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**Organization of Heart Failure Care in Spain: Characteristics of Heart Failure Units**



**Organización de la atención a la insuficiencia cardiaca en España: unidades existentes y características**

**To the Editor,**

Heart failure (HF) is a major health problem, and the burden it places on health care systems and society in general has increased in recent years and is expected to continue to grow.<sup>1</sup> Due to the wide diversity of patients with very different prognoses and therapeutic options, current guidelines recommend a multidisciplinary approach and the establishment of organizational structures to guarantee its implementation (recommendation class I A).<sup>2</sup>

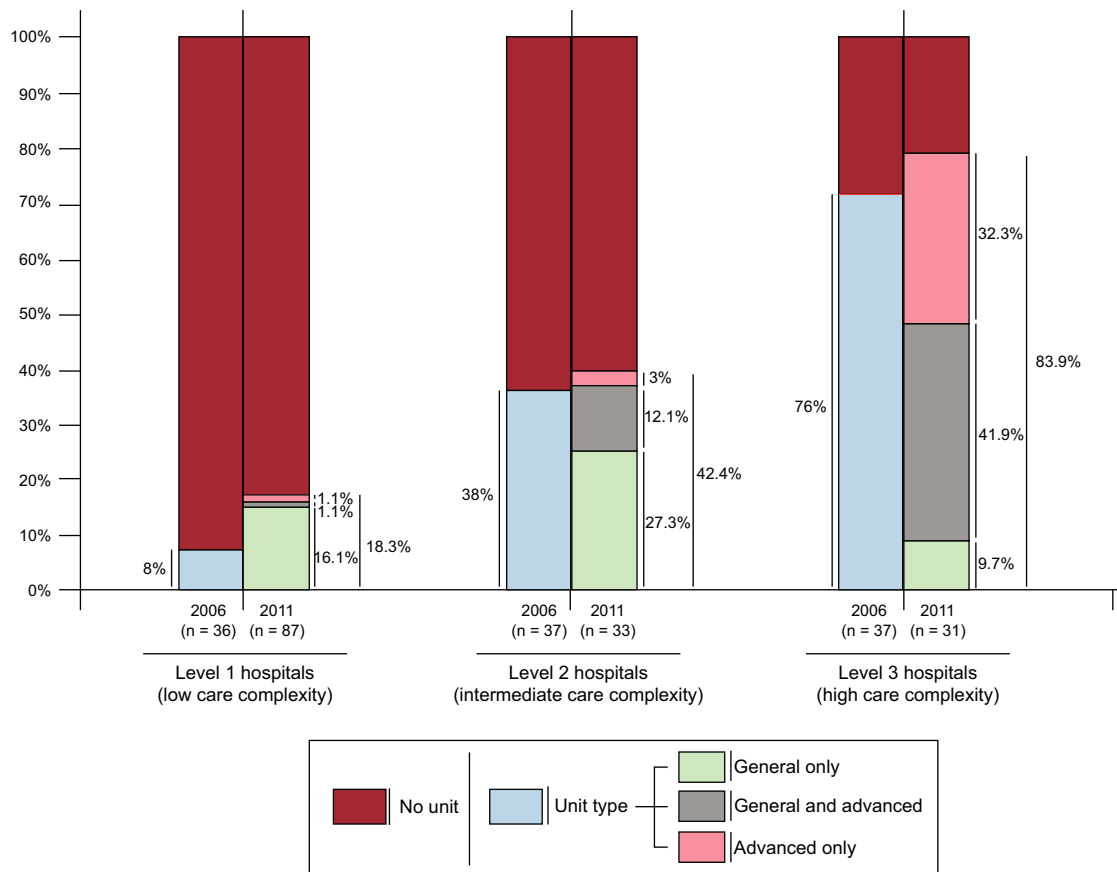
Here we present the results of the MOSAIC (*Mapa de la Organización de la Insuficiencia Cardiaca en España* [Map of Heart Failure Organization in Spain]) project, which updates and expands the information available about resources and organizational structures in Spain for the care of patients with HF<sup>3</sup> and complements the data from other recent studies conducted by the Spanish Society of Cardiology.<sup>4</sup>

We contacted 219 of the 246 hospitals listed (89%) in the general catalog of the Spanish Ministry of Health, Social Services, and Equality (*Ministerio de Sanidad, Servicios Sociales e Igualdad* [MSSSI])<sup>5</sup>; 60 hospitals declined to participate, and 8 were excluded due to insufficient data. We thus present information from 151 hospitals, obtained by an online and telephone survey in the last quarter of 2011.

The hospitals were classified into 3 groups according to the complexity of health care provision: level 1 (no hemodynamic monitoring, electrophysiology, or cardiac surgery), level 2 (hemodynamic monitoring and/or electrophysiology, but no surgery), and level 3 (hemodynamic monitoring, electrophysiology, and surgery).

