

# Heart failure: A challenging syndrome for health care professionals

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## Abstract

Research and evidence-based practice in heart failure (HF) have well been developed the latest years helping health professionals to cope with multiple care needs of patients with HF. The current review presents an overview of the challenging issues of health professionals who care for patients with HF. The review was based on the relevant databases of PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Cochrane Library (reviews and clinical trials). Mortality and impaired quality of life in patients with HF still rises. This is mainly due to the ageing of population and the fact that prevalence of HF is higher in older people. Often HF in older people exists with co-morbidities which make HF diagnosis and management more difficult and complex.

## Introduction

Heart failure (HF) is considered as one of the major public health problems worldwide, with a 5-year survival ranging from 50 to 70%, and multiple adverse outcomes; such as hospitalization, death, functional and emotional impairment [1, 2]. Ageing population, better treatment of myocardial infarction and prolongation of life expectancy of patients with cardiovascular diseases lead to an increasing prevalence of HF, posing a challenge for health care professionals who have to respond to the needs and problems of a population with high prevalence of co-morbidities [3–5]. Frequently, non-specific signs and symptoms of HF are covered by those of non-cardiac comorbidities causing diagnostic difficulties, polypharmacy and difficult management of the certain population [3].

There has been an improved survival in patients with HF and reduction in HF mortality due to substantial progress in the management of care of individuals with HF, including pharmacologic therapy, devices and multi-disciplinary approach [6]. Even though, there are existing challenges for health care of patients with HF. First, age-adjusted prevalence rate continues to rise, causing an enormous economic burden to health care systems [1, 7–9]. Second, even though the clinical practical guidelines and recommendations promote best clinical practice, surveys have shown variation in adherence to the guidelines and a gap between them and the clinical practice [10, 11].

This paper provides an overview of the challenges health professionals may confront when they care HF patients.

## Changing demographics and increasing incidence of HF and co-morbidities

Advances in cardiology and in medicine in general, have increased life expectancy of individuals with acute and chronic health problems, changing at the same time the demographic and clinical characteristics of patients with HF [3]. Additionally, heart failure risk factors vary substantially among world regions. More detailed regional heart failure epidemiology studies are needed in order to quantify the global

burden of heart failure and identify regional prevention and treatment strategies. The increase in HF prevalence is age dependent and the prevalence of HF is highest in older people. The changing profile of individuals with HF has resulted the fact of multiple comorbid conditions and the need of multiple medications (polypharmacy) along with the challenge of diagnostic difficulty and complex management. HF symptoms are often not typical in older people. Respiratory disorders, depression, obesity and arthritis in older people have common symptoms with those in HF, e.g. dyspnea and fatigue [6]. Other, rarely mentioned concomitant conditions are frailty syndrome (FS), dementia, and orthostatic hypotension (OH) [12], which might adversely affect overall morbidity and mortality. It is not unusual; polypharmacy has drug interactions which may interfere with drug efficacy, and in unpredictable ways. Thus often, early readmissions are not due to cardiac reasons, but due to complications of other diseases or polypharmacy, due to behavioral reasons, such as non-adherence to the therapy and social factors such as social isolation. As it seems, many of those readmissions could be prevented. Age-related physiological changes, functional status, comorbid conditions, patients and health professional's preferences influence the care of older people with heart failure, along with readmission cause [13].

Due to its prevalence among older people, HF might be considered as a geriatric disease as well [6]. Co-morbidities, socio-economic and frailty issues make heart failure a much more complex syndrome than a cardiac pump syndrome. That means that patients receiving solo care

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from cardiologists, in even specialized heart failure clinics, might not receive appropriate care for other unrelated comorbidities, such as severe arthritis or depression. Depression in older people is common, and the prevalence is higher in HF patients and has been associated with functional decline and increased mortality [14].

Though the high estimations of depression in patients with HF, depression often goes unrecognized and untreated [15, 16]. The fact that depressive symptoms are often similar to somatic symptoms, e.g. sleep disturbance, fatigue, weak concentration, may partially explain the low diagnose rate of depression in patients with HF [15].

This brings in front the need of the longitudinal care expertise of general practitioners (GPs), the expert knowledge of cardiologists, nurses and all other health professionals involved. The multi-disciplinary team must be prepared and well-organized to respond to the multiple needs of older patients with HF, who may enjoy the best possible quality of care and at the same time the most efficient and cost-effective one.

