REVIEW ARTICLE

Organisational mechanisms for adaptation and survival in emergency departments

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Over the last decades emergency departments (ED) have undergone a deep transformation. These changes may be a result of an increase in the complexity of health care departments which, in turn, led to more heterogeneity in the current organization of the Spanish ED. Frequently, the organization changes derive from the need to deal with a lack of effective medical assistance in the ED generated in other levels of assistance. In other cases, they are a consequence of the need to provide health care in the most effective and efficient way. The present study was carried out to assess the end results of these adaptive changes and the most important health care patterns that appeared as a consequence of them. [Emergencias 2008; 20: 48-53]

Key words: Emergencies. Management. Observation unit. Short term admission unit. Chest pain unit. Fast track unit.

Introduction

Hospital Emergency Departments (HED) constitute the top of the pyramid of emergency care where patients treated in other healthcare levels as well as those who attend by their own initiative converge. In Spain, 23,654,303 attendances to HEDs took place in 2004, entailing a total increase of a 45.5% in relation to the number of attendances recorded 10 years earlier[1]. On most occasions, this increase did not take place simultaneously to a rise in structure or in human resources in HEDs. As a consequence, waiting times are frequently higher than desirable, entailing a deterioration in quality[2,3] and effectiveness[3,4]. The periods during which the HED is overloaded are commonly known as overcrowding or collapse periods.

HEDs have traditionally reacted to these situations with discourses that put the focus on the great amount of inadequate attendances they had to cope with due to different reasons such as atmospheric changes[5], flu epidemics[6], elevated pollution levels[7], moon cycles[8], sports events[9] or even the deficits in other levels of the Spanish public healthcare system[10]. Studies carried out later[11] have proved that this increase in the number of attendances does not seem as inappropriate as they wanted us to believe, especially from certain forums and administrations. Indeed, by proving that the number of inadequate attendances to HEDs is lower than predicted, this discourse is invalidated and a strategic change in the approach to the problem is prompted. Considering this together with the unquestionable fact that the most important part of the problem lies not in external factors (mainly the healthcare demand from users) but in internal ones (mainly the permanence of patients in the HED[12]) leading to a more proactive attitude in the HEDs which have searched for solutions from inside the departments. There have been creative individual efforts that have resulted in discretionary changes such as the response to local requirements in a given HED. The good results obtained by some of them should have favoured their assumption by the administration and the explicit introduction in backgrounds and settings similar to those in which the benefits have been proven. The aim of this review is to present and describe some of the most representative solutions that have been promoted or even leaded from HEDs during recent years in order to survive to situations of collapse.

Organisational changes inside the department

All the measures or procedures designed to make the HED more efficient in time and/or resources, are included in this section and they are known as organisational changes of the department itself.

Among them, we must highlight: structured triage, advanced triage, fast-track areas, day centres linked to the emergency department and referral.

Structured triage

Triage is a preliminary clinical assessment process that classifies patients before diagnostic and therapeutic evaluation so that patients with a more severe condition are treated first. When this prioritisation process is applied using valid, useful, relevant and reproducible scales, it is known as structured triage. Currently, there are 5 structured triage systems: ATS (Australasian Triage Scale), CTAS (Canadian Triage and Acuity Scale), MTS (Manchester Triage Scale), ESI (Emergency Severity Index) and MAT *(Model Andorrà de Triatge)*[13]. The latter has been adopted by the Spanish Society of Emergency Medicine (SEMES) as a standard for the Spanish structured triage system known as *Sistema Español de Triaje* (SET). The results obtained after applying one of the above mentioned triage systems in HEDs are: quick and efficient identification of patients with a condition that can be potentially fatal in order to prioritise their treatment; determination of the most adequate area to provide treatment, helping to relieve overcrowding in the different areas; adequate management of waiting times, re-evaluating patients and informing them and their relatives in a precise manner; and provision of information that enables knowing and comparing casuistry of HEDs, in order to optimise resources and improve efficiency[13].

