madrid, we have seen a considerable increase in non-heart-beating donation proceeding from unrecovered heart attack victims outside hospitals. Although this does not currently exceed 5% of national transplants, as stated in the article, an equal number of brain death and non-heart-beating donors providing organs was recorded at the Hospital Nacional 12 de Octubre and Hospital Clínico San Carlos in 2009. This is possible thanks to a non-heart-beating donor program which coordinates a complex system involving various links in the healthcare chain, with a key role played by out-of-hospital emergency services. We therefore believe that the authors' should include that good coordination between hospital emergency services, intensive care units (UVI) and the National Transplant Association allows for above-average numbers of donors, since non-heart-beating donors are transferred directly to the UVI.

We are also pleased to know that in the next few years we ED physicians are to be included in the plans of the National Organization Transplantation (ONT). But we honestly believe that, apart from inclusion in training programs that are fundamental for procedures and performance protocols, it is also necessary to initiate lines of continuing research from the donor's home until discharge from the receiving centre. This requires the creation of a nationwide database of non-heart-beating donors, just as there is for other types of donors, within the framework established by law. Since a few months ago, SUMMA 112 and Emergency Management of Castilla-La Macha (GUETS-SESCAM) are working on this, and the effort is beginning to bear fruit[2]. In our service in particular, the clinical management of cardiorespiratory arrest, presented in February 2010, includes non-heart-beating donors as a part of the overall process. We hope that in the near future we can collectively attain the magnificent goal of 40 donors per million inhabitants, a goal towards which we believe to be working.

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Non-invasive mechanical ventilation and influenza A in the emergency department

Sir,

What follows is what I consider to be the main recommendations for the use of non-invasive ventilation (NIV) in the treatment of severe respiratory failure in pneumonia caused by the H1N1 virus in the emergency department (ED). The reason for doing so is the current controversy concerning its contraindication, mainly because of poor results in Canada in observational studies on NIV (in which NIV itself is not analyzed) and the risk of droplet transmission of the disease, about which there are no comparative studies[1,2]. In any case, the risk of droplet transmission of the disease in the ED is much greater due to outpatients presenting with the disease than that caused by the few patients receiving NIV with the appropriate isolation measures.

This technique is fundamental in the ED for treating severe respiratory failure in those patients not requiring orotracheal intubation (OTI) immediately or, because of their age or clinical condition, would never be admitted to critical care units[3,4]. The blanket contraindication against ED use may result in a greater number of complications associated with OTI and mechanical invasive ventilation (MIV), since we would be depriving patients of one of the benefits of NIV, which is its early implementation, used to treat dyspnea and hypoxemia, which decreases the work of breathing, and thus avoids respiratory failure and the resulting OTI. Current evidence on the application of NIV in severe pneumonia is contradictory[5,6], so it is essential know the indications for the technique and the criteria for failure and discontinuation. Patients must be monitored and

Table 1. Recommendations

Indications:
Spontaneous breathing with significant dyspnea at rest.
Respiratory rate > 30/minute.
Age < 58 years.
PaO_2/FiO_2 > 175 at the time of initiating NIV.
Simplified Acute Physiology Score (SAPS) II < 34.
Medical and nursing staff trained to treat such patients.
Contraindications:
Age > 58 years.
SAPS II > 34.
Coma, seizures, altered level of consciousness
$PaO_2/FiO_2 \leq 175$ when NIV is initiated.
Hemodynamic instability.
Active bleeding.
Need for intubation for airway protection.
Recent trauma or recent gastro-esophageal surgery.
Failure of ≥ two organs.

NIV: noninvasive ventilation.

subjected to close clinical surveillance by staff with experience in NIV and handling of the airway[7,8], in order to reduce OTI by as much as 54% following the recommendations summarized in Table 1[9].

It is essential to have all the proper equipment: specific fans with at least a single circuit and valve, instead of the expiratory port, or better still a double circuit. And in all cases there should be bacterial and viral filters, and facial or helmet type interfaces, offering better tolerance for long-term treatment and minimal dispersion of aerosols. Finally, we must have active humidification systems using water vapor (which conveys no germs) since they improve initial tolerance, decrease bacterial colonization and prevent the formation of mucus plugs[10].