### Socio-economic challenges

HF is an enormous economic burden for health care system and the most common reason for hospitalization of people over 65 years of age [8, 17]. Unless appropriate preventive strategies and measures are implemented instantly, the prevalence, related complications and total burden of HF and especially in older population, will expand and tax future healthcare systems even more [18]. Hospital services, medications, physician costs, primary healthcare costs and follow-up visits are considered to be the direct costs and lost productivity resulting from morbidity and mortality. Sickness benefit and welfare support are considered to be the indirect cost of healthcare expenditures [19].

Individuals with HF suffer a variety of emotional and physical symptoms that substantially impair their quality of life (QoL), mobility and daily living [20]. The World Health Organization (WHO) defines QoL as “individuals’ perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” [21]. One of the major challenges for health care professionals in HF management is to maintain and/or improve HF patients’ QoL. But the question rising is how often it is evaluated in the clinical practice, even though it is found to be high correlated with the NYHA classification. Additionally, patients with HF and their families come to difficult dilemmas or face options regarding continuing or not therapeutic interventions, especially when they have to consider about maintaining QoL against life prolongation or survival[22]. Unfortunately, during the end of stage time, often patients’ preferences are neglected or misperceived; supportive evidence from ESCAPE study has shown that there are patients who prefer to trade almost all survival in order to have better perceived health[23–25]. Therefore, health professionals caring for HF patients and especially those with progressed HF, need an understanding and knowledge of factors that may help them identify patients for whom extension of life is not the priority [26].

Evidence also indicates that HF patients with poor social support have an increased risk for adverse clinical events and are less likely to adhere to treatment, self-care recommendations and maintain their QoL [27–29]. In the general population, positive social support is beneficial in improving coping skills. Gaining sense of control and stability, anxiety and depression, which are two of the most common co-morbidities in HF are eliminated. Therefore, it is an aspect which should not be neglected in the management of the HF [30] and which is

also included in the American and European guidelines [2, 31]. Health care professionals need to be familiarized with procedures which facilitate the identification of patients with poor social support in order to be able to adopt practices for lowering their risk of negative events.

### Integration of palliative care in clinical practice

New therapeutic approaches for managing HF have led to a prolonged disability. Meeting the varying needs of patients arising from the vicious cycle of HF intermittent exacerbations, and the anxiety caused by the progressive and fatal course of the syndrome, has shifted the emphasis towards a model of care that integrates palliation. Palliative care is a multidimensional approach and there are certain issues that should be considered when applied. As mentioned in the position statement of ESC for palliative care in HF, beyond symptom assessment there are several psychological, spiritual, social, family-related and end-of-life issues that should be addressed [32].

Discussing end-of-life issues is never easy but patient’s information needs and preferences should be taken into consideration. New practitioners are not always ideally trained to approach the dying patient; they appear reluctant to discuss end-of-life issues, usually due to low exposure to palliative care during their generic training [33–35]. In the context of holistic care, clinicians should be prepared to initiate open discussions about the end-of-life and should receive proper training that would allow them to confidently interact with the dying patient. Of course, this necessitates the development of advanced communication skills.

Regulating the balance between curative and palliative care is critically important in all chronic illnesses. Achieving a balance in the case of HF becomes more complex and puzzling due to the recurrent serious exacerbations of the syndrome. Decision making could be quite challenging for the health-care professionals especially when it comes to withdrawing assist devices and deactivating implantable defibrillators. Physicians, cardiologists and HF experts should be prepared to face these ethical dilemmas arising mostly at the end stages of HF [36]. Answering the dilemma of withdrawing such treatments does not only concern dying patients, since shocks from implantable devices can cause fear and distress to any patient carrying them [37]. Therefore, physicians should act accordingly after weighting the treatment benefits against patient’s preferences and risks.

Palliative care in HF is not an approach appointed to a certain profession or health care worker but is a matter that concerns all the members of the multi-disciplinary team, while expanding across all care settings. Comfort relieve from suffering and quality of life maintenance are optimal goals not only for the terminally ill HF patient but for all symptomatic HF patients; thus palliative care should be embodied in several stages of HF when appropriate [32]. For this reason, health care systems need to adapt to the challenge of providing seam-less tailored services by improving linkage and co-ordination among different settings (hospital, home, nursing homes) and professions [38]. All HF patients should have access to palliative care, and clinicians are challenged to respond to multiple and complex patient needs while applying this approach. All the professionals belonging to the HF team should be given opportunities during their training courses to gain in-depth knowledge and expertise in palliative care. This will aid to improve advanced communication and decision-making skills. A more flexible health care system would allow penetration of palliative care to all settings and help health care providers overcome the barriers in providing optimal palliative care.