Advanced triage

In this type of triage, and in accordance with the assigned prioritisation and the specific policies specially created for nursing, structured triage includes the possibility of carrying out certain complementary tests before the conventional assessment. These are basically blood tests and simple radiology or even therapeutic actions such as obtaining peripheral venous accesses, administering analgesia, applying immobilisation with plaster casts, etc. Under these premises, t certain patients with low severity conditions are presumably seen more quickly[14].

Multidisciplinary triage

This type of triage represents a further step in relation to advanced triage. Multidisciplinary triage should include a team with at least one physician and one nurse among the healthcare professionals applying it. In some cases, administrative staff might also be included in order to accelerate administrative tasks and proceedings on arrival to the HED. There can also be a nursing auxiliary to facilitate transfer of patients. Besides the initial assessment of patients which, in this case, is carried out by a physician, the idea of multidisciplinary triage consists of the elaboration of basic diagnostic tests (full blood count, biochemistry test and simple radiology) before the patient goes to the assessment room to be seen by a physician. Once test results have been received, the physician may choose to discharge the patient when appropriate or consider conventional assessment with the advantage of already having the complementary tests. Obviously, although what we could call the "academic" assessment of the patient is inverted, both treatment and waiting times are considerably reduced. This experience was tested part-time (daily from 10 am to 8 pm) in the Inova Fairfax Hospital in Washington DC, USA and showed a reduction in the average total length of stay in the emergency department of almost 4 hours and increased the perceived quality among patients and their predisposition to use that HED again in nearly 100%. Currently, this system is being implemented in some hospitals in Melbourne, Australia[15].

Fast-track areas

The creation of fast-track areas is a way of increasing the flow of patients that a given HED can treat simultaneously[16]. It entails the creation of physical spaces within the department where patients with low severity conditions are treated. These are patients that can be discharged quickly with a minimum amount or no need for complementary tests. Normally, in Anglo-Saxon countries, specially qualified non-medical staff are responsible for the area and therefore for sorting out everything concerning this type of patients. In some settings they are known as nurse practitioners or physician assistants and they would be equivalent to Spainish nurses with proven experience in the emergency department that would undergo a special and specific 2-year training directed to exploring, diagnosing and treating this type of patients. It has been demonstrated that these areas with specialised healthcare professionals are capable of reducing waiting times[17], total length of stay in the emergency department[16,18] and the

percentage of patients that leave the HED without being seen by a physician[18], without any detriment to the technical quality provided[19].

Day centres

These specific areas were created at the end of the last century in Spain and are attached to a certain hospital department in order to facilitate more complex treatment and follow-up of patients than that provided in previous traditional outpatient areas. Thereafter, there was a proliferation of day centres that provided services to HIV patients receiving complex prophylaxis treatment of certain opportunist infections, centres that treated oncology or haematology patients requiring chemotherapy or frequent blood transfusions, or more recently, centres which follow diabetic patients with minor complications that can be treated within this system. Their usefulness and purpose in the HEDs remains to be clarified, since despite their use in some Australian hospitals[15], there are no publications about their experience. It would not be ludicrous to think that certain patients that attend HEDs could benefit from these resources: cirrhotic patients with tense ascites requiring paracentesis to evacuate the fluid, patients with chronic anaemia that attend the HED to receive a transfusion, patients that have accidentally pricked themselves with needles of uncertain origin or those with high-risk sexual behaviour requesting advice, etc. However, despite these potential advantages, it must be considered that this entails the creation of a new resource requiring staff and carrying out activities which, at the end of the day, could be done at other healthcare levels if well organised.