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How can one practice telemedicine without having been trained in it?

Sir,

It was a pleasant surprise to read the publication entitled "Telemedicine applied to urgent healthcare: methodological and practical aspects" in a recent issue of EMERGENCIAS[1]. We would only like to add that the body of knowledge of Telemedicine (TM) consists of 12 sections and that it is risky to offer TM services without adequate training beforehand. Part of that training involves knowing the history and the definition of TM. The European Commission (EC)[2] defines TM as the provision of health services through the use of ICTs. However, the World Health Organization (WHO)[3] defines electronic Health (e-Health) as the use of Information and Communication Technologies (ICT) in a cost-effective and safe manner to support health and related issues, including health services, surveillance, information science, health education, scientific knowledge and research. Health professionals, accustomed to using terms etymologically, use TM to refer to medicine at a distance, electronic health (e-Health) to the provision and surveillance of health by electronic means, and e-Health to the electronic administration or management of healthcare activities.

In fact, what interests us is their knowledge. According to the forum on electronic knowledge (e-Skills), there are three levels of knowledge about ICT which, applied to TM, are: 1) the professional level in TM, 2) the user level in TM and 3) the level of electronic health transactions (to which we must add "with quality and safety for the patient and the user"). The professional level (i.e. TM professional) includes: the knowledge and skills needed to research, develop, design, manage, produce, advise or perform consultations, integrate, install and manage, maintain, support and offer services using ICT systems (i.e. telemedicine). The user level (i.e. health professional), includes: knowledge and skills to run the devices

and applications of ICT systems (i.e. telemedicine) used as supporting tools in the course of their own work (i.e. healthcare activity). This includes the use of software tools and specialized programs for the firm or industry (i.e. healthcare). And third, the commercial electronic transaction level (i.e. e-Health) include the knowledge and skills to exploit opportunities provided by ICT (i.e. telemedicine), particularly the Internet (currently forbidden in healthcare due to lack of security) so as to achieve more efficient and effective work and generate new forms of commercial transaction and organizational process, establishing new industries.

Finally, we must reflect on TM's degree of maturity. The maturity of a technology depends on the quantity and quality of its researchers and the number of available standards or norms and their professional acceptance. According to this, TM is not mature, as the number and quality of researchers is limited, as is professional acceptance. It is time, therefore, to introduce levels of professional accreditation in the medical training of physicians, since on them depends the acceptance and implementation of quality medical care through TM, comparable to face-to-face medicine.

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Boussignac CPAP in the Emergency Department

Sir,

We have read with interest the review by JM. Carratala and J. Masip "Non-invasive ventilation in acute heart failure: use of continuous positive airway pressure (CPAP) in the emergency department "[1], which is known to be infrequently used in the ED[2].

Our experience of Boussignac CPAP is with 10 cases, 8 women and 2 men, mean age 79.8 years. The improvement in dyspnea was 100%, reduction of breathing work (Patrick scale) 100%, total remission70% and O_2 saturation above 95% in all cases. No case required orotracheal intubation (OTI), mortality was zero, the duration of CPAP was 3.63 hours and we have not had a single case requiring prolongation, since the application of other therapeutic measures proved effective[3]. We shortened the duration in 2 cases due to claustrophobia, with CPAP duration being less than 30 minutes.

We deduce that Boussignac CPAP is a good positive pressure system, but does not allow precise delivery of pressure, so that stepped increases or decreases of 2 cm H_2O are not very applicable. Pressure values range between 7 and 10, with adjustments being guided mainly by the arterial O_2 saturation (immediate variable) rather than breathing work (later variable). Neither does it allow the detection, remedy or correction of leakage, the gauge only indicates the inspiratory pressure demand of the patient and we must interpret whether this is due to leakage or inspiratory fatigue and therefore we accept a variability of 2 cm H_2O. In accordance with the authors, CPAP systems can not properly be considered ventilation systems, so leakage represents loss in these situations. In the management of lung edema accompanied by hypercapnia, we agree on the use of bi-level pressure, when control of leakage is fundamental[4]. We believe that providing a maximum 100% FIO_2, as recommended by the authors, in hypercapnic syndrome is not appropriate, especially considering that we can optimize the oxygen saturation with expiratory pressure. Moreover, this parameter should be the last to be manipulated in situations of hypercapnia.