The study examined 2 types of HF unit. A general unit is a designated hospital service with an assigned manager and a specific protocol for the care of HF patients. An advanced unit has resources for the treatment of critically ill patients, including the management of advanced HF, pretransplant evaluation, hemodynamic monitoring, and ability to recommend implantation of an automated implantable cardioverter defibrillator or cardiac resynchronization device.

The survey included hospitals from all 17 Spanish autonomous regions and Melilla, with a total assigned catchment population of 34.2 million people. Of these centers, 87 (57.6%) are level 1



**Figure.** Heart failure units by type and hospital complexity.

**Table**

Programs and Activities in General Heart Failure Units (n = 44) and Tasks Assigned to Nursing Staff

Programs and protocols in the unit	
Cardiac rehabilitation program	20 (45.5)
Joint protocol with internal medicine	19 (43.2)
Joint protocol with primary care	21 (47.7)
Hospital care program	10 (22.7)
Specific telemedicine program	9 (20.5)
Unstructured telephone contact	5 (11.4)
Structured follow-up by telephone <sup>†</sup>	6 (13.6)
Collection of biometric data with remote telemonitoring devices	5 (11.4)
Remote tele-intervention by video link	1 (2.3)
Remote telemonitoring of implantable devices (AICD and resynchronization devices)	6 (13.6)
<b>Day-hospital</b>	
Unit with seating	15 (34.1)
Rotation of resident physicians	21 (47.7)
Responsibilities of nursing staff	
Training of patients and carers	41 (93.2)
Patient care support tasks (eg, ECG)	42 (95.5)
Nurse-led clinic	29 (65.9)
Contacting and assessing patients by telephone	35 (79.5)
Link with primary care physician and nurses	31 (70.5)
Telemonitoring	11 (25)

AICD, automated implantable cardioverter defibrillator; ECG, electrocardiogram. Values are expressed as no. (%).

<sup>†</sup> Following a written protocol and contact schedule.

hospitals, 33 (21.9%) are level 2, and 31 (20.5%) are level 3, the most complex level. The annual median number [interquartile range] of hospital discharges of patients admitted for all causes was 9220 [4433–20 648], and the annual number of discharges of patients admitted for HF as the main cause was 409 [156–687]. The Figure shows the proportion of centers with an HF unit broken down by unit type and compares these data with the situation in 2006<sup>3</sup> (although that publication did not describe the criteria used to define the hospital type, which may have differed from those used here). Of the 151 centers, 56 (37.1%) have HF units. Of these, 16 are level 1 centers (28.6% of all units), 14 (25%) are level 2 centers, and 26 (46.4%) are level 3 centers. Heart failure units are currently found in 18.4% of level 1 centers, 42.4% of level 2 centers, and 83.9% of level 3 centers, figures only slightly higher than those for 2006 ( $P > .05$  for all comparisons). Regarding unit type, 26 hospitals have only a general unit (46.4% of centers with an HF unit and 17.2% of the total), 12 have only an advanced unit (21.4% and 7.9%), and 18 have units of both types (32.1% and 11.9%). Centers with an HF unit are larger than those without one, have higher numbers of discharges of patients admitted for all causes (median 18 906 [7962–30 984] vs 6000 [3 498–13 154]) and for HF (661 [358–1027] vs 251 [121–493]), and also have more cardiologists (17 [9–23] vs 4 [2–9]). Of the 44 general HF units (26 as the only HF unit and 18 in centers that also have advanced units), most (n = 37 [84.1%]) are managed by the cardiology service and a few (n = 6 [13.6%]) are managed by internal medicine (the corresponding figures for 2006 were 91% and 9%). The cardiology service participates in 42 of the general units (95.5% vs 96% in 2006), internal medicine in 17 (38.6% vs 11% in 2006), rehabilitation in 9 (20.5% vs 9% in 2006), and geriatrics in 4 (9.1%

vs 22% in 2006)—the same proportion as psychiatry/psychology and social care. Nursing staff are assigned to the general HF unit at all centers except for 1 (compared with 78% in 2006), but 20 (45.5%) of the 44 centers reported that no nursing staff are assigned to the unit full-time (compared with a calculated figure of 74% for 2006). These general units vary greatly in the programs they run, their organization and activities, and the tasks assigned to nursing staff (Table). In 46.7% of the advanced HF units (14 of 30), staff do not participate in the follow-up of patients' automated implantable cardioverter defibrillators or cardiac resynchronization devices.

In summary, the proportion of hospitals with an HF unit has changed little since 2006,<sup>3</sup> indicating ample room for improvement to meet the guideline recommendations,<sup>2</sup> especially in level 1 centers. Moreover, units with a similar level of technological sophistication vary greatly in their organization and the services provided. There is also ample room for improvement in the role played by advanced HF units, many of which do not currently participate in the follow-up of the devices they have recommended for patients.

