

Research in emergency medicine and prehospital emergency care

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At the sixth congress of the European Resuscitation Council (Florence 2002) a group of pathological processes was presented and discussed in which the initial, immediate action taken is key to the prognosis of the patient. Severe trauma, chest pain, stroke, acute respiratory failure and severe cardiac arrest, known as the "first hour quintet", together constitute the leading causes of death in developed industrialized countries and are the main reason for the existence of pre-hospital emergency medical services (EMS). The incidence of these processes in EMS work is a key indicator used to analyze and compare EMS performance and impact on health care in a country¹.

This first issue of 2012 of EMERGENCIAS presents a series of works in fields associated with these pre-hospital time-dependent processes. They happily coincide with the publication of a consensus document by the Working Group of the European Society of Cardiology on acute cardiac care (Doi: 10.3109/17482941.2011.581292) which focuses on the pre-hospital management of ST elevated acute myocardial infarction². The document identifies two key aspects of the pre-hospital phase as critical for patient prognosis, and stresses the need to promote research in EMS as a tool to increase competence and the final quality of care that patients receive. This reflection is not just pure coincidence. There is strong evidence on the actions necessary to reduce morbidity and mortality in these processes, and others, linked to EMS treatment, but there is also the recognition of the difficulty of performing active care work and research in order to advance^{3,4}.

In addition to the well-known difficulties^{4,5} there are specific aspects of EMS work which greatly affect the different research models. On the one hand, EMS are not final services, which fact hinders their participation in studies on effectiveness where final results are known. On the other hand,

there is the immediacy of EMS care, which hinders participation in randomized trials where the inclusion of patients consumes time and generates all manner of problems, such as informed consent which itself is a source of controversy⁶. These important problems inherent in EMS work make it extremely difficult to perform classical research studies. In fact, the main sources of knowledge and research in this field are mostly professionals not directly involved in emergency care activity. This can be seen in the list of authors, specialty and workplace appearing in the above-mentioned consensus document 2, or the collaborators of the studies entitled CRASH (<http://www.crash.lshtm.ac.uk>) 1 and CRASH 2 (<http://crash2.lshtm.ac.uk>), to cite two clear examples of processes where the main focus of interest is on action taken before reaching the hospital. This should not be mal-interpreted as intrusion or excess, but rather the result of lack of research habit by pre-hospital emergency physicians and the influence of the Anglo-Saxon world (with different models of health care) in the literature and research worldwide on emergency medicine.

There is no magic formula for avoiding these drawbacks, only some recipes to be able to advance. First, research must flow from and return to the professionals involved. It is essential to facilitate the flow of information to these professionals, for them to feel part of the research effort and that their results are important for their own medical practice. Second, we must facilitate and promote training in methodology: how to understand and formulate research questions, and how to compete for public funding. Financing is a key element in research and obtaining it in a competitive world requires training and planning⁷. Third, we must promote the habit of knowing the results of the emergency procedure performed, by incorporating indicators of health outcomes in addition to the process audits commonly used in

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this field. For this, we should extend the use of case records, especially electronic records, to facilitate the inclusion of data and their exploitation in an easy manner. This is an essential step to advance from evidence-based medicine to medicine based on results in real life clinical practice⁸. Fourth, we need to involve health managers, institutions and administrations in research tasks. Health managers are directly responsible for organizing clinical practice and identifying opportunities for improvement, so the need for research should be integrated in their plans. Research is also a source of revenue for the healthcare system. Fifth, network collaboration between national and international EMS is necessary^{9,10} like inter-level collaboration between different specialties. An encouraging example in this regard is the recently published White Paper on Emergency Medicine (Available at <http://www.epes.es/visita/SEMS/>) which is the first joint publication of EMS in Spain. It offers a snapshot of EMS resources, activity and lines of work. Sixth, we need to understand that research can and should guide all areas of EMS activity, including emergency coordination centers and the quality of life of patients after care. As an example, EMS can expand the field of research to embrace evidence on equity and accessibility, evidence-based clinical practice, variability in clinical practice and its causes, improvement of available scientific evidence (practice guidelines, traditional or independent clinical trials), evaluation of new and emerging technologies, health outcomes assessment or effectiveness of interventions, including risk adjustment and patient safety (from first contact with the health system to final outcome).

Research in the field of emergency medicine including pre-hospital emergency care should be a priority in any health system, for its managers and the professionals working in that field. The research projects are created and developed by these professionals, and promoted and supported by their institutions. The first issue of the Journal EMERGENCIAS 2012 is a good example of how this is also possible in Spain.

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