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Response

Sir,

First, we thank the authors for their critical reading our article[1] and congratulate Dr. Lista *et al.* on their implementation of a non-invasive continuous positive airway pressure (CPAP) protocol in the emergency department, a technique that is currently under-utilized in our emergency departments[2]. Regarding their findings, first we would point out that in the Boussignac® CPAP system, airway pressure is controlled by adjusting the flowmeter tap and reading the gauge values, with the measured CPAP value actually being applied to the patient; adjustment of 2 cm H_2O steps is measurable and assessable[3] and contributes to better patient tolerance of the technique and to detect and control leakage around the interface[4]. The gauge does not indicate demand for patient inspiratory pressure, but reflects the pressure generated by the valve suitably adapted to the interface (irrespective of the non-invasive ventilatory mode used). Secondly, in agreement with the authors, cases of hypercapnia require the minimum value of inspired fraction of O_2 to maintain O_2 saturation (Sat O_2) above 90%. Finally, the improvement in Sat O_2 with positive end-expiratory pressure (EPAP) occurs late and is limited by the actual value of EPAP, since elevated values increase the likelihood of failure because of intolerance[5].

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Update on regulations for training and use of semi-automatic defibrillators in Spain

Sir,

The article published in EMERGENCIAS on regulations for automatic defibrillators in Spain[1] indicated that 13 autonomous communities possessed their own regulations. Since then three autonomous community decrees and one national decree have been issued, so we consider it appropriate to provide an update on the data.

The Balearic Islands published its regulations on December 20, 2008[2], Cantabria on 23 January 2009[3], and Castilla La Mancha (CLM) on February 13, 2009[4]. On 2 April 2009 a Royal Decree was issued, laying down the conditions and minimum requirements on the use of defibrillators outside the health sector[5]. This, far from being a unifying measure given the existing diversity (as we stated in our article), it is the lowest common denominator of all regulations, so we understand that an opportunity has been missed to homogenize the regulations. Currently, the only Autonomous Community with no regulations is that of Madrid, which is paradoxical given the widespread use of semiautomatic defibrillators in this community, and the amount of public spaces (office complexes, transit and entertainment areas, etc.) that have them.

Ambiguity remains regarding the possible denominations: automated external defibrillator (AED) or semi-automated external defibrillator (SAED). The three Communities cited consider physicians and nurses as qualified to use the devices. The Balearic Islands and Cantabria establish that device users must be adults and have completed compulsory secondary school education or higher levels. Cantabria also requires that the user must justify their relationship for use of defibrillators.

Cantabria and the Balearic Islands have opted for a mixed model of training, provided by the Administration or by authorized entities. CLM has opted for an external model of training, delegated to authorized entities and subject to accreditation. The duration of individual instructor accreditation varies from 3 years in the Balearic Islands and Cantabria to 2 years in CLM. All training programs require an initial course and another refresher course. CLM continues the general rule of one third theoretical training and two thirds practical. The Balearic Islands do not set any minimum hours for each type of training and Cantabria leaves it to reference scientific societies: the ERC (European Resuscitation Council) and the AHA (American Heart Association). The CLM theoretical training program must follow ERC recommendations. The student-instructor ratio is 6:1 in the Balearic Islands, 7:1 in CLM and no data are available in the case of Cantabria.

In CLM, instructors can be physicians or nurses with knowledge of the matter, or experience,

and the door is left open for paramedics. For coordination, there are more stringent requirements regarding experience, training or possessing a medical or nursing specialty, as in the Balearic Islands.

In the three Autonomous Communities, regulation is reinforced by activation of the care chain with the obligation to communicate with the emergency coordinating centre (CCU). CLM and Cantabria contemplate the possibility of using immediate connection with the CCU incorporated into the SAED, while CLM provides a "handsfree" telephone. The Balearic Islands calls for defibrillator installation close to a telephone with 061 or 112 connection.

The three Autonomous Communities allow the approval of authorized personnel by other communities, assuming equivalent training, and inform the competent authority. The Balearic Islands and CLM establish a flexible procedure of course validation, including retrospective or courses completed in other communities, provided that they comply with the training contents established in their respective training programs.

