ORIGINAL ARTICLE

The integrated management of the emergency area and coordinated primary care

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None

Aim: To assess the impact of a unique management model combining the different emergency areas included in a Department of Health on the activity of an emergency department (ED) and the results of developing a Center for Integrated Health (CIH) which acts as a link between emergency attention at continued attention points (CAP) and the ED.
Methods: Over a 2-year period from April 2003 to 2005 we performed two separate studies in the Department of Health. The first descriptive study evaluated different elements necessary to provide emergency assistance in an integrated system. The second study assessed the usefulness of the CIH (before-after study).
Results: The number of emergency department visits in the area of influence decreased by 30% in the ED since the Center for Integral Health (CIH) started to work. This percentage was equivalent to the increase in the number of visits to the CIH (34%). The emergency assistance curve of growth diminished from 135 000 patients in 2003 to 116 085 patients in 2005.
Conclusions: The unique healthcare management model improves the use of the available resources in order to satisfy the patient care needs. [Emergencias 2008; 20: 8-14]

Key words: Integration. Emergency. Integral management.

Introduction

On January 1st, 1999 the first public health service administrative concession model was introduced in the autonomous community of Valencia. This was undertaken by Health Department 11 in the town of Ribera. This model, known as the "Alzira Model "was first launched in Hospital de La Ribera and was consolidated with the integration of Primary Care (PC) in April 2003, bypassing the concessionary company to manage integrated public health care for the 247,000 people that live in the 29 towns that are covered by this Health Department, as well as an annual floating population of around 60,000. The characteristics of the new model are part of an adaptation project. Therefore, the hospital as we know it disappears and a new joint organisation is integrated bringing together all the levels of patient care in the department. Once the different levels of patient care are integrated, the hospital is no longer a crucial axis and the organisation can move on from managing specialised services to managing a set of health services that are part of the department[1].

The patient care work of Health Department 11 is carried out in 11 health care centres, 18 permanent surgeries and 12 temporary surgeries (in summer), as well as in Hospital de La Ribera. Personnel (doctors) in the department is made up of the following: 27 doctors in the HED and 1 coordinator who are all contracted by the UTE (the temporary union of businesses which manages the department), as well as 6 doctors who are administered by the *Consellería de Sanitat* (although in organisational terms, the person responsible for the HED manages all these resources). In primary care there are 46 doctors spread throughout all the basic areas who are managed by the UTE and 148 administered by the *Consellería de Sanitat.*

During the first phase of the integration project the organisation developed several structural

improvements in the different primary care (PC) centres in the department which potentially represent an improvement in the use of the Hospital Emergency Departments[2,3]. There were 10 continuing care points (CCPs) in the health centres where emergency care was given to primary care patients. These CCPs include computerised systems and the same information system found in the hospital emergency department (HED) was installed here. This is a great advantage for users given that the information that the doctor from the health centre enters into the system goes on to form part of the patient history that is used in Hospital de La Ribera, thereby improving the communication and coordination between the different levels of patient care. Patient care in CCPs is usually provided by 1 or 2 doctors, a nurse and an administrator; the opening times are 15:00 to 08:00; the technical resources are varied but also limited (there are few x-ray and observation areas); and patient care activity takes place in the health centre as well as at the patient's home. The next link in emergency patient care is the Hospital de La Ribera Emergency Department, which is located in Alzira for strategic reasons. There are also three mobile units for emergency medical care and basic life support. This established two emergency patient care bands for the population. Intervention in recent years has created a third band (Figure 1), that can be found between the CCP and the HED, and in this instance patient care is provided by the Integrated Health Centres (IHC) which will be defined later. This study describes the steps that have been taken to develop this project and the results obtained.