Referral

Considering the frequently used argument stating that a large number of attendances to HEDs are inadequate, it is not ludicrous to think that patients could be redirected from the HED itself to a more appropriate healthcare level. Results should be more evident in relieving the overcrowding of the department. The first part of the hypothesis has been confirmed in a recent study showing that about 15% of patients attending HEDs for a medical pathology can be effectively referred to other levels of the healthcare system where their problem would be solved. The risk of this policy can be regarded as low, as less than 2% of these patients return to the HED and less of 0.2% are admitted. Although a certain degree of scepticism can be detected in users when referral is proposed, the final perception in relation to the treatment, the degree of resolution of the problem and overall satisfaction are good[20]. Besides, the study in question analysed two different possibilities of referral: directly to the patient's health centre or to a minor emergencies centre that was linked the hospital itself and with a high resolution capacity for this type of patients. Both possibilities were equally valid, although they obviously presented certain strengths and weaknesses when compared to each other[20]. As they both proved to be useful, the implementation of one or the other in a given setting depends mainly on local factors. Unfortunately, the authors did not assess the impact that these measures had on effectiveness and quality parameters of the HED, that is to say, whether they were useful to attenuate the pressure originated by the healthcare demands in these departments. However, there are indirect data available that seemed to minimise the influence of referrals on healthcare times in the HED. Indeed, in a recent study, the conclusions pointed out that for every 10 low-complexity patients that arrived to the HED in a period of 8 hours, the total length of stay in the department of patients with higher complexity increased a "not very" significant 5.4 minutes[21].

Alternatives to conventional hospitalisation

The strong pressure experienced in a hospital when the emergency department is overcrowded with patients that have been admitted, reduces the number of hospitalisation beds that the centre can offer for admissions, which are basically for programmed surgery. The cancellation of operations that these situations entail does not help to reduce the already long waiting lists. This has led some hospitals to redesign resources in the emergency department and they have been required to re-organise and improve their clinical work adapting it to the daily and even seasonal time fluctuations of healthcare demand[22,23]. These circumstances have originated alternatives to conventional hospitalisation in order to diagnose and treat patients more efficiently and to avoid hospital admissions, as they are conventionally understood. The following are considered to be alternatives to conventional hospitalisation: observation units (OU), short stay units (SSU), chest pain units (CPU) and hospital at home (HH).

Observation units

The need for an OU linked to the HED appeared more than 40 years ago[24]. In 1989, the British

Association of Accident and Emergency Medicine (BAEM) recommended their introduction to all HEDs and advised the inclusion of one observation bed for every 5000 annual patients seen in the emergency department[25]. However, since then and to date, terminology related to the concept of OU is confusing. Indeed, in the literature, terms such as observation rooms, treatment rooms or even SSU have been used without distinction[26]. This is why,in order to eliminate concepts in our setting, OU is considered as the resource described in the Handbook of Accreditation Standards for Hospital Emergency Departments and is specified as: a space with a minimum capacity to provide healthcare services to 10% of the demand for emergency care in one day, with clearly written policies for admission, referral and discharge and with a maximum stay of 24 hours[27]. Cooke et al[26] carried out an excellent review of this. Some of the advantages of these areas include a significant reduction in the total length of stay, a higher degree of user satisfaction, a reduction in the total workload in the HED and a control mechanism to avoid inadequate discharges. The most damaging disadvantage is one which conditions the future performance of the OU and lies in accepting hospital admissions that can not be finalised and which, in the end, collapse this resource.

Short stay units

Conceptually, these are hospitalisation areas that are dependent on HEDs with a variable amount of beds, and in which certain patients with specific pathologies are admitted following strict diagnosis and treatment policies and with a total length of stay that must not be in general of more than 2-3 days. An important aspect to consider is that, despite having a similar - if not the same - name as that of other areas originatly attached to a hospital department, they present a distinguishing characteristic: the healthcare staff is assigned to the HED and therefore they work 24 hours a day unlike other hospital SSUs that work on a standard schedule. This enables a higher rate of patient/bed rotation and therefore a more efficient use of this resource[23,28,29]. Moreover, it has been proven that this positive aspect of its management is achieved at the expense of safety and satisfaction for patients that is at the least able to overlap conventional hosptialisation[30,31].

Chest pain unit

Currently, there is a high probability for any patient attending a HED of having to wait to be seen. Patients with chest pain, who can constitute up to 5% of attendances[32], can be included in the group requiring immediate attention since early identification of acute coronary syndrome (ACS) and prompt initiation of reperfusion treatment, when indicated, have important implications in prognosis[33]. This is why chest pain units (CPU) have proliferated so quickly in the United States[34]. Conceptually, these units can be functional or structural. In fact, a functional CPU[34] is characterised by the introduction and compliance with a specific policy that enables early identification of patients with ACS and also to rule it out efficiently in those patients who do not have it, reducing inadequate admissions or wrong discharges. Although structural CPUs have not gained generalised acceptance in our setting, they constitute an efficient method of managing attention to patients with chest pain as they obtain a clear improvement in treatment times for these patients[32].