In all three Autonomous Communities, the register of entities with SAED must indicate the specific location of the device. None of the three Autonomous Communities has a register of SAED interventions and monitoring in order to assess device effectiveness. Supervision of SAED use is performed by completion of specific forms presented to the administration usually within 24 hours each use (72 hours in The Balearic Islands) together with the computerized record stored in the SAED memory. Only Cantabria refers to using the Utstein model for communication, and the form is elaborated there.

The provision of supplementary material for SAED units is very poor in the case of CLM. Nothing is said about this in the regulations of Cantabria and the Balearic Islands. None mention pediatric attenuator systems.

We find it striking, and positive, that the Balearic Islands regulation allows the use of SAEDs by non-accredited adults in emergencies, while contacting the emergency services via 061/112, and exempts them from liability, which together with the known safety of SAED use contributes to public defibrillation; this is the only Autonomous Community with an express provision in this regard.

In conclusion, the appearance of Royal Decree national regulations and three Autonomous Community regulations, far from standardizing the situation, contributes to further atomize the regulatory landscape of defibrillator training and use.

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On university teaching of Emergency Medicine in Spain

Sir,

Regarding the articles recently published in EMERGENCIAS on the teaching of Emergency Medicine (EM)[1-3], we were surprised by the situation at Spanish universities. The results[1,2] and opinions[3] in those articles reflect the reality of teaching of EM in Spain[1,2] (and EM itself) and external opinions[3].

On the one hand, medical students consider EM as a separate discipline from other specialties[1], and most (52.1%) indicate it as a possible option, although only 2.4% would choose EM as their first option for MIR specialty training[1]. Moreover, having a family physician was associated with lower preference for specializing in EM[1]. Obviously, the fact that many hospital emergency departments (ED) have poor working conditions is the fundamental factor underlying these results, as suggested by Coll-Vinent *et al.*[1]. Clearly, the absence of the specialty[4,5] means that heterogeneity of structure, function and professional training for our ED staff will continue to exist in Spain[6].

Regarding how EM is taught in Spanish medical schools[2], the situation is absolutely chaotic[2], with the type of teaching being vertical rather than horizontal, delivered by professionals not involved in EM[7], the non-existence of EM as a subject in some of the faculties while others offer more than one EM subject with different curricula and departments responsible, optional versus compulsory subjects, no cardiopulmonary resuscitation (CPR) in the curriculum of some MD degree programs, theoretical and practical examination in only 20% of these and non-compliance, in general, with the recommendations of the Spanish Society of Emergency Medicine (SEMES), which is mainly comprised of practicing EM physicians who also engage in accreditation, continuous training and research in our country. Why is this the situation? It could be hypothesized (research studies are yet to be carried out) that the reasons, inter alia, include the well-known (though often subliminal) interdepartmental war in our faculties of Medicine to hog the greatest possible number of newly created subjects, or poor inter-departmental relationships for common curricular design, in detriment of training the medical student (their "client" and future physician for society).

Regarding the editorial by Cardellach[3], we agree that curricula are the basis of medical training and that new teaching methods contribute to improving the acquisition of skills. However, these methodologies are being shoehorned into medical faculty curricula, and in a heterogeneous manner. It remains true that most current professionals owe most of their skills to MIR training rather than undergraduate (currently degree) training, too theoretical in many instances. MIR training, despite its pros and cons, has situated Spanish medicine where it is today. On the other hand, we cannot fully agree with the statement that "Thus neither professional societies (the term scientific would be more accurate, at least in the case of SEMES) as a group, nor any of its members as individuals, should be tempted to utilize medical schools (or academic institutions in general) in their different forums, to achieve certain objectives that are not in accord with those institutions". Undoubtedly, the author refers to the creation of the specialty of EM. We have heard many times that the University should be open to society and its demands. Well, scientific societies are a highly qualified part of society, owing to their clinical activity, and they are familiar with the university setting, having qualified through it, and they are also familiar with the demands of businesses, professionals and patients alike. Spanish universities are in the process of adapting to the new European Higher Education Space (EHES) norms and aligning their teaching to real vocational training (competencies). In our opinion, current medicine requires the specialty of EM, and a quality health system is not possible without it. Spanish Universities are not yet ready to offer future professionals with essential skills to begin postgraduate training in ideal conditions, much less in EM. Must we wait for the results of futile struggle between departments to see who gets to teach a subject with great future projection? It is not logical or responsible on our part to continue with vertical teaching of EM, cut into pieces by different departments so as not to lose an ounce (i.e. credit) of their university hegemony. The obligation of a scientific society, especially in the case of specialty-less discipline such as EM, is to ensure that it develops in a transversal, uniform manner, with essential content (CPR, triage, care coordination, disasters, pre-hospital emergencies, etc.) and, as in other disciplines, that is taught by professional teachers with personal knowledge of the field they are talking about (knowledge) and practical experience (skills); teachers who are able to inculcate in students the passion for a really wonderful discipline (attitudes), despite the poor conditions of all kinds that still prevail today in EM. We believe it is the perception of these conditions that most discourages students from wanting to specialize in EM, even when there is a preference for the discipline. Is it so difficult to understand this?