## Advances in evidence-based practice and research

Pharmacological therapy for chronic HF includes evidence-based drugs which are ACE-inhibitors, b-blockers, angiotensin receptor blockers and mineralocorticoid receptor antagonists, whereas for the treatment of acute HF (AHF) diuretics, vasodilators and positive inotropic agents are used [2, 39]. AHF is a major manifestation of HF decompensation and a reason for increased cost of care. However, there is a lack of evidence-based guidelines to support health professionals during the acute phase [40, 41]. The development of evidence based and comprehensive approach to guide patient's care how and when to use available treatment for AHF remains an urgent unmet need. A comprehensive strategy involving available drugs, devices, ultrafiltration, biomarkers, objective and valid tools, such as VAS for quantification of dyspnea and of course a multi-disciplinary approach to cope with the urgent and at the same time very complex event [41, 42]. Latest ESC and AHA guidelines include suggestions on when to use devices, but health professionals meet the challenge of best timing for each patient, the management of such procedure, including the management of possible complications [2, 31]. It is questionable how well prepared are health professionals across settings and countries to deal this challenge and the education needs raises again. Additionally, more improved surgery strategies for more minimally invasive approach of device transplantation, devices that are easy to use and also, are cost-effective is an important management issue that also can be put under the umbrella of future research needed.

As referred above, the prevalence of HF is associated with ageing and older people with HF have much more higher mortality than younger people with HF [43]. The management of older people with HF is often received from primary health settings and is challenging due to co-morbidities and physical changes of ageing. Despite epidemiological facts and challenges of older population with HF, certain population is under-represented to clinical trials [44].

Stem cell and gene therapy are promising for the near future, but research is yet incomplete. Innovative strategies need basic scientists and clinicians to be in close collaboration and combine their experience and expertise for the benefit of HF patients [45–47].

## Evidence based practice: how is it translated into clinical practice?

There is a rich body of evidence regarding the pharmacological and device-based efficacy translated into guidelines and recommendations [2]. Electronic health records, cohort and multi-center studies showed that adherence to guidelines and quality of care provided varies between the physicians, hospitals and countries, even though this would might not be expected taking into consideration the plethora of publications, guidelines and position statements available [11, 48–51]. Many clinical trials include pre-randomization and often exclude patients with major comorbidities, documented contra-indications, poor compliance, and prior drug intolerance; nevertheless, the certain target group represents a population often met in clinical practice. So, even though there is an attempt to apply the evidence to all patients, it is unlikely to explain in detail the wide variation in care in both within and between different countries [44]. That also concerns drugs which found to be effective for HF [52]. Most studies have shown that drugs were prescribed at low doses and those high-risk populations, such as older patients and patients with renal failure, were under-treated or prescribed at low dosages. Few although, recent studies have shown that prescription rates of b-blockers, ACE inhibitors and spironolactone have increased, but still do not meet the suggested doses, especially concerning older

people and those with renal failure [11, 52, 53]. Older people are at higher risk of side effects of b-blockers, e.g. hypotension, bradycardia and pulmonary events. At the same time, HF in older people often co-exists with co-morbidities which are contraindications for the use of b-blockers, e.g. chronic obstructive pulmonary disease, peripheral artery disease and the risk of postural hypotension and associated neurologic disorders. Nevertheless, if doses are not reached as those in clinical trials the drugs may not be as effective as expected. This should be taken into consideration during titration, and of course in a careful way and under close monitoring. So, how a health professional can be sure? Continued education and multi-education of cardiologists, general practitioners and nurses is required in order to improve the therapeutic management of chronic HF patients, with particular emphasis on the effective doses of drugs required.

Echocardiography varies among settings, despite the guidelines recommendation, even though is considered the reference standard for the diagnosis of heart failure. Early identification and accurate diagnosis gives the chance for an early and effective treatment. This explains the fact that echo is found to be a key predictor of evidence-based therapy [2, 48, 53]. An important percentage (10–25%) submitted to hospital with primary diagnosis of HF have no assessment documentations of LV function [48, 51, 53]. That is maybe one of the reasons that HF is underdiagnosed, especially among older people to which symptoms of co-morbidities may cover or mimic HF symptoms. Furthermore, the difficulty of distinguishing HF with preserved ejection fraction from other entities remains a challenge for the clinician [54]. Several skills and in-depth knowledge are needed for the acquisition of competence in performing echocardiography in HF

