Centres of excellence in heart failure: results of an accreditation programme in Spain (2017–2021)

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Abstract

Aims To describe logistics and outcomes of the accreditation program of centres of excellence in heart failure (HF) developed in Spain by the Spanish Society of Cardiology (SEC) between 2016 and 2021.

Methods and results A scientific committee created by the SEC defined three types of HF units (community, specialized, and advanced), depending on the characteristics of the hospital and their portfolio of services and equipment, as well as the quality standards required for the accreditation of excellence. The units were required to submit to the SEC a document certifying compliance with the requirements and quality standards. Once verified these, the unit received accreditation of excellence from the SEC. Between 2017 and October 2021, 78 HF units spread throughout Spain applied for accreditation. This represents 50.6% of all Spanish national health system centres with cardiology departments. Accreditation was definitive in 56.4% of the applicant centres and provisional in the remaining 43.6%. Of the 78 units, 19 were community units, 44 specialized, and 15 advanced. Of the 34 units that received provisional accreditation for failure to meet any of the required quality standards, all resolved these deficits within 6 months of the initial evaluation, subsequently receiving definitive accreditation.

Conclusions Our experience indicates that implementation of an accreditation programme for excellence and quality of care of HF units at the national level by a scientific society is feasible and sustainable over time, leading the majority of HF units in the country to apply for accreditation and to meet the required quality standards.

Keywords Heart failure; Excellence centres; Accreditation; Heart failure units

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Introduction

Heart failure (HF) is a major cardiovascular problem, with increasing incidence and prevalence and high mortality.1 Advances in pharmacological and non-pharmacological treatment have contributed to improving its prognosis but have also increased the complexity of its management.2 Therefore, the development of specific HF units and programmes has become essential to improve the management of care for these patients, receiving a Class I recommendation in the European Society of Cardiology (ESC) guidelines.3 However, it is not enough to create these units; it must be ensured that they meet adequate quality standards. In 2016, the Spanish Society of Cardiology (SEC) launched the SEC-Excellent programme, a project to accredit the quality of healthcare in the most prevalent and important processes and procedures in the cardiovascular area.4 The first of these to be implemented was HF, whose design and methodology were already published in 2016.5 Based on this experience, and others carried out in other European countries, the ESC HFA has also initiated the design of a similar programme of quality centres in HF, at European level.6-9
Objectives

The aim of our work is to describe the logistics and outcomes of the accreditation programme of centres of excellence in HF developed in Spain by the SEC between 2016 and 2021.

Methods

The general methodology of the SEC-Excellent project and of the accreditation programme for centres of excellence in HF have already been described in previous work. In brief, for HF, a scientific committee was created consisting of experts appointed by the executive of the SEC and the HF Association of our society. This committee defined three types of HF units (community, specialized, and advanced), depending on the complexity and characteristics of the hospital and cardiology departments in which they are included, their portfolio of services and equipment, and the availability of different diagnostic and treatment techniques. A summary of the characteristics and required standards of the three types of HF units is shown in Table 1. These three types of units have been