In Spain, rational university education in EM adapted to EHEA norms is yet to occur. Our hope is that our universities make the often proclaimed principle of openness to society a reality, starting in this case with scientific societies, particularly SEMES. Meanwhile, we continue investigate in the field of EM[1,2,8-10].

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Cardiogenic shock as initial presentation of pheochromocytoma

Sir,

Pheochromocytoma is a potentially lethal tumor with widely varying modes of clinical presentation. We report the case of a patient where cardiogenic shock as the initial presentation of pheochromocytoma led to rapid death.

A 52 year-old man with no remarkable medical history consulted the emergency department for fever, diffuse abdominal pain and dyspnea during 12 hours. On physical examination the patient was restless, sweaty, tachycardic 166 bpm, with blood pressure of 211/153 mmHg, tachypneic 45 rpm, and showed baseline blood oxygen saturation of 80%. Respiratory auscultation showed bibasilar rales, the abdomen was distended, with peristalsis preserved, and palpable distal pulses. The electrocardiogram showed atrial fibrillation and signs of left ventricular hypertrophy. Chest X-ray chest showed bilateral interstitial alveolar infiltrates without cardiomegaly. Arterial blood gas was pO_2: 82 mmHg, pCO_2: 37 mmHg, pH: 7.33. There was hyperlactacidemia (8.39 mEq/l), hemogram showed leukocytosis with neutrophilia (22,000 l/mm^3) and biochemistry showed hyperglycemia and acute renal failure (creatinine 3 mg/dl, urea 100 mg/dl). Abdominal CT showed a right adrenal mass (11 x 9.5 cm) with necrotic areas compatible with pheochromocytoma. Based on the initial suspicion of catecholamine crisis secondary to an adrenal tumor, we initiated treatment with low dose nitroprusside infusion. After 6 hours the patient showed extreme lability of blood pressure and alternated between periods of hypotension and hypertensive crises. His instability prompted admission to the hemodynamic intensive care unit (ICU). He received fluid therapy, intubation with mechanical ventilation and vasoactive support. The echocardiogram showed widespread akinesia with an ejection fraction of 20%. The clinical condition progressively deteriorated, with refractory hypoxemia and hypotension. Two hours after admission to the ICU, the patient suffered an episode of electromechanical dissociation that did not respond to prolonged cardiopulmonary resuscitation (40 min). Adrenal necropsy confirmed the diagnosis of infracted pheochromocytoma with areas of cystic degeneration.

Pheochromocytoma is a tumor that secretes catecholamines, originating in the adrenal medulla[1]. The most common symptom is hypertensive crisis accompanied by sweating, headache and palpitations. It rarely debuts as cardiogenic shock with fatal outcome[2,3]. Chronically elevated catecholamine levels are responsible for this form of myocarditis[4]. Intensive treatment intensive is required for acute cardiac decompensation[5]. Mortality is very high, although reversibility of the myocardial alterations is normal the acute phase can be overcome[6].

In conclusion, faced with cardiogenic shock in a relatively young patient, without myocardial infarction, especially if it occurs with marked lability in blood pressure, we can rule out occult pheochromocytoma-induced myocarditis[6].

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