Further progress is needed in the specification and establishment of HF units, both general and advanced, while ensuring that they are adapted to local conditions and aim to achieve maximum efficiency with the allocated resources.

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**CONFLICTS OF INTEREST**

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## The Use of Coronary Artery Bypass Graft in our Setting. Are We Following the Recommendations of the Clinical Guidelines?



### Utilización de la cirugía de revascularización coronaria en nuestro medio. ¿Seguimos las recomendaciones de las guías?

#### To the Editor,

Coronary artery bypass graft (CABG) is the treatment of choice in certain clinical and anatomical contexts in coronary artery disease, as described in clinical practice guidelines, including those of the European Society of Cardiology, which has been adopted by the Spanish Society of Cardiology.<sup>1</sup>

The aim of this study was to analyze the number of patients referred for CABG in our setting, determine the rate of interventions per head of population, compare the rate obtained with other rates in Spain, and appraise the degree of compliance with the recommendations of the clinical practice guidelines.

To achieve this, we determined the number of patients referred for CABG by our unit between January 1, 2012 and October 31, 2013, computed the number of patients treated per million inhabitants in our region, and compared these results with the situation in other parts of the country. Finally, we analyzed the number of patients who should have been referred for CABG according to the recommendations of the guidelines. Our unit is the provincial referral center for cardiac catheterization and has a catchment area of 630 000 inhabitants.

During the study period, severe coronary disease was diagnosed in 1409 patients. These patients' therapeutic management is shown in the Figure. Of 75 referrals, 44 underwent surgery (58.7%), 27 (61%) underwent isolated CABG, and the remainder underwent

combined CABG and valve replacement. This corresponds to 38.1 and 23.3/million inhabitants per year for combined surgery and isolated CABG, respectively. Thirty-one patients did not undergo surgery because they had died, had refused to undergo surgery, or because the cardiac surgeon did not consider them suitable for surgery, among other reasons.

The clinical profile (Table) of the 42 patients referred for isolated CABG was absence of high surgical risk and high SYNTAX score (chronic occlusions, trunk disease and/or multivessel disease with multiple lesions). Referral was generally decided upon after consultation between the cardiac catheterization specialist and the clinical cardiologist.

According to the registry of interventions of the Spanish Society of Cardiovascular Surgery, 7149 patients underwent CABG in Spain in 2011 (154/million inhabitants per year); of these, 5010 underwent CABG only (111/million inhabitants per year) and the remainder combined surgery.<sup>2</sup> In Germany in the same year, 55 299 patients underwent surgery (680/million inhabitants per year) and 41 976 underwent CABG only (516/million inhabitants-year).<sup>3</sup> In the United States in 2010, isolated CABG was performed in 219 000 patients (697/million inhabitants per year).<sup>4</sup>

Because these data are influenced by the prevalence of the disease in different geographical areas, we analyzed the ratio between percutaneous revascularization and CABG. At our center, this ratio was 44.7 for isolated CABG and 24.7 for combined surgery. According to the Spanish Cardiac Catheterization Registry, 63 202 patients underwent percutaneous revascularization in 2011, giving a percutaneous revascularization/CABG ratio of 12.6 for isolated CABG and 8.8 for combined surgery.<sup>5</sup> In the United States in 2010, the percutaneous revascularization/CABG ratio was 2.2.

Patients with multivessel disease are a heterogeneous group and it is difficult to generalize strategies;<sup>6</sup> nevertheless, the clinical

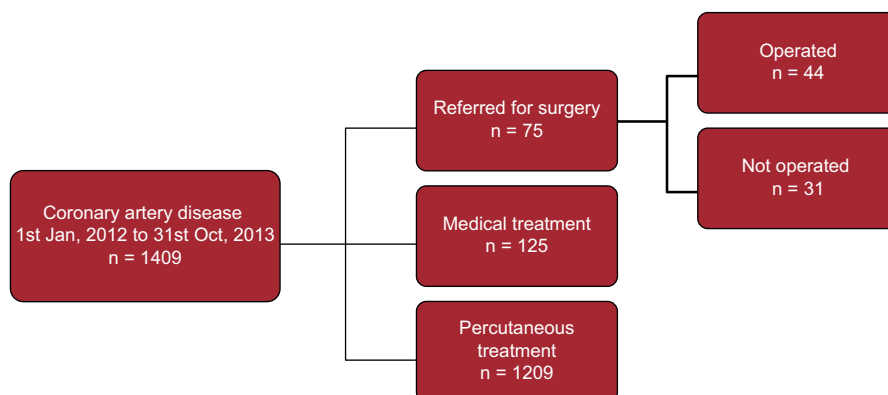


Figure. Therapeutic management of patients diagnosed with coronary artery disease.