| Table 1 | Characteristics and required standards of the community, specialized, and advanced heart failure units in the Spanish centres of excellence programme |
|-----------------|-------------------------------------------------|-----------------|-----------------|
| **Organizational and process structure** | Community | Specialized | Advanced |
| An agreement between the stakeholders and institutions based on a regionally based care agreement that includes commitments to key performance indicators | Yes | Yes | Yes |
| An operational committee that addresses the elements of the program | Yes | Yes | Yes |
| An organizational chart | Yes | Yes | Yes |
| **Portfolio services, facilities, and equipment** | | | |
| Provision of inpatient, outpatient, and day hospital care | Yes | Yes | Yes |
| Presence of an on-duty cardiologist 24 h/day, 7 days/week, 365 days/y | No | Yes | Yes |
| Provision of consultation (patient/caregiver with the nurse) and inter-consultation (primary care health professional), at least by e-mail and mobile phone | Yes | Yes | Yes |
| Availability of: | | | |
| - Haematological studies and routine clinical analysis | Yes | Yes | Yes |
| - Electrocardiography | | | |
| - Natriuretic peptide testing | | | |
| - Transthoracic echocardiography | | | |
| Availability of: | No | Yes | Yes |
| - Trans-oesophageal and transthoracic echocardiography | | | |
| - Cardiac catheterization | | | |
| - Electrophysiology laboratory | | | |
| - Cardiac MRI and coronary CT | | | |
| Availability of the implantation and follow-up of AID and re-synchronization devices | No | Yes | Yes |
| Availability of endomyocardial biopsy and endomyocardial anatomic pathology | No | No | Yes |
| Availability of: | | No | Yes |
| - Cardiovascular surgery service | | | |
| - Heart transplant | | | |
| - Ventricular assist devices | | | |
| - Complex ventricular remodelling techniques | | | |
| Provision of patient and caregiver education | Yes | Yes | Yes |
| A healthcare clinic dedicated to the HF unit | Yes | Yes | Yes |
| Day hospital places specific to the unit and dedicated cardiology beds | No | Yes | Yes |
| Cardiac critical care unit | No | Yes | Yes |
| **Human resources** | | | |
| A head of the HF unit must be formally appointed. The head must have training in HF | Yes | Yes | Yes |
| A nurse with experience in HF | Yes | Yes | Yes |
| A multi-disciplinary HF care team comprising at least one cardiologist and/or internist trained in HF, one representative of the physicians in the primary care teams within the hospital’s catchment area, and one nurse with experience in HF | Yes | Yes | Yes |
| All members of the multi-disciplinary team will receive a structured continuing education program tailored to the skills needed by each member | Yes | Yes | Yes |
| **Process** | | | |
| Development of a process for HF management, agreed by members of the multi-disciplinary team, which must fulfil the diagnostic criteria and therapeutic management recommendations of the ESC guidelines | Yes | Yes | Yes |
| Specific protocol for the referral and follow-up of patients needing devices or advanced HF solutions (Heart Team) | Yes | Yes | Yes |
| A clinical pathway for the structured follow-up of patients under telemonitoring | Yes | Yes | Yes |
| Development and implementation of a protocol for the immediate care of patients with cardiogenic shock | No | Yes | Yes |
| Specific process for patients with HF and advanced chronic disease at the end of life | Yes | Yes | Yes |

AID, automatic implantable defibrillator; CT, computerized tomography; HF, heart failure; MRI, magnetic resonance imaging.
included, with similar terminology and characteristics, in the ESC HFA quality programme. In addition, the quality standards that each type of unit had to meet to receive accreditation of excellence were defined. The units were required to submit to the SEC a document certifying compliance with the requirements and quality standards, and this document was evaluated by a consultant specialized in health management. In the pilot phase of the study, carried out in 2017, which included 14 HF units, all these 14 centres were audited on-site, and then, a randomly selected 10% of units also were audited on-site. Once compliance with the required quality standards was verified, the unit received accreditation of excellence from the SEC. This accreditation could be definitive (when all the standards were met) or provisional. A unit receives provisional accreditation when it does not meet 100%, but at least 90% of the required standards, with the commitment of those responsible for the unit to implement the deficits within 6 months. Once the feasibility of the process was proven in the 2017 pilot study, an annual call for accreditation applications was opened to which all HF units that so requested could apply a re-accreditation 5 years after the initial one is planned, based on participation in a national HF registry and certification of results (number of patients attended, mortality and re-hospitalization rates). Process measures of healthcare as performance indicators such as proportion of patients with HF who have had an imaging-based assessment of cardiac function or who attend cardiac rehabilitation and proportion of patients with HFrEF who receive a medication titration plan or prescription for guideline-recommended therapies or achieve target or maximum tolerated doses of guideline-recommended therapies will also be required in the recertification process.

**Results**

Between 2017 and October 2021, 78 HF units spread throughout Spain applied for accreditation. This represents 50.6% of all Spanish national health system centres with cardiology departments or units (78 of 154), but 80% of hospitals with HF units. Accreditation was definitive in 56.4% of the applicant centres (44 of 78) and provisional in the remaining 43.6% (n = 34). Figure 1A shows the distribution of accredited units in the different Spanish autonomous communities. The largest number of accredited units was in the regions with the largest populations and number of hospitals (Andalucía, Madrid, Catalonia, and Valencia), and only three of the 17 autonomous communities (those with the smallest populations) did not apply for accreditation. Of the 78 accredited units, 19 were community units.