Hospital at home

Hospital at home is defined as a healthcare alternative that is capable of carrying out, diagnostic and therapeutic procedures in the patient's home and providing care similar to that provided in hospitals. Activities are carried out by specialised professionals during a limited period of time to patients who otherwise would have required care in a department of an acute treatment hospital[35]. This is one of the distinguishing aspects in relation to home care based on primary care, oriented to long-term care, preventive measures and health education[36].

The average stay in HH should be similar to that in a department of an acute treatment hospital. The services portfolio includes the possibility of early transfer to their homes of patients with acute conditions[37], exacerbation of chronic conditions[38], those who are in the postoperative period[39], those with a traumatologic or orthopaedics condition[40] or patients who are terminally ill and have a decompensation of symptoms[41].

Traditionally, these units do not depend on HDEs but the current situation has made it necessary to assume new functions that guarantee a certain relief of their overload. As in SSUs managed directly from the HEDs, it has been possible to identify certain benefits that are not present in the more traditional HH and also a more efficient management of this resource[42].

Conclusions

In the present review, we have described most of the adaptation and survival efforts that have

been "invented" or "improvised" in HEDs to be able to carry out their mission that is no other than to provide attention to patients demanding emergency care. A cold analysis of the situation leads to the realisation that a great part of what has been explained here represents an attempt to escape forward that has little or nothing to do with this mission. In fact, hospital inefficiency, which is in percentage the most important cause of the current state of HEDs in Spain, is alive and well. In this sense, as discharges are not carried out within an adequate amount of time in synchronisation with the real needs of HEDs, these end up assuming functions that go beyond their true mission[12]. An attempt has been made to correct inefficiencies by requesting hospitalisation beds (SSU), admitting and controlling patients at home (HH) and even implementing day centres. Each of these resources has their mission and responsibilities and in this setting, those of hospitals are perfectly identified. As a consequence, some have tried to adapt to the situation creating preadmission areas that temporarily attenuate the asynchrony of hospital discharges with the real needs of the emergency department. Moreover, the more daring have incorporated discharge lounges, where they send patients that are going to be discharged from hospital and are waiting for the discharge report, their relatives or for any other proceeding that can delay the occupation of their beds by an emergency admission.

Activities in emergency departments can be programmed[43] and when there are enough hospitalisation beds available, there is no such deterioration to the point of compromising healthcare quality[44]. Therefore, it is surprising that asthe ultimate trustee responsible for resources that are finite and that should not be wasted, the administration does not courageously support initiatives that have proven to be efficient, with their introduction and general application to the rest of the HEDs, while at the same time leading and promoting a clear change in the management of hospital beds that is more in accord with 21st century medicine.

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Mecanismos organizativos de adaptación y supervivencia de los servicios de urgencia

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Durante las últimas décadas se ha asistido a una transformación profunda de los servicios de urgencias hospitalarios (SUH). Dicha transformación ha supuesto, entre otros cambios, un incremento en la complejidad organizativa que ha conducido, a su vez, a una heterogeneidad en la actual organización de los SUH españoles. En muchos casos, estos cambios organizativos han venido motivados por la necesidad de los SUH de adaptarse a situaciones de déficit asistencial generadas en otros niveles asistenciales. En otros, a la propia necesidad de los SUH de estructurar la asistencia de una forma más efectiva y eficiente. En el presente trabajo se revisa cuál ha sido el resultado final de estos cambios adaptativos y los principales modelos asistenciales a los que han dado lugar. [Emergencias 2008; 20: 48-53]

Palabras clave: Urgencias. Organización. Unidad de observación. Unidad de corta estancia. Unidad de dolor torácico. Unidad de visita rápida.