## Multi-disciplinary and non-pharmacologic management

Recent studies included multi-disciplinary HF clinics, multi-disciplinary follow-up, telephone contact, primary care follow-up, and enhanced patient self-care. Most have used specialist personnel with cardiologists and HF specialist nurses within the multi-disciplinary team. The improvement shown in recent studies is maybe due to better knowledge of international guidelines and the results of large therapeutic trials [11, 53]. Needs are not the same among health professionals. A young person with HF with left ventricular dysfunction and no co-morbidities has different needs from an older person with HF and co-morbidities who also needs care from a geriatrician and a general physician. A systematic review of which the trials included multi-professional care with health care specialists in HF showed reduced mortality by 25%, HF hospitalizations by 26% and all-cause hospitalizations by 19% [55]. Also, multi-disciplinary programs which are led by nurses are found to be beneficial in terms readmissions [56]. Nurses who use holistic approach care are likely to identify patient's individual needs and are able to coordinate care among all health professionals in the best possible way. Latest guidelines on HF include suggestion for adopting multi-disciplinary approach in HF management [2]. The progressive syndrome of HF makes insufficient to facilitate a holistic approach in the management of heart failure, despite the progress in the therapeutic approaches. Heart failure is a chronic disease and patients are suggested to take an active role in their care and thus become experts of their condition. They are expected to adopt self-management practices that concern adherence to the treatment plan, monitoring symptoms and evaluating the effectiveness of their actions, such as daily weighting, compliance with diet, sodium and fluid intake recommendations. Unfortunately, findings from studies documented knowledge deficits about HF self-management [57]. Nurses who have a better understanding of HF self-management

may provide a more effective education for the patient. Therefore, strategies to improve nurses' knowledge on HF self-management are needed. Health care professionals and community health programs need to cooperate in order to help the patient gain self-management skills. The milestone of this procedure is continuity and integration of care. All health professionals involved in the management programme have the opportunity to promote self-care management. Nurses who are involved in all stages of care have the opportunity to detect possible obstacles and promote self-management before patient's discharge from the hospital and make sure that the patient participates to a HF management programme [56]. Nurses who have a better understanding of it is important for all health professionals in the HF team to learn how to work together, since they have parallel aims of care. In order to achieve productive co-operation health professionals, need to be adaptable, flexible, collaborative team workers with highly developed interpersonal skills which provide motivation and justification for the introduction of more shared learning opportunities [58].

Numerous studies have proved the importance of a multi-disciplinary approach which is also recommended in the guidelines [1, 2]. The management though between the settings and countries seems to vary and often patients are under-treated or late diagnosed. Between countries and settings, clinical practice is constrained by variable awareness of the evidence and guidelines, several external obstacles and clinical interest. On the other hand, in clinical trials, researchers are familiar with the evidence and protocols and patient care is supported by research clinicians, physicians and nurses, who assist in follow-up clinical assessment, regularly document pharmacotherapy and possible titration, monitor compliance to the therapy [59]. Multi-disciplinary management approach that is close to the models of care provided in the clinical trials is met differently between countries and centres as well. What may remain common between the settings and countries are the patients with HF. The care is also differentiated according to the culture, socio-economic status, educational background and patients and caregivers' wishes [60]. A patient-centred care is the key of creating a partnership between the patient and the health professional and at the same time involving all possible sources and cultural differences. The educational goals all health professionals are much more in common sharing similar difficulties, worries and educational needs. Continuing education of all health professionals on recommended doses, management of complications, early diagnosis and therapy and follow-up, may be beneficial for the prognosis of HF patients. All health professionals with special interest on the care of HF patients must have a knowledge on all diagnostic and therapeutic approaches available for the early diagnose and treatment of patients with HF. For that reason, several educational programs and courses are developed to support health professionals interested on the care of HF patients [61].

## Conclusion

The increased prevalence of HF the last decades might be the result of the ageing population, increasing incidence of HF and growing awareness and diagnosis of HF. Rapid advances in the management of HF and the population that concerns, which mostly include older people with co-morbidities, make it difficult for health professionals to catch up with evidence and clinical expertise. The care of a HF patient may become very complex, not only due to the disease progress, but also due to multiple factors that should be taken into consideration including burden of disease and therapy, type of outcome, and patient's preferences. The key of care in all spectrum of disease progress is prevention of all stages; from primary prevention to rehabilitation. Risk stratification and early diagnosis might be the most benefit

strategies to detect which patient is at high risk for short- or long-term hospitalization, mortality and would benefit from aggressive therapy or palliative care. Health professional's awareness and education is the milestones to establish early diagnosis, and best possible prognosis and health-related quality of life of patients with HF.

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