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Figure 1  (A) map of the Spanish autonomous communities with the number of accredited units in each. (B) Distribution of the type of accredited units. (C) Overall number of accredited HF units per year. (D) Distribution by type of unit of the number of accredited units per year.
44 specialized, and 15 advanced (Figure 1B). The relative proportion of the three types of units was similar in each autonomous community. By year (Figure 1C), in 2017, the 14 units included in the pilot phase were accredited, 31 in 2018, seven in 2020, and eight in 2021. Advanced units were almost all (14 of 15) accredited in 2017 and 2018, and specialized units in 2018 and 2019 (28 of 44, 63.6%), whereas community units were spread across all years sim-

Table 2 Reasons for initial non-compliance with the quality standards required in the SEC-Excellent programme for heart failure units (n = 34)

| Reason                                                                 | Count | Percentage |
|------------------------------------------------------------------------|-------|------------|
| Lack of coordinated and signed process/clinical pathway between cardiology, internal medicine, and primary care | 14    | 41.2%      |
| Lack of in-hospital rehabilitation programme                           | 6     | 17.6%      |
| Lack of joint work with primary care                                    | 6     | 17.6%      |
| Lack of 24-h cardiology duty at the centre                             | 5     | 14.7%      |
| Lack of a coordinator appointed in writing in the unit                 | 3     | 8.8%       |
| Lack of training programmes for primary care physicians                 | 3     | 8.8%       |

Table 3 Baseline features of patients included in the Sec-Excellence registry according to the type of heart failure unit (n = 1157)

| Feature                                      | Community (n = 173) | Specialized (n = 694) | Advanced (n = 290) | P value |
|----------------------------------------------|--------------------|-----------------------|--------------------|---------|
| Age (years)                                  | 74.3 ± 11.7        | 72.9 ± 11.6           | 69.5 ± 13.0        | <0.001  |
| Female                                       | 64 (36.9%)         | 288 (41.6%)           | 92 (31.7%)         | 0.01    |
| Co-morbidities                               |                    |                       |                    |         |
| Active smoking                               | 31 (17.9%)         | 74 (10.7%)            | 47 (10.2%)         | 0.01    |
| Hypertension                                 | 139 (80.3%)        | 527 (76.6%)           | 201 (69.3%)        | 0.01    |
| Diabetes mellitus                            | 68 (40.0%)         | 306 (44.5%)           | 119 (41.1%)        | 0.42    |
| Stroke                                       | 15 (8.9%)          | 62 (9.1%)             | 37 (12.8%)         | 0.17    |
| Chronic renal failure                        | 62 (36.4%)         | 246 (35.8%)           | 148 (51.2%)        | <0.001  |
| COPD                                         | 32 (18.8%)         | 120 (17.4%)           | 46 (15.8%)         | 0.70    |
| Cognitive impairment                         | 11 (6.5%)          | 15 (2.2%)             | 13 (4.5%)          | 0.01    |
| Cancer history                               | 19 (11.2%)         | 31 (4.5%)             | 20 (6.9%)          | 0.01    |
| Anaemia                                      | 61 (35.9%)         | 233 (34.1%)           | 114 (39.6%)        | 0.25    |
| Ferropenia                                   | 56 (34.3%)         | 221 (32.7%)           | 70 (24.3%)         | 0.02    |
| Cardiac history                              |                    |                       |                    |         |
| Myocardial infarction                        | 55 (32.1%)         | 228 (33.1%)           | 83 (28.6%)         | 0.39    |
| Coronary artery re-vascularization           | 46 (26.6%)         | 244 (33.9%)           | 89 (30.7%)         | 0.002   |
| CRT/AID                                      | 20 (11.5%)         | 97 (14.1%)            | 68 (23.5%)         | 0.005   |
| Atrial fibrillation                          | 94 (54.4%)         | 373 (54.2%)           | 157 (54.2%)        | 0.23    |
| Heart failure history                        |                    |                       |                    |         |
| Previous 1-year HF admission                 | 62 (36.2%)         | 202 (29.3%)           | 114 (39.3%)        | 0.006   |
| Aetiology:                                   |                    |                       |                    | 0.24    |
| - Ischaemic                                  | 54 (31.4%)         | 223 (32.2%)           | 95 (32.7%)         | 0.24    |
| - Non-ischaemic                              | 119 (68.6%)        | 471 (67.8%)           | 195 (67.3%)        | 0.24    |
| NYHA Class III-IV                           | 111 (64.5%)        | 426 (62.1%)           | 202 (71.1%)        | 0.02    |
| LVEF (%)                                     | 40.1 ± 15.6        | 43.1 ± 15.6           | 37.0 ± 16.7        | <0.001  |
| Type of HF:                                  |                    |                       |                    | <0.001  |
| - Reduced                                    | 96 (55.5%)         | 327 (49.8%)           | 187 (65.6%)        | 0.56    |
| - Mildly reduced                             | 23 (13.3%)         | 87 (13.2%)            | 17 (5.9%)          | 0.56    |
| - Preserved                                  | 54 (31.2%)         | 243 (37.0%)           | 81 (28.5%)         | 0.56    |
| Heart rate (bpm)                             | 71.4 ± 13.4        | 72.7 ± 14.2           | 72.9 ± 13.8        | 0.56    |
| LBBB                                         | 48 (28.4%)         | 136 (20.1%)           | 88 (30.5%)         | 0.001   |
| Systolic BP (mmHg)                           | 117 ± 16.0         | 117 ± 16.0            | 114 ± 17.0         | 0.001   |
| GFR (mL/min)                                 | 58.1 ± 21.2        | 59.2 ± 22.8           | 57.6 ± 25.2        | 0.001   |
| GFR < 30 mL/min                              | 17 (10.5%)         | 68 (10.9%)            | 37 (14.4%)         | 0.28    |
| Pro-BNP (ng/mL)                              | 6545 ± 9148        | 4234 ± 7119           | 4581 ± 5992        | <0.001  |
| Treatment                                    |                    |                       |                    |         |
| Diuretics                                    | 151 (89.3%)        | 583 (85.1%)           | 245 (90.4%)        | 0.05    |
| ACEi/ARA                                     | 62 (36.9%)         | 271 (39.5%)           | 103 (38.1%)        | 0.78    |
| Sacubitril/valsartan                         | 65 (38.4%)         | 236 (34.5%)           | 85 (31.3%)         | 0.31    |
| β-Blockers                                   | 139 (82.7%)        | 537 (78.5%)           | 212 (78.8%)        | 0.47    |
| ARN                                          | 89 (52.7%)         | 362 (52.8%)           | 151 (55.7%)        | 0.70    |
| Digoxin                                      | 16 (9.7%)          | 55 (8.1%)             | 28 (10.3%)         | 0.50    |
| Ivabradine                                   | 20 (12.1%)         | 50 (7.3%)             | 35 (12.9%)         | 0.01    |
| Anti-platelets                               | 50 (30.1%)         | 233 (34.2%)           | 81 (30.0%)         | 0.34    |
| Anti-coagulants                              | 96 (55.4%)         | 417 (60.1%)           | 157 (42.1%)        | 0.01    |
| SGLT2 inhibitors                             | 48 (28.7%)         | 216 (31.7%)           | 55 (20.4%)         | 0.002   |
| Cardiac rehabilitation programme             | 10 (6.1%)          | 52 (7.8%)             | 25 (9.2%)          | 0.50    |
ilarly (Figure 1D). Another 24 units have applied to start the accreditation process by 2022.