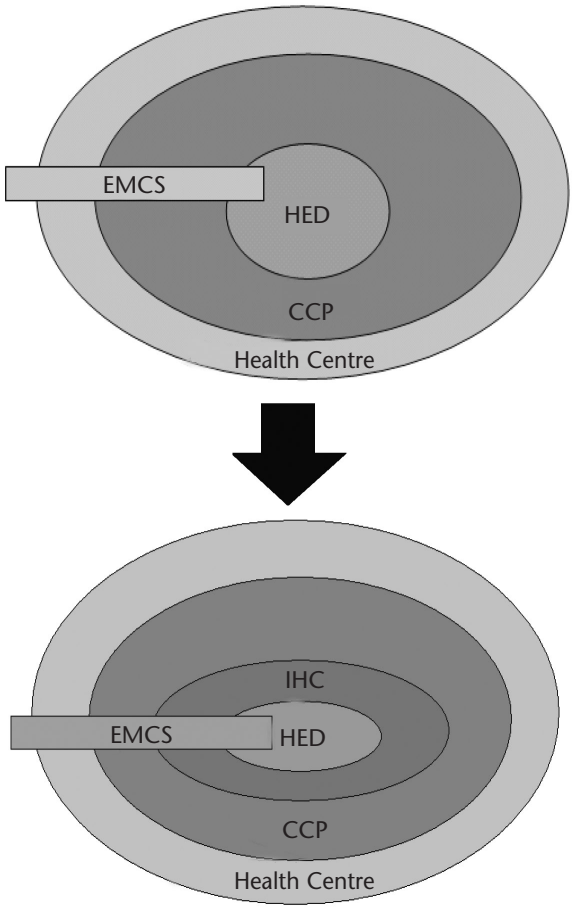

Figure 1. The patient care bands in 2003 (above) and in 2007 after the introduction of a third emergency care band (below). EMCS: Emergency Medical Care Services. CCP: Continuing Care Point. HED: Hospital Emergency Department. IHC: Integrated Health Service.

Method

The initial organisation of emergency patient care

We considered some guidelines for the emergency action plan which are shown in Figure 2 and are described below.

The integration of Human Resources (HR); the integration of PC professionals was carried out by their immersion in the HEDs where patient care was provided and their assignment to 1-2 duty shifts a month. An exchange also took place between doctors in CCPs and those in HEDs.

The objectives were as follows: to achieve a level of continuing patient care, to improve our understanding of the different levels of patient care that make up the organisation, to improve professional capability, to develop common protocols and to establish incentives based on common objectives[4]. This was achieved using a HED template, continuing emergency care in the department and integrating hospital professionals as well as those from PC. Today, 22 out of 46 (49%) PC doctors work duty shifts in the HED on a regular basis. At the same time, some HED personnel have left in order to join PC teams, more specifically 15 in the last 2 years (47%). Moreover, in order to obtain a higher level of integration, part of the HED (25 out of 32 doctors: 78%) have set up surgeries or work duty shifts in PC.

This bidirectional flow between the HED and PC should be interpreted as a sign of support lent by the professionals from both areas[5]. Finally, another important point linked to the integration of human resources is the development of training programmes. During 2005 courses in basic cardiopulmonary resuscitation (CPR) and the use of

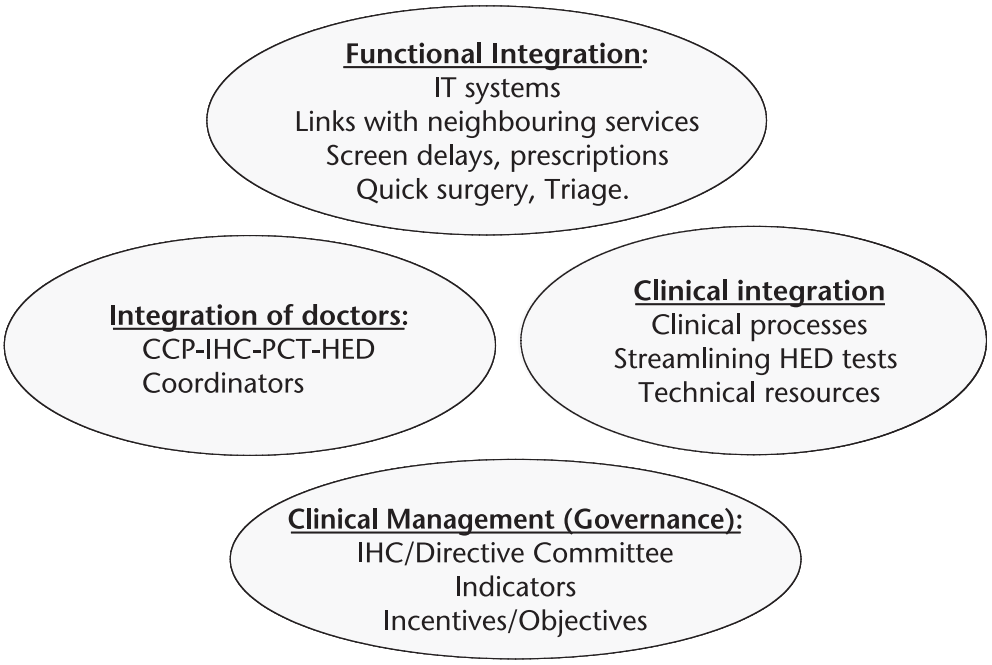

Figure 2. Elements needed to develop an integrated emergency care system. CCP: Continuing Care Point. IHC: Integrated Health Service. PCT: Primary Care Teams. HED: Hospital Emergency Department.

the automatic defibrillator (ADF) were given by HED personnel mainly for CCP personnel and PC teams. These courses were attended by 140 professionals, including doctors as well as nurses.

Functional integration: computerised systems have been introduced in 10 CCPs and the same information system found in the hospital emergency department (HED) was installed here. This allows professionals to consult patient histories and enter new information at the same time, thus creating what is known as new "emergency episode" which is then included in the history that is used in the HED. The triage system used in the HED is based on the Canadian and Australian classification models that have 5 levels and optimise the time elapsed between the time the patient arrives at the emergency department and the time they are examined by a doctor (Table 1). A quick resolution surgery was created in the HED which offered the user the same level of care available in a CCP. In this way, the least serious cases (P5) that are treated and developed in other patient care stages (the out-of-hospital stage) no longer interfer with the patient care reserved for those in a serious condition or emergency situation. Information on patient care activity and delays in all CCPs in the Health Department can be obtained in real time. This information is provided by a monitor in the HED waiting room and represents an improvement in the quality of patient care by reducing waiting times[6].

Clinical integration: different multidisciplinary working groups for establishing clinical processes, adapting tests and results in a way that include professionals from different patient care levels (PC-HED-Specialised Care) were set up with the objective of standardising patient care systems and developing continuing care. This allows monitoring scales and parameters to be established to indiscriminately focus on the use of these processes in any of the patient care stages[7]. With regard to clinical integration, guides on nephritic colic, abdominal pain, lumbalgia, corneal ulcers, ankle sprains and bronchiolotis have been published recently.

Clinical management (governance): the department's governance entities are responsible for checking that the operating clauses are upheld, putting forward solutions for operating and turnover issues, as well as following up on patient care and economic indicators, monitoring the workforce and defining quality controls in regular meetings[1,8].

The introduction of a third emergency patient care band

In April 2005 a new patient care concept was added to the management model in force up un-

Table 1. A description of the different levels that make up the scale

Priority	Description
P-1	Patients that require immediate treatment or treatment within the first 2 minutes of arriving at the emergency department. Immediate risk to their lives. Patients in this group are critically ill and require immediate attention. The majority of these patients should arrive at the emergency department by ambulance.
P-2	Patients that require medical attention within the first 10 minutes of arriving at the emergency department. Imminent risk to their lives. Patients in this group are critically ill or are suffering from a serious condition and are progressively deteriorating. Patients with severe chest pain, considerable dyspnoea and serious fractures should be included in this group.
P-3	Patients that require medical attention within the first 30 minutes of arriving at the emergency department. Potential risk to their lives. Patients in this group are suffering from a serious illness: profuse bleeding, dehydration
P-4	Patients that require immediate treatment or treatment within the first hour of arriving at the emergency department. These are patients with potentially serious conditions. People in this group have less serious symptoms or injuries, for example: a foreign object in the eye, sprained ankle, migraine, etc.
P-5	Patients that require immediate treatment or treatment within the first 2 hours of arriving at the emergency department. These patients have less serious conditions. Symptoms are mild and have usually been present for over a week e.g. rashes and pain that is less acute.

til now known as the IHC. The aim of these centres was to create a patient care unit that could cover greater emergency care needs than those covered by a CCP by including basic tests and x-rays. At the same time, it would help relieve the HED patient care burden by changing the CCP model that existed at the time.

Integrated health centre: IHCs are strategically located in four key areas in Health Department 11 (Figure 3). In structural terms, an IHC is made up of 3 general emergency surgeries, an observation room with 4 beds, a resuscitation room and a room for dressing wounds. The staff work in shifts (morning-afternoon-duty shift) and the workforce includes 2 doctors, 2 nurses and an administrative assistant. The centre is open to the public 24 hours a day. There is a basic x-ray service available from 09:00 until 22:00. Equipment and dressing materials such as plaster, splints, monitors, defibrillators and ECGs can be found here. Since there is an IT connection with the hospital, support from specialists (radiologists, orthopaedic surgeons and surgeons) is also available.

Some IHC staff spent time in the HED to train and become familiarised with the processes, protocols and practices. We should also take into consideration that seven of the eleven IHC doctors (64% of the workforce) were once part of or had gone through the HED which is also in line with the previously mentioned human resources integration policy.

The third patient care band is thus established in the following way: less serious issues will be resolved by the CCPs who will not be competing with the PC team. The IHC will be responsible for conditions of intermediate seriousness with in situ

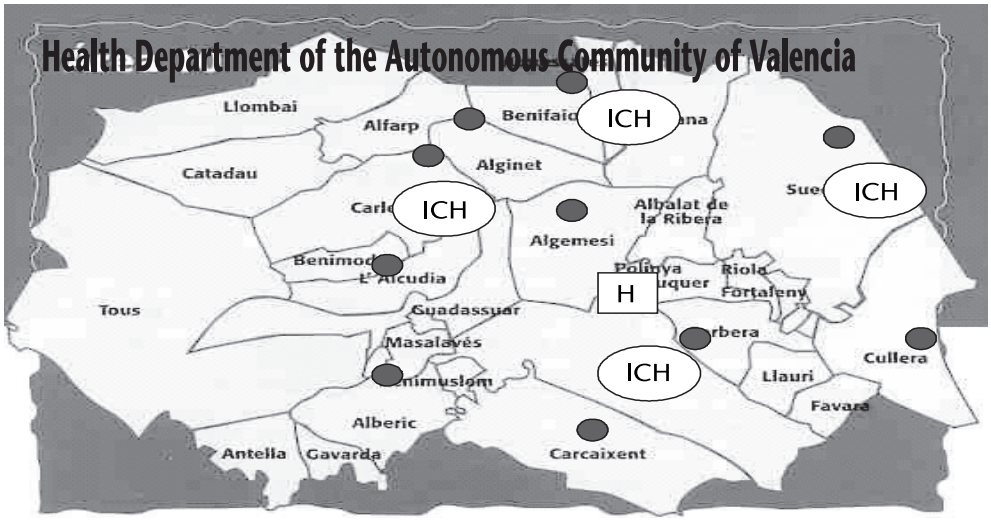

Figure 3. Continuing patient care project in the Health Department of the Autonomous Community of Valencia. H: Hospital. ICH: Integrated health centre. ●: Continuing Care Point.

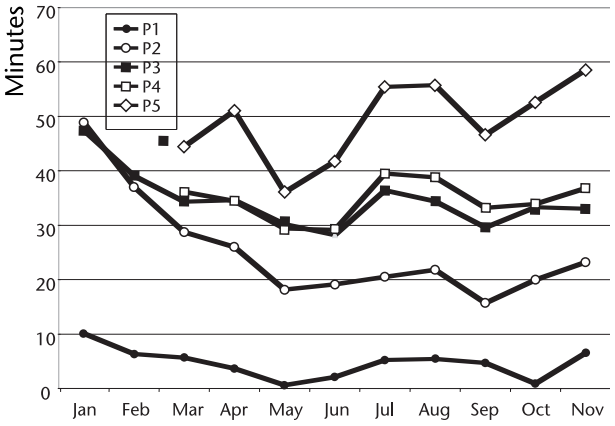

Figure 4. Waiting times according to triage priority.

technical support and finally, the HED will take care of the most serious cases.

Analysis of the results

Once the management points and indicators have been established and given the nature of the IT systems that have been set up using a single model in all centres, data can be collected using statistical models which reflect the number of visits in different patient care centres and the results can be evaluated. The data collected will be related to the Sueca ICH, which has been in operation since April 2005. An evaluation of the trends was carried out using the linear regression test and it demonstrated that there was statistical significance when the value of p was less than 0.05.

Results

One of the improvements observed is linked to the implementation of the triage system since we have already observed that it has produced a gradual increase in the number of patients that have moved over to rapid surgery (P-5). However, there is still a conflict between the percentage of patients selected as P-5 in our triage system (17%) and the percentage commonly found in other studies (around 30- 40%). The waiting times for each level are shown in Figure 4.

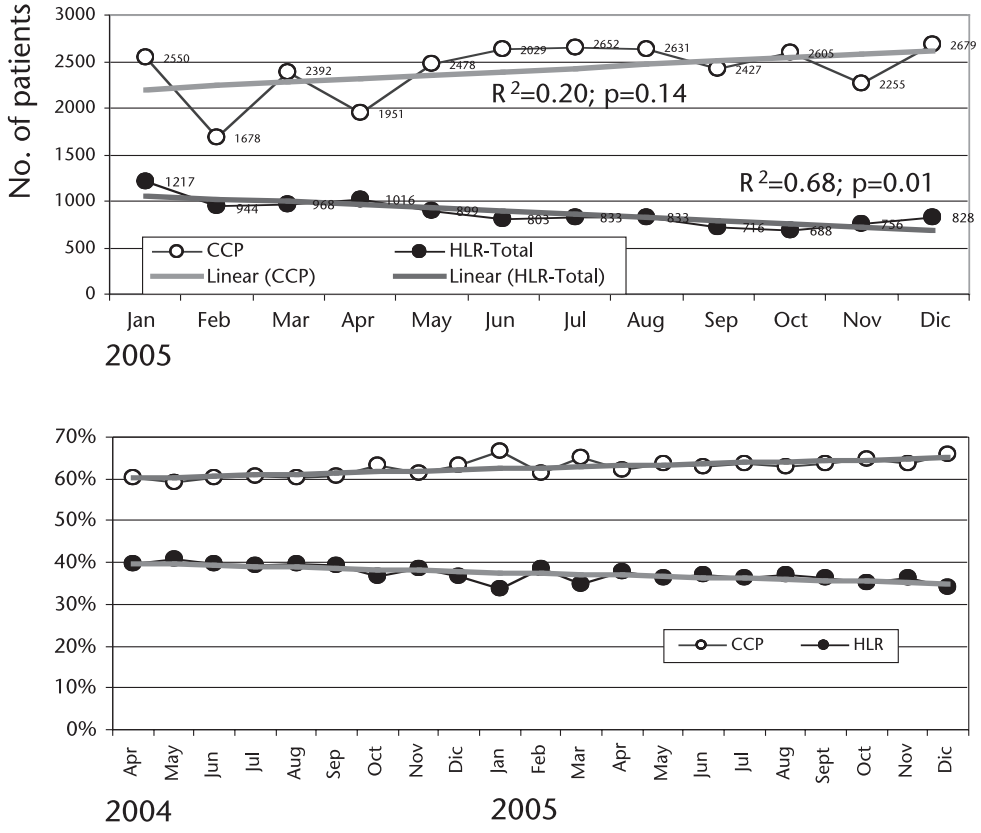

Figure 5. Emergency care provided for the population of Sueca (2005) in absolute numbers (above) and in percentages (below) once the integrated health centre was opened. CCP: continuing care point. HLR: Hospital La Ribera.

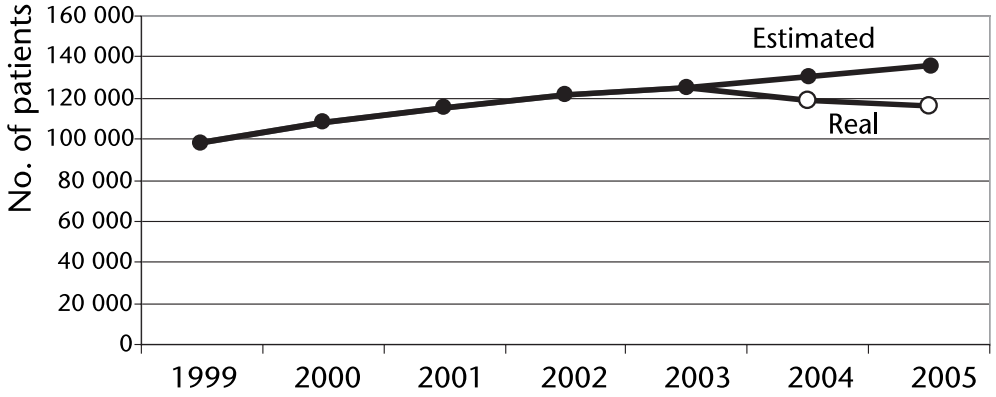

Figure 6. Patient care curve in relation to the total number of hospital emergencies during the period 1999-2005. For 2004 and 2005 the number of estimated and real hospital emergencies is shown.

The establishment of an IHC has led to a declining trend in HED patient care which stood at 30% during the last year and a half of this study ($p = 0.14$; Figure 5). This decrease is directly linked to a percentage increase (34%) of people who now visit the IHC in the first instance ($p = 0.01$; Figure 5). After the integration with PC the hospital patient care growth curve has fallen, thereby reflecting the benefits of a system with the correct integration policy at all levels (Figure 6).

Discussion

From 2003, when the single management model was introduced in the department, to 2005, we have seen a reduction of 6.5 per cent in hospital emergencies1. If we change the reference date and establish it as the moment when all CCPs began to work with the SIAS (IT system that we use in the clinical management of our Health Department) emergency module (June 2004), the figure increases by 1 point to 7.5 per cent. The percentage decrease in the number of patients who visited the HEDs in the basic area covered by this study is the same as the percentage increase in the number that now visit the IHC in the first instance. ICHs allow closer contact with the patient and also provide PC professionals with more means and resources to make a correct diagnosis, as a result the user is more satisfied with the level of service[3,7,9]. The new IT systems in CCPs have also contributed to the positive development of patient care. One of the pillars of continuing patient care is an effective IT system[10,11]. A reduction in paperwork and an increase in technological equipment that facilitate the diagnosis of a range of conditions which previously were not considered because of the lack of resources to enable doctors to resolve more health issues.

The implementation of this strategy in emergency patient care has meant a redistribution of emergency cases seen in the department. If we analyse the results it becomes clear that the department has developed in a similar way to the emergency cases in the rest of the Autonomous Community of Valencia, experiencing an increase in emergency cases of approximately 4% (in hospitals as well as PC). As a result, a percentage of emergency cases that used to go to hospital and could have been seen in AP are treated in the emergency care points during the out-of-hospital stage.

In contrast with other experiences that have been detailed in different studies, such as the "calle Valencia" out-of-hospital emergency device which can be found in Hospital Clínic or the "Perecamps centre" in Hospital del Mar, which are both in Barcelona, our case is different because we are trying to change the behaviour of users in such a way that the patient goes directly to the most appropriate centre for the initial patient care that corresponds to their condition. In other models, after the patient has visited the HED, if necessary they are sent to an out-of-hospital patient care unit so that the emergency case can be resolved.

With regard to the repercussions that the implementation of the structured triage system has had, we believe that they have been positive because waiting times have been reduced when compared to those linked to the previous triage system which was based on only three priority levels which were modified during the last few months of this study. As a result, today waiting

times are close to reaching our target (Table 1)[7,8,11]. Despite the progressive increase in the number of patients with level 5 priority, we have observed that this percentage is still lower than that described in previous studies[7,8,11]. The explanation for this is that we have adapted our triage system to our organisational and work model and as a result part of priority level 5 in conventional work systems is considered priority level 4 (Figure 3).

Finally we can conclude by saying that a single management model for patient care services leads to an improvement in the use of resources because of the flexibility of a single coordination and decision making system[1,8]. It also establishes quality indicators which satisfy the current needs of users by compiling surveys and statistical and analytical works on the results of the research carried out in the whole area[4,5].

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Gestión integral del área de urgencias y coordinación con atención primaria

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Objetivo: Valorar el impacto que tiene un modelo único de gestión que integra las distintas áreas de urgencias de un Departamento de Salud sobre la actividad de un servicio de urgencias hospitalario (SUH), así como la repercusión de la creación de un centro se salud integrada (CSI) que actúa como eslabón intermedio entre la asistencia urgente que se presta en los puntos de atención continuada (PAC) y el SUH.

Método: Se estructurarán dos subestudios en el ámbito del Departamento de Salud en el periodo de dos años a partir de abril de 2003. En primer lugar, estudio descriptivo de los distintos elementos para avanzar hacia un sistema integrado de prestación de servicios urgentes. En segundo lugar, la valoración de la implantación del CSI (estudio evaluativo antes-después).

Resultados: Tras la creación del Centro de Salud Integral (CSI) se observa un descenso de asistencia en el SUH de pacientes de su zona de influencia (30%). El descenso directamente se corresponde con el porcentaje de aumento que ahora acude inicialmente al CSI (34%). Se observa inversión en la curva de crecimiento de asistencia urgente hospitalaria (116.085 personas durante 2005 frente a una estimación de 135.000).

Conclusiones: La gestión única de los servicios asistenciales conlleva un mejor aprovechamiento de los recursos en la búsqueda de satisfacer las necesidades actuales del usuario. [Emergencias 2008; 20: 8-14]

Palabras clave: Integración. Urgencias. Gestión única.