Of the 34 units that received provisional accreditation for failure to meet any of the required quality standards, the most frequent cause of non-compliance was the lack of a coordinated and signed process/clinical pathway between cardiology, internal medicine, and primary care in the unit’s health area (14 of the 34 cases, 41.2%). Other less frequent causes are detailed in Table 1. Among these standards, some related to equipment and portfolio of services (cardiac rehabilitation unit in the centre, existence of 24-h cardiology duty in the centre), or educational aspects (training courses for primary care) stand out. All 34 units resolved these deficits within 6 months of the initial evaluation, subsequently receiving definitive accreditation.

Initial data of the results of the patients included in the registry, by type of unit are shown in Table 2. Although the development of the registry was slowed by the COVID-19 pandemic, the characteristics of the first 1157 patients included indicate a high use of β-blockers, sacubitril/valsartan, mineralocorticoid receptor antagonists, and even SGLT2 inhibitors, and no differences in drug therapy between the three types of HF units were observed (Table 3). The possible influence of the accreditation programme on improved outcomes of care for patients with HF will be well known after the final analysis of the 5000 planned patients, but these initial data suggest that compliance with quality standards should lead to better patient care. Even more, 1-year mortality in our first patients was low, 11.3%, as was the HF re-admission rate (16.5%).

Conclusions

Our experience indicates that the creation and implementation of an accreditation programme for excellence and quality of care of HF units at the national level by a scientific society may be feasible and sustainable over time, although it is necessary to wait a few years, at least until the 5-year re-accreditation process is carried out. This can lead to an improvement in the quality of care and improved prognosis of HF patients. Compliance with homogeneous protocols and standards common to all units will contribute to improving the equity of the system. Although the generalizability of these programmes of excellence will depend on the type of health system and that of the economic level of each country, and we have no comparative data on the organization of HF units in the various European countries, which have very different healthcare systems, this positive experience can help to advance the HFA-ESC programme of excellence at the European level.9

Conflicts of interest

